Final

834 Lakeshore Road, Sarnia

Environmental Impact Study

Prepared for:

Wicks Homes
1310 Hillcrest Nisbit Drive
Sarnia, Ontario
N2S 2N4

Project No. 1889 | November 2019

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

834 Lakeshore Road, Sarnia

Environmental Impact Study

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Wicks Homes to complete an Environmental Impact Study (EIS) for a proposed six-lot residential development on a property legally described as Concession 9, Part of Lot 60, in the City of Sarnia. The property's civic address is 834 Lakeshore Road. For the purposes of this report, this property is referred to as the "subject property", while the surrounding lands within 120m of the property are referred to as the "study area". See Map 1 for the subject property location.

The subject property contains a single residential dwelling and is primarily wooded. Driveway access to the property is from Centennial Avenue and crosses an existing residential property and a City-owned park (Centennial Parkette). The lot has a width of approximately 40m and depth of 337m, and a total area of approximately 1.3ha. The subject property is surrounded on the west, east, and south sides by long-established residential development, and abuts Lake Huron to the north with a lakeshore frontage.

The subject property is designated "Urban Residential" in the Sarnia Official Plan (OP) while the shoreline area is designated "Natural Hazards" as shown on Maps 7 and 8 of the OP (City of Sarnia 2016). The lakeshore hazard areas are also referred to as Great Lakes Shoreline Management Areas on Map 6 of the OP. The City Structure Plan identifies the subject property as a "Stable Residential Area", and as part of the City's Natural Heritage System coinciding with the lakeshore area as shown on Map 1 of the OP. The property contains a wooded feature that is designated as a "Type B Natural Area" in the City's OP (Map 5), which corresponds to a feature considered to be Significant Woodland within the City's Natural Heritage System.

The subject property is also regulated by the St. Clair Region Conservation Authority (SCRCA) due to the presence of lakeshore hazard lands based on the SCRCA's Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 171/06). Furthermore, the property falls within the SCRCA's Shoreline Management Plan Area 1 (flood hazard) and Area 2 (stable slope allowance, plus 30m erosion allowance).

Finally, the subject property contains lands designated as Primary Corridor within the Lambton County OP (2019). Primary Corridor is considered a "Group B feature" within the County's Natural Heritage System. The Primary Corridor that extends through the subject property corresponds to the Lake Huron shoreline within the county boundaries.

The proposed development was originally discussed at a pre-consultation meeting held between staff of the City and SCRCA and the proponent on January 5, 2017 at which time required technical studies to submit with the development application were identified. Due to the existing land use designation on the property, and the presence of shoreline hazard lands and SCRCA-regulated lands, an EIS is required to demonstrate that the proposed development will not negatively impact the existing natural features and ecological functions.

Although Significant Woodland has been mapped on the subject property, City staff have acknowledged that no detailed information is available for the woodland feature, and that its ecological functions and level of significance have not been determined (N. Bourgeois, City of Sarnia, email dated January 20, 2017; Appendix I). An evaluation of the functional value and ecological significance of the woodland was therefore intended to represent a key component of the required EIS. As described further in Section 1.1.3, the EIS is to also address various other criteria listed in Section 4.3.3.4 of the OP, including a plan for natural feature enhancement such as forest improvement, reforestation, linkages, stewardship agreements and conservation agreements (City of Sarnia 2016). See Appendix I for agency pre-consultation comments and EIS scoping requirements.

This report represents an update to a previous EIS submission (dated November 2017) that was completed by NRSI for the subject property based on a previous version of the property development plan. Following comments received on Wicks Homes' original development application by the City of Sarnia, SCRCA and members of the public, revisions were made to the proposed development plan. This report also addresses SCRCA comments on the 2017 EIS and includes responses to individual comments in Appendix II.

Technical studies, relevant to other aspects of the EIS such as planning, stormwater management, shoreline hazard mapping, engineering etc. have been prepared by the study team and have been used to supplement the natural feature characterization and inform the impact assessment. The study team comprises the following:

- Wicks Homes (landowner and development proponent)
- Zelinka Priamo Ltd. (land use planning consultant)
- Shoreplan Engineering Ltd. (shoreline hazards assessment consultant)
- Natural Resource Solutions Inc. (natural environment consultant)

This report summarizes background information on natural heritage features, as well as the results of field surveys completed within the subject property. This information was used to define the boundaries of woodland on the property and to assess its significance against City OP and Provincial criteria. Natural feature constraints were combined with shoreline hazard limits and setbacks identified by other members of the study to guide the layout of the development. An impact assessment has been completed based on the comparison of the existing natural features to the conceptual layout of the proposed development. Recommendations have been provided to avoid, or otherwise minimize or mitigate impacts to these features.

1.1 Project Scoping

1.1.1 Background Information Review

In order to determine a study approach for the EIS, existing natural heritage information was first gathered and reviewed to identify key natural heritage features and species that are known or have potential to occur within the subject property and surrounding vicinity. Existing background information was requested from the Ontario Ministry of Natural Resources and Forestry (MNRF) Aylmer District and the SCRCA. Information was provided by the MNRF on May 25, 2017, and from the SCRCA on April 18, 2017.

Background information on the natural environmental features within the subject property vicinity was also gathered from the MNRF Natural Heritage Information Centre significant species database (MNRF 2015a), the MNRF's Land Information Ontario, and relevant taxa-specific databases, as listed below.

Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the subject property (10km radius) using various atlases; including the Ontario Mammal Atlas (Dobbyn 1994), the Ontario Reptile and Amphibian Atlas (Ontario Nature 2015), the Ontario Butterfly Atlas (McNaughton et al. 2017), and the Ontario Odonata Atlas (MNRF 2017a). Data on breeding birds in the area was extracted from the Ontario Breeding Bird Atlas (BSC et al. 2008). Since this atlas provides data based on 10x10km survey squares, information on breeding birds from the square that overlaps the study area (17LH86) was compiled. These initial species lists were used to guide the scope and type of field surveys required as outlined in the following sections.

Other information sources that were reviewed to inform project scoping included the following:

- SCRCA online mapping
- Lambton County Official Plan (County of Lambton 2019)
- Sarnia Official Plan (City of Sarnia 2016)
- Pre-consultation between City staff, SCRCA and proponent regarding required EIS scope, including MNRF technical memo (January 5, 2017) (Appendix I)

Based on the findings of the background review a Terms of Reference (TOR) for the EIS was prepared by NRSI and submitted to the SCRCA and City of Sarnia on May 18, 2017 for review and comment. Comments were received from the SCRCA on June 6, 2015, while no formal comment on the TOR was received from the City. The TOR are included in Appendix III.

1.1.2 Significant Species and Habitat Screening

Species at Risk (SAR) are those listed on the Species at Risk in Ontario List (MNRF 2017b). These include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered, Threatened, or Special Concern. Species listed as Endangered or Threatened are protected under the *Endangered Species Act* (ESA), which includes protection to their habitat.

Species considered Special Concern are included in the definition of Species of Conservation Concern (SCC), which includes the following:

- species designated provincially as Special Concern,
- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the Natural Heritage Information Centre, and
- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the COSSARO. These species are protected by the federal *Species at Risk Act* but not provincially by the ESA.

Habitat for SCC is considered Significant Wildlife Habitat (SWH) (OMNR 2010), which is afforded protection under the Provincial Policy Statement (OMMAH 2014) and City and County natural heritage protection policies. For the purposes of this report, the term “SAR” will refer to provincially Threatened and Endangered species regulated under the ESA while provincial species of Special Concern will be considered SCC.

Based on NRSI's examination of background sources and federally or provincially significant species with occurrence records in the subject property vicinity (within 10km), an assessment of SAR and SCC suitable habitat presence on the subject property was completed. Assessments of habitat suitability in the study area were made by cross-referencing each species' known habitat preferences or requirements (e.g., OMNR 2000) with NRSI biologist site knowledge based on a preliminary site visit completed prior to TOR development.

Based on the results of the preliminary screening, the following SAR that are regulated under the ESA were identified as having potentially suitable habitat in the study area:

Threatened and Endangered Species Regulated Under the ESA

- American Chestnut (*Castanea dentata*) – provincially and federally Endangered
- Butternut (*Juglans cinerea*) – provincially and federally Endangered
- Chimney Swift (*Chaetura pelagica*) – provincially Endangered; listed as nationally endangered by COSEWIC
- Dwarf Hackberry (*Celtis tenuifolia*) – provincially and federally Threatened
- Kentucky Coffee-tree (*Gymnocladus dioicus*) – provincially and federally Threatened
- Little Brown Myotis (*Myotis lucifugus*) – provincially and federally Endangered
- Northern Myotis (*Myotis septentrionalis*) – provincially and federally Endangered
- Tri-colored Bat (*Perimyotis subflavus*) – provincially and federally Endangered

See below for SCC whose habitats were screened as potentially occurring in the study area.

A preliminary screening for the presence of Significant Wildlife Habitat (SWH) was also completed for the study area, as summarized in the TOR (Appendix III). The Significant Wildlife Habitat Technical Guide (SWHTG) outlines the types of habitats that the MNRF considers significant in Ontario as well as criteria to identify these habitats for Ecoregion 7E (OMNR 2000, MNRF 2015b). The SWHTG groups SWH into four broad categories: seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats of SCC, and animal movement corridors.

Based on the results of this preliminary screening exercise, the following SWH types were initially considered Candidate SWH for the study area to inform the need for further assessment through the field work and analysis in the EIS:

- Bat Maternity Colonies

- Snake Hibernaculum
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat
- Potential Habitat for the following SCC:
    - Bald Eagle (*Haliaeetus leucocephalus*)
    - Eastern Wood-Pewee (*Contopus virens*)
    - Red-headed Woodpecker (*Melanerpes erythrocephalus*)

1.1.3 Relevant Policies, Legislation and Planning Studies

Table 1 provides an overview of natural heritage-based policies, regulations and legislation that were considered and which informed the field program and analysis. To help inform suitable land-use concepts, guide the layout of development, and identify areas to be protected, inventoried natural features were evaluated against relevant policies, regulations and legislation outlined in the following sections. The specific implications of these policies to the proposed development are discussed in further in Section 4.0. Development implications associated with protection policies relating to physical land features, such as shoreline/lakeshore and natural hazard lands, are referred to but generally considered outside the scope of this EIS.

Table 1. Relevant Policies, Legislation and Planning Studies

Policy/Legislation	Description	Project Relevance
Provincial Policy Statement (OMMAH 2014).	• Issued under the authority of Section 3 of the Planning Act and came into effect on April 30, 2014, replacing the 2005 PPS (OMMAH 2005). • Section 2.1 of the PPS – Natural Heritage establishes clear direction on the adoption of an ecosystem approach and the protection of resources that have been identified as 'significant'. • The Natural Heritage Reference Manual (OMNR 2010) and the Significant Wildlife Habitat Technical Guide (OMNR 2000, MNRF 2015a) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS.	• Natural features that occur or may occur within the subject property, and which receive protection under the PPS, include: o Significant Woodlands, o Potential Significant Wildlife Habitat, and o Potential habitat for Endangered and Threatened species. • Section 2.1.5 of the PPS states that development or site alteration shall not be permitted in Significant Wildlife Habitat or Significant Woodland unless it has been demonstrated that there will be no negative impacts on the features or their ecological functions. • Section 2.1.7 of the PPS states that development or site alteration shall not be permitted in habitat of Endangered or Threatened species except in accordance with provincial or federal requirements. • Section 3.1.1 of the PPS states that development shall generally be directed to areas outside of hazardous lands adjacent to the shorelines of the Great Lakes which are impacted by flooding, erosion, and/or dynamic beach hazards. • Section 3.1.7 of the PPS states that development and site alteration may be permitted in those portions of the hazardous lands where the effects and risk to public safety are minor, could be mitigated in accordance with provincial standards, and where other requirements can be demonstrated as listed in Section 3.1.7, including the development not causing adverse environmental impacts.
Endangered Species Act	• The original ESA, written in 1971, underwent a year-long review which resulted in a number of changes which came into force in 2007. • The ESA prohibits killing, harming, harassing or capturing SAR and protects their habitats from damage and destruction.	• Based on a preliminary analysis, several SAR were identified as having the potential to occur within the subject properties based on presence of suitable habitat.

Policy/Legislation	Description	Project Relevance
Migratory Birds Convention Act	• Prohibits the disturbance, destruction, or taking of a nest or eggs of migratory birds.	• Any vegetation removal required for construction of the proposed development must have regard for this legislation in the form of timing window restrictions or other suitable mitigation measures.
County of Lambton Official Plan (2019)	• The County OP describes and outlines protection policies for the Natural Heritage System in Lambton County. • The Natural Heritage System is divided into Group A, B and C features based on their significance and sensitivity.	• The subject property contains lands designated as Primary Corridor as shown on OP Appendix Map A. • As a Group B Natural Heritage System feature, development may be permitted if it can be demonstrated that no negative impacts on the feature or its ecological functions will result.

City of Sarnia Official Plan (2016)	•	• The subject property contains a wooded feature designated as a "Type B Natural Area", as shown on OP Map 5. This feature corresponds to a feature considered to be Significant Woodland within the City's Natural Heritage System.
		• Section 4.3.3.4 of the OP states that development may be permitted provided that it can be demonstrated in an EIS that no negative impacts to the feature or its ecological functions will result.
		• The EIS must also demonstrate:
		  • *"no alternative location exists that is outside of the Natural Area designation;*
		  • *the affected area is not a wetland, floodplain, or hazardous area (e.g., unstable slopes, soils or sinkholes);*
		  • *groundwater will be protected, particularly in vulnerable areas;*
		  • *the St. Clair Region Conservation Authority, and other appropriate agencies, shall be consulted; and,*
		  • *the development must not be severed from the holding on which it is located".*
		• Development is also conditional on natural environment enhancements, such as forest improvement, reforestation, linkages, stewardship agreements and conservation agreements as stated in Section 4.3.3.4.

Policy/Legislation	Description	Project Relevance
		• Section 5.12.3 of the OP states that where Natural Areas forest cover is to be removed in accordance with the OP policies, it is to be replaced at a ratio of 2:1 of the total area of forest cover that is removed. • The subject property also contains a shoreline area that is designated as “Natural Hazards” as shown on Maps 7 and 8 of the OP • Section 4.3.2 states that development should avoid natural hazard areas, including flooding, erosion, and dynamic beach hazards related to the Great Lakes system. • OP shoreline development policies prohibit new lot creation, with the exception that new lot creation within Shoreline Management Areas 1 and 2 may be permitted provided that new buildings and structures conform with applicable requirements.
SCRCA Regulation 171/06	• Regulation issued under *Conservation Authorities Act,* R.S.O. 1990. • Through this regulation, the SCRCA has the responsibility to regulate activities in natural and hazardous areas (i.e., areas in and near rivers, streams, floodplains, wetlands, and slopes).	• The subject property falls within the regulation limit of the SCRCA due to the presence of lakeshore hazard lands. • As such, permitting from the SCRCA must be obtained for proposed works within their regulation area. • An EIS is required to demonstrate that the proposed development will result in no negative impact to the regulated natural features and their ecological functions.
SCRCA Shoreline Management Plan (W.F. Baird and Associates 2011)	• A Shoreline Management Plan was produced for the SCRCA, which summarizes the legislation, policies and guidelines regarding shoreline hazards along the Lake Huron shoreline. • Hazard limits for flooding, erosion and dynamic beaches are mapped within the Plan report.	• The subject property falls within the Shoreline Management Plan Area 1 (flood hazard) and Area 2 (stable slope allowance plus 30m erosion allowance). SCRCA guidelines do not permit new lot creation within Shoreline Areas 1 or 2. • New dwellings are not permitted in Shoreline Area 1. Within Shoreline Area 2, new dwellings may only be permitted if it has been demonstrated that flooding and/or erosion hazards are appropriately addressed.

2.0 Field Methods

The EIS field survey methodology was described in the TOR as submitted to the City and SCRCA. Table 2 provides a summary of field surveys undertaken on the subject property, which were completed over 6 site visits during the period April-July 2017.

Table 2. Field Survey Summary

Survey Type	Survey Protocol	Dates
Vegetation Community Mapping, and Woodland Dripline Boundary Flagging and Surveying	Lee et al. 1998	May 26, 2017; July 11, 2017
Vegetation Inventories	Comprehensive search by ELC polygon	May 26, 2017; July 11, 2017
Tree Inventory	See Tree Protection Plan Report	April 6, 2017; April 17, 2017; December 14, 2018; December 17, 2018
Bat Cavity Tree Assessment	OMNR 2011; MNRF 2017c	April 6, 2017; April 17, 2017
Breeding Bird Surveys	BSC 2001	May 26, 2017; June 21, 2017
Reptile Emergence Survey	Comprehensive search of suitable habitat within the property and potential hibernaculum features	April 26, 2017

See below for detailed descriptions of the field survey methods used.

2.1 Vegetation Surveys

Vegetation community delineation was completed by NRSI staff through two field investigations completed on May 26 and July 11, 2017. The standard Ecological Land Classification (ELC) System for southern Ontario was applied (Lee et al. 1998) to accurately characterize and map each vegetation community to ecosite level. All observed species of vascular flora were inventoried on these dates during thorough area searches of the subject property. The vegetation inventories were timed to identify spring, and summer-flowering species. All inventoried vegetation species were recorded in field notes by ELC community.

The northern dripline boundary of the on-site woodland was flagged in the field during the July 11, 2017 site visit. The northern woodland boundary was also flagged on the adjacent property

to the east following site access permission by the property owner. The dripline boundary was GPS-georeferenced to sub-50cm accuracy for mapping purposes. The west, east and south woodland boundaries were not flagged or surveyed where the woodland extended right up to property boundaries.

2.1.1 Tree Inventory

All trees ≥10cm diameter at breast height (DBH) within the subject property, including shared property boundary trees and off-site trees within 10m where access permits, were inventoried by Certified Arborists and assessed for health condition and potential for structural failure. For each inventoried tree, the following information was recorded:

- Species common and scientific name,
- DBH,
- Crown radius (metres),
- General condition/health (excellent, good, fair, poor, very poor, dead);
- Tree identification number,
- Potential for structural failure (low, medium, high),
- Tree location (UTM coordinates), and
- General comments (i.e. disease, aesthetic quality, development constraints, sensitivity to development)

2.2 Breeding Bird Surveys

Breeding bird surveys were completed by NRSI staff on two survey visits (May 26 and June 21, 2017) in accordance with OBBA protocol (BSC 2001). Surveys consisted of area searches by habitat type (ELC community) during morning hours (see Table 3 below). Each observed (seen or heard) species was recorded by breeding status. Evidence for possible, probable or confirmed breeding status was based on OBBA breeding evidence methodology (BSC 2001). Table 3 presents timing, survey effort and weather details of the completed breeding bird surveys.

Table 3. Breeding Bird Survey Details

Date	Surveyor	Time	Field Hours	Weather
May 26, 2017	NRSI	08:30-10:30	2.0	Temp.: 10°C Wind: Beaufort 1 Cloud cover: 10% Precipitation: None

Date	Surveyor	Time	Field Hours	Weather
June 21, 2017	NRSI	07:55-08:46	0.85	Temp.: 18°C Wind: Beaufort 1 Cloud cover: 15% Precipitation: None

2.3 Reptile Emergence Survey

An area search of the subject property was completed on April 26, 2017 to coincide with the period of spring emergence. The visual search focused on the occurrence of any basking reptile species. Any on-site features with the potential to provide overwintering habitat were closely investigated. These features included an old stone foundation on the property as well as the foundation of the existing house. The house foundation was examined for the presence of cracks or crumbling material that may allow snake access into subterranean areas. Table 4 presents timing, survey effort and weather details of the completed reptile emergence survey.

Table 4. Reptile Survey Details

Date	Surveyor	Time	Field Hours	Weather
April 26, 2017	NRSI	13:38-15:38	2.0	Temp.: 22°C Wind: Beaufort 1 Cloud cover: 20% Precipitation: None

2.4 Bat Cavity Tree Assessment

An inspection of the trees within the property was completed on April 6 and 17, 2017 to determine the likelihood of suitable maternity colony or roosting habitat for bats. The tree assessments followed guidelines for the identification of suitable bat habitat outlined in the MNRF's *Bats and Bat Habitats: Guidelines for Wind Power Projects* (OMNR 2011) as well as the *Survey Protocol for Species at Risk Bats in Tree Habitats* (MNRF 2017c). All trees ≥10cm DBH on the subject property were systematically searched for the presence of bat habitat features (e.g., suitable cavities, loose/peeling bark) in conjunction with the tree inventory.

2.5 Other Wildlife

All observations of mammals, butterflies and odonates were documented during site visits. This included actual direct observations of individuals, as well as signs of wildlife presence (i.e. tracks, scat, dens, nests etc.).

3.0 Existing Conditions

3.1 Soils, Terrain and Drainage

Background information indicates the surficial substrates within the study area are comprised of coarse sand and loamy sand (County of Lambton 2015). The study area is located within the Plainfield soil series, with the predominant soil type for the property vicinity described as sand and well-sorted sandy outwash. These soils are noted to exhibit excessive drainage. The general topography of the area is moderately sloping (Agriculture Canada 1979).

The subject property has a relatively consistent elevation for the majority of its length with the exception of the shoreline slope to the north of the existing house. The tableland portion of the property contains small topographical undulations and a small ridge sloping toward Lakeshore Road at the south end of the property. With the exception of the shoreline slope, the property ranges in elevation between approximately 179-181masl with a general overall increase in elevation from south to north up to the top of shoreline slope. Elevation then drops to approximately 177-178masl below the shoreline slope to the lake.

3.2 Vegetation

3.2.1 Vegetation Communities

The study area is generally characterized by two distinct vegetation communities (i.e. CUS1, FOD1), both of which are dominated by mature oaks (*Quercus* spp.). Based on the species, soils, and form, it is possible these vegetation communities are remnant oak woodland/savannah. However, the CUS1 community is strongly anthropogenically-influenced and functions as parkland with manicured lawns. As well, a portion of the CUS1 community is currently used as a municipal park at the western lobe extending off-property. Occasional yard waste and other debris/refuse dumping was noted within the FOD1 community, and the presence of non-native and invasive species exists throughout, resulting from garden escapees and other edge effects for a feature that is largely urbanized and surrounded by residential development. Two existing residential lots are located in the northern portion of the study area, one on the subject property itself and one on an adjacent property to the east for which NRSI field staff were granted site access. A small slope exists at the northern extent of the CUS1 vegetation community and existing residential lots which has been modified historically for residential development, and is dominated by manicured lawns and ornamental plantings. An unvegetated open beach exists along the shoreline and is used as a recreational area for the adjacent residents. The beach is maintained by groynes constructed of sheet piling.

A summary of ELC communities identified within the study area is provided in Table 5 and shown on Map 2.

Table 5. Vegetation Communities within the Subject Property

ELC Ecosite Type	ELC Description	Environmental Characteristics
FOD1	Dry – Fresh Oak Deciduous Forest Ecosite	The majority of the study area is dominated by this vegetation community, which is generally characterized as a mature oak forest that resembles oak woodland/savannah, particularly in the central portion where tree canopy density is notably less than the surrounding areas. A driveway traverses the community from north to south immediately east of the subject property boundary. A driveway to the on-site residence, which passes through the Centennial Parkette, roughly coincides with the surveyed northern boundary of the FOD1 feature on the subject property. A strong presence of non-native and invasive vegetation species was observed throughout the feature. The canopy and sub-canopy is comprised of Black Oak (*Quercus velutina*), White Oak (*Quercus alba*), Norway Maple (*Acer platanoides*), and Black Cherry (*Prunus serotina*). Understorey vegetation is dominated by Choke Cherry (*Prunus virginiana ssp. virginiana*), Tartarian Honeysuckle (*Lonicera tatarica*), and Winged Spindle Tree (*Euonymus alata*). The groundcover layer is comprised of Garlic Mustard (*Alliaria petiolata*), Yellowish Enchanter's Nightshade (*Circaea lutetiana ssp. canadensis*), and Star-flowered Solomon's Seal (*Maianthemum stellatum*).
CUS1	Mineral Cultural Savannah Ecosite	This vegetation community is located in the northern portion of the study area, and a lobe extending off-property to the west. It functions primarily as parkland in the ecological sense, with mature canopy trees, sparse sub-canopy and understorey layers, and a manicured/mowed groundcover layer consisting of lawn and naturalized herbaceous species. Within the subject property, the CUS1 community corresponds to the actively maintained/manicured portion of the existing residential property. This community comprises the entirety of the Centennial Parkette immediately west of the subject property. The canopy is dominated by Black Oak, White Oak, and Norway Spruce (*Picea abies*). Sparse (i.e. 0-10% cover) sub-canopy and understorey layers are comprised of White Mulberry (*Morus alba*), Scots Pine (*Pinus sylvestris*), Black Oak, Tartarian Honeysuckle, and Black Locust (*Robinia pseudo-acacia*). The groundcover layer is dominated by Kentucky Bluegrass (*Poa pratensis ssp. pratensis*), Common Plantain (*Plantago major*), and Poverty Oat Grass (*Danthonia spicata*).

3.2.2 Vascular Flora

In total, 108 vegetation species were identified during site investigations within the subject property. A complete list of these species is appended to this report (Appendix IV).

Based on the results of background information review and agency correspondence, five plant SAR have been reported within the subject property vicinity (MNRF 2016; C. Jong, MNRF Aylmer District, pers. comm., May 2017) and were identified as having potentially suitable habitat on the subject property (Appendix V):

- American Chestnut (*Castanea dentata*); federally and provincially Endangered
- Butternut (*Juglans cinerea*); federally and provincially Endangered
- Eastern Flowering Dogwood (*Cornus florida*); federally and provincially Endangered
- Dwarf Hackberry (*Celtis tenuifolia*); federally and provincially Threatened
- Kentucky Coffee-tree (*Gymnocladus dioicus*); federally and provincially Threatened

None of these species were observed during thorough vegetation inventories of the subject property.

See Appendix V for a list of federally or provincially significant vegetation species known from the vicinity of, or observed within, the study area including status ranks and preferred habitats.

No federally or provincially significant vegetation species were inventoried within the study area. Four species were inventoried that are considered significant in Lambton County, including species that are ranked native and “rare” or “uncommon” or known from historical records (Oldham 1993). Three of these species were inventoried within the subject property itself (within the FOD1 community) and include the following:

- Fragrant Sumac (*Rhus aromatica*)
- Spring Clearweed (*Pilea fontana*)
- Herbaceous Carrion-flower (*Smilax herbacea*)

The additional species, Yellow Avens (*Geum aleppicum*), was observed within the FOD1 community located on the property immediately east of the subject property.

Significance rankings for Lambton County (Oldham 1993) are provided for these species in Appendix IV.

The coefficient of conservatism (CC), a value ranging from 0 (low) to 10 (high) and is based on a species' tolerance of disturbance and fidelity to a specific habitat integrity (Oldham et al. 1995), was moderate (average of 4.0) when considering all inventoried species that have an assigned CC value. Of 210 inventoried species with assigned CC values, 21 had relatively low values of 0-3, indicating species that are generally tolerant of various habitat conditions including disturbed conditions. Seven inventoried species had relatively high CC values (≥7) indicating fidelity to specified habitat conditions that are currently provided on-site. Among inventoried species, 43% are non-native in Ontario. This value is reflective of the high degree of ecological disturbance that has been imposed on the on-site woodland features due to the long history of surrounding residential development as well as human use of the property.

3.2.3 Tree Inventory

In total, 489 trees were inventoried comprising 28 species. Of the trees inventoried and assessed, 303 (62%) are native species and 186 (38%) are non-native. A complete list of trees inventoried is provided in Appendix VI.

Table 6 provides a list of tree species inventoried within the subject property, whether they are native or non-native and their overall health.

Table 6. Summary of Inventoried Trees

Common Name	Scientific Name	Excellent	Good	Fair	Poor	Very Poor	Dead	Total
Native Species								
Black Ash	*Fraxinus nigra*			1				1
Black Cherry	*Prunus serotina*		2	38	15	4	1	60
Black Oak	*Quercus velutina*		14	36	8		9	67
Black Walnut	*Juglans nigra*		7	5	2		1	15
Black Willow	*Salix nigra*			1				1
Eastern Red Cedar	*Juniperus virginiana*		1	2	1	1	2	7
Eastern White Cedar	*Thuja occidentalis*			2				2
Eastern White Pine	*Pinus strobus*		8	15	1			24
Freeman's Maple	*Acer X freemanii*			1				1
Manitoba Maple	*Acer negundo*		1	12	16	1		30
Red Oak	*Quercus rubra*		7	14	3	1	4	29
Red Pine	*Pinus resinosa*			4	1			5
Sugar Maple	*Acer saccharum* ssp. *saccharum*		1					1
Trembling Aspen	*Populus tremuloides*		1					1
White Elm	*Ulmus americana*		1	3	2		1	7
White Oak	*Quercus alba*		4	19	1		5	29
White Spruce	*Picea glauca*		2	11	3		7	23
Total			**49**	**164**	**53**	**7**	**30**	**303**
Non-Native Species								
Black Locust	*Robinia pseudoacacia*			4				4
Colorado Spruce	*Picea pungens*			1				1
Common Apple	*Malus domestica*			2				2
Horsechestnut	*Aesculus hippocastanum*			1				1
Norway Maple	*Acer platanoides*	1	38	51	1	1	1	93
Norway Spruce	*Picea abies*		11	11	2		3	27
Red Pine	*Pinus resinosa*						2	2
Scots Pine	*Pinus sylvestris*		5	20	6		8	39
Siberian Elm	*Ulmus pumila*			1				1
Sweet Cherry	*Prunus avium*			1				1

Common Name	Scientific Name	Excellent	Good	Fair	Poor	Very Poor	Dead	Total
Tree-of-Heaven	*Ailanthus altissima*		2	1				3
White Mulberry	*Morus alba*		1	8	2	1		12
Total		**1**	**57**	**101**	**11**	**2**	**14**	**186**
Overall Total		**1**	**106**	**265**	**64**	**9**	**44**	**489**

Table 7 provides a summary of the overall health of trees inventoried within the subject property, along with their potential for structural failure. A majority of the trees inventoried are in good or fair health, with an improbable or possible potential for structural failure.

Table 7. Overall Health of Trees Inventoried

Potential for Structural Failure Rating	Overall Condition						Total
	Excellent	Good	Fair	Poor	Very Poor	Dead	
Improbable	1	102	141	0	0	0	244
Possible	0	4	124	47	4	14	193
Probable	0	0	0	17	5	29	51
Imminent	0	0	0	0	0	1	1
Total	1	106	265	64	9	44	489

3.3 Wildlife

3.3.1 Birds

A total of 69 bird species are reported from within 10km of the study area based on the OBBA (BSC et al. 2008). Fourty-six (46) of these species were documented within the study area during field surveys. Of these, 25 species displayed evidence of possible, probable or confirmed breeding within the subject property. The majority of the remaining observed species were documented during the spring migration season prior to the bird breeding period (i.e., prior to May 26). Refer to Appendix VII for a list of bird species recorded within in the subject property and vicinity.

Appendix V provides a summary of significant bird species known to occur or observed in the study area, their current status ranks, and preferred habitats. Based on field work conducted, three of these species were observed within the study area:

SAR:

- Chimney Swift (*Chaetura pelagica*) – evidence of possible breeding (suitable nesting habitat)

SCC:

- Canada Warbler (*Cardellina canadensis*) – evidence of possible breeding (singing male)
- Eastern Wood-Pewee (*Contopus virens*) – evidence of possible breeding (singing male)

<u>Chimney Swift</u>

Chimney Swift is listed as Threatened provincially, affording individuals and their habitat protection under the Endangered Species Act (MNRF 2017b). Chimney Swift has also been listed as Threatened federally under Schedule 1 of the federal SARA and therefore is also afforded protection under this federal legislation (Government of Canada 2017). Chimney Swifts are commonly found in urban areas near buildings and often nest in hollow trees, crevices of rock cliffs and chimneys (OMNR 2000). Protected habitat for this species under the ESA comprises the nesting structure specifically.

One individual of this species was observed foraging over the subject property during the May 26 site visit. No evidence of this individual using the existing house on the property for nesting (i.e., entering or exiting the chimney) was observed during the survey, and this species was not documented during subsequent site visits. The observed Chimney Swift is anticipated to nest within one of the several surrounding house chimneys and uses a broad area of the residential and lakeshore area for foraging. Therefore, no protected habitat for Chimney Swift occurs in the study area.

Eastern Wood-Pewee

Eastern Wood-Pewee is listed as a species of Special Concern by COSEWIC and the MNRF (COSEWIC 2017, MNRF 2017b). This species is therefore considered a SCC in Ontario and is not afforded protection under the ESA or the federal SARA. This species can be found in a wide variety of forested habitats, but prefers open, deciduous, mixed or coniferous forest predominated by oak, with little understory, forest clearings, edges, farm woodlots, and parks (McCarty 1996).

A singing male Eastern Wood-Pewee was observed in the Dry-Fresh Oak Deciduous Forest (FOD1) community during the May 26 bird survey visit. This species was not recorded during other site visits on the property, including the second breeding bird survey. This information therefore represents evidence of possible breeding in the study area although it is likely that the observed individual was a visitor and not using the subject property for breeding habitat.

Canada Warbler

Canada Warbler is considered a species of Special Concern by the MNRF (MNRF 2017b). It is listed as Threatened federally under Schedule 1 of the federal SARA and is therefore afforded protection under this federal legislation (Government of Canada 2017). This species is considered a SCC in Ontario and is not afforded protection under the ESA. Canada Warblers

are an interior forest species, preferring dense, mixed forest with closed canopy, wet bottomlands of cedar or alder, shrubby undergrowth in cool moist mature woodlands and riparian habitat.

A singing male Canada Warbler was observed in the FOD1 community during the May 26 bird survey visit. This species was not recorded during other site visits on the property, including the second breeding bird survey. This information therefore represents evidence of possible breeding in the study area. However, it is anticipated that the observed individual was a late spring migrant that was using the subject property as a stop-over site.

The majority of the observed bird species are common and ubiquitous on human-influenced landscapes such as the large residential urban area that surrounds the subject property. However, the observation of certain species only during the spring period up to and including the May 26 site visit suggests that those individuals were visitors or late migrants using the property as a stop-over site due to its location adjacent to the Lake Huron shoreline. In addition to the above-mentioned Eastern Wood-Pewee and Canada Warbler, this includes species such as Black-and-white Warbler (*Mniotilta varia*), Yellow-billed Cuckoo (*Coccyzus americanus*), Black-throated Green Warbler (*Setophaga virens*), Carolina Wren (*Thyrothorus ludovicianus*), Palm Warbler (*Setophaga palmarum*), Hermit Thrush (*Catharus guttatus*), and Sharp-shinned Hawk (*Accipiter striatus*). Some of these species observed during the May 26 site visit have breeding habitat requirements that do not exist on the subject property or are too small on the subject property for what the species normally requires, which suggests that they were late migrants as opposed to breeding individuals.

3.3.2 Herpetofauna

According to the Ontario Amphibian and Reptile Atlas (Ontario Nature 2015), 12 species of herpetofauna are known from within 10km of the subject property. No herpetofauna species were observed by NRSI staff during site visits.

Reptile Emergence Surveys

The reptile emergence survey completed on April 26, 2017 included investigation of various features that represent potential snake hibernaculum habitat. These included a large concrete debris pile, an old stone foundation and potential access points (e.g. cracks) along the foundation of the existing house on the property. Despite thorough area searches, no snakes were observed during this visit or any of the subsequent site visits.

A complete list of herpetofauna reported from the subject property vicinity is included in Appendix VIII. Appendix V provides a summary of significant herpetofauna species known to occur or observed in the study area vicinity, their current status ranks, and preferred habitats.

3.3.3 Mammals

According to the Mammal Atlas of Ontario (Dobbyn 1994), 30 mammal species are reported from within 10km of the study area. Of these, two species, Eastern Cottontail (*Silvilagus floridanus*) and Eastern Gray Squirrel (*Sciurus carolinensis*), were observed within the study area. A complete list of mammals reported from the subject property vicinity, based on background information and observations made as part of this study is included in Appendix IX.

No mammal SAR or SCC were observed within the study area. Appendix V provides a summary of significant mammal species known to occur or observed in the study area vicinity, their current status ranks, and preferred habitats.

Three bat SAR, Little Brown Myotis, Northern Myotis and Tri-colored Bat, were initially screened as having potentially suitable habitat within the study area. Based on the results of the cavity tree assessment, seven (7) suitable cavity trees were identified. As discussed in Section 4.0, based on correspondence with the MNRF, the seven suitable cavity trees are considered to represent habitat for SAR bats. However, removal of these trees will not represent a negative impact to SAR bat habitat (i.e., in contravention of Section 10 of the ESA) provided appropriate mitigation measures are implemented. See Appendix X for the technical memorandum summarizing the results of the bat habitat assessment and MNRF's response.

3.3.4 Insects

According to the Ontario Butterfly Atlas (McNaughton et al. 2017), 37 butterfly species are known to occur within 10km of the subject property. Three butterfly species were observed during site investigations, none of which are considered SAR or SCC. A complete list of butterfly species observed and reported from the subject property and vicinity is provided in Appendix XI.

According to the Ontario Odonate Atlas (MNRF 2017a), 18 odonate species are known to occur within 10km of the subject property. None of these species were observed within the subject property during site visits. A complete list of odonate species reported from the subject property vicinity is provided in Appendix XII.

4.0 Natural Environment Development Constraints

The natural environment constraints analysis is used to identify natural features that are sensitive to disturbance based on the rarity or significance of the feature or the functions/processes and/or policies inhibiting development within them. These areas are identified as "constraints", and are discussed in the context of natural heritage policies governing their protection. Conversely, opportunities for development may occur outside of these natural environment constraints within the subject property. Development or site alteration within certain natural feature constraints may be permitted by the regulatory agencies subject to implementation of recommended measures to appropriately mitigate anticipated impacts as discussed below.

Results of this analysis have been provided as input to the proposed development plan in order to avoid and/or appropriately mitigate impacts to natural features and functions. A summary of this analysis for the study area is discussed below. Natural features identified as constraints to development are shown on Map 3.

4.1 Significant Natural Features and Habitats

As detailed above, the study area contains woodland features and functions that are afforded significance under the City and County OPs. However, the functional significance of this feature had not previously been evaluated and is an objective of this EIS. The following is a summary of the significance and sensitivity of the study area natural features and how the natural heritage policies and legislation described in Section 2.0 inform the identification of constraints for the proposed development.

4.1.1 Significant Woodland

The subject property contains a wooded feature that is designated as a "Type B Natural Area" in the City's OP (Map 5), which corresponds to a feature considered to be Significant Woodland within the City's Natural Heritage System. In accordance with the Provincial Policy Statement and the City OP, development and site alteration within a Significant Woodland is prohibited unless it can be demonstrated that there will be no negative impacts to the natural feature or its ecological functions (OMMAH 2014, City of Sarnia 2016). Furthermore, the City requires that developments proposed within Type B Natural Areas (including Significant Woodlands) also meet the following additional conditions:

- no alternative location exists that is outside of the Natural Area designation;

- the affected area is not a wetland, floodplain, or hazardous area (e.g., unstable slopes, soils or sinkholes);
- groundwater will be protected, particularly in vulnerable areas;
- the St. Clair Region Conservation Authority, and other appropriate agencies, shall be consulted; and,
- the development must not be severed from the holding on which it is located.

Development in Type B Natural Areas is also conditional on natural environment enhancements such as forest improvement, reforestation, linkages, stewardship agreements and conservation agreements (City of Sarnia 2016).

Finally, where development or site alteration is permitted within features such as Significant Woodlands in accordance with City OP policies, areas of woodland that are removed must be compensated for. In the case of the proposed development on the subject property, the area of Significant Woodland removal must be compensated such that twice the area of removal is established through compensatory woodland plantings (City of Sarnia 2016). The compensation plantings must be designed to create a woodland community that emulates the impacted woodland to the degree possible (e.g., with respect to its location on the landscape, its native species composition and ecological functions). Where possible, the compensation plantings should occur at the same site as that of the woodland removal; otherwise, it should occur adjacent to a City-designated Natural Area and/or within natural hazard lands. The compensation plantings must be maintained by the proponent until the free-to-grow stage, and the long-term management of the plantings must comply with County's Woodland Conservation By-law (City of Sarnia 2016).

Significant Woodlands are defined in the City OP as features identified by the County of Lambton in accordance with the Provincial Natural Heritage Reference Manual (OMNR 2010), and meeting the following criteria:

- woodlands 2ha or larger;
- smaller woodlands having a minimum size of 0.5ha and
    - located within 150m of another natural heritage feature;
    - located within 120m of two or more other natural heritage features;

- within a surface water feature;
- above a groundwater feature;
- within 750m of a surface water feature;
- being of economic or social value;
- having native forest species that have declined significantly; or,
- unique in terms of species composition, cover type, age or structure (City of Sarnia 2016).

The spatial extent of the study area woodland was mapped through site-level vegetation community characterization, including delineation and surveying of a northern dripline boundary. Based on this work, the Dry-Fresh Oak Deciduous Forest (FOD1) community was characterized as an ecologically natural functioning woodland community, whereas the Mineral Cultural Savannah (CUS1) community was observed to represent a former woodland area that had been highly modified for use as a residential area over several years and no longer contained a vegetative structure found in natural woodland communities (i.e., almost a lack of sub-canopy and understorey vegetation; a highly modified and mown groundcover layer). The northern boundary of the FOD1 community, as defined by the surveyed dripline, therefore represents the northern extent of what is considered the naturally functioning woodland community within the study area. This community extends to the south subject property boundary and onto adjacent properties to the east while a small portion extends into the parkette to the west (Map 3). Including off-site areas, the FOD1 community was calculated to comprise an area of 1.65ha.

As a feature that is <2ha in size but >0.5ha, the FOD1 woodland meets the City's woodland significance criteria (e.g., as a woodland located within 750m of Lake Huron). However, in addition to refining the boundaries of the study area woodland, the City required that the functional significance of the woodland be further evaluated (Appendix I). As a means of further evaluating the ecological significance of the FOD1 woodland, provincial woodland significance criteria described in the Natural Heritage Reference Manual (OMNR 2010) were used to guide the assessment.

Table 8 below lists the recommended woodland significance criteria outlined in the Natural Heritage Reference Manual, with information about how each of these criteria are or are not met with respect to the study area woodland. Provincial criterion #1 (woodland size criterion) is not

included here since woodland size is already explicitly addressed in the significance criteria outlined by the City as listed above (City of Sarnia 2016).

Table 8. Assessment of study area woodland significance against Provincial criteria outlined in the Natural Heritage Reference Manual (OMNR 2010).

Natural Heritage Reference Manual Criteria/Sub-Criteria	Applicability to Study Area Woodland	Woodland Significance Assessment
Criterion #2: Ecological Functions		
a) Woodland Interior Woodlands should be considered significant if they have: • Any interior habitat where woodlands cover less than about 15% of the land cover • 2 ha or more of interior habitat where woodlands cover about 15-30% of the land cover • 8 ha or more of interior habitat where woodlands cover about 30-60% of the land cover • 20 ha or more of interior habitat where woodlands cover about 60% of the land cover	Interior habitat is defined as areas of woodland >100m from a woodland edge. Interior woodland habitat is absent within the study area woodland.	Not significant
b) Proximity to Other Woodlands or Other Habitats Woodlands should be considered significant if: • A portion of the woodland is located within a specified distance (e.g. 30m) of a significant natural feature or fish habitat likely receiving ecological benefit from the woodland and the entire woodland meets the minimum area threshold (e.g., 0.5-2.0 ha, depending on circumstance).	The study area woodland is located approximately 200m west of an adjacent woodland that has also been identified as a Type B Natural Area in the City's OP. Each of these features is physically isolated from the other by long-established surrounding residential land use. However, as noted below (sub-criterion c), each of these woodlands may function as "stepping stones" for migrating bird species that travel along Lake Huron shoreline areas. The relative proximity of these woodland features may increase their functional significance on the landscape.	Significant
c) Linkages Woodlands should be considered significant if they: • Are located within a defined natural heritage system or provide a connecting link between two other significant features, each of which is	The study area woodland is located within or immediately adjacent to a Lake Huron shoreline linkage corridor, designated as a Primary Corridor, in the Lambton County OP (County of Lambton 2019). The Primary Corridor is intended to represent a significant linkage within Lambton County, in part to facilitate wildlife movement corridors (e.g., for birds) over large landscape areas. As noted above (sub-criterion b), the study area woodland provides a	Significant

Natural Heritage Reference Manual Criteria/Sub-Criteria	Applicability to Study Area Woodland	Woodland Significance Assessment
within a specified distance (e.g., 120 m) and meets minimum area thresholds (e.g., 1-20 ha, depending on circumstance).	natural area within this landscape-level linkage along the Lake Huron shoreline that, in part, provides stop-over habitat for migrating birds.	
d) Water Protection Woodlands should be considered significant if they: • Are located within a sensitive or threatened watershed or a specified distance (e.g., 50 m or top of valley bank if greater) of a sensitive groundwater discharge, sensitive recharge, sensitive headwater area, watercourse or fish habitat and meet minimum area thresholds (e.g., 0.5-10 ha, depending on circumstance).	The study area is not known to contain sensitive groundwater discharge or recharge areas, is not a sensitive headwater area, and does not contain any watercourses or fish habitat.	Not significant
e) Woodland Diversity Woodlands should be considered significant if they have: • A naturally occurring composition of native forest species that have declined significantly south and east of the Canadian Shield and meet minimum area thresholds (e.g., 1-20 ha, depending on circumstance). • A high native diversity through a combination of composition and terrain (e.g., a woodland extending from hilltop to valley bottom or to opposite slopes) and meet minimum area thresholds (e.g., 2-20ha, depending on circumstance).	The study area woodland does not contain native forest species that have declined significantly south and east of the Canadian Shield. The majority of the study area is also relatively uniform from both topographical and vegetation community standpoints, with the exception of the immediate shoreline area. The proliferation of non-native/invasive vegetation species within the study area has likely reduced vegetative diversity within the area across several years of surrounding residential land uses.	Not significant
Criterion #3: Uncommon Characteristics		
Woodlands should be considered significant if they have: • A unique species composition or the site is represented by less than 5%	The study area woodland appears to represent former oak woodland or oak savannah, which are relatively open canopy wooded features dominated by species such as Black Oak. These vegetation communities are rare in Ontario. The relatively open spacing of the mature Black Oaks within the	Significant

Natural Heritage Reference Manual Criteria/Sub-Criteria	Applicability to Study Area Woodland	Woodland Significance Assessment

overall in woodland area and meets minimum area thresholds (e.g., 0.5 ha, depending on circumstance)
• A vegetation community with a provincial ranking of S1, S2 or S3 (as ranked by the NHIC) and meet minimum area thresholds (e.g., 0.5 ha, depending on circumstance)
• Habitat (e.g., with 10 individual stems or 100 m^2 of leaf coverage) of a rare, uncommon or restricted woodland plant species and meet minimum area thresholds (e.g., 0.5 ha, depending on circumstance):
  ○ Vascular plant species for which the NHIC's Southern Ontario Coefficient of Conservatism is 8, 9 or 10
  ○ Tree species of restricted distribution such as Sassafras or Rock Elm
  ○ Species existing in only a limited number of site within the planning area
• Characteristics of older woodlands or woodlands with larger tree size structure in native species and meet minimum area thresholds (e.g., 1-10 ha, depending on circumstance):
  ○ Older woodlands could be defined as having 10 or more trees/ha greater than 100 years old
  ○ Larger tree size structure could be defined as 10 or more trees/ha at least 50 cm in diameter, or a basal area of
	study area woodland is indicative of the former form of the feature. The study area woodland has become in-filled with growth of various native and non-native woody species to create a more closed canopy forest community. However, with restoration and management this woodland can be returned to a condition that more closely resembles its former open woodland characteristics.
	
	The study area woodland provides habitat for species that are regionally significant (Oldham 1993) and/or have a CC value of ≥8 (Oldham et al. 1995) and were observed with at least 10 individuals: Fragrant Sumac, Black Oak and Common Hackberry (*Celtis occidentalis*). Sassafras (*Sassafras albidum*), a species with restricted distribution in Ontario, was inventoried within the subject property.	

Natural Heritage Reference Manual Criteria/Sub-Criteria	Applicability to Study Area Woodland	Woodland Significance Assessment
8 or more m^2/ha in trees that are at least 40 cm in diameter		
Criterion #4: Economic and Social Functional Values		
Woodlands should be considered significant if they have: • High productivity in terms of economically valuable products together with continuous native natural attributes and meet minimum area thresholds (e.g., 2-10 ha, depending on circumstance). • A high value in special services, such as air quality improvement or recreation at a sustainable level that is compatible with long-term retention and meet minimum area thresholds (e.g., 0.2-10 ha, depending on circumstance). • Important identified appreciation, education, cultural or historical value and meet minimum area thresholds (e.g., 0.2-10 ha, depending on circumstance).	The study area woodland is not anticipated to provide any significant economic or social functional values.	Not significant

Based on this assessment, the study area woodland is considered to meet Provincial woodland significance criteria associated with its function as a portion of lakeshore corridor stop-over habitat for migrating birds as well as habitat for vegetation species that are regionally significant and/or have restricted distributions in the surrounding region. It also likely represents a remnant of former oak woodland or savannah, which is provincially rare (MNRF 2015a). However, the value of the study area woodland as former Black Oak woodland or savannah can only be realized through active restoration of the feature through removal of non-native and native invasive species that have in-filled the understorey and sub-canopy layers of this feature over several years.

The FOD1 community should therefore be considered Significant Woodland based on these criteria in addition to the criteria met within the City's OP (City of Sarnia 2016) as shown on Map 3. Other aspects of woodland significance that are not directly addressed by the Provincial criteria (OMNR 2010) (e.g., habitat for SAR, SWH) are further discussed below.

4.1.2 Species at Risk Habitat

No confirmed habitat for SAR was documented within the study area. However, due to the presence of seven cavity trees within the subject property, the study area woodland is considered to represent potential habitat for SAR. See Map 3 for the cavity tree locations. The small number of cavity trees, relative to the total number of trees within the subject property portion of the woodland, suggests that the woodland does not provide an important habitat function for bat roosting. Based on MNRF correspondence, it is understood that removal of the seven identified cavity trees will not represent a contravention of Section 10 of the ESA (habitat protection) provided that appropriate mitigation measures are implemented. These may include timing windows to avoid the active period during which bats may roost on-site, and establishing bat boxes to compensate for the lost roosting habitat (C. Jong, MNRF, pers. comm., May 2017; Appendix X). Further consultation with the Ontario Ministry of Environment, Conservation and Parks (MECP), which took over administration of the ESA from the MNRF in 2019, will be completed to confirm appropriate mitigation measures.

4.1.3 Significant Wildlife Habitat

Based on the review of background information and completion of field surveys, no SWH functions were confirmed within the study area.

As listed in Section 1.1.2, multiple forms of Candidate SWH were identified for the study area based on the preliminary screening. Based on the completion of additional field investigations, all of these Candidate SWH types are considered absent in the study area (Appendix XIII). The following summarizes the assessment of these Candidate SWH types:

Table 9. Summary of Candidate Significant Wildlife Habitat Categories Identified During Preliminary Screening

Significant Wildlife Habitat Type	Assessment Result
Bat Maternity Colonies	Only seven suitable bat cavity trees were documented on or immediately adjacent to the subject property, out of a total of 299 trees inventoried. This is far below the minimum threshold of 10 large-DBH trees/hectare that is required to be considered Candidate SWH (MNRF 2015b).
Snake Hibernaculum	No snakes were observed within the subject property during the spring emergence period (late April) or during any other site investigations. These results suggest that the subject property does not function as significant snake overwintering habitat.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	No Bald Eagles or Ospreys were observed during site investigations. No large stick nests were observed within the subject property.
SCC Habitat for Eastern Wood-Pewee, Red-headed Woodpecker	Eastern Wood-Pewee was observed showing evidence of possible breeding within the study area. SWH is assigned when bird species show evidence of probable or confirmed habitat. The observed individual may have been a late spring migrant. No Red-headed Woodpeckers were observed during site investigations.

4.1.4 Regionally Significant Habitat and Species

The City OP identifies the Huron Shore Flyway as a regionally important network of natural features and areas that provides resting and staging areas for migrating birds. The natural features associated with this flyway are generally located north of Michigan Avenue/Line (City of Sarnia 2016), which includes the study area woodland. It is the intent of the City OP to recognize and support the protection and enhancement of the natural features and areas that comprise this flyway.

In addition to the proximity of the study area woodland to a nearby woodland to the east and its potential to represent a lakeshore linkage for bird migration habitat (Table 8), the results of NRSI field investigations indicate that the study area woodland is used by spring migrant birds. Certain bird species were observed during the April site visits that are not typical of urban breeding birds and for which the study area did not provide suitable breeding habitat, as described in Section 3.3.1. This includes observations of the SCC Eastern Wood-Pewee and

Canada Warbler which were recorded on May 26 but were determined to likely represent late-season migrants. The bird migration stop-over habitat function provided by the study area woodland is not protected under specific natural heritage protection policies in and of itself, but is rather considered an additional aspect of woodland habitat significance that closely aligns with the assessment conclusions for woodland significance criteria 2(b) and (c) in Table 8 (OMNR 2010).

Of the 46 total bird species observed within the study area during field investigations, 30 (65%) were observed during the spring migration period (prior to the May 26 site visit), some of which also established breeding territories on-site. Of these 30, 16 species were only observed during the spring migration period and did not breed in the study area. These results indicate that the study area features provide an important function as bird migration stop-over habitat.

As noted in Section 3.2.1, four regionally significant vegetation species were identified within the study area, three of which fall within the subject property itself. All of these species were observed within the Dry-Fresh Oak Deciduous Forest (FOD1) community. These species were considered among the criteria assessing woodland significance as summarized in Table 8.

4.2 Buffers

Protective buffers of 10m width are typically applied to the dripline of Significant Woodlands in order to mitigate adjacent land use impacts, protect tree root zones, and provide opportunity to enhance woodland edge quality through passive regeneration and/or active planting where warranted. Based on the proposed development plan, a woodland dripline buffer from the north end of the FOD1 feature cannot be accommodated. It is therefore recommended that impacts to adjacent woodland features to be retained be addressed through various mitigation measures such as tree protection fencing, rear yard native species plantings, and landowner informational/educational materials as discussed in Section 5.0.

5.0 Impact Assessment

5.1 Description of the Proposed Undertaking

Wicks Homes proposes to subdivide the subject property into a six-lot residential development that will include an extension of Tudor Close West as a cul-de-sac on the property. Portions of each lot will eventually be developed by the future lot purchasers to accommodate a single detached house with surrounding lawn and driveway, while rear-lot areas would be left in their existing natural state. The proponent will not be undertaking any grading or house construction on the subject property. Therefore, for the purposes of this EIS, assumptions have been made as to the extent of lot grading (identified by the Grading Limit) and house location (identified by the Building Envelope) on each lot. Future lot development details (e.g., detailed grading plans, driveway locations) will be determined by future lot owners as part of subsequent development applications with the City. However, general requirements for lot grading and lot-level drainage, as identified in the EIS, will be required as part of future lot development plans.

In order to prepare the six lots for sale, the proponent will construct the proposed cul-de-sac extension and install the required underground servicing extensions to the lot limits from the cul-de-sac and Lakeshore Road right-of-ways. The existing house on the property would be removed to accommodate the development. Current access to the property via a driveway that crosses the Centennial Parkette from Centennial Avenue would be closed.

The development will be serviced through extensions of existing municipal infrastructure from Lakeshore Road and Tudor Close West, such as water, wastewater and storm sewers. The lots will be graded by future lot owners so that the front yards and front half of the roof areas will surface drain to their adjacent road surfaces. Rear lot areas within the building envelopes on lots fronting Lakeshore Road and the south side of the cul-de-sac will be graded to drain the rear yard and rear half of the roof surface toward rear-yard drywell catchbasins. Similarly, the graded rear lot and rear half of roof area for the two lakefront lots will surface drain toward the beach where water will infiltrate into existing sandy soils. Perforated exfiltration tiles will be installed within the drywell catchbasins to allow collected surface runoff to be returned to the native sandy soils.

Graded areas around each building envelope will be developed to include driveway and sodded lawn areas, and are to contain any accessory features such as sheds or patios. Rear-lot areas to the rear of the grading limits are to remain in their existing natural condition.

See Map 3 for an overlay of the conceptual development onto the existing natural features. The Overall Base Plan (Zelinka Priamo 2019) is included in Appendix XIV.

5.2 Approach to Impact Assessment

As described above, the proponent will not be undertaking lot grading or house construction as part of this development application. Rather, lots will be serviced to facilitate their sale to individual lot purchasers, who will subsequently submit detailed development applications for the individual lots. This impact assessment has been written based on the general grading requirements and approximate limits identified herein, based on information provided by Zelinka Priamo and Wicks Homes, to accommodate the development.

Potential impacts arising from the proposed development are determined by comparing the details of the proposed development with the characteristics of the existing natural features and their functions. Where the development proposal overlaps with the natural features, impacts may arise. The following is a description of the types of impacts which will be discussed.

- Direct impacts to the natural features within the subject property associated with disruption or displacement caused by the actual proposed 'footprint' of the undertaking, including impacts caused by site grading and the installation of site servicing features.
- Indirect impacts associated with changes in site conditions such as drainage and water quantity/quality, and effects of construction on adjacent natural features.
- Induced impacts associated with impacts after the development is constructed such as subsequent impacts to adjacent natural features created by increased human habitation/use of the area and vicinity.

5.2.1 Site-Specific Zoning

It is recommended that the proposed lots be dual-zoned such that the rear-lot residual woodland areas fall under protective zoning, as discussed further in Section 5.5 as a post-development mitigation measure. The option of implementing dual-zoning was discussed between members of the study team and City staff, and it is NRSI's understanding that City staff are still considering this possibility (H. Froussios, Zelinka Priamo, pers. comm., October 2019). A key consideration of this impact assessment is whether dual-zoning represents a feasible option for the conservation and protection of the residual woodland, based on whether it can be practically implemented. If City staff confirm that dual-zoning of lots can be implemented, this will represent one means of mitigating impact to the residual woodland area. If it is determined that

dual-zoning is not available as an option, this EIS assumes that the residual woodland will remain in place post-development, but will be subject to long-term disturbances by the future lot owners to the extent that its ecological form and functions will be significantly impaired given the lack of any enforceable protection measures. Another protective mechanism for consideration would require registration of restrictive covenants on title for each created lot that would restrict vegetation removal. The above scenarios are considered where applicable within the impact assessment.

5.3 Direct Impacts and Mitigations

5.3.1 Vegetation Removal and Site Grading

Direct impacts within the subject property will occur as a loss of natural vegetation as a result of clearing, grubbing and grading where indicated in the proposed development plan (Map 3). The proposed development will require the removal of portions of the Dry-Fresh Oak Deciduous Forest (FOD1) community that is considered Significant Woodland. Specifically, this removal will occur within the entirety of the Lakeshore Road lots, and within the lots south of the cul-de-sac where a portion of the north woodland edge will require removal. The maximum extent of grading into the north woodland edge from dripline is 44.6m. In total, 0.23ha of Significant Woodland will require removal to accommodate the proposed development, which represents 13.9% of the total area mapped on and off of the property. Including off-property areas, it is estimated that the residual Significant Woodland will total 1.34ha in area.

The proposed development will therefore directly impact a City-designated Type B Natural Area. However, in accordance with City OP policy, restoration and enhancement measures will be undertaken on retained areas of the woodland that will fall within rear-lot areas in order to mitigate negative effects caused by localized woodland removal. These measures will include removal of invasive non-native vegetation species that have proliferated within the woodland across several years and replace them with plantings of native species (e.g., Black Oak) to facilitate the long-term persistence of this feature as a Black Oak-dominated woodland. Under the current condition and with no intervention, Black Oak and associated native associate species, such as White Oak, may decline in their proportion of the woodland community over time as aggressive non-native species such as Norway Maple, Tree of Heaven and White Mulberry continue to establish themselves within the feature. See Section 5.6 for further information about the proposed woodland restoration plan. However, implementation of this woodland restoration plan is contingent on the availability of municipal dual-zoning tools and/or

restrictive covenants to feasibly conserve and protect the integrity of the residual woodland feature during the post-construction period as discussed in Section 5.5. If dual-zoning and/or restrictive covenants are deemed by City and/or SCRCA staff to be infeasible or impractical, then efforts will focus on compensation of the entire on-site Significant Woodland as discussed further below.

The proposed development will require some removal of trees and vegetation that is currently being maintained in a manicured state within the Mineral Cultural Savannah (CUS1) community. These areas fall outside of the Significant Woodland and Natural Area features protected under City policy. However, they occur within the broad lakeshore area identified as Primary Corridor in the County's OP. Impacts to this corridor function can be mitigated through maximized retention and establishment of additional tree coverage within the lot areas to the extent possible, as further discussed below. Due to the highly modified condition of the CUS1 community as a result of its active maintenance as a residential area, it is considered less ecologically significant than the FOD1 community. Provided that tree coverage is maximized to the extent feasible through retention and planting, significant negative impact is not anticipated.

The proposed development may require the removal of regionally significant vegetation species where these fall within the development footprints. It is recommended that, where possible, individuals of these species be relocated elsewhere within the retained portions of the woodland where suitable growing conditions occur. Alternately, seed may be collected from the plants to be impacted and distributed by hand to suitable areas where the soil has been prepared for seeding. In either case, to help ensure survival, adjacent non-native plant individuals at the relocation sites should be removed that may otherwise out-compete the relocated species.

Significant species that fall outside of the development footprints are recommended to be kept in place and protected from potential construction- and post-construction stage impacts through the measures described below.

Significant Woodland Compensation

Assuming that conservation and protection of the residual Significant Woodland through dual-zoning of the lots and/or restrictive covenants is feasible, at a minimum, the total area of Significant Woodland removal must be compensated for at a 2:1 ratio in accordance with City OP Section 5.12.3 (City of Sarnia 2016). In total, 0.46ha of woodland compensation area is required. Replacement of the lost features and ecological functions through compensatory

woodland habitat creation represents a key means of mitigating the loss of forest canopy on a landscape scale where complete preservation of the subject woodland cannot be accommodated and where removal occurs in compliance with City policies.

Since the required area of woodland compensation cannot be accommodated on the subject property, the proponent will secure an off-property location for the compensation tree plantings through discussions which will be held with owners of potential sites in conjunction with other site plan approval requirements. In accordance with SCRCA comments (Appendix II), the selected compensation site must reflect the landscape context of the subject property woodland as best as possible to maintain the landscape-level functional values that it provides. This includes its function as stop-over habitat for migrating birds that use woodlands as stepping-stones along the Lake Huron shoreline. The compensation site should therefore be located in proximity to the Lake Huron shoreline, preferably within the same subwatershed, and should be located within or adjacent to existing natural heritage features such that the ecological value of those features is enhanced. Compensation woodland plantings should comprise native species that are reflective of those present within the subject property woodland and should be designed to emulate a Black Oak woodland or savannah feature. Tree plantings should be of as large a size as feasible to help accelerate the maturation and ecological value of the compensation feature, and to mitigate negative effects caused by deer browse. Woodland compensation requirements will be planned and implemented with regard to existing guidance and literature, such as Ontario Nature's principles and recommendations for biodiversity offsetting (Ontario Nature 2016). The number of trees to be planted within the woodland compensation area will have regard for the minimum tree density criteria included in the *Forestry Act* definition of "woodland", such that by assuming some die-off of tree plantings, the resulting planted area will still meet the "woodland" definition. The number of compensation tree plantings must also incorporate the minimum requirements described below, in compensation for individual inventoried trees on the subject property.

If it is determined that site-specific zoning of the lots and/or restrictive covenants are not an option for protection of the feature, it is understood that the entirety of the Significant Woodland area on the subject property will require compensation at a ratio of 2:1 (S. Hodgkiss, SCRCA, pers. comm., August 2019). This is based on the expectation that the form of the subject property woodland may be altered (e.g., due to additional tree cutting by lot owners) and ecological functions may be diminished (e.g., due to cutting or thinning of understorey vegetation) over long-term periods despite the distribution of educational materials to new

homeowners (see Section 5.5). Based on a Significant Woodland area of 0.71ha that falls on the subject property, the total area of off-site woodland compensation that would be required under this scenario would be 1.42ha.

Tree Removal

Preliminary tree removal and retention is based on two considerations:

1) Trees identified as having a probable or imminent potential for structural failure or poor or very poor health, or identified as dead. The removal of these trees would be recommended for safety etc., especially if they are located within striking distance of a component of the proposed development, or existing off-site sidewalks, roads or buildings. For the purpose of this report, trees which fall into this category are identified for removal.
2) Trees that may require removal based on the extent of proposed site grading. This was determined by comparing the location of the trees to the location of the components of the development proposal as shown on Map 4.

The preliminary tree removal and retention analysis has been completed in consideration of the conceptual plan provided, and is intended to provide a framework for potential compensation activities. There may be opportunities to retain certain additional trees based on grading details to be developed at the detailed design stage for the individual lots. As a conservative approach, this analysis assumes that all trees within the illustrated grading limits will require removal. Tree Preservation Plans prepared for the individual lots will aim to preserve individual good quality trees, such as along the conceptual limits of grading shown in this plan. A more detailed analysis will be required to determine which of these trees require removal for the servicing phase, and ensure protection of trees on each lot that may be able to be retained during the detailed design (building permit) stage. Detailed tree protection fencing and retention analysis should be developed and approved by the City prior to any construction activity.

Of the 489 trees inventoried, 205 have been outlined as potentially requiring removal. This includes 42 trees that have been identified as being in poor or very poor health, and/or have a probable or imminent potential for structural failure, and/or have been identified as dead. An additional 75 trees under these conditions are located greater than 10m from the development limit line, and therefore will be retained.

The remaining 163 trees may require removal based on the extent of the proposed site grading. This includes trees situated along the grading limit or in close proximity that may incur root damage as a result of grading. Most of these trees are in fair health with a possible to improbable potential for structural failure, and range in size from 10.5cm DBH to 73.1cm DBH. Approximately 60% of these trees are native and are dominated by Black Oak (*Quercus velutina*), Red Oak (*Quercus rubra*), and Black Walnut (*Juglans nigra*). Non-native trees are dominated by Norway Maple (*Acer platanoides*) and Scot's Pine (*Pinus sylvestris*). Where feasible, mature native trees that fall within the grading limits but outside of the building envelopes (i.e., within future graded lawn areas) will be retained and protected during construction, to be determined during detailed design of the individual lots.

Many of the trees identified for potential removal are located on the property boundary, or just off-property. Removal of boundary or off-site trees will require the permission of all owners involved. If the main stem of any tree is located on multiple properties, all owners of those properties must be consulted before any tree removal or impact occurs. NRSI is not aware of receipt of approval for these removals at this time, and our recommendation for removal should not be inferred to reflect any approval from any parties.

Table 10 provides a summary of the trees inventoried within and immediately adjacent to the subject property, and total number that may require removal. A complete list of inventoried trees, including information on the characteristics of trees to be removed, is provided in Appendix VI.

Table 10. Summary of Trees to be Removed

Tree Inventory	**Total**
Total number of trees inventoried	489
Total number of trees to be removed	205
→ Poor, Very Poor, or Dead trees to be removed	42
→ Fair, Good, or Excellent trees to be removed	163
Tree Compensation	
Compensation at a 1:1 ratio for all Poor, Very Poor, or Dead	42
Compensation at a 2:1 ratio for all Fair, Good, or Excellent Trees	326
Total trees required based on maximum tree removal requirements	368

It is recommended that all inventoried trees that are in fair, good or excellent condition be compensated for at a ratio of 2:1. Following SCRCA requirement that poor, very poor or dead trees also be compensated for due to their potential value as wildlife habitat (Appendix II), it is recommended that these trees be compensated for at a 1:1 ratio. As shown in Table 10, a total

of 368 compensation tree plantings are required. These are to be incorporated into the off-site woodland compensation area described above.

5.3.2 Impacts to Wildlife and their Habitats

Bat Species at Risk

Although the study area woodland is not considered to represent significant habitat for bat SAR, use of the seven identified cavity trees as roosting habitat cannot be ruled out. As shown on Map 3, it is anticipated that up to three of these trees may require removal due to site development. Therefore, in order to avoid potential injury, mortality or harassment of SAR bats that may use the trees, it is recommended that removal of these trees be timed to occur outside of the bat active season (i.e., outside of April 30-September 1) when they may be using these trees for habitat purposes. However, this timing may need to be confirmed with the MECP. Note that the tree removal window should also avoid the migratory bird nesting period described below. Future consultation with MECP staff will be held to determine the details of required mitigation measures, including the placement of bat boxes to replace roosting habitat where required.

Other Wildlife

The proposed development will require removal of portions treed areas within the residential CUS1 feature that are used as bird migratory stop-over habitat. However, this effect will be mitigated through the retention of mature trees within the development envelopes where possible as well as the establishment of additional tree plantings within the residential yard areas as further described in Section 5.6. In addition to the retained woodland area, it is anticipated that the developed lot areas will be treed such that they provide an open canopy tree coverage area that will continue to be used by several bird species.

The anticipated woodland habitat and tree removal is not expected to negatively impact the migration or breeding habitat functions on the property for the majority of observed bird species, which are habitat generalists and/or are adapted to human-influenced landscapes and urban/residential areas. The proposed development may lessen the likelihood of continued migration stop-over use for certain species that prefer forest or forest edge habitats such as Black-and White Warbler and Sharp-shinned Hawk although the size requirements for wooded migration habitat are not clearly defined in the literature (Kricher 2014, Bildstein and Meyer 2000). Several other observed migrating species (e.g., Yellow-billed Cuckoo, Palm Warbler,

Hermit Thrush and the SCC Canada Warbler and Eastern Wood-Pewee) are either not strongly associated with large wooded migration habitats or are known to occur in smaller habitats and/or in proximity to urban/residential areas (Hughes 2015, Wilson 2013, Jones and Donovan 2013, Conway 2009, McCarty 1996). Provided tree coverage is maintained within the developed residential areas through retention of existing trees and new tree plantings, it is expected that these species will continue to use the subject property lands as a migratory stop-over point in conjunction with nearby wooded habitats near the Lake Huron shore to the east and west (e.g., Canatara Park).

All other species observed to be using the subject property features are not provincially significant and have secure or apparently secure populations in Ontario (MNRF 2015a). These species are ubiquitous on the surrounding landscape and are generally tolerant to human land uses. These species are expected to continue using the subject property features including the retained woodland areas and trees within the developed residential areas. Construction of the proposed development is not expected to significantly impact local wildlife populations due to the presence of suitable habitat within nearby natural features and the retention of natural feature cover within the subject property.

If dual-zoning of lots and/or restrictive covenants to protect the remaining woodland area is not feasible, use of the woodland areas by lot owners may negatively impact certain wildlife habitat functions over longer-term periods. This may include clearing dense forest understorey vegetation for ease of access within the rear property areas; it is likely that most canopy and subcanopy trees would be left in place. Removal of understorey would reduce the vegetative structural diversity of the forest community and remove habitat for species that occupy these features as part of their migration habitat. Habitat generalists may be unimpacted by these changes. Establishment of compensation woodland, comprising twice the area of the existing Significant Woodland on the property, according to a plan that emulates the existing feature will mitigate the reduction in functional capacity of the subject property woodland that may occur across future years.

Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs and young, or avoidance of the area by breeding adults. Vegetation clearing should therefore occur outside the bird nesting season of March 25-August 25 so as to limit disturbances to nesting activities of birds and to avoid destruction of active

nests. The destruction of migratory birds and their nests is prohibited under the federal *Migratory Birds Convention Act*, 1994.

5.4 Indirect Impacts and Mitigations

Construction of the proposed development has potential to cause indirect impacts on the adjacent natural features and functions if not mitigated appropriately. "Construction" will occur in two stages: construction activities undertaken by the proponent (e.g., cul-de-sac construction and service installation to lot limits) and construction activities undertaken by future individual lot owners (e.g., lot-level vegetation removal, grading and service installation, house construction). However, as this impact assessment includes the anticipated effects of future lot development and house construction, construction mitigation recommendations are provided that apply to both stages of construction. Construction mitigation measures recommended for activities specifically undertaken by the proponent (e.g., tree protection) will be identified during the detailed design stage. Recommended mitigation measures are provided for each potential impact.

5.4.1 Disturbance to Adjacent Natural Features and Wildlife Habitats

Vegetation clearing and other construction activities have the potential to inadvertently destroy, damage and degrade existing vegetation along the development limits unless the development limit boundaries are clearly marked. For example, construction activities can cause scarring and decreased health of adjacent trees whose branches or root systems have been damaged by machinery or affected by construction-related dust and sedimentation. Damage to trees and other vegetation can also be caused by the compaction of soils within tree rooting zones along the new woodland edges to be created at the development limits.

Direct damage and indirect disturbances can cause stresses on the natural features that weaken their ecological integrity. In these states, natural features are more prone to establishment and proliferation of invasive, non-native species such as Common Buckthorn. Proliferation of invasive, non-native species within natural communities decreases their ecological value such as by suppressing native species, diminishing biodiversity and reducing habitat suitability.

To limit ecological impacts during construction, clearly defined construction limits, in the form of tree protection fencing should be established to avoid unnecessary vegetation removal. Tree

protection fencing can take the form of brightly coloured snow fencing secured to t-bar posts. Where tree protection fencing is not required along construction area limits, construction limit fencing should still be used. Where trees are located along the natural feature edges to be retained, protective tree fencing should be installed at least 1m from dripline where possible to adequately protect the root zone from soil compaction and other disturbances.

Designated areas for construction lay-down, vehicle access and parking, equipment storage, materials stockpiling, and any on-site construction offices should be located entirely outside the retained natural features, and preferably not adjacent to those features so as to limit potential to indirectly impact the adjacent natural features.

Potential indirect impacts to natural features and wildlife may also arise from noise, vibrations, human presence, and artificial lighting associated with construction activities.

Excessive noise, vibrations, artificial lighting and human presence as a result of site preparation and construction activities may cause wildlife to temporarily avoid the area. These impacts can be mitigated by restricting the daily timing of construction activities to between 7:00hr and 19:00hr. This timing restriction should also apply to the use of generators or pumps insofar as possible. Any artificial lighting used for construction purposes should be turned off or directed away from the adjacent natural features following the completion of daily construction activities.

Such impacts resulting from noise, and vibrations are expected to be temporary, minimal and localized during the construction of the proposed development. Significant effects on wildlife are not anticipated and it is expected that displaced wildlife species will return to the vicinity of the subject property following construction.

5.4.2 Sedimentation and Erosion

During vegetation removal and site grading activities, areas of bare soil will be exposed which have the potential to erode during rainfall events and impact adjacent natural features. Reduced vegetation cover on the subject property in combination with the presence of exposed soils during construction activities may also increase the potential for stormwater flow to downslope areas if not appropriately mitigated. Increased stormwater surface flow and erosion processes may cause the deposition of sediments onto down-slope vegetation, ultimately causing vegetation die-back or impaired health.

Soil compaction also has potential to occur as a result of heavy machinery in the area of development. Soil compaction can greatly reduce the permeability of soils and affect their ability to retain water during rain/snow melt events. This will result in an increase in surface water run-off which will ultimately increase the erosion potential and the amount of sediment being transported into adjacent natural features and toward the lake.

In order to protect on-site natural features from potential impacts due to sediment, a Sediment and Erosion Control Plan must be developed prior to any construction activities on-site. The primary principles associated with sedimentation and erosion protection measures are to: (1) minimize the duration of soil exposure, (2) retain existing vegetation, where feasible, (3) encourage re-vegetation, (4) divert runoff away from exposed soils, (5) keep runoff velocities low, and (6) trap sediment as close to the source as possible.

The following actions are recommended to limit potential for erosion and sedimentation from construction areas:

- installation of erosion control silt fencing adjacent to construction or area grading operations, targeted to any areas where there is a concern for off-site migration of sediment-laden stormwater;
- inspection of all erosion control measures by the contractor, with repairs completed as required;
- operation and storage of all materials and equipment in a manner that prevents any deleterious substance from leaving the site;
- stripping and strategic placement of topsoil stockpiles, and placement of sediment control fencing around all stockpile areas; and,
- re-vegetation of completed areas as soon as possible after construction.

The impact resulting from soil compaction can be mitigated by minimizing the use of construction vehicles and equipment within 10m of the retained natural features, and by locating material stockpile and equipment storage locations away from the natural features.

5.4.3 Water Quality Changes

Decreases in water quality, such as through discharge of deleterious substances in stormwater runoff, can cause both acute and chronic toxicity impacts within biological communities. These impacts include increased mortality rates, impaired health conditions, decreased reproductive productivity and other reproductive impairments in wildlife. Environmental contaminants are also known to biomagnify 'up the food chain', where higher-level predators are particularly susceptible to impacts. Water quality impairments can also pose health risks to humans wherever there is potential to come into contact with untreated or inadequately treated water discharge.

Lot-level Best Management Practices have been incorporated into the stormwater management plan to ensure the appropriate treatment of stormwater to meet provincial water quality criteria. At the lot level, rear yard drainage to drywell catchbasins will be incorporated as a means of providing control of surface runoff and groundwater recharge to the native sandy soils. Rear yard stormwater drainage will flow overland through grassed yards, which will allow for vegetative filtration of sediments prior to entering the catchbasins. Additionally, house downspouts will discharge to the ground surface rather than discharge directly into storm sewers, which will provide an extended flow path and additional opportunity for vegetative filtration and soil over grassed surfaces. The catchbasins for road drainage within the cul-de-sac will be provided with sumps for sediment accumulation, while oil-water-debris separators will be installed at the outlet of the catchbasin pipes to reduce the potential conveyance of floatable materials into the storm sewers.

5.5 Induced Impacts and Mitigations

As described in Section 3.0, the subject property natural features are currently subjected to human use disturbances, particularly the Mineral Cultural Savannah (CUS1), which is maintained in a manicured state for residential use purposes. The Dry-Fresh Oak Deciduous Forest (FOD1) community is subjected to regular disturbance through the use of two driveways (for the subject property and the adjacent property to the east) along the north boundary and directly through the feature, respectively. Dumped yard waste and miscellaneous debris was observed within the FOD1 feature.

Establishment of the proposed residential development may increase the potential for human disturbances to the adjacent natural features if not appropriately mitigated. In particular, subdivision of the retained woodland feature into separate residential lots will allow for

increased human access to, and activity within, the woodland features, with associated potential for habitat degradation (e.g., vegetation trampling or damage, garbage or yard waste dumping). Habitat degradation may further facilitate the ongoing establishment of non-native, invasive species such as Tartarian Honeysuckle or Norway Maple. Subdivision of woodland ownership within residential lots may also increase the potential for domestic animal (e.g., cat (*Felis catus*)) access to the features. Access provided to cats in particular may impact nesting success and direct mortality among certain small-size wildlife, such as passerine birds. However, this potential disturbance increase, based on the addition of six lots, is likely negligible in relation to the existing disturbance potential from these animals given the existing surrounding residential development and the access these animals currently have to the property. Use of the residential development is not anticipated to increase the potential for other development-tolerant predatory mammals (e.g., raccoon (*Procyon lotor*)) to the woodland feature given the long-established surrounding residential land uses.

Since private lot ownership will extend through the retained portions of the Significant Woodland, inhibiting future homeowner access to the adjacent woodland areas within the rear lot boundaries is not feasible. It is therefore recommended that protective municipal zoning (i.e., dual-zoning of the lots) and/or restrictive covenants be placed on the retained woodland features that fall within the rear-lot areas of the four lots south of the proposed cul-de-sac. These protective mechanisms would restrict certain activities of the lot owner within the woodland in order to mitigate potential negative effects. Restrictions would include but not be limited to prohibitions on tree and other vegetation removal (with the exception of trees that become a safety hazard) within the woodland, prohibitions on accessory structure (e.g., shed) or formal trail construction, and yard waste or debris dumping within the woodland.

While protective zoning over the woodland does not entirely remove the possibility that future lot owners will cut additional trees/vegetation or inadvertently degrade the rear-lot woodland areas through other forms of property use, it is assumed to provide more protective value than having no zoning protection over the feature. Furthermore, the registration of restrictive covenants on title for each lot that would restrict the removal of vegetation provides a legal mechanism for additional protection. Conversely, it is assumed that the induced impacts stated above may occur if it is confirmed through City consultation that dual-zoning of the lots and/or restrictive covenants are not a feasible woodland protection measure. Under that circumstance, the SCRCA requires that the entire on-property portion of the Significant Woodland be compensated for at a 2:1 ratio, using proven approaches to biodiversity offsetting (e.g., Ontario

Nature 2016), assuming that the form and ecological function of the residual woodland may be significantly degraded over long-term periods (S. Hodgkiss, SCRCA, pers. comm., April 2019) (see Section 5.3).

Although homeowner access cannot feasibly be restricted to areas of the retained rear-lot woodland areas, measures are required to clearly demarcate the limits of features under the protective zoning restrictions and/or restrictive covenants and to mitigate inadvertent homeowner damage or removal of vegetation within these features. It is therefore recommended that visible, permanent markers be established along the rear grading limits of these lots to clearly demarcate the limits of the protected feature while allowing for residents access to their wooded rear-lot areas. These markers may take the form of prominent marker stones or wood posts that are aesthetically compatible with the adjacent natural area. Permanent markers can also be established along the rear-lot boundaries of the lots fronting Lakeshore Road and the south side of the cul-de-sac.

As additional measures to mitigate impacts to the retained features, it is recommended that future homeowners be provided with an informational/educational brochure that describes the importance of maintaining the existing woodland features and encourages stewardship and wise management of these features to preserve their form and ecological functions. Homeowners will receive information about the vegetation and wildlife found on their property and in the adjacent areas, including full colour photographs and descriptions, and the importance of protecting existing habitats. This brochure would also include information on steps that have been taken to enhance the existing features through the establishment of restoration plantings (see Section 5.6). Through this brochure, residents will be notified of the protective municipal zoning within their rear-lot woodlands, and will be informed to refrain from dumping yard waste or garbage within the retained features on their rear lots, or from removing vegetation within the lots to the rear of the graded property area. Recommendations will be made to avoid home lighting, such as within backyard areas that shine into the adjacent features. The brochure will foster awareness about the importance of the adjacent natural area as wildlife habitat, and will encourage residents to avoid intentional disturbance or persecution of wildlife within the features. Residents will also be asked to refrain from letting their pet cats roam freely outdoors due to the hazard cats pose to birds and other small wildlife. By highlighting the ecological values of the adjacent features, homeowners will be encouraged to restrict their use of the rear-lot natural features to passive enjoyment activities.

5.6 Restoration and Enhancement of Natural Features

In accordance with City OP policy, restoration and enhancement measures will be undertaken on retained areas of the woodland that fall within rear-lot areas in order to mitigate negative effects caused by localized woodland removal. Woodland restoration strategy would focus on the removal of selected non-native and invasive tree and shrub species that have infiltrated and proliferated within the study area woodland over several years, with a focus on non-native species that are most invasive. The removal of selected individuals of undesirable species would effectively open up the canopy of the current closed-canopy forest feature. The study area woodland previously existed as an open canopy Black Oak woodland or savannah feature, now considered provincially rare; consequently, tree removal within the feature would return the woodland to a condition closer to its original state. However, due to surrounding urban land use disturbances and significant edge effects imposed on the existing feature, it is expected that opened canopy areas would eventually become recolonized by non-native species such as Norway Maple.

It is therefore recommended that areas of tree removal be in-filled with plantings of native tree species (e.g., Black Oak) that are representative of the natural species assemblage and native to Lambton County. These plantings would be established to speed the process of oak regeneration that would naturally occur over time under natural conditions, but would mitigate the effects of invasive species recolonization, which would outcompete oak seedlings without human intervention. Native plantings of oak and associated species will therefore help to restore the woodland community by short-circuiting the natural process while helping to sustain the feature over the long-term by mitigating non-native species re-establishment.

Further details of the restoration/enhancement plan would be developed in consultation with the regulatory agencies. Woodland restoration activities would be undertaken by the proponent prior to the sale of the lots and subsequent lot-level vegetation removal. Future homeowners would be informed of the rationale and significance of the restoration effort, while encouraging them to be good stewards of the woodland features. As stated above, implementation of this restoration/enhancement plan is predicated on the City's acceptance of a dual-zoning and/or resrtrictive covenant protective mechanism for the woodland with a feasible implementation plan. If this cannot be achieved and impacts to the feature cannot be effectively mitigated, efforts will instead be placed on a larger off-property woodland compensation plan in which twice the area of the on-property Significant Woodland will be planted.

Detailed Landscape Plans will be prepared as part of development applications for the individual lots (e.g., a required Schedule to the individual Building Permit Applications) that place an emphasis on native species tree planting opportunities. To the extent feasible, existing native trees within the lot grading limits will be retained and incorporated as lot-level features. Tree planting coverage on the graded portions of the lots will be maximized to the extent feasible while allowing for suitable landowner amenity use of the lawn areas. This will further mitigate woodland removal impacts by ultimately replacing much of the tree canopy and providing additional habitat for wildlife including migratory birds. Replacing non-native tree growth with native species plantings, both within the graded lot areas and within the retained woodland, will improve overall wildlife habitat function as wildlife species are believed to use non-native tree species for habitat (e.g., nesting) significantly less than native tree species (Davies, unpublished data).

5.7 Monitoring

Pre-, during-, and post-construction monitoring is recommended as a means to ensure that retained natural features are not impacted throughout all stages of property development. As described in Section 5.4, construction activities are expected to occur over two stages as undertaken by the proponent and future individual lot owners. Monitoring applies to both stages of construction unless otherwise stated. The engineering consultant overseeing construction activities will have responsibility for implementation of these monitoring measures as part of the general servicing contract, unless where noted otherwise.

5.7.1 Pre-Construction

On-site inspections of the following are recommended to ensure proper installation:

- Sediment and erosion control measures
- Tree protection measures, such as tree protection fencing installed wherever possible beyond dripline of trees to be retained, to be overseen by a Certified Arborist.

5.7.2 During Construction

Construction monitoring is the responsibility of the proponent and is tied to the specific undertaking. Generally, construction monitoring must occur to ensure compliance with the conditions of various permits.

- Periodic monitoring of the above measures to ensure maintenance and effectiveness.

- Pruning of any limbs or roots (of trees to be retained) damaged during construction by a Certified Arborist.
- Inspection of adjacent retained woodland areas to ensure no unauthorized construction encroachments, vegetation damage, or other disturbances caused by construction activities.
- Fueling of machinery to be undertaken at designated location away from the retained woodland area.
- Storage of machinery and material, fill, etc. in designated areas away from the retained woodland area.

5.7.3 Post-Construction

A post-construction monitoring plan will be implemented to include the following components:

- Inspections of all transplanted vegetation, including any significant vegetation species individuals relocated to suitable locations.
- Inspections of all restoration/enhancement plantings to ensure their successful establishment and survival. A two-year warranty is recommended for all proposed planting material throughout the subject property. Planted material will be inspected at the end of the warranty period.
- Inspections of off-property woodland compensation plantings during Years 1, 3 and 5 post-planting to assess the successful establishment of these plantings toward a woodland condition as defined under the *Forestry Act*. The monitoring plan for the off-property woodland compensation area will include the use of forestry survey plots to assess the density of successful tree plantings at various locations within the compensation area. Details of the compensation woodland monitoring plan will be determined in consultation with the SCRCA, City of Sarnia, the property owner and other parties as required during the detailed design stage.

The details of the overall pre-/during-/and post-construction monitoring plan for the development will be refined during the detailed design stage of the development application process in conjunction with City and SCRCA staff. The efficacy of stormwater management measures within the development will also be monitored according to standard monitoring practices to be

detailed by the engineering consultant in consultation with the City and SCRCA as a condition of Subdivision Approval.

6.0 Summary

NRSI was retained by Wicks Homes to complete an EIS for a proposed six-lot residential development located at 834 Lakeshore Road, Sarnia. The proponent proposes to service the six lots through the construction of a cul-de-sac extension of Tudor Close West and the installation of underground servicing to the lot limits. The lots will be sold to individual purchasers who will in turn undertake site grading and house construction. This report provides a comprehensive characterization of the existing natural features and assesses natural feature significance and sensitivity to inform the design of the proposed development. Potential impacts to natural features were assessed based on a development layout provided by Zelinka Priamo Ltd.

The subject property is predominantly wooded and contains a City-designated Type B Natural Area that is considered Significant Woodland in the OP. The subject property also contains shoreline hazard lands that are regulated by the SCRCA as well as lakeshore lands broadly classified as Primary Corridor in the County's OP. Finally, the property is located within a general zone adjacent to Lake Huron known as the Huron Shore Flyway, which is recognized as an important regional bird migration corridor. Desktop- and field-based assessments confirmed the significance of the study area woodland due to its function as bird migration stop-over habitat and also because it contains vegetation species that are regionally significant and/or have a limited distribution. The spatial extent of the Significant Woodland was confirmed through site investigation and dripline confirmation. This area was distinguished from the north end of the property which has been actively used for residential purposes and highly altered from its previous natural condition.

A development layout has been proposed which will require some removal of Significant Woodland area at the north and south ends of the feature. In accordance with OP policies, this impact will be mitigated by restoring and enhancing the existing woodland area to be retained, which is currently degraded from colonization by non-native woody vegetation species. A detailed Restoration Plan will be developed that specifies a strategy to remove non-native tree growth within the woodland and establish infill plantings of native species reflective of the woodland's natural condition, such as Black Oak. Potential impacts to wildlife use of the features, such as for bird migration stop-over habitat, are mitigated by minimizing the grading footprints within the lots, replacing non-native tree species with native species that are preferably used by wildlife, and maximizing tree planting opportunity within graded portions of

the residential lots. Any regionally significant vegetation species that may be impacted by the proposed development will be relocated to appropriate adjacent areas.

Off-property compensation tree plantings will be required to create an area of woodland that is twice the area of Significant Woodland requiring removal on the subject property. The specific location of the compensation woodland area will be determined through future consultations, but should be located and designed to replicate and improve upon the existing condition of the subject property woodland form and function.

A key means of mitigating post-construction human disturbance of the residual woodland is through dual-zoning of the lots and/or restrictive covenants, such that the rear-lot residual woodland areas to the rear of grading limits would fall under an environmental protection zoning that prohibits certain activities and built structures within the protected area. At the time of writing it is undetermined whether dual-zoning and/or restrictive covenant protections can feasibly be applied to the proposed lots. If these protection mechanisms are not available, the full extent of Significant Woodland on the subject property will require off-property compensation planting at a 2:1 ratio, assuming that the residual woodland form and function may be negatively impacted by landowner activities over long-term periods. Under this scenario, the restoration/enhancement plan will not be undertaken for the subject property woodland.

Recommendations have been provided to minimize impacts and mitigate potential negative effects caused by the development. These include recommendations to mitigate direct, indirect and induced impacts that may arise through construction and human use of the proposed development. Monitoring recommendations have been provided to ensure that construction-stage mitigations are functioning appropriately and construction limits are being respected.

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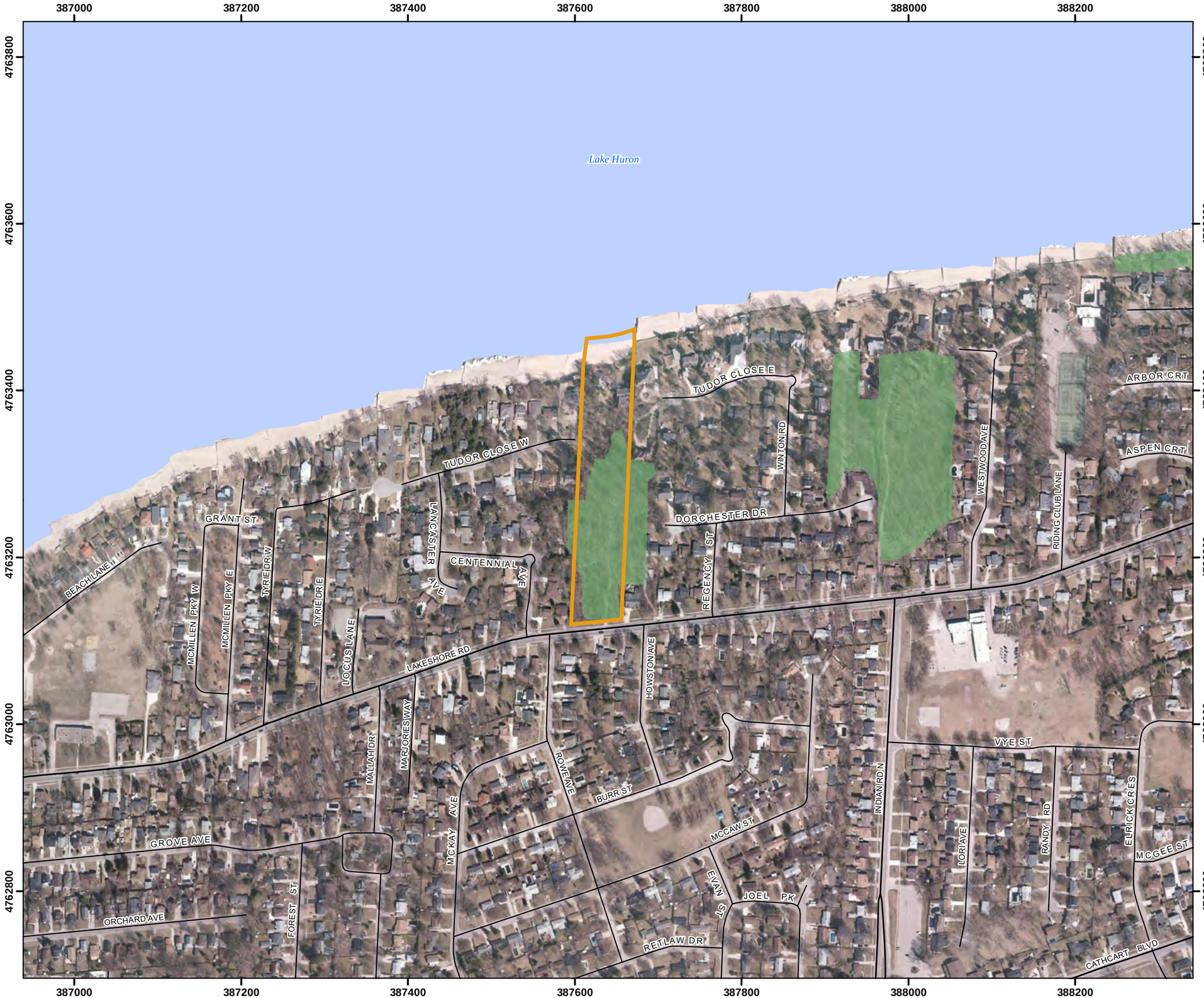
MAPS



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Map 1

834 Lakeshore Road, Sarnia

Study Area

Legend

- Subject Property
- Primary Road
- Secondary Road
- Water Body
- Wooded Area

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1889
Date: May 18, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:4,500

N

0 50 100 150 200 250 Metres

Path: X:\1889_LakeshoreRoadSarnia\NRSI_1889_Map2_ELC_2K_2017_11_21_SNV.mxd

Map 2

834 Lakeshore Road, Sarnia

Vegetation Communities

Legend

- Subject Property
- Surveyed Dripline
- Ecological Land Classification (ELC)
- (CUS1) Mineral Cultural Savannah Ecosite
- (FOD1) Dry - Fresh Oak Deciduous Forest Ecosite

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1889 Date: November 21, 2017	NAD83 - UTM Zone 17 Size: 11x17" **1:1,500**

0 20 40 60 80 100 Metres

N

387400 387500 387600 387700 387800

4763400 4763300 4763200

Lake Huron

Residential

CUS1

CUS1

FOD1

TUDOR CLOSE E

TUDOR CLOSE W

WINTON RD

LANCASTER AVE

CENTENNIAL AVE

DORCHESTER DR

REGENCY ST

LAKESHORE RD

Path: X:\1889_LakeshoreRoadSarnia\NRSI_1889_Map3_SigFeatures_PropDevelopment_2019_11_01_LEH.mxd

Map 3

834 Lakeshore Road, Sarnia

Significant Features and Proposed Development

Legend

- Subject Property
- Bat Cavity Tree
- Grading Limits
- Building Envelope
- Development Plan
- Lot Line
- Surveyed Dripline
- Significant Woodland
- Ecological Land Classification (ELC)

(CUS1) Mineral Cultural Savannah Ecosite

(FOD1) Dry - Fresh Oak Deciduous Forest Ecosite

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1889
Date: November 1, 2019

NAD83 - UTM Zone 17
Size: 11x17"
1:1,500

N

0 20 40 60 80 100 Metres

Map 4a

834 Lakeshore Road, Sarnia

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Inventoried Tree to be Retained (Crown to Scale)
- Inventoried Tree to be Removed (Crown to Scale)
- Proposed Building Envelope
- Proposed Development
- Proposed Servicing
- Existing Conditions
- Legal Lot Lines
- Grading Limits
- Surveyed Dripline
- Primary Road
- Secondary Road

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1889 Date: October 2, 2017	NAD83 - UTM Zone 17 Size: 24x36" 1:375

0 5 10 15 20 25 30
Meters

TUDOR CLOSE E

DORCHESTER DR

LAKESHORE ROAD

EXISTING SEAWALL

TOE OF SLOPE

TOP OF BANK

98.855m

97.248m

SHORELINE AREA 1

SHORELINE AREA 2

TUDOR CLOSE W

CENTENNIAL AVE

834 Lakeshore Road, Sarnia

Tree Inventory and Preservation Plan - Tree Tables

Map 4b

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1889
Date: November 8, 2019
Size: 24x36"

Tree Number	Common Name	Scientific Name	Native / Non-native	DBH (cm)	Stem Count	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Lot No.	ELC Polygon	Proposed Action	Rationale for Removal	Comments
1	Red Oak	*Quercus rubra*	Native	73.1	1	6.5	Possible	Fair	Onsite	2	FOD1	Remove	Removal may be required depending on the final building design	Large and small branch dieback
2	Eastern Red Cedar	*Juniperus virginiana*	Native	17.2	1	1.5	Possible	Poor	Onsite	2	FOD1	Remove	Site Grading	Dieback, unbalanced due to competition
3	Black Walnut	*Juglans nigra*	Native	15.8	1	4.0	Probable	Poor	Onsite	2	FOD1	Remove	Safety	Dieback, grapevine in canopy, unbalanced crown
4	Manitoba Maple	*Acer negundo*	Native	11.9	1	2.5	Possible	Poor	Onsite	2	FOD1	Remove	Site Grading	Lean, grapevine in canopy, dieback
5	Manitoba Maple	*Acer negundo*	Native	10.5	1	3.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Lean over southwest into lines, decay in pruned stems
6	Black Walnut	*Juglans nigra*	Native	67.3	1	6.0	Possible	Fair	Onsite	1	FOD1	Remove	Site Grading	Some dieback
7	Manitoba Maple	*Acer negundo*	Native	14.8	1	2.5	Possible	Poor	Onsite	1	FOD1	Remove	Site Grading	Phototrophic growth into lines under adjacent walnut, grapevine in canopy, dieback, epicormic shoots
8	Eastern Red Cedar	*Juniperus virginiana*	Native	10.1	1	0.5	Probable	Dead	Onsite	1	FOD1	Remove	Site Grading	Dead
9	Norway Maple	*Acer platanoides*	Non-Native	11.8	2	3.0	Possible	Fair	Onsite	1	FOD1	Remove	Site Grading	Fence through stem, lean, some dieback, growing adjacent to walnut
10	Manitoba Maple	*Acer negundo*	Native	20.8	1	2.5	Probable	Poor	Onsite	1	FOD1	Remove	Safety	Epicormic shoots, bark cracks up leader, mostly dead
11	Red Oak	*Quercus rubra*	Native	62.3	1	5.0	Possible	Poor	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Dieback on small & large branches, old pruned scaffold branch, seam with callous, history of branch failure
12	Manitoba Maple	*Acer negundo*	Native	46.6	2	6.0	Possible	Fair	Onsite	1	FOD1	Remove	Site Grading	Large codominant stems, epicormic shoots, some dieback, cavity present but used for nesting and not suitable for bats
13	Norway Maple	*Acer platanoides*	Non-Native	14.0	1	2.0	Possible	Fair	Onsite	1	FOD1	Remove	Site Grading	Some dieback & bark cracks with bacterial staining
14	Norway Maple	*Acer platanoides*	Non-Native	22.5	1	2.5	Improbable	Fair	Onsite	1	FOD1	Remove	Site Grading	Corrected lean, some dieback
15	Norway Maple	*Acer platanoides*	Non-Native	27.4	1	3.0	Possible	Fair	Onsite	1	FOD1	Remove	Site Grading	Slight lean and dieback
16	Scots Pine	*Pinus sylvestris*	Non-Native	10.8	1	1.0	Possible	Poor	Onsite	1	FOD1	Remove	Site Grading	Reduced crown
17	Scots Pine	*Pinus sylvestris*	Non-Native	13.5	1	1.5	Possible	Poor	Onsite	1	FOD1	Remove	Site Grading	Reduced crown
18	Red Oak	*Quercus rubra*	Native	13.0	1	2.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Reduced crown, some dieback
19	Norway Maple	*Acer platanoides*	Non-Native	32.8	1	3.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Bark cracks, shallow roots, some dieback
20	Black Oak	*Quercus velutina*	Native	13.7	1	3.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Dieback, unbalanced crown
21	Scots Pine	*Pinus sylvestris*	Non-Native	23.3	1	1.0	Probable	Dead	Onsite	2	FOD1	Remove	Site Grading	Dead
22	Norway Maple	*Acer platanoides*	Non-Native	17.2	1	3.5	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Some dieback, slight lean
23	Red Oak	*Quercus rubra*	Native	29.9	1	5.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Girdling roots, some dieback
24	Red Oak	*Quercus rubra*	Native	24.2	1	3.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Lean, grapevine in canopy, dieback
25	Red Oak	*Quercus rubra*	Native	13.0	1	1.5	Possible	Fair	Onsite	2	FOD1	Remove	Removal may be required depending on the final building design	Dieback, history of branch failure
26	Norway Maple	*Acer platanoides*	Non-Native	25.1	1	3.5	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Lean, some dieback
27	Scots Pine	*Pinus sylvestris*	Non-Native	14.0	1	1.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Reduced crown
28	Norway Maple	*Acer platanoides*	Non-Native	13.7	1	2.5	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Some dieback, exposed root, lean
29	Manitoba Maple	*Acer negundo*	Native	11.8	1	1.5	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Epicormic shoots, dieback
30	Scots Pine	*Pinus sylvestris*	Non-Native	14.7	1		Probable	Dead	Onsite	2	FOD1	Remove	Site Grading	Dead
31	Scots Pine	*Pinus sylvestris*	Non-Native	15.5	1	1.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Reduced crown
32	Black Oak	*Quercus velutina*	Native	14.0	1	1.5	Possible	Fair	Onsite	2	FOD1	Remove	Removal may be required depending on the final building design	Dieback, lean, reduced crown
33	Scots Pine	*Pinus sylvestris*	Non-Native	14.8	1		Probable	Dead	Onsite	2	FOD1	Remove	Safety	Dead
34	White Elm	*Ulmus americana*	Native	24.5	1	3.0	Possible	Poor	Onsite	2	FOD1	Remove	Site Grading	Dieback, history of branch failure
35	Scots Pine	*Pinus sylvestris*	Non-Native	12.8	1	1.0	Possible	Poor	Onsite	1	FOD1	Remove	Site Grading	Reduced crown
36	Black Oak	*Quercus velutina*	Native	30.5	1	4.0	Possible	Fair	Onsite	2	FOD1	Remove	Removal may be required depending on the final building design	Dieback, history of branch failure
37	Scots Pine	*Pinus sylvestris*	Non-Native	12.8	1	1.0	Possible	Poor	Onsite	1	FOD1	Remove	Site Grading	Reduced crown
38	Black Walnut	*Juglans nigra*	Native	27.3	1	3.0	Possible	Fair	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Unbalanced crown, dieback
39	Black Walnut	*Juglans nigra*	Native	25.8	1	3.5	Possible	Fair	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Dieback
40	Black Walnut	*Juglans nigra*	Native	11.3	1	1.5	Possible	Fair	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Lean due to phototrophic growth, dieback
41	Black Walnut	*Juglans nigra*	Native	16.2	1	4.0	Probable	Poor	Onsite	1	FOD1	Remove	Site Grading	Extreme lean on one side, leader arches 6m in, few living buds remain
42	Norway Maple	*Acer platanoides*	Non-Native	32.5	2	6.0	Possible	Fair	Onsite	1	FOD1	Remove	Site Grading	Some dieback, codominant stems with split, girdling roots
43	Eastern Red Cedar	*Juniperus virginiana*	Native	18.0	1	1.5	Possible	Dead	Onsite	1	FOD1	Retain		Dead
44	Norway Maple	*Acer platanoides*	Non-Native	21.2	1	2.0	Possible	Fair	Onsite	1	FOD1	Retain		Dieback
45	White Mulberry	*Morus alba*	Non-Native	19.4	1	4.0	Possible	Poor	Onsite	1	FOD1	Retain		Lean, dieback, staining
46	Norway Maple	*Acer platanoides*	Non-Native	38.0	1	5.0	Possible	Fair	Onsite	1	FOD1	Retain		Girdling roots, some dieback
47	White Spruce	*Picea glauca*	Native	20.9	1	2.0	Possible	Fair	Onsite	1	FOD1	Retain		Unbalanced crown
48	White Spruce	*Picea glauca*	Native	26.2	1	1.0	Possible	Poor	Onsite	1	FOD1	Retain		Reduced crown
49	White Spruce	*Picea glauca*	Native	24.3	1	1.0	Possible	Poor	Onsite	1	FOD1	Retain		Reduced crown, dieback
50	Norway Maple	*Acer platanoides*	Non-Native	16.1	1	3.0	Improbable	Good	Onsite	2	FOD1	Retain		Minimal dieback
51	White Spruce	*Picea glauca*	Native	18.0	1	2.0	Improbable	Fair	Onsite	2	FOD1	Retain		Some dieback
52	White Spruce	*Picea glauca*	Native	16.4	1	1.5	Possible	Dead	Onsite	1	FOD1	Retain		Dead
53	Manitoba Maple	*Acer negundo*	Native	15.4	1	2.5	Possible	Fair	Onsite	2	FOD1	Retain		Unbalanced crown, dieback
54	White Spruce	*Picea glauca*	Native	21.5	1	1.0	Probable	Dead	Onsite	2	FOD1	Retain		Dead
55	White Spruce	*Picea glauca*	Native	17.0	1	1.5	Possible	Dead	Onsite	2	FOD1	Retain		Dead
56	White Spruce	*Picea glauca*	Native	13.2	1	1.0	Possible	Dead	Onsite	2	FOD1	Retain		Dead
57	Black Cherry	*Prunus serotina*	Native	19.0	1	3.5	Possible	Fair	Onsite	2	FOD1	Retain		Dieback, codominant branches
58	White Oak	*Quercus alba*	Native	34.0	1	3.5	Possible	Fair	Adjacent Property		FOD1	Retain		History of branch failure, dieback, gypsy moth egg mass
59	White Oak	*Quercus alba*	Native	50.2	1	5.0	Possible	Fair	Adjacent Property		FOD1	Retain		Unbalanced crown, dieback
60	Black Cherry	*Prunus serotina*	Native	13.0	1	2.5	Possible	Fair	Adjacent Property		FOD1	Retain		Dieback
61	Red Oak	*Quercus rubra*	Native	76.0	1	6.5	Possible	Fair	Adjacent Property		FOD1	Retain		Staining down scaffold branch union, dieback, history of branch failure
62	White Oak	*Quercus alba*	Native	67.5	1	7.0	Possible	Fair	Adjacent Property		FOD1	Retain		Dieback, history of branch failure
63	White Elm	*Ulmus americana*	Native	22.6	1	5.0	Possible	Fair	Onsite	2	FOD1	Retain		Dieback
64	White Oak	*Quercus alba*	Native	48.4	2	6.5	Possible	Fair	Onsite	2	FOD1	Retain		Dieback, history of branch failure, one stem with more branch failure
65	Norway Maple	*Acer platanoides*	Non-Native	57.5	1	5.0	Probable	Poor	Onsite	1	FOD1	Retain		Large scaffold branch tore off stem with callous, other scaffold branch failures, dieback
66	White Oak	*Quercus alba*	Native	63.8	1	7.0	Possible	Fair	Onsite	2	FOD1	Retain		Unbalanced crown, history of branch failure, dieback
67	Black Oak	*Quercus velutina*	Native	47.6	1	5.0	Probable	Poor	Onsite	1	FOD1	Retain		Extensive branch failure including scaffold branches, staining, dieback, potential bat cavity tree
68	Sweet Cherry	*Prunus avium*	Non-Native	17.4	1	4.0	Possible	Fair	Onsite	1	FOD1	Retain		Fair health, some potential for structural failure
69	Black Cherry	*Prunus serotina*	Native	10.5	1	1.0	Improbable	Good	Onsite	1	FOD1	Retain		S-bend, some dieback
70	Norway Maple	*Acer platanoides*	Non-Native	16.9	1	2.0	Improbable	Good	Onsite	1	FOD1	Retain		Some exposed roots, bend in stem, otherwise okay
71	White Oak	*Quercus alba*	Native	48.4	1	8.0	Possible	Fair	Onsite	1	FOD1	Retain		History of branch failure, dieback, heavy lean
72	White Oak	*Quercus alba*	Native	75.8	1	6.0	Probable	Dead	Onsite	1	FOD1	Retain		Dead
73	Manitoba Maple	*Acer negundo*	Native	31.6	1	5.0	Possible	Fair	Onsite	1	FOD1	Retain		Epicormic shoots, open cankers on both codominant branches, minimal dieback
74	Black Cherry	*Prunus serotina*	Native	35.2	1	3.0	Possible	Fair	Onsite	1	FOD1	Retain		Poor structure, bent leader, epicormic growth, dieback
75	Manitoba Maple	*Acer negundo*	Native	23.9	2	4.5	Probable	Poor	Onsite	1	FOD1	Retain		One stem is dead, lean, epicormic shoots, dieback, branch failure
76	Norway Maple	*Acer platanoides*	Non-Native	44.0	1	4.5	Improbable	Good	Onsite	1	FOD1	Retain		Girdling root, few branch failures
77	Norway Maple	*Acer platanoides*	Non-Native	13.8	1	3.0	Possible	Fair	Onsite	1	FOD1	Retain		Unbalanced crown, s-bend, dieback
78	Eastern White Pine	*Pinus strobus*	Native	10.7	1	1.5	Improbable	Fair	Adjacent Property			Retain		Sparse crown, gummosis
79	Black Oak	*Quercus velutina*	Native	63.0	1	1.0	Probable	Dead	Onsite	1	FOD1	Retain		Dead
80	White Spruce	*Picea glauca*	Native	18.9	1	1.5	Possible	Fair	Onsite	1	FOD1	Retain		One-sided crown
81	Manitoba Maple	*Acer negundo*	Native	31.0	1	4.0	Possible	Fair	Onsite	1	FOD1	Retain		Staining, epicormic shoots, dieback
82	Manitoba Maple	*Acer negundo*	Native	22.5	1	5.0	Probable	Poor	Onsite	1	FOD1	Retain		Lean, dieback, grapevine in canopy, open wound
83	Manitoba Maple	*Acer negundo*	Native	17.5	1	1.0	Probable	Poor	Onsite	1	FOD1	Retain		Bark cracks, cankers, epicormic shoots
84	White Oak	*Quercus alba*	Native	30.8	2	5.0	Possible	Fair	Onsite	1	FOD1	Retain		Dieback, grapevine, codominant stems with included bark
85	Black Cherry	*Prunus serotina*	Native	25.6	1	3.5	Possible	Fair	Onsite	1	FOD1	Retain		Dieback, unbalanced crown, s-bend
86	Black Cherry	*Prunus serotina*	Native	16.3	1	3.0	Possible	Fair	Onsite	1	FOD1	Retain		Dieback, s-bend, history of branch failure
87	Norway Maple	*Acer platanoides*	Non-Native	12.2	1	2.0	Improbable	Good	Onsite	1	FOD1	Retain		Minimal dieback, exposed roots
88	Black Oak	*Quercus velutina*	Native	38.6	1	5.0	Probable	Poor	Onsite	1	FOD1	Retain		Large codominant branch failed, stem with bark cracks, dieback
89	Manitoba Maple	*Acer negundo*	Native	12.5	1	2.0	Probable	Poor	Onsite	1	FOD1	Retain		Epicormic shoots, dieback, staining, bark cracks
90	Black Cherry	*Prunus serotina*	Native	16.8	1	3.0	Possible	Fair	Onsite	2	FOD1	Retain		Dieback, gravel piled around base
91	White Oak	*Quercus alba*	Native	33.1	1	3.5	Possible	Fair	Onsite	2	FOD1	Retain		Dieback, unbalanced crown, bend in stem
92	Norway Maple	*Acer platanoides*	Non-Native	25.6	1	3.0	Improbable	Fair	Onsite	2	FOD1	Retain		Exposed roots, dieback, bend in stem
93	White Oak	*Quercus alba*	Native	15.8	1	1.0	Possible	Poor	Onsite	2	FOD1	Retain		Sapsucker damage, dieback throughout, epicormic shoots
94	Norway Maple	*Acer platanoides*	Non-Native	17.6	1	3.0	Possible	Fair	Onsite	2	FOD1	Retain		Dieback, wound on upper stem due to rubbing against adjacent tree
95	White Oak	*Quercus alba*	Native	40.4	1	6.5	Possible	Fair	Onsite	2	FOD1	Retain		Heavy crown, codominant branches, epicormic shoots
96	Black Oak	*Quercus velutina*	Native	77.5	1	8.0	Possible	Fair	Onsite	2	FOD1	Retain		Staining at root flare and in upper canopy, fungi on dead limb, history of branch failure, cavity on scaffold branch suitable for bats
97	Norway Maple	*Acer platanoides*	Non-Native	22.1	1	4.0	Improbable	Fair	Onsite	2	FOD1	Retain		Exposed roots, gravelly sand on roots, dieback, bend in upper stem
98	Black Cherry	*Prunus serotina*	Native	17.0	1	1.0	Possible	Poor	Onsite	2	FOD1	Retain		Vine up stem and in crown, lean, leader snapped
99	Black Cherry	*Prunus serotina*	Native	15.3	1	2.5	Possible	Poor	Onsite	1	FOD1	Retain		Vine up stem, decay in one codominant branch, dieback
100	Black Oak	*Quercus velutina*	Native	54.4	1	7.0	Possible	Fair	Onsite	3	FOD1	Retain		Staining from small cavity, history of branch failure, some dieback, heavy crown
101	Horsechestnut	*Aesculus hippocastanum*	Non-Native	19.7	1	3.0	Possible	Fair	Onsite	3	FOD1	Retain		Exposed roots, dieback
102	Manitoba Maple	*Acer negundo*	Native	17.5	1	6.0	Probable	Poor	Adjacent Property			Retain		Lean, dieback, grapevine in crown, epicormic shoots
103	Black Cherry	*Prunus serotina*	Native	26.5	1	3.0	Probable	Poor	Onsite	3	FOD1	Retain		Epicormic shoots, large wound on stem, dieback
104	White Oak	*Quercus alba*	Native	47.4	1	1.0	Probable	Dead	Onsite	3	FOD1	Retain		Armillaria rot present
105	Norway Maple	*Acer platanoides*	Non-Native	27.8	1	4.0	Improbable	Fair	Onsite	3	FOD1	Retain		Some dieback, slight bend, exposed roots
106	White Oak	*Quercus alba*	Native	26.2	1	0.5	Probable	Dead	Onsite	3	FOD1	Retain		Dead
107	Norway Maple	*Acer platanoides*	Non-Native	11.1	1	2.0	Improbable	Fair	Onsite	3	FOD1	Retain		No leader, dieback
108	Norway Maple	*Acer platanoides*	Non-Native	35.8	2	4.5	Possible	Fair	Onsite	3	FOD1	Retain		Codominant stems with included bark and staining
109	Norway Maple	*Acer platanoides*	Non-Native	19.8	1	3.0	Improbable	Fair	Onsite	3	FOD1	Retain		Adjacent tree rubbing stem, dieback, exposed roots
110	White Oak	*Quercus alba*	Native	18.0	1		Probable	Dead	Onsite	3	FOD1	Retain		Dead
111	White Oak	*Quercus alba*	Native	37.2	1	3.5	Improbable	Fair	Onsite	3	FOD1	Retain		Some dieback, history of branch failure
112	White Oak	*Quercus alba*	Native	29.4	1	4.0	Possible	Fair	Onsite	3	FOD1	Retain		Unbalanced crown, sand/gravel piled next to tree
113	Norway Maple	*Acer platanoides*	Non-Native	31.0	1	3.5	Possible	Fair	Onsite	3	FOD1	Retain		Bark cracks, calloused cracks, some dieback
114	Black Cherry	*Prunus serotina*	Native	15.3	1	3.3	Possible	Fair	Onsite	4	FOD1	Retain		Calloused wounds, epicormic shoots, lean, reduced crown
115	Black Oak	*Quercus velutina*	Native	44.4	1		Probable	Dead	Onsite	4	FOD1	Retain		Dead
116	Black Cherry	*Prunus serotina*	Native	13.6	1	1.0	Possible	Fair	Onsite	4	FOD1	Retain		Large stem wound with callous, lean, dieback
117	White Oak	*Quercus alba*	Native	41.7	1	4.7	Improbable	Good	Onsite	4	FOD1	Retain		Unbalanced crown, epicormic shoots, dieback
118	Norway Maple	*Acer platanoides*	Non-Native	20.6	1	4.0	Improbable	Fair	Onsite	4	FOD1	Retain		Epicormic shoots, history of branch failure, dieback
119	Norway Maple	*Acer platanoides*	Non-Native	24.2	1	3.0	Improbable	Fair	Onsite	4	FOD1	Retain		Bend in upper stem, exposed roots, some dieback
120	Black Cherry	*Prunus serotina*	Native	45.0	1	6.0	Possible	Fair	Onsite	4	FOD1	Retain		History of branch failure, calloused wounds, epicormic shoots
121	Black Cherry	*Prunus serotina*	Native	15.0	1	2.0	Possible	Fair	Onsite	2	FOD1	Retain		Reduced crown, dieback
122	Norway Maple	*Acer platanoides*	Non-Native	25.4	1	3.0	Improbable	Fair	Onsite	4	FOD1	Retain		Exposed roots, epicormic shoots, some dieback
123	Norway Maple	*Acer platanoides*	Non-Native	22.0	1	3.5	Improbable	Fair	Onsite	4	FOD1	Retain		Lean, dieback, unbalanced crown
124	Norway Maple	*Acer platanoides*	Non-Native	33.5	1	5.0	Improbable	Fair	Boundary	4	FOD1	Retain		Exposed roots, girdling roots, vigorous crown
125	White Oak	*Quercus alba*	Native	32.2	1	3.0	Improbable	Fair	Adjacent Property		FOD1	Retain		Located in gravel shoulder, epicormic shoots, some dieback
127	Norway Maple	*Acer platanoides*	Non-Native	31.0	1	3.5	Improbable	Fair	Boundary	4	FOD1	Retain		Bend in stem, some dieback
128	Black Cherry	*Prunus serotina*	Native	21.5	1	4.5	Possible	Fair	Adjacent Property		FOD1	Retain		Dieback, unbalanced crown
129	Black Oak	*Quercus velutina*	Native	64.0	1	6.5	Possible	Fair	Adjacent Property		FOD1	Retain		Calloused wound with frass, heavy crown, some dieback, history of branch failure, cavity on stem (not suitable bats)
130	Black Cherry	*Prunus serotina*	Native	17.3	1	2.5	Possible	Fair	Boundary	4	FOD1	Retain		One codominant branch dead, other in fair condition
131	Norway Maple	*Acer platanoides*	Non-Native	19.2	1	3.0	Improbable	Good	Onsite	4	FOD1	Retain		Bend in stem, otherwise vigorous
132	Norway Maple	*Acer platanoides*	Non-Native	27.4	1	3.3	Improbable	Fair	Onsite	4	FOD1	Retain		Exposed roots, bend in stem, some dieback
133	Black Oak	*Quercus velutina*	Native	51.5	1	2.0	Probable	Dead	Onsite	4	FOD1	Retain		Dead
134	Black Cherry	*Prunus serotina*	Native	26.7	1	4.0	Possible	Fair	Onsite	4	FOD1	Retain		Some dieback, history of branch failure, vine up stem, lean
135	Black Cherry	*Prunus serotina*	Native	13.0	1	1.0	Possible	Fair	Onsite	4	FOD1	Retain		Lean, dieback
136	Black Cherry	*Prunus serotina*	Native	18.5	1	2.5	Improbable	Fair	Onsite	4	FOD1	Retain		Some dieback
137	Black Oak	*Quercus velutina*	Native	24.0	1	3.0	Improbable	Fair	Onsite	4	FOD1	Retain		Slight lean, some dieback
138	Black Cherry	*Prunus serotina*	Native	22.0	1	3.0	Possible	Poor	Onsite	4	FOD1	Retain		Vine up stem, some deadwood, gummosis, fungi
139	Black Cherry	*Prunus serotina*	Native	16.3	1	2.0	Possible	Poor	Onsite	4	FOD1	Retain		Gummosis, reduced and unbalanced crown, dieback
140	Black Walnut	*Juglans nigra*	Native	12.7	1		Probable	Dead	Onsite	3	FOD1	Retain		Dead
141	Black Oak	*Quercus velutina*	Native	74.5	1	7.0	Possible	Poor	Onsite	4	FOD1	Retain		Codominant branches (one dead), bark cracks off main stem, cavity in dead stem (not suitable for bats)
142	Black Cherry	*Prunus serotina*	Native	25.0	1	2.0	Probable	Dead	Onsite	3	FOD1	Retain		Dead
143	Norway Maple	*Acer platanoides*	Non-Native	21.3	1	3.5	Improbable	Good	Onsite	3	FOD1	Retain		Bend in stem, otherwise vigorous
144	Norway Maple	*Acer platanoides*	Non-Native	21.8	1	3.5	Improbable	Fair	Onsite	3	FOD1	Retain		Lean, dieback, unbalanced crown, exposed roots
145	Black Oak	*Quercus velutina*	Native	15.0	1	2.0	Improbable	Fair	Onsite	3	FOD1	Retain		Lean, unbalanced crown, dieback
146	Black Cherry	*Prunus serotina*	Native	20.7	1	3.0	Possible	Fair	Onsite	3	FOD1	Retain		Dieback, unbalanced crown, epicormic shoots
147	Norway Maple	*Acer platanoides*	Non-Native	26.6	1	3.0	Improbable	Good	Onsite	3	FOD1	Retain		Bend in upper stem, otherwise vigorous
148	Black Oak	*Quercus velutina*	Native	46.2	1	4.0	Possible	Poor	Adjacent Property		FOD1	Retain		Unbalanced crown, basal rot, history of branch failure, large limb extends over sidewalk
149	Black Walnut	*Juglans nigra*	Native	11.1	1	2.5	Improbable	Good	Adjacent Property		FOD1	Retain		Codominant leaders
150	Scots Pine	*Pinus sylvestris*	Non-Native	27.0	1	2.0	Improbable	Fair	Onsite	2	FOD1	Remove	Site Grading	Slightly unbalanced crown, minor dieback, squirrel nest
151	Red Pine	*Pinus resinosa*	Non-Native	54.0	1	2.5	Probable	Dead	Adjacent Property		FOD1	Remove	Site Grading	Previously topped, dead branches, heartwood rot
152	Black Walnut	*Juglans nigra*	Native	16.5	1	3.0	Improbable	Good	Adjacent Property		FOD1	Remove	Removal may be required depending on the final building design	Crooked stem at top
153	Red Oak	*Quercus rubra*	Native	22.7	1	3.5	Improbable	Good	Adjacent Property		FOD1	Retain		Two dead branches
154	Scots Pine	*Pinus sylvestris*	Non-Native	13.2	1	1.0	Probable	Dead	Onsite	2	FOD1	Remove	Site Grading	All branches dead, shedding bark, supporting a leaning dead tree
155	Norway Maple	*Acer platanoides*	Non-Native	30.5	1	4.0	Improbable	Good	Onsite	2	FOD1	Remove	Site Grading	One girdling root, one scaffold branch with poor union
156	Scots Pine	*Pinus sylvestris*	Non-Native	17.8	1	0.5	Possible	Dead	Onsite	2	FOD1	Remove	Site Grading	Shedding bark, insect galleries, all branches dead
157	Black Oak	*Quercus velutina*	Native	14.6	1	3.0	Improbable	Fair	Onsite	2	FOD1	Remove	Removal may be required depending on the final building design	Irregular crown with some dieback
158	Scots Pine	*Pinus sylvestris*	Non-Native	18.0	1	0.5	Probable	Dead	Onsite	2	FOD1	Remove	Site Grading	Woodpecker damage, no living crown
159	Eastern Red Cedar	*Juniperus virginiana*	Native	11.1	1	0.8	Possible	Very Poor	Onsite	2	FOD1	Remove	Site Grading	Extensive crown dieback, stem stil relatively solid
160	Red Oak	*Quercus rubra*	Native	38.5	1	5.0	Improbable	Fair	Onsite	2	FOD1	Remove	Site Grading	Some light pruning in scaffold branches, good root flare
161	Sugar Maple	*Acer saccharum ssp. saccharum*	Native	22.2	1	3.0	Improbable	Good	Onsite	2	FOD1	Remove	Site Grading	Solid stem with full crown
162	Manitoba Maple	*Acer negundo*	Native	11.4	3	2.0	Possible	Poor	Onsite	1	FOD1	Remove	Site Grading	Epicormic shoots, insect feeding with some rot
163	Black Walnut	*Juglans nigra*	Native	35.0	1	5.0	Improbable	Good	Onsite	1	FOD1	Remove	Site Grading	Slightly one-sided crown, otherwise solid, healthy tree
164	Black Walnut	*Juglans nigra*	Native	37.7	1	5.0	Improbable	Good	Onsite	1	FOD1	Remove	Site Grading	Full, healthy crown with solid stem, good root flare
165	Eastern Red Cedar	*Juniperus virginiana*	Native	23.5	1	1.0	Improbable	Fair	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Off-property with minimal crown over subject property
166	Eastern Red Cedar	*Juniperus virginiana*	Native	20.6	1	1.5	Improbable	Good	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Relatively full crown
167	Eastern Red Cedar	*Juniperus virginiana*	Native	31.0	1	1.3	Improbable	Fair	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	One-sided crown due to competition for sunlight with adjacent cedar, off-property, growing very close to fence
168	Manitoba Maple	*Acer negundo*	Native	21.4	2	2.3	Possible	Fair	Onsite	1	FOD1	Remove	Site Grading	Codominant stems with some included bark, some crown dieback, epicormic growth
169	Black Walnut	*Juglans nigra*	Native	10.6	1	1.5	Improbable	Good	Onsite	1	FOD1	Remove	Site Grading	Minimal dieback, solid stem
170	Red Oak	*Quercus rubra*	Native	14.2	2	2.5	Improbable	Good	Onsite	1	FOD1	Remove	Site Grading	Relatively full crown with minimal light pruning
171	Scots Pine	*Pinus sylvestris*	Non-Native	13.6	1	0.3	Probable	Dead	Onsite	1	FOD1	Remove	Site Grading	Dead
172	Norway Maple	*Acer platanoides*	Non-Native	20.3	1	2.3	Improbable	Good	Onsite	2	FOD1	Remove	Site Grading	Full crown with solid stem
173	Scots Pine	*Pinus sylvestris*	Non-Native	24.8	1	3.5	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	One-sided crown with slight lean
174	Scots Pine	*Pinus sylvestris*	Non-Native	22.4	1	2.8	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Crown growing on 45 degree angle, some insect feeding
175	Norway Maple	*Acer platanoides*	Non-Native	13.8	1	2.5	Improbable	Good	Onsite	2	FOD1	Remove	Site Grading	Relatively full crown with solid stem
176	Red Oak	*Quercus rubra*	Native	30.2	1	4.5	Improbable	Good	Onsite	2	FOD1	Remove	Site Grading	Full crown with solid stem, minimal scaffold dieback
177	Scots Pine	*Pinus sylvestris*	Non-Native	27.7	1	2.0	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Minimal woodpecker damage
178	Scots Pine	*Pinus sylvestris*	Non-Native	18.2	1	1.5	Possible	Fair	Onsite	2	FOD1	Remove	Site Grading	Narrow crown due to competition for sunlight, growing on slight angle
179	Scots Pine	*Pinus sylvestris*	Non-Native	17.8	1	1.0	Possible	Poor	Onsite	2	FOD1	Remove	Site Grading	One-sided crown with quite a bit of dieback
180	Norway Maple	*Acer platanoides*	Non-Native	22.5	1	4.0	Improbable	Good	Onsite	2	FOD1	Remove	Site Grading	Full crown with solid stem, growing close to existing laneway
181	Red Oak	*Quercus rubra*	Native	35.5	2	4.0	Improbable	Fair	Onsite	2	FOD1	Retain		Slightly reduced crown, solid stem, some scaffold dieback
182	Black Oak	*Quercus velutina*	Native	37.7	1	6.0	Improbable	Good	Onsite	2	FOD1	Remove	Removal may be required depending on the final building design	Large, full crown, minimal scaffold dieback
183	Red Oak	*Quercus rubra*	Native	12.0	2	0.3	Possible	Dead	Onsite	2	FOD1	Remove	Site Grading	Some bark loss, crown draped in grapevine
184	Red Oak	*Quercus rubra*	Native	16.3	1	1.5	Possible	Poor	Onsite	2	FOD1	Remove	Removal may be required depending on the final building design	Reduced crown draped in grapevine, dieback, stem still relatively solid
185	Tree-of-Heaven	*Ailanthus altissima*	Non-Native	25.0	1	4.0	Improbable	Good	Onsite	2	FOD1	Retain		Girdling roots, one stem with codominant leaders
186	Black Walnut	*Juglans nigra*	Native	16.3	1	2.5	Improbable	Good	Onsite	1	FOD1	Retain		Some crown dieback, solid stem
187	Black Walnut	*Juglans nigra*	Native	21.0	1	3.0	Improbable	Good	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Codominant stems with included bark, full crown with solid stem
188	Black Willow	*Salix nigra*	Native	24.2	1	2.0	Improbable	Fair	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Codominant leaders with included bark, few dead branches
189	Manitoba Maple	*Acer negundo*	Native	15.3	1	2.0	Possible	Poor	Onsite	1	FOD1	Remove	Removal may be required depending on the final building design	Epicormic growth, shedding bark on two upper branches, unbalanced crown
190	Trembling Aspen	*Populus tremuloides*	Native	31.5	1	4.0	Improbable	Good	Onsite	1	FOD1	Retain		Tight branch angle, growing against fence
191	Black Walnut	*Juglans nigra*	Native	27.8	1	4.0	Possible	Fair	Onsite	1	FOD1	Retain		Slightly one-sided crown, few bark wounds on main stem and scaffold branches
192	Manitoba Maple	*Acer negundo*	Native	75.7	1	9.0	Possible	Fair	Onsite	1	FOD1	Retain		One-sided crown, growing on extreme angle, history of branch failure,epicormic growth, small cavity at root flare (not suitable for bats)
193	Tree-of-Heaven	*Ailanthus altissima*	Non-Native	19.7	1	3.0	Improbable	Good	Onsite	1	FOD1	Retain		Compartmentalized stem wound
194	White Mulberry	*Morus alba*	Non-Native	13.2	1	2.0	Improbable	Fair	Onsite	2	FOD1	Retain		Exposed feeder roots, slight lean, reduced crown
195	White Spruce	*Picea glauca*	Native	21.7	1	2.0	Possible	Dead	Onsite	2	FOD1	Retain		Dead crown, shedding bark
196	White Oak	*Quercus alba*	Native	23.8	1	4.0	Improbable	Fair	Onsite	2	FOD1	Retain		Codominant stems with included bark, few dead branches
197	Norway Maple	*Acer platanoides*	Non-Native	19.2	1	3.0	Improbable	Fair	Onsite	2	FOD1	Retain		Somewhat crooked stem, compartmentalized wounds
198	Black Cherry	*Prunus serotina*	Native	13.5	1	2.5	Improbable	Fair	Onsite	2	FOD1	Retain		Slight lean, phototrophic growth
199	Black Oak	*Quercus velutina*	Native	48.3	1	6.0	Improbable	Good	Onsite	2	FOD1	Retain		Growing on slight angle, some light pruning in lower scaffold branches
200	Black Cherry	*Prunus serotina*	Native	16.2	1	2.8	Improbable	Fair	Onsite	2	FOD1	Retain		Fungus on one branch, slightly reduced crown due to competition with adjacent tree
201	White Spruce	*Picea glauca*	Native	15.5	1	2.0	Possible	Dead	Onsite	2	FOD1	Retain		Dead crown, shedding bark, insect galleries
202	White Spruce	*Picea glauca*	Native	12.4	1	0.5	Possible	Dead	Onsite	2	FOD1	Retain		Dead crown, shedding bark, insect galleries
203	Manitoba Maple	*Acer negundo*	Native	13.0	2	3.5	Improbable	Fair	Adjacent Property		FOD1	Retain		Epicormic growth, growing on edge of driveway, compartmentalized wounds
204	Black Cherry	*Prunus serotina*	Native	13.5	2	2.5	Improbable	Fair	Adjacent Property		FOD1	Retain		Unbalanced crown, crooked stem
205	Norway Maple	*Acer platanoides*	Non-Native	13.0	1	2.0	Improbable	Good	Onsite	2	FOD1	Retain		Slightly suppressed crown, otherwise good
206	White Elm	*Ulmus americana*	Native	23.6	1	3.0	Improbable	Fair	Onsite	2	FOD1	Retain		Slightly one-sided crown, some dieback
207	Black Cherry	*Prunus serotina*	Native	41.2	1	5.0	Possible	Fair	Onsite	2	FOD1	Retain		Some scaffold branch dieback, history of branch failure
208	Manitoba Maple	*Acer negundo*	Native	24.5	4	4.5	Improbable	Good	Adjacent Property		FOD1	Retain		Two stems with intertwining growth, full crown, growing on edge of driveway
209	White Elm	*Ulmus americana*	Native	22.4	1	2.5	Improbable	Fair	Boundary	2	FOD1	Retain		Reduced crown, some insect feeding
210	Black Cherry	*Prunus serotina*	Native	32.3	1	2.5	Possible	Fair	Onsite	2	FOD1	Retain		Reduced crown, some scaffold dieback, staining on root flare
211	Red Oak	*Quercus rubra*	Native	49.3	1	3.8	Possible	Poor	Onsite	2	FOD1	Retain		Unbalanced crown, crown dieback
212	Norway Maple	*Acer platanoides*	Non-Native	11.4	1	2.3	Improbable	Good	Onsite	2	FOD1	Retain		Full, relatively vigorous crown
213	Norway Maple	*Acer platanoides*	Non-Native	22.8	1	3.0	Improbable	Good	Onsite	2	FOD1	Retain		Slightly phototrophic growth, minimal dieback
214	Norway Maple	*Acer platanoides*	Non-Native	13.0	1		Imminent	Dead	Onsite	2	FOD1	Retain		No crown, extensive rot, open cavities (not suitable for bats)
215	Black Cherry	*Prunus serotina*	Native	32.0	1	3.0	Probable	Poor	Onsite	2	FOD1	Retain		Wounds on main stem, narrow, unbalanced crown, crown dieback
216	Norway Maple	*Acer platanoides*	Non-Native	16.0	4	0.3	Probable	Very Poor	Onsite	2	FOD1	Retain		Main stem dead, smaller stems with DBH of <10cm, shedding bark
217	White Elm	*Ulmus americana*	Native	15.2	1	3.0	Possible	Poor	Onsite	2	FOD1	Retain		Dieback, unbalanced crown, wound in upper crown
218	Black Oak	*Quercus velutina*	Native	47.5	1	6.5	Possible	Fair	Onsite	1	FOD1	Retain		Unbalanced crown, some dieback, one large dead scaffold limb
219	Red Oak	*Quercus rubra*	Native	37.4	1		Probable	Dead	Onsite	1	FOD1	Retain		No crown, missing bark
220	White Elm	*Ulmus americana*	Native	26.0	1		Probable	Dead	Onsite	1	FOD1	Retain		No crown, shedding bark
221	Red Oak	*Quercus rubra*	Native	49.5	1	4.0	Probable	Dead	Onsite	1	FOD1	Retain		No living crown, missing bark
222	Black Cherry	*Prunus serotina*	Native	26.8	1	2.5	Probable	Very Poor	Onsite	1	FOD1	Retain		Extensive crown dieback, some rot in lower stem
223	Norway Maple	*Acer platanoides*	Non-Native	12.7	1	3.0	Possible	Fair	Onsite	1	FOD1	Retain		Suppressed crown, some dieback
224	Norway Maple	*Acer platanoides*	Non-Native	19.2	1	3.0	Possible	Fair	Onsite	1	FOD1	Retain		Suppressed crown, some dieback
225	Manitoba Maple	*Acer negundo*	Native	20.0	1	4.0	Probable	Poor	Onsite	1	FOD1	Retain		Entire crown leaning toward off-property house, dieback, epicormic growth
226	Norway Maple	*Acer platanoides*	Non-Native	27.4	1	4.0	Possible	Good	Onsite	1	FOD1	Retain		Minimal dieback, otherwise relatively full crown
227	Black Oak	*Quercus velutina*	Native	44.5	1	6.0	Possible	Poor	Boundary	1	FOD1	Retain		Growing on 20 degree angle, crown dieback
228	Red Oak	*Quercus rubra*	Native	55.1	1	7.5	Possible	Fair	Onsite	1	FOD1	Retain		Phototrophic growth in main leader, some scaffold dieback
229	Red Oak	*Quercus rubra*	Native	46.9	1	5.0	Improbable	Good	Onsite	1	FOD1	Retain		Some crown dieback, relatively solid stem
230	Black Cherry	*Prunus serotina*	Native	17.0	1	3.0	Improbable	Fair	Onsite	1	FOD1	Retain		Suppressed crown with some dieback
231	Manitoba Maple	*Acer negundo*	Native	20.2	1	2.5	Possible	Poor	Onsite	1	FOD1	Retain		Narrow, suppressed crown with dieback, epicormic growth
232	White Oak	*Quercus alba*	Native	42.8	1	5.3	Improbable	Fair	Onsite	1	FOD1	Retain		Slight lean with some dieback
233	Manitoba Maple	*Acer negundo*	Native	21.0	1	3.0	Possible	Fair	Onsite	1	FOD1	Retain		Epicormic growth, some dieback
234	Black Cherry	*Prunus serotina*	Native	25.4	1	3.0	Possible	Poor	Onsite	1	FOD1	Retain		Narrow crown with dieback, gypsy moth eggs
235	Black Cherry	*Prunus serotina*	Native	33.5	1	4.0	Possible	Fair	Onsite	1	FOD1	Retain		Some woodpecker damage on main stem, one-sided crown with dieback
236	Norway Maple	*Acer platanoides*	Non-Native	53.6	1	6.0	Possible	Fair	Onsite	2	FOD1	Retain		On slight lean, few sapsucker holes, small wound on lower stem, full crown
237	Manitoba Maple	*Acer negundo*	Native	12.1	1	2.0	Possible	Poor	Onsite	2	FOD1	Retain		Narrow crown with dieback, evidence of some decay
238	Norway Maple	*Acer platanoides*	Non-Native	21.4	1	2.0	Possible	Fair	Onsite	2	FOD1	Retain		Narrow, one-sided crown, relatively solid stem
239	Norway Maple	*Acer platanoides*	Non-Native	13.7	1	2.0	Improbable	Good	Onsite	2	FOD1	Retain		Crown slightly suppressed, otherwise in good condition
240	Manitoba Maple	*Acer negundo*	Native	18.1	1	0.8	Probable	Poor	Onsite	2	FOD1	Retain		Narrow crown with dieback, epicormic growth, evidence of rot on root flare
241	White Oak	*Quercus alba*	Native	35.7	1	3.0	Possible	Fair	Adjacent Property		FOD1	Retain		Slight phototrophic growth, some dieback
242	Black Oak	*Quercus velutina*	Native	60.7	1	6.5	Possible	Good	Boundary	2	FOD1	Retain		History of branch failure, relatively full crown, solid stem
243	Black Cherry	*Prunus serotina*	Native	12.9	1	4.0	Probable	Very Poor	Onsite	2	FOD1	Retain		Minimal living crown, epicormic growth, rot on main stem
244	Norway Maple	*Acer platanoides*	Non-Native	21.0	1	3.8	Improbable	Good	Onsite	2	FOD1	Retain		Slightly reduced crown due to competition with adjacent trees, otherwise relatively healthy
245	Norway Maple	*Acer platanoides*	Non-Native	21.7	1	3.5	Improbable	Good	Onsite	2	FOD1	Retain		Slightly suppressed crown, otherwise relatively healthy
246	White Oak	*Quercus alba*	Native	33.2	1	4.0	Possible	Fair	Onsite	2	FOD1	Retain		Some crown dieback, some insect feeding, irregular crown
247	Black Cherry	*Prunus serotina*	Native	17.1	1	3.0	Improbable	Good	Onsite	2	FOD1	Retain		Relatively full crown, some sand up against root flare
248	Manitoba Maple	*Acer negundo*	Native	12.3	3	2.0	Probable	Poor	Onsite	1	FOD1	Retain		Crack up main stem, some dieback
249	Black Cherry	*Prunus serotina*	Native	11.6	1	2.0	Improbable	Fair	Onsite	1	FOD1	Retain		Suppressed crown due to competition with adjacent trees, minimal dieback
250	Manitoba Maple	*Acer negundo*	Native	16.5	1	2.5	Possible	Poor	Onsite	1	FOD1	Retain		Crown dieback, upper crown on 50 degree angle
251	Black Cherry	*Prunus serotina*	Native	38.0	1	5.0	Possible	Poor	Onsite	1	FOD1	Retain		Girdling root, scaffold branch dieback, poison ivy
252	Black Cherry	*Prunus serotina*	Native	14.0	1	2.0	Improbable	Fair	Onsite	3	FOD1	Retain		Slightly suppressed crown with some dieback
253	Black Cherry	*Prunus serotina*	Native	13.8	2	3.0	Possible	Very Poor	Onsite	1	FOD1	Retain		Extensive crown dieback, epicormic growth, draped in grapevine
254	White Mulberry	*Morus alba*	Non-Native	15.6	1	2.8	Possible	Very Poor	Adjacent Property			Retain		Extensive crown dieback, draped in grapevine, main stem still relatively solid
255	White Mulberry	*Morus alba*	Non-Native	13.6	1	2.3	Probable	Poor	Adjacent Property			Retain		Crown dieback, draped in grapevine, suppressed crown
256	Red Pine	*Pinus resinosa*	Non-Native	37.5	1	1.0	Probable	Dead	Adjacent Property			Retain		Extensive rot, exfoliating bark
257	Manitoba Maple	*Acer negundo*	Native	24.6	1	4.5	Possible	Very Poor	Adjacent Property			Retain		Main leaders snapped, epicormic growth, crown dieback
258	Norway Maple	*Acer platanoides*	Non-Native	17.5	1	3.0	Improbable	Fair	Onsite	3	FOD1	Retain		Codominant leaders, slight pistol butt
259	Manitoba Maple	*Acer negundo*	Native	22.0	1	4.0	Possible	Fair	Onsite	3	FOD1	Retain		Minor dieback, codominant leaders, two former stems cut with heartwood rot
260	Black Oak	*Quercus velutina*	Native	55.4	1	6.5	Improbable	Fair	Onsite	3	FOD1	Retain		Large codominant leaders, unbalanced crown, poor branch structure, potential bat cavity but nesting material is present
261	Black Oak	*Quercus velutina*	Native	55.5	1	1.0	Probable	Dead	Onsite	3	FOD1	Retain		Previously topped, hyphae under bark, shedding bark, dead branches
262	Eastern White Pine	*Pinus strobus*	Native	20.5	1	3.5	Improbable	Fair	Onsite	3	FOD1	Retain		Pitch from a stem wound, crown thinning
263	Black Cherry	*Prunus serotina*	Native	23.0	1	4.0	Improbable	Fair	Onsite	3	FOD1	Retain		Poor branch structure, epicormic growth
264	Norway Maple	*Acer platanoides*	Non-Native	25.6	1	4.5	Improbable	Fair	Onsite	3	FOD1	Retain		Sand in root zone, unbalanced crown, two dead branches
265	Black Cherry	*Prunus serotina*	Native	13.8	2	2.5	Possible	Poor	Onsite	4	FOD1	Retain		Former leader dead, thin crown
266	Black Cherry	*Prunus serotina*	Native	22.0	1	4.5	Possible	Poor	Onsite	4	FOD1	Retain		Codominant leaders with included bark, bark wound near base, history of branch failure
267	Norway Maple	*Acer platanoides*	Non-Native	11.5	1	2.0	Improbable	Fair	Onsite	4	FOD1	Retain		Compartmentalized wounds on stem, poor branch structure
268	Norway Maple	*Acer platanoides*	Non-Native	13.0	1	2.5	Possible	Fair	Onsite	4	FOD1	Retain		Former leader dead, poor branch union
269	Black Oak	*Quercus velutina*	Native	37.3	1	5.5	Possible	Fair	Onsite	4	FOD1	Retain		Unbalanced crown, leaning north, one broken branch with fruiting bodies, minor dieback
270	Black Cherry	*Prunus serotina*	Native	12.5	1	2.5	Possible	Poor	Onsite	4	FOD1	Retain		Stem wounds with sap exuding, suppressed crown, branch rubbing adjacent tree
271	Black Cherry	*Prunus serotina*	Native	22.4	1	4.5	Probable	Very Poor	Onsite	4	FOD1	Retain		Large surface root, codominant leaders with included bark, major bark wound on main branch
272	Black Oak	*Quercus velutina*	Native	44.0	1		Possible	Dead	Onsite	4	FOD1	Retain		Topped snag
273	White Oak	*Quercus alba*	Native	31.0	1		Possible	Dead	Onsite	4	FOD1	Retain		Topped snag, shedding bark
274	Norway Maple	*Acer platanoides*	Non-Native	18.5	1	3.5	Improbable	Fair	Onsite	4	FOD1	Retain		Crooked stem, poor branch structure
275	Black Cherry	*Prunus serotina*	Native	18.1	1	6.0	Possible	Poor	Onsite	4	FOD1	Retain		Heavy lean north, thin crown, one dead branch
276	Norway Maple	*Acer platanoides*	Non-Native	23.7	1	4.0	Possible	Fair	Boundary	4	FOD1	Retain		Poor branch structure showing some leaders have failed in past, codominant leaders
277	Norway Maple	*Acer platanoides*	Non-Native	18.0	1	4.0	Improbable	Fair	Adjacent Property		FOD1	Retain		Tall crown, poor branch structure at top, compartmentalized wounds on main stem
278	Black Oak	*Quercus velutina*	Native	56.5	1	10.0	Possible	Fair	Adjacent Property		FOD1	Retain		One main limb broken then pruned, remaining limb leans heavily to east, one dead branch
279	Black Cherry	*Prunus serotina*	Native	20.6	1	3.5	Possible	Poor	Onsite	4	FOD1	Retain		Significant dieback, minor epicormic growth
280	Norway Maple	*Acer platanoides*	Non-Native	17.3	1	3.0	Improbable	Fair	Onsite	4	FOD1	Retain		Small stem crack, pronounced root flare
281	Black Cherry	*Prunus serotina*	Native	17.7	1	2.0	Possible	Fair	Onsite	4	FOD1	Retain		Poor branch structure, minor epicormic growth
282	Black Cherry	*Prunus serotina*	Native	18.4	1	2.5	Possible	Fair	Onsite	4	FOD1	Retain		Crooked stem, fruiting bodies on two branches
283	White Oak	*Quercus alba*	Native	26.4	1	5.0	Improbable	Fair	Onsite	4	FOD1	Retain		Codominant leaders, two dead branches, lean north
284	Black Cherry	*Prunus serotina*	Native	16.0	1	3.0	Improbable	Fair	Onsite	4	FOD1	Retain		Lower branches dead, poor branch structure
285	Black Cherry	*Prunus serotina*	Native	20.3	1	2.0	Possible	Fair	Onsite	4	FOD1	Retain		Crooked stem, three dead branches
286	Black Cherry	*Prunus serotina*	Native	22.8	1	3.0	Improbable	Fair	Onsite	4	FOD1	Retain		Codominant leaders
287	Norway Maple	*Acer platanoides*	Non-Native	31.2	1	3.5	Possible	Good	Onsite	3	FOD1	Retain		Two large codominant leaders, bark wound on surface root, minor stem crack
288	Black Cherry	*Prunus serotina*	Native	22.8	1	3.5	Improbable	Fair	Onsite	3	FOD1	Retain		Unbalanced crown, one dead branch
289	Black Cherry	*Prunus serotina*	Native	24.0	1	2.5	Improbable	Fair	Onsite	3	FOD1	Retain		Crooked stem, unbalanced crown, two dead branches
290	Black Oak	*Quercus velutina*	Native	40.2	1	4.0	Probable	Dead	Onsite	3	FOD1	Retain		Dead crown, shedding bark, lean east
291	Norway Maple	*Acer platanoides*	Non-Native	30.1	1	4.0	Improbable	Good	Onsite	3	FOD1	Retain		Tight branch angles near top of crown
292	Norway Maple	*Acer platanoides*	Non-Native	10.2	1	2.5	Improbable	Fair	Onsite	3	FOD1	Retain		Unbalanced crown
293	Norway Maple	*Acer platanoides*	Non-Native	21.5	1	6.0	Improbable	Fair	Onsite	3	FOD1	Retain		Several branch stubs healing well, poor branch structure, one dead branch
294	Black Cherry	*Prunus serotina*	Native	20.5	1	2.0	Possible	Fair	Onsite	3	FOD1	Retain		Codominant leaders with included bark, crooked stem, epicormic growth
295	Black Cherry	*Prunus serotina*	Native	25.3	1	3.0	Possible	Fair	Onsite	3	FOD1	Retain		Codominant leaders with included bark, two dead branches
296	Norway Maple	*Acer platanoides*	Non-Native	39.4	1	5.5	Improbable	Excellent	Onsite	3	FOD1	Retain		Slightly crooked stem
297	Black Cherry	*Prunus serotina*	Native	18.0	1	3.0	Possible	Poor	Onsite	3	FOD1	Retain		Significant dieback, fruiting bodies on two branches, lean north
298	Black Cherry	*Prunus serotina*	Native	11.3	1	3.0	Improbable	Fair	Onsite	4	FOD1	Retain		Slight lean north, thin crown
299	Red Oak	*Quercus rubra*	Native	39.7	1	4.5	Possible	Fair	Onsite	3	FOD1	Retain		One larger scaffold with dieback and splitting, main leader in good condition
300	Black Oak	*Quercus velutina*	Native	45.6	1	4.0	Possible	Fair	Onsite	3	FOD1	Retain		Irregular crown growth with some dieback, main stem relatively solid
301	Eastern White Pine	*Pinus strobus*	Native	21.8	1	3.0	Possible	Poor	Onsite	4	FOD1	Retain		Relatively extensive scaffold dieback, some woodpecker damage
302	Black Oak	*Quercus velutina*	Native	43.0	1	5.0	Improbable	Good	Onsite	4	FOD1	Retain		Minimal crown dieback, some scaffold dieback
303	Norway Maple	*Acer platanoides*	Non-Native	21.7	1	3.0	Improbable	Good	Onsite	4	FOD1	Retain		Solid stem with very minimal dieback
304	Norway Maple	*Acer platanoides*	Non-Native	33.6	1	4.0	Improbable	Good	Onsite	4	FOD1	Retain		A few minor cracks in lower stem, good root flare
305	Red Oak	*Quercus rubra*	Native	43.3	1	6.0	Probable	Dead	Onsite	4	FOD1	Retain		Although dead, main stem appears relatively solid
306	Red Oak	*Quercus rubra*	Native	40.1	1	4.5	Improbable	Good	Onsite	4	FOD1	Retain		Slight phototrophic growth in crown, some history of branch failure
307	Norway Maple	*Acer platanoides*	Non-Native	24.2	1	4.5	Improbable	Good	Adjacent Property		FOD1	Retain		Very full and vigorous crown, growing next to laneway
308	White Oak	*Quercus alba*	Native	43.4	1	6.0	Possible	Fair	Adjacent Property		FOD1	Retain		A few larger scaffold with dieback, some epicormic growth, prune if retained
309	Norway Maple	*Acer platanoides*	Non-Native	28.2	1	4.0	Improbable	Good	Onsite	4	FOD1	Retain		Vigorous crown with minimal dieback, slightly unbalanced root flare
310	Norway Maple	*Acer platanoides*	Non-Native	14.1	1	3.5	Improbable	Good	Onsite	4	FOD1	Retain		Phototrophic growth, minimal dieback
311	Norway Maple	*Acer platanoides*	Non-Native	28.5	1	4.5	Improbable	Good	Onsite	4	FOD1	Retain		Minimal scaffold dieback
312	Norway Maple	*Acer platanoides*	Non-Native	25.7	1	3.5	Improbable	Good	Onsite	3	FOD1	Retain		Slightly narrow crown due to competition with adjacent trees
313	Norway Maple	*Acer platanoides*	Non-Native	27.2	2	3.3	Possible	Good	Onsite	3	FOD1	Remove	Removal may be required depending on the final building design	Minor girdling roots with slight lean, full crown
314	Norway Maple	*Acer platanoides*	Non-Native	27.0	1	4.0	Improbable	Good	Onsite	4	FOD1	Remove	Removal may be required depending on the final building design	Narrow wound with compartemtalization, full crown
315	White Oak	*Quercus alba*	Native	49.7	1	7.0	Improbable	Good	Onsite	4	FOD1	Remove	Removal may be required depending on the final building design	A couple large dead scaffold, prune if retained
316	Black Oak	*Quercus velutina*	Native	48.8	1	4.3	Possible	Fair	Onsite	4	FOD1	Retain		Aome history of branch failure
317	Eastern White Pine	*Pinus strobus*	Native	27.2	1	4.0	Improbable	Fair	Onsite	4	FOD1	Remove	Removal may be required depending on the final building design	Competition for sunlight, unbalanced crown
318	Eastern White Pine	*Pinus strobus*	Native	13.7	1	3.0	Improbable	Fair	Onsite	4	FOD1	Retain		Unbalanced crown due to competition with adjacent tree, some dieback
319	Black Oak	*Quercus velutina*	Native	51.4	1	5.0	Improbable	Fair	Adjacent Property		FOD1	Retain		Growing on 5 degree angle, slightly unbalanced crown
320	Norway Maple	*Acer platanoides*	Non-Native	20.3	1	3.0	Improbable	Fair	Adjacent Property		FOD1	Retain		Some crown dieback, competition with adjacent tree
321	Black Cherry	*Prunus serotina*	Native	11.3	1	3.0	Possible	Fair	Onsite	4	FOD1	Remove	Removal may be required depending on the final building design	Growing on 10 degree angle, suppressed crown
322	Black Cherry	*Prunus serotina*	Native	21.5	1	0.8	Possible	Poor	Onsite	4	FOD1	Remove	Removal may be required depending on the final building design	very narrow crown with dieback
323	Black Cherry	*Prunus serotina*	Native	17.3	1	4.0	Improbable	Fair	Onsite	4	FOD1	Remove	Removal may be required depending on the final building design	Narrow crown, growing on slight lean
324	Black Oak	*Quercus velutina*	Native	23.5	1	4.0	Possible	Fair	Onsite	4	FOD1	Remove	Removal may be required depending on the final building design	Some crown dieback, crown narrow
325	White Oak	*Quercus alba*	Native	50.5	1	6.0	Improbable	Good	Onsite	4	FOD1	Remove	Site Grading	Minimal dieback
326	Norway Maple	*Acer platanoides*	Non-Native	24.7	1	4.5	Improbable	Good	Onsite	4	FOD1	Remove	Site Grading	A couple of cracks with compartemtalization
327	Norway Maple	*Acer platanoides*	Non-Native	17.0	1	4.0	Improbable	Good	Onsite	4	FOD1	Remove	Site Grading	Slightly unbalanced crown due to competition with adjacent trees
328	Norway Maple	*Acer platanoides*	Non-Native	28.5	1	4.0	Improbable	Good	Onsite	4	FOD1	Remove	Site Grading	Very little dieback, solid stem
329	Black Oak	*Quercus velutina*	Native	41.5	1	2.0	Probable	Dead	Onsite	4	FOD1	Remove	Site Grading	Dead
330	Black Oak	*Quercus velutina*	Native	54.7	1	6.5	Possible	Poor	Onsite	4	FOD1	Remove	Site Grading	Nearing poor condition, three cavities potentially suitable for bats
331	Norway Maple	*Acer platanoides*	Non-Native	22.1	1	4.0	Improbable	Fair	Onsite	4	FOD1	Remove	Site Grading	Unbalanced crown with minimal dieback
332	Norway Maple	*Acer platanoides*	Non-Native	26.7	1	4.0	Improbable	Good	Adjacent Property		FOD1	Remove	Site Grading	Light pruning in lower scaffold, full crown
333	White Spruce	*Picea glauca*	Native	25.4	1	3.0	Improbable	Fair	Adjacent Property		FOD1	Retain		Narrow crown with some dieback
334	White Spruce	*Picea glauca*	Native	19.9	1	3.0	Improbable	Fair	Onsite	4	CUS1	Remove	Site Grading	Some crown dieback, unbalanced root flare
335	White Spruce	*Picea glauca*	Native	20.0	1	4.0	Improbable	Fair	Onsite	4	CUS1	Remove	Site Grading	Some dieback
336	Black Locust	*Robinia pseudoacacia*	Non-Native	23.8	1	3.0	Improbable	Fair	Onsite	4	CUS1	Remove	Site Grading	Wound with compartemtalization, narrow crown with some dieback
337	Eastern White Pine	*Pinus strobus*	Native	33.8	1	4.5	Improbable	Good	Onsite	4	CUS1	Remove	Site Grading	Minimal light pruning in lower scaffold
338	Scots Pine	*Pinus sylvestris*	Non-Native	23.0	1	2.5	Improbable	Good	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Very minimal dieback
339	Black Oak	*Quercus velutina*	Native	63.1	1	7.0	Improbable	Fair	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Wound healing, some dieback, one cavity potentially suitable for bats
340	White Spruce	*Picea glauca*	Native	22.0	1	2.0	Possible	Poor	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Crown dieback throughout, suppressed by adjacent tree
341	Eastern White Pine	*Pinus strobus*	Native	31.0	1	3.0	Improbable	Good	Onsite	6	CUS1	Remove	Site Grading	One-sided crown with some light pruning, growing on slight lean
342	Eastern White Pine	*Pinus strobus*	Native	22.0	1	2.3	Improbable	Good	Onsite	6	CUS1	Remove	Site Grading	Some light pruning, otherwise healthy
343	Eastern White Pine	*Pinus strobus*	Native	13.3	1	1.5	Improbable	Good	Onsite	6	CUS1	Remove	Site Grading	Suppressed by adjacent oak, otherwise good condition
344	Red Oak	*Quercus rubra*	Native	56.7	1	6.0	Improbable	Good	Onsite	6	Residential	Retain		Some dieback, recommend pruning a few scaffold branches, slightly unbalanced crown
345	Norway Maple	*Acer platanoides*	Non-Native	27.0	1	4.0	Improbable	Good	Onsite	6	Residential	Retain		Minimal included bark, full crown
346	Norway Maple	*Acer platanoides*	Non-Native	55.3	1	3.0	Possible	Fair	Onsite	5	CUS1	Retain		Leader previously pruned off with some rot, small girdling root, mower damage on feeder roots with compartemtalization
347	White Spruce	*Picea glauca*	Native	31.5	1	3.5	Improbable	Good	Onsite	5	CUS1	Remove	Removal may be required depending on the final building design	Minimal dieback, some mower damage on feeder roots
348	White Spruce	*Picea glauca*	Native	34.3	1	3.0	Improbable	Fair	Onsite	5	CUS1	Remove	Removal may be required depending on the final building design	Narrow crown with some dieback, one-sided root flare
349	White Spruce	*Picea glauca*	Native	21.7	1	4.3	Improbable	Good	Onsite	5	CUS1	Remove	Removal may be required depending on the final building design	One-sided crown due to competition with adjacent trees, otherwise healthy
350	Black Oak	*Quercus velutina*	Native	41.2	1	5.0	Improbable	Fair	Onsite	5	CUS1	Remove	Site Grading	Unbalanced crown due to competition with adjacent tree, some included bark in upper branch unions
351	Black Oak	*Quercus velutina*	Native	25.4	1	5.5	Improbable	Fair	Onsite	5	CUS1	Remove	Site Grading	Phototrophic growth with 20 degree lean
352	Black Oak	*Quercus velutina*	Native	30.7	1	6.5	Improbable	Fair	Onsite	5	CUS1	Remove	Site Grading	Phototrophic growth, narrow crown with some dieback
353	Scots Pine	*Pinus sylvestris*	Non-Native	28.0	1	3.0	Possible	Fair	Onsite	5	CUS1	Remove	Site Grading	Unbalanced crown, some insect feeding up main stem
354	Tree-of-Heaven	*Ailanthus altissima*	Non-Native	39.5	1	5.5	Possible	Fair	Onsite	6	CUS1	Remove	Site Grading	Some evidence of rot on root flare, some dieback
355	Scots Pine	*Pinus sylvestris*	Non-Native	23.4	1	3.8	Improbable	Fair	Onsite	5	CUS1	Remove	Site Grading	Sapsucker damage, light pruning in lower scaffold
356	Black Oak	*Quercus velutina*	Native	11.8	1	4.0	Improbable	Good	Onsite	5	CUS1	Remove	Removal may be required depending on the final building design	Full vigorous crown
357	Black Oak	*Quercus velutina*	Native	28.3	1	4.3	Improbable	Good	Onsite	5	CUS1	Remove	Removal may be required depending on the final building design	Slightly unbalanced crown due to competition with adjacent tree, otherwise good
358	Black Oak	*Quercus velutina*	Native	53.6	1	5.0	Possible	Fair	Onsite	5	CUS1	Remove	Site Grading	Old wound on lower stem with some rot but also compartemtalization, one larger dead scaffold
359	Scots Pine	*Pinus sylvestris*	Non-Native	23.5	1	3.0	Improbable	Fair	Onsite	6	CUS1	Remove	Site Grading	One-sided crown, minimal woodpecker damage
360	Scots Pine	*Pinus sylvestris*	Non-Native	37.0	1	5.0	Improbable	Fair	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Some sapsucker damage, some crown dieback
361	Scots Pine	*Pinus sylvestris*	Non-Native	22.0	1	3.0	Possible	Poor	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Growing up through crown of adjacent trees, suppressed with dieback, some sapsucker damage
362	Black Oak	*Quercus velutina*	Native	49.6	1	5.0	Possible	Poor	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Poor structure, crown dieback, squirrel damage
363	Black Oak	*Quercus velutina*	Native	50.0	1	8.0	Improbable	Good	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Solid stem with relatively full crown
364	Scots Pine	*Pinus sylvestris*	Non-Native	22.8	1	2.0	Possible	Fair	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Insect feeding, some crown dieback
365	Norway Spruce	*Picea abies*	Non-Native	45.8	1	3.0	Possible	Fair	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Rot on one side of root flare, minimal dieback
366	White Mulberry	*Morus alba*	Non-Native	20.4	9	5.0	Improbable	Good	Onsite	Cul-de-sac	CUS1	Remove	Site Grading	Slightly suppressed due to competition with adjacent tree, minimal dieback
367	Black Oak	*Quercus velutina*	Native	63.0	1	6.0	Improbable	Good	Onsite	4	CUS1	Remove	Site Grading	A few larger scaffold branches that could be pruned off, old cuts compartmentalized
368	Norway Spruce	*Picea abies*	Non-Native	40.8	1	3.0	Improbable	Good	Onsite	4	CUS1	Remove	Site Grading	Slightly unbalanced root flare
369	Black Oak	*Quercus velutina*	Native	61.7	1	8.0	Improbable	Good	Onsite	3	FOD1	Remove	Site Grading	Irregular growth, very minimal dieback, cavity in old prune cut but not suitable for bats
370	White Oak	*Quercus alba*	Native	48.0	1	7.0	Improbable	Good	Onsite	3	FOD1	Remove	Removal may be required depending on the final building design	Growing adjacent to laneway, two upper scaffold branches to prune if retained
371	White Spruce	*Picea glauca*	Native	35.8	1	2.0	Possible	Fair	Onsite	3	FOD1	Remove	Removal may be required depending on the final building design	Very narrow crown with some dieback, mower damage on feeder roots
372	Black Oak	*Quercus velutina*	Native	71.0	1	8.0	Improbable	Good	Onsite	3	FOD1	Retain		Old prune cut cavity (not suitable for bats), one girdling root
373	Norway Spruce	*Picea abies*	Non-Native	50.2	1	5.0	Improbable	Good	Adjacent Property		CUS1	Retain		Some light pruning in lower scaffold branches
374	White Spruce	*Picea glauca*	Native	33.8	1	3.0	Possible	Fair	Adjacent Property		FOD1	Retain		One-sided root flare, some evidence of rot on root flare
375	White Mulberry	*Morus alba*	Non-Native	23.5	1	3.5	Possible	Fair	Adjacent Property		FOD1	Retain		Old prune cut with staining, epicormic growth from lower prune cut
376	Black Oak	*Quercus velutina*	Native	63.0	1	4.0	Improbable	Good	Adjacent Property		CUS1	Retain		Minimal dieback that could be pruned off, prune cuts compartmentalized
377	Norway Spruce	*Picea abies*	Non-Native	25.5	1	2.5	Improbable	Fair				Remove	Removal may be required depending on the final building design	Minor dieback; slightly supressed.
378	Black Oak	*Quercus velutina*	Native	51.3	1	7.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	English ivy; slightly unbalanced; minor dieback.
379	White Oak	*Quercus alba*	Native	43.0	1	5.5	Improbable	Fair				Remove	Removal may be required depending on the final building design	English ivy; small dead branches.
380	Norway Spruce	*Picea abies*	Non-Native	47.1	1	5.0	Improbable	Good				Remove	Removal may be required depending on the final building design	Minor english ivy; vigorous.
381	Norway Spruce	*Picea abies*	Non-Native	45.6	1	5.0	Improbable	Good				Remove	Site Grading	Minor english ivy; vigorous.
382	Black Oak	*Quercus velutina*	Native	45.0	1	5.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Dieback; dead branches; history of branch failure.
383	White Mulberry	*Morus alba*	Non-Native	14.0	4	5.0	Improbable	Fair				Remove	Site Grading	Codominant stems; dieback; potential root girdling.
384	Norway Spruce	*Picea abies*	Non-Native	58.0	1	5.0	Improbable	Good				Remove	Removal may be required depending on the final building design	Very minor dieback.
385	Black Oak	*Quercus velutina*	Native	47.2	1	6.0	Improbable	Good				Remove	Removal may be required depending on the final building design	Minor dieback.
386	Common Apple	*Malus domestica*	Non-Native	20.5	1	4.5	Possible	Fair				Retain		Removed codominant stem; water sprouts; minor root damage.
387	Norway Spruce	*Picea abies*	Non-Native	54.3	1	6.0	Improbable	Good				Retain		Maintained in private garden; minor fill at base.
388	Norway Spruce	*Picea abies*	Non-Native	46.9	1	6.0	Improbable	Good				Retain		Maintained in private garden; minor fill at base.
389	Norway Spruce	*Picea abies*	Non-Native	48.8	1	5.5	Improbable	Good				Retain		Maintained in private garden; minor fill at base; english ivy.
390	Norway Spruce	*Picea abies*	Non-Native	50.2	1	5.5	Improbable	Good				Retain		Maintained in private garden; minor fill at base; english ivy.
391	Black Oak	*Quercus velutina*	Native	33.7	1	5.0	Improbable	Good				Remove	Site Grading	Earth works below tree; healthy crown.
392	White Spruce	*Picea glauca*	Native	40.8	1	4.5	Improbable	Fair				Remove	Site Grading	Slightly exposed roots; damage to roots.
393	Scots Pine	*Pinus sylvestris*	Non-Native	21.8	1	3.0	Improbable	Fair				Remove	Site Grading	Slightly supressed; slightly unbalanced.
394	Red Oak	*Quercus rubra*	Native	60.5	1	7.0	Improbable	Good				Remove	Site Grading	Minor dead branches; good form.
395	Black Oak	*Quercus velutina*	Native	43.1	1	5.5	Improbable	Fair				Remove	Site Grading	Earthworks up to stem; dieback.
396	Black Oak	*Quercus velutina*	Native	58.4	1	6.0	Possible	Fair				Remove	Site Grading	Dead branches; earthworks up to stem; canker.
397	White Mulberry	*Morus alba*	Non-Native	14.5	1	3.0	Improbable	Fair				Remove	Site Grading	Minor dieback; off property.
398	White Mulberry	*Morus alba*	Non-Native	58.3	1	6.0	Improbable	Fair				Remove	Site Grading	Dieback; dead branches.
399	White Mulberry	*Morus alba*	Non-Native	15.6	1	3.5	Improbable	Fair				Remove	Removal may be required depending on the final building design	Asymmetrical crown to east; minor dieback.
400	Norway Spruce	*Picea abies*	Non-Native	20.9	1	3.5	Probable	Dead				Remove	Site Grading	Tall; small branches remain.
401	Norway Spruce	*Picea abies*	Non-Native	25.0	1	3.0	Possible	Poor				Remove	Site Grading	Major dieback
402	Norway Spruce	*Picea abies*	Non-Native	31.4	1	3.0	Probable	Dead				Remove	Site Grading	Tall; small branches remain.
403	Scots Pine	*Pinus sylvestris*	Non-Native	25.0	1	3.5	Improbable	Fair				Remove	Site Grading	Slightly unbalanced.
404	Scots Pine	*Pinus sylvestris*	Non-Native	34.0	1	4.5	Improbable	Good				Remove	Site Grading	Healthy crown.
405	Scots Pine	*Pinus sylvestris*	Non-Native	13.5	1	1.0	Possible	Dead				Remove	Site Grading	Snag.
406	Scots Pine	*Pinus sylvestris*	Non-Native	14.0	1	2.5	Improbable	Fair				Remove	Removal may be required depending on the final building design	Slightly supressed; minor dieback.
407	White Mulberry	*Morus alba*	Non-Native	21.7	2	5.0	Improbable	Fair				Remove	Site Grading	Dieback.
408	Colorado Spruce	*Picea pungens*	Non-Native	15.0	1	2.5	Improbable	Fair				Retain		Dieback in lower branches (not light pruning).
409	Black Oak	*Quercus velutina*	Native	62.3	1	5.0	Improbable	Fair				Remove	Site Grading	Large pruned branches; healthy remaining crown.
410	Black Locust	*Robinia pseudoacacia*	Non-Native	29.4	1	4.5	Improbable	Fair				Remove	Site Grading	Small dead branches; slightly unbalanced.
411	Scots Pine	*Pinus sylvestris*	Non-Native	22.3	1	3.0	Improbable	Good				Remove	Site Grading	Minor dieback.
412	Scots Pine	*Pinus sylvestris*	Non-Native	26.5	1	3.0	Improbable	Good				Remove	Site Grading	Minor dieback.
413	Scots Pine	*Pinus sylvestris*	Non-Native	16.9	1	2.0	Improbable	Fair				Remove	Site Grading	Minor dieback.
414	Scots Pine	*Pinus sylvestris*	Non-Native	19.2	1	2.0	Improbable	Fair				Remove	Site Grading	Tall healthy crown; susceptible to wind.
415	Common Apple	*Malus domestica*	Non-Native	16.0	2	5.0	Improbable	Fair				Remove	Site Grading	Water sprouts; dieback.
416	Norway Spruce	*Picea abies*	Non-Native	25.6	1	3.5	Improbable	Fair				Remove	Site Grading	Next to gravel driveway; damage to stem.
417	Red Oak	*Quercus rubra*	Native	41.2	1	6.0	Improbable	Fair				Remove	Site Grading	Asymmetrical crown to south; fill pile at base.
418	Red Oak	*Quercus rubra*	Native	14.8	1	3.0	Probable	Very Poor				Remove	Safety	Dead top; broken branches; next to fill pile.
419	Black Oak	*Quercus velutina*	Native	69.4	1	8.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Large healthy crown; earthworks under crown.
420	Black Oak	*Quercus velutina*	Native	54.4	1	4.0	Possible	Poor				Remove	Site Grading	Significant dieback; galls; unbalanced.
421	Black Oak	*Quercus velutina*	Native	41.1	1	3.0	Possible	Dead				Remove	Site Grading	Snag; 1 large branch.
422	Norway Maple	*Acer platanoides*	Non-Native	25.4	1	4.0	Improbable	Good				Remove	Site Grading	Minor dieback.
423	Norway Maple	*Acer platanoides*	Non-Native	31.4	1	4.0	Improbable	Good				Retain		Small dead branches.
424	Black Oak	*Quercus velutina*	Native	42.8	1	6.0	Improbable	Fair				Retain		M9nor lean west; dead branches.
425	White Elm	*Ulmus americana*	Native	11.3	1	3.5	Improbable	Good				Remove	Removal may be required depending on the final building design	Codominant stems; included bark; minor dieback.
426	Norway Maple	*Acer platanoides*	Non-Native	37.4	1	6.0	Improbable	Good				Remove	Removal may be required depending on the final building design	Minor dieback; stem near foundation.
427	Norway Maple	*Acer platanoides*	Non-Native	11.1	1	3.5	Improbable	Good				Retain		Minor lean east.
428	Black Oak	*Quercus velutina*	Native	48.4	1	2.0	Possible	Dead				Remove	Site Grading	5m tall snag
429	Norway Spruce	*Picea abies*	Non-Native	21.8	1	3.0	Improbable	Fair				Remove	Site Grading	Minor dieback; slightly sparse.
430	Norway Spruce	*Picea abies*	Non-Native	27.3	1	3.0	Probable	Dead				Remove	Removal may be required depending on the final building design	Tall; small branches remain.
431	Black Oak	*Quercus velutina*	Native	57.8	1	6.5	Possible	Fair				Retain		Asymmetrical crown to west; minor dieback; rot at base.
432	Norway Maple	*Acer platanoides*	Non-Native	28.3	1	3.5	Improbable	Fair				Retain		Minor dieback.
433	Norway Maple	*Acer platanoides*	Non-Native	35.8	1	3.5	Improbable	Fair				Retain		Minor dieback.
434	Norway Maple	*Acer platanoides*	Non-Native	20.1	1	3.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Minor dieback; small dead branches.
435	Black Oak	*Quercus velutina*	Native	17.1	1	3.5	Possible	Fair				Remove	Removal may be required depending on the final building design	Unbalanced; dieback.
436	Scots Pine	*Pinus sylvestris*	Non-Native	26.1	1	3.0	Improbable	Fair				Remove	Site Grading	Exit holes; asymmetrical crown to south.
437	Scots Pine	*Pinus sylvestris*	Non-Native	35.5	1	3.0	Improbable	Good				Remove	Site Grading	Minor dieback.
438	Scots Pine	*Pinus sylvestris*	Non-Native	22.9	1	2.5	Improbable	Fair				Remove	Site Grading	Dieback.
439	Norway Spruce	*Picea abies*	Non-Native	23.2	1	3.0	Possible	Poor				Retain		Major dieback; minor lean east.
440	Red Pine	*Pinus resinosa*	Native	24.0	1	2.5	Possible	Poor				Retain		Unbalanced; major dieback.
441	Red Pine	*Pinus resinosa*	Native	18.0	1	3.0	Improbable	Fair				Retain		Minor dieback.
442	Red Pine	*Pinus resinosa*	Native	25.0	1	3.0	Improbable	Fair				Retain		Minor dieback.
443	Red Pine	*Pinus resinosa*	Native	19.0	1	3.0	Improbable	Fair				Retain		Dieback.
444	Black Oak	*Quercus velutina*	Native	64.6	1	8.0	Improbable	Good				Remove	Site Grading	Old wound with good compartmentalization; overextended
445	White Spruce	*Picea glauca*	Native	41.8	1	4.5	Improbable	Fair				Remove	Site Grading	Mower damage to roots; minor dieback.
446	Eastern White Pine	*Pinus strobus*	Native	29.3	1	5.0	Improbable	Good				Remove	Site Grading	Asymmetrical crown to south.
447	Eastern White Pine	*Pinus strobus*	Native	17.6	1	3.5	Improbable	Fair				Remove	Site Grading	Asymmetrical crown to south.
448	Black Oak	*Quercus velutina*	Native	54.6	1	8.0	Possible	Fair				Remove	Site Grading	Leaning soth; dead branches.
449	Eastern White Pine	*Pinus strobus*	Native	25.6	1	2.5	Improbable	Good				Remove	Site Grading	English ivy; minor dieback.
450	Black Oak	*Quercus velutina*	Native	50.4	1	7.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	English ivy; overextended branches; minor dieback.
451	Scots Pine	*Pinus sylvestris*	Non-Native	17.6	1	2.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	English ivy; slightly supressed.
452	Eastern White Pine	*Pinus strobus*	Native	22.8	1	2.0	Improbable	Good				Remove	Removal may be required depending on the final building design	English ivy.
453	Black Ash	*Fraxinus nigra*	Native	63.8	1	8.0	Improbable	Fair				Remove	Site Grading	Overextended branches; minor ro; english ivy.
454	Eastern White Cedar	*Thuja occidentalis*	Native	19.5	1	2.0	Improbable	Fair				Remove	Site Grading	Small crown; vertical crack.
455	Freeman's Maple	*Acer X freemanii*	Native	65.2	1	5.0	Possible	Fair				Remove	Site Grading	Minor dieback; water sprouts; slightly exposed roots.
456	Eastern White Cedar	*Thuja occidentalis*	Native	33.2	1	3.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Pruned lower branches; minor damage at base.
457	Eastern White Pine	*Pinus strobus*	Native	42.5	1	5.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Asymmetrical crown to south; dieback.
458	Eastern White Pine	*Pinus strobus*	Native	33.9	1	3.0	Improbable	Fair				Remove	Access Road	Minor dieback; tall crown; susceptible to windthrow.
459	Eastern White Pine	*Pinus strobus*	Native	26.5	1	3.0	Improbable	Fair				Remove	Access Road	Minor dieback; tall crown; susceptible to windthrow.
460	Eastern White Pine	*Pinus strobus*	Native	35.6	1	3.0	Improbable	Fair				Remove	Access Road	Minor dieback; tall crown; susceptible to windthrow.
461	Eastern White Pine	*Pinus strobus*	Native	27.0	1	3.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Minor dieback; tall crown; susceptible to windthrow.
462	Eastern White Pine	*Pinus strobus*	Native	23.1	1	3.0	Improbable	Fair				Remove	Access Road	Minor dieback; tall crown; susceptible to windthrow.
463	Norway Spruce	*Picea abies*	Non-Native	20.0	1	2.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Minor dieback; tall crown; susceptible to windthrow.
464	Norway Spruce	*Picea abies*	Non-Native	25.8	1	2.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Minor dieback; tall crown; susceptible to windthrow.
465	Norway Spruce	*Picea abies*	Non-Native	29.1	1	2.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Minor dieback; tall crown; susceptible to windthrow.
466	Norway Spruce	*Picea abies*	Non-Native	34.8	1	3.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Wind reaction wood; fill pile near base.
467	Norway Spruce	*Picea abies*	Non-Native	31.5	1	3.0	Improbable	Fair				Remove	Removal may be required depending on the final building design	Wind reaction wood; fill pile near base.
468	Norway Spruce	*Picea abies*	Non-Native	21.8	3	3.5	Improbable	Fair				Remove	Removal may be required depending on the final building design	Access road up to stem; asymmetrical crown to south.
469	Eastern White Pine	*Pinus strobus*	Native	12.2	1	2.5	Possible	Fair				Retain		Dieback; slightly supressed.
470	Norway Spruce	*Picea abies*	Non-Native	33.6	1	6.0	Improbable	Good				Retain		Minor damage to roots.
471	Norway Spruce	*Picea abies*	Non-Native	38.1	1	5.0	Improbable	Good				Retain		Slightly exposed roots.
472	Black Oak	*Quercus velutina*	Native	79.4	1	8.0	Possible	Fair				Retain		Dieback; large broken branches; armor stone under crown.
473	Eastern White Pine	*Pinus strobus*	Native	24.2	1	3.5	Improbable	Fair				Retain		Dieback; exposed to wind.
474	Black Locust	*Robinia pseudoacacia*	Non-Native	34.6	1	4.5	Improbable	Fair				Retain		Dead branches; dieback.
475	Black Locust	*Robinia pseudoacacia*	Non-Native	51.6	1	6.0	Improbable	Fair				Retain		Dieback; dead branches.
476	Eastern White Pine	*Pinus strobus*	Native	25.0	2	2.0	Improbable	Fair				Retain		Small dead branches.
477	Red Oak	*Quercus rubra*	Native	41.5	1	7.0	Possible	Fair				Retain		Asymmetrical crown to north; small dead branches.
478	Eastern White Pine	*Pinus strobus*	Native	20.4	1	2.0	Improbable	Fair				Retain		Minor dieback.
479	Eastern White Pine	*Pinus strobus*	Native	49.6	1	5.0	Improbable	Good				Retain		Small dead branches.
480	Norway Spruce	*Picea abies*	Non-Native	19.6	1	2.5	Improbable	Fair				Retain		Minor dieback.
481	Norway Maple	*Acer platanoides*	Non-Native	23.0	2	5.0	Improbable	Fair				Retain		Dense crown; minor dieback.
482	Manitoba Maple	*Acer negundo*	Native	21.6	1	3.5	Possible	Fair				Retain		Pruned water sprouts.
483	Siberian Elm	*Ulmus pumila*	Non-Native	21.7	1	4.0	Improbable	Fair				Retain		Minor dieback; minor staining.
484	Norway Maple	*Acer platanoides*	Non-Native	11.2	1	2.5	Improbable	Fair				Retain		Minor dieback.
485	Red Pine	*Pinus resinosa*	Native	19.1	1	2.0	Possible	Fair				Retain		Dieback.
486	White Mulberry	*Morus alba*	Non-Native	65.0	1	7.0	Improbable	Fair				Retain		Small dead branches.
487	Red Oak	*Quercus rubra*	Native	20.0	1	3.0	Improbable	Fair				Retain		Asymmetrical crown to east.
488	Red Oak	*Quercus rubra*	Native	30.0	1	7.5	Improbable	Fair				Retain		Asymmetrical crown to east; minor dieback.
489	Black Oak	*Quercus velutina*	Native	63.1	1	8.0	Improbable	Fair				Remove	Site Grading	Slightly overextended branches; minor dieback.

Appendix I
Pre-consultation Summaries and Agency EIS Scoping Correspondence

THE CORPORATION OF THE CITY OF SARNIA
Planning and Building Department
255 Christina Street N. PO Box 3018
Sarnia ON Canada N7T 7N2
519-332-0330, Ext. 3295 (Tel.), 519-332-3995 (fax)
519-332-2664 (TTY)
www.sarnia.ca nancy.bourgeois@sarnia.ca

January 20, 2017

Paul Wicks
Wicks Construction and General Contracting Ltd.
537 Gladwish Drive North
Sarnia ON N7T 7H3

ATTENTION: Paul Wicks

REFERENCE: Pre-application consultation meeting notes

ADDRESS: 834 Lakeshore Road; Concession 9, Part Lot 60

DATE OF MEETING: January 5, 2017

In Attendance: Paul Wicks, Applicant
Curt Bladon, B.M. Ross and Associates Limited
Frank Fazio, Frank Fazio Law
Mario Fazio, Royal LePage Key Realty

City Staff: Max Williams, Senior Planner
Jordan Fohkens, Planner
Nancy Bourgeois, Planner
Jay Vanvlymen, Engineering Technologist
Brenda Lupi, Engineering Technologist
Ryan Chamney, Parks and Recreation Planning Manager

St. Clair Region Conservation Authority Staff:
Erica Ogden, Planner
Patty Hayman, Planning Director

Regrets: Roel Bus, Fire Prevention Officer
Greg Botting, County of Lambton Public Works

Dear Mr. Wicks:

Thank you for meeting with City Staff to discuss development proposals for the property located at 834 Lakeshore Road. This letter summarizes the keys points discussed at the meeting and additional information is provided:

1. THE PROPOSAL

The subject land is located on north side of Lakeshore Road. The lot has width of approximately 39.6m (130ft.), irregular depth of approximately 327m/335m (1076ft./1099ft.) and area of approximately 1.3 hectares (3.2 ac.). The lot is used for an existing dwelling and vehicular/driveway access is provided from Centennial Avenue over two intervening properties – including a residential property at 1636 Centennial Avenue and a City park at 1640 Centennial Avenue.

Two preliminary development proposals (concept plans) were submitted (see attached):

Options 1 & 2
Options 1 & 2 propose the extension of Tudor Close West to the east across the width of the lot. The subject land would be subdivided to create six (6) residential lots, including:

- two (2) waterfront lots on the north side of the Tudor Close West,
- two (2) lots on the south side of Tudor Close West, and
- two (2) lots with frontage on Lakeshore Road.

Both options would provide for abutting lands to the east to potentially be subdivided in the future.

2. COMMENTS

a. Sarnia Official Plan
The subject land is designated "Urban Residential" in the Sarnia Official Plan and the shoreline area is designated "Natural Hazards" (see Maps 7 & 8 – Land Use Plan). The natural hazards areas are also shown as "Great Lakes Shoreline Management Areas" on Map 6 – Natural Hazards.

Map 1 – City Structure Plan identifies the subject land as a "Stable Residential Area" and as part of the City's "natural heritage system".

The wooded area on the lot is identified as "Natural Areas - Type B" (see Map 5 – Natural Heritage).

The Official Plan may be accessed through this link: http://sarnia.ca/doing-business/property-development/planning-documents/official-plan Selected maps and policies relevant to this application are attached.

i) Natural heritage policies

As noted, part of the subject land and surrounding areas are designated as "Type B Natural Areas" by the Official Plan (Map 5). This designation reflects that the site contains a significant woodland feature. Significant woodlands may overlap with other significant natural heritage features such as the habitat of endangered species and/or threatened species, or significant wildlife habitat.

Conservation uses are the main permitted uses in "natural areas" [Policy 4.3.3(2), p. 41]. Policy 4.3.3(4), p. 42 requires that development shall be directed away from natural areas. In certain instances, development and site alteration may be considered in 'Type B' natural areas, provided that such development or site alteration does not negatively impact natural features or their ecological functions, and an Environmental Impact Study would be required, including confirmation of the boundaries of the feature (Policy 4.3.3(5). The detailed criteria for Environmental Impact Studies (EIS) are listed in Policy 4.3.3(9), p. 44.

The terms of reference for the study would be developed by the applicant in consultation with City staff and the Conservation Authority. Please also refer to the SCRCAs written comments (attached). As part of an EIS, a preliminary screening for species-at-risk should be completed (see Technical Memo from Ministry of Natural Resources, attached.)

Policy 4.3.3(10) sets out that lot creation in natural areas is discouraged and severances may only be permitted for the conveyance of land for the purpose of environmental protection or for minor boundary adjustments. Therefore, an official plan amendment would be required before a plan of subdivision application could be considered. The outcome of an Official Plan amendment application would be dependent on the findings of the Environmental Impact Study.

ii) Urban Residential Policies

Apart from the restrictions of policy 4.3.3(10) noted above, any development in an Urban Residential area would be required to be compatible with the scale, existing & planned physical character and patterns of surrounding development, and contingent upon the availability of adequate servicing infrastructure.

In support of a Plan of Subdivision application, a planning rationale is required to demonstrate that the proposed development would be a compatible form of development for the site and surrounding area.

A Planning Rationale Terms of Reference is attached.

iii) Flooding and Erosion hazards

The *natural hazards* designation reflects the *flooding hazard* and *erosion hazard* limits associated with Lake Huron, as defined by provincial standards. According to the Shoreline Management Plan prepared by the St. Clair Region Conservation Authority (SCRCA), the subject land is within Shoreline Management Area 1 (SMA1) [a high hazard *flooding hazard* area] and Shoreline Management Area 2 (SMA2) [a medium hazard *erosion hazard* area between the limits of Area 1 and the Stable Slope Allowance plus a 30m erosion allowance].

The Official Plan does not permit lot creation within Shoreline Management Areas 1 and 2. However, the creation of lots that extend into SMA1 and SMA2 may be permitted, provided that new buildings and structures conform with applicable requirements, and the hazardous lands area is appropriately zoned and/or registered on the title of the lands [Policy 4.3.2(3.1), bottom of chart, p. 35].

To support lot creation that extends into shoreline management areas – a coastal study, prepared by a qualified person, is required to demonstrate that flooding and erosion hazards can be appropriately addressed. Terms of reference for this study would be prepared by the applicant, in consultation with the SCRCA and peer review of the study by a coastal engineer retained by the Conservation Authority would be required. Please also refer to the CAs comments, attached.

b. Comments from St. Clair Region Conservation Authority

Comments from the St. Clair Region Conservation Authority regarding natural hazards and natural heritage are attached.

c. Zoning By-law

The subject land is zoned "Urban Residential 1 (UR1)" and "Shoreline Management Area 1 and 2" by Map 3 of Zoning By-law 85 of 2002. The Permitted Uses and Zone Regulations are attached. Any development proposal would need to conform with the Zoning By-law requirements.

d. Lakeshore Road – Arterial County Road

The property has frontage of approximately 39.6m (130ft.) along Lakeshore Road (a 20m Arterial County Road).

The County of Lambton Public Works Department has indicated in preliminary comments that a land dedication for a road widening strip of 3.05m (10 ft.) along Lakeshore Road would be required to provide for the County's planned arterial road width of 26.2m (86 ft.). New driveways would require an entrance permit.

For further information about the County Road, please contact Greg Botting, County of Lambton, Public Works Technician, at 519-845-0809, Ext. 5299.

e. Site servicing

Preliminary comments from the Engineering Department are as follows:

- All road excavation and lot servicing is to be constructed as per City of Sarnia current Standards
- Existing services on Lakeshore Road will be required to be videoed. Service sizes are to be a minimum of 150mm diameter for storm and sanitary.
- Water service to be a minimum 20mm diameter. Service must be excavated to verify size.
- With discussion from Public Works on January 11, 2017, concerns were noted regarding water quality if the looped watermain from Tudor Close East to West was cut off. Engineering/Public Works is requesting the design to allow for the waterline to remain through the properties.
- Reports required by the engineer include: Servicing, geology, stormwater management

For more information and terms of reference for study requirements, please contact Brenda Lupi or Jay VanVlymen in the Engineering Department, at 519-332-0330, Ext. 3355 (Brenda) or Ext. 3282 (Jay).

f. Utilities

The Official Plan requires that underground utilities, including electric power lines and telephone lines, will be required in all new developments within Residential Areas. All new electrical service layouts shall be reviewed and approved to the satisfaction of Bluewater Power.

Joint Trenching meetings are held monthly to discuss projects that require new or upgraded electrical services, telecommunications lines (Bell, Cable), and natural gas lines.

For further information about electrical service layout options and requirements, please contact Brandan Smyth, Bluewater Power, at 519-337-8201, Ext. 2246.

For more information about monthly Joint Trenching Meetings, please contact Brenda Lupi, Development Technologist, 519-332-0330, Ext. 3355.

3. APPLICATION SUBMISSION REQUIRMENTS

a. Plan of Subdivision application

For this proposal, a plan of subdivision application and official plan amendment application are required. Application forms are provided on the City's web site at this link http://sarnia.ca/doing-business/property-development/permits-and-applications/permits-and-applications The 2017 plan of subdivision application fee is $7,500.00 and the OPA fee is $4,825, plus additional fees required by the Conservation Authority.

b. Official Plan Amendment

As noted, Policy 4.3.3(10) sets out that lot creation in natural areas is discouraged and severances may only be permitted for the conveyance of land for the purpose of environmental protection or for minor boundary adjustments. Any lot creation proposal – other than a minor boundary adjustment, would require a site specific official plan amendment, and such amendment could not be supported unless it was clearly demonstrated through an Environmental Impact Study that the feature and its functions would not be negatively impacted.

Staff would recommend that before proceeding with all study requirements – that an Environmental Impact Study first be completed to evaluate the ecological significance of the woodland feature.

Staff notes that the City's new (2014) Official Plan came into full force and effect on July 15, 2016. Section 22(2.1) of the Planning Act states that "No person or public body shall request an amendment to a new official plan before the second anniversary of the first day any part of the plan comes into effect". Therefore, applications to amend the Official Plan are not permitted until July 15, 2018. Section 22(2.2) requires that an amendment could be considered before July 15, 2018 – but only if Council declares by resolution that a request to amend the City's Official Plan may be considered.

c. Complete Application Forms

It is required that the application forms be completed, signed, and submitted with the required fees, prescribed information and supporting studies.

d. Prescribed information

Section 51(17) of the Planning Act provides a list of the prescribed information required for a plan of subdivision application. A survey with this information, prepared by an Ontario land surveyor, will be required as part of a complete application (see attached list of Prescribed information).

e. Supporting studies

As noted in this letter, a preliminary list of required supporting studies includes the following:

- Environmental Impact Study (and Official Plan Amendment application)
- Planning rationale
- Coastal report to address natural hazards
- Servicing study
- Geology
- Stormwater management
- Additional studies may be requested, if required upon application review.

ADDITIONAL COMMENTS:

NOTE: The Pre-application meeting identifies the requirements and materials to assist the applicant in their submission of a complete planning application. The comments generated from the Pre-application meeting do not constitute an approval nor does it reflect the position of the Planning and Building Department.

_____

NANCY BOURGEOIS
PLANNER I

Attachments:

1. Development concept plans (Options 1 and 2)
2. Selected Official Plan maps and policies
3. Planning Rationale Terms of Reference
4. St. Clair Region Conservation Authority comments
5. Ministry of Natural Resources Technical Memo – Screening process for species-at-risk
6. Permitted Uses and Zone Regulations for the 'Urban Residential 1 Zone (UR1)' and Shoreline Regulations from Zoning By-law 85 of 2002
7. List of prescribed information for complete application

Matt Pearson

From: Curt Bladon <cbladon@bmross.net>
Sent: February 8, 2017 5:58 PM
To: Matt Pearson (mpearson@bmross.net)
Subject: FW: 16289- Wicks Construction- 834 Lakeshore Road, Extension of Tudor Close West

Regards,

Curt Bladon, P.Eng.
B.M. Ross and Associates Limited

From: Nancy Bourgeois [mailto:nancy.bourgeois@sarnia.ca]
Sent: Wednesday, February 8, 2017 4:49 PM
To: 'Sarah Hodgkiss' <shodgkiss@scrca.on.ca>; Curt Bladon <cbladon@bmross.net>; Erica Ogden <eogden@scrca.on.ca>
Cc: Frank@faziolaw.net; wicks1@live.ca
Subject: RE: 16289- Wicks Construction- 834 Lakeshore Road, Extension of Tudor Close West

Yes. One of the OP policies is quite restrictive. It is noted in my written response that I sent out. Lot creation in a 'Type B Natural Area' is not permitted. Could we have a preliminary site visit to look to look at the feature? Nancy

Nancy Bourgeois
Planner I
City of Sarnia
255 Christina Street North
Sarnia, ON N7T 7N2
Phone: 519-332-0527 Ext. 3295
www.sarnia.ca

Discoveries That Matter
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From: Sarah Hodgkiss [mailto:shodgkiss@scrca.on.ca]
Sent: Wednesday, February 08, 2017 4:41 PM
To: Curt Bladon; Erica Ogden
Cc: Nancy Bourgeois; Frank@faziolaw.net; wicks1@live.ca
Subject: RE: 16289- Wicks Construction- 834 Lakeshore Road, Extension of Tudor Close West

Hi Curt,

Matt Pearson

From: Curt Bladon <cbladon@bmross.net>
Sent: February 22, 2017 11:50 AM
To: Matt Pearson (mpearson@bmross.net)
Subject: FW: 16289- Wicks, 834 Lakeshore Road

Matt:

This is follow up to the email received from Nancy Bourgeois on Friday.

I had a text from Wicks today asking if we can prepare that summary of scope of work and estimate of costs so he can decide if this project is worth pursuing or not.

He is asking what we think his chances are on getting this pushed through.

Probably hard to answer that until we get some initial input from NRSI?

Regards,

Curt Bladon, P.Eng.
B.M. Ross and Associates Limited

From: Curt Bladon [mailto:cbladon@bmross.net]
Sent: Tuesday, February 21, 2017 11:18 AM
To: Frank@faziolaw.net; wicks1@live.ca
Subject: FW: 16289- Wicks, 834 Lakeshore Road

FYI…

The following is in response to an email received from Nancy on Friday (bottom of this thread)

Regards,

Curt Bladon, P.Eng.
B.M. Ross and Associates Limited

From: Curt Bladon [mailto:cbladon@bmross.net]
Sent: Tuesday, February 21, 2017 11:16 AM
To: Nancy Bourgeois <nancy.bourgeois@sarnia.ca>
Subject: RE: 16289- Wicks, 834 Lakeshore Road

Hi, Nancy:

I have not had any luck reaching you yet today by telephone, so I thought I would follow up with a quick email.

We will be contacting Natural Resource Solutions Inc. (NRSI) tomorrow to discuss the project, and the input received to date from the City and SCRCA.

NRSI is a firm of Aquatic, Terrestrial and Wetland Biologists. They have significant experience with preparation of Environmental Impact Studies and have worked on other projects under the jurisdiction of the SCRCA.

We will have them prepare a draft Terms of Reference for an EIS for the project for submission to the City and SCRCA for review, comment and approval before proceeding with the investigation.

However, I don't believe that detailed information is available for this site. The natural feature and its ecological functions have not likely been evaluated and its level of significance not determined.

Before development can even be contemplated – a Phase 1 Environmental Impact Study is required to establish what the feature is and its ecological functions and level of significance.

A scoped evaluation is recommended.

- Map the feature (show the boundaries of the feature on the subject land and surrounding properties) with area noted
- Tree & plant inventory (species list)
- Bird survey
- Wildlife survey
- What are the ecological functions and hydrological functions?
- What is the significance of the feature and its functions?

Other Information to be included would include:
a) an inventory of existing trees, health, and size;
b) indicate the impact of development on existing trees and the wildlife habitat that they provide;
c) indicate measures necessary to reduce the negative effects of development, including the identification of opportunities to restore tree and woodland health through pruning, transplanting, replanting and landscaping;
d) identify all trees to be removed and all trees to be preserved;
e) indicate a plan for the replacement of all removed trees with suitable quality stock, preferably of indigenous species and the maintenance of replacement trees to a free to-grow stage;
f) be included in the development agreement; and
g) incorporate the requirements of any applicable Environmental Impact Study.

To comment on how the proposed development might impact on the trees and their wildlife habitat, some vegetation and wildlife surveys will need to be done this spring.

This type of study will need to be completed by a qualified person, to the satisfaction of the SCRCA. They may be able to offer a list of qualified persons.

A draft terms of reference should be prepared by the consultant before the evaluation is undertaken.

Additionally – a coastal report is required. The SCRCA will have specific study requirements for the coastal report.

If an official plan amendment is required – a special request would need to be made to Council before such application could be considered. Please see this link: http://sarnia.ca/doing-business/property-development/permits-and-applications/official-plan-amendments

If a meeting would be of assistance to you and your client – please let me know. I suggest that it be a joint meeting with CA staff.

Thank you, and hopefully we could talk about this further next week. Nancy

City of Sarnia

Pre-Application Report

834 Lakeshore Road

Date: Tuesday, October 22, 2019

File Number: PRE-46-2019

Owner: Paul Wicks

Applicant: Zelinka Priamo Ltd. c/o Harry Froussios

Description of the Proposal:
The applicant has proposed Official Plan and Zoning By-law Amendments for the proposed extension of Tudor Close West to facilitate the development of 2 new residential lots to the north, 2 new residential lots to the south and 2 new residential lots off Lakeshore Road all on municipal services. A similar application was refused by City Council on November 5, 2018.

Eric Hyatt, Planner I
Community Development Services & Standards
255 Christina Street North
PO Box 3018
Sarnia, ON N7T 7N2
519-332-0330 extension 3285
eric.hyatt@sarnia.ca

Eric Hyatt, Planner I

Pre-Application Process

This package includes preliminary comments to guide future development applications associated with this particular proposal.

Please note that while we endeavor to provide as thorough a set of comments as possible, these comments are preliminary based on the information submitted to-date and the current planning requirements. As such, any formal future application may require additional information, fees and/or applications to advance.

Please find below the project proposal that is the subject of this review. Following this, the expectations of this process and the structure of this report are provided along with the findings of this preliminary review.

Expectations of Pre-Application

Purpose of this Process

In accordance with the Pre-Application Protocol the enclosed information is intended to educate and inform customers, ahead of making a formal development application, about the expected future submission requirements, the current regulatory framework, and any key issues with respect to the current proposal.

Outcome from this Process

Pre-Application does not imply or suggest any future recommendations or decisions whatsoever on behalf of the Corporation of the City of Sarnia, staff, or agencies to either support or refuse any future planning applications. This service will not shorten the City's standard processing timelines, or guarantee that a future application will be approved.

Timelines

The comments provided by City staff in the Pre-Application Consultation Meeting notes are solely for the specific application(s) discussed. The comments are based on the information provided by the applicant and documents available at that time. If the development does not proceed within **six months**, the applicant is advised to consult with the Planning Department prior to making (a) formal application(s) to find out if there have been changes to policies, regulations or procedures.

A further Pre-Application Consultation Meeting is required if the application(s) discussed are substantially revised or have not been submitted within **one year** of the meeting notes.

NOTE: It must be noted that all formal planning applications are evaluated against the planning framework that is in place at the time they make that application, regardless of the content of the Pre-Application form.

PART 1: Current Property Status

Current Planning Context

Existing Official Plan Designation:	Urban Residential/Natural Hazard
Existing Zoning By-Law Number:	85 of 2002
Existing Zone:	Urban Residential 1 (UR1)
Current site area:	1.30ha
Current site frontage:	40m

	Yes	No	Unclear
Does the proposal conform to the policies of the Official Plan?	☐	☒	☐
Does the proposal conform to the permitted uses in the zone?	☒	☐	☐
Does the proposal conform to the provisions of the zoning by-law?	☒	☐	☐
Will the proposal be subject to Site Plan Control?	☐	☒	☐
Is there an existing registered Site Plan Control Agreement?	☐	☒	☐

If yes, please provide the city file number:

Cultural Heritage Context

	Yes	No
Is this property on the City's Heritage Properties Register?	☐	☒

If yes, which level of heritage protection / recognition applies to this property?

- Individual Property Designation (Part IV) ☐
- Non-designated property (Listed property) ☐
- Provincial Heritage Building ☐
- Cultural Heritage Landscape ☐
- Federal Heritage Building ☐

	Yes	No
Is this property adjacent to any protected heritage properties?	☐	☒

If yes, what is the address(s)?

Is this property in an area of archaeological significance?	☒	☐
Given this, is an Archaeological Assessment required?	☒	☐

PART 2: Preliminary Planning Framework & Next Steps

NOTE: The following is a description of how well the proposal appears to meet the City's land use objectives and concludes with preliminary comments to guide an applicant in advancing this proposal. Please note this assessment is purely advisory as this process has not completed a detailed review.

The subject land is located on north side of Lakeshore Road. The lot has width of approximately 39.6m, irregular depth of approximately 327m/335m and area of approximately 1.3 hectares. The lot is used for an existing dwelling and vehicular/driveway access is provided from Centennial Avenue over two intervening properties – including a residential property at 1636 Centennial Avenue and a City park at 1640 Centennial Avenue.

Policy and Regulatory Framework

Official Plan

The subject land is identified as 'Stable Residential Area' and within the City's 'Natural Heritage System' on Map 1 - City Structure, and designated 'Urban Residential' and 'Natural Hazards' on Maps 7 and 8 - Land Use Plan. The natural hazards areas are also shown as 'Great Lakes Shoreline Management Areas' on Map 6 - Natural Hazards and the wooded area on the lot is identified as 'Natural Areas - Type B' on Map 5 - Natural Heritage.

Natural Heritage

As mentioned above, the subject lands are within an area identified as 'Natural Areas - Type B'. Natural features identified as natural areas form part of a larger system, and shall be protected from development with a view to enhancing the entire ecosystem. Uses such as conservation, forestry, wildlife areas and passive recreation are permitted (4.3.3). Development should be directed away from natural areas. In certain instances development and site alteration may be permitted in 'Type B' natural areas provided that such development or site alteration does not negatively impact natural features or their ecological functions (4.3.3.4). The completion of an EIS is required. An EIS completed as part of OPA No. 12 in 2018 which identified the feature as significant.

Policy 4.3.3.10 sets out that lot creation in natural areas is discouraged and severances may only be permitted for:

a) the conveyance of land to public bodies or agencies engaged in the protection, reestablishment and management of the natural environment; and
b) for minor lot boundary adjustments.

An official plan amendment would be required before a plan of subdivision application could be considered. The outcome of an Official Plan amendment application would be dependent on the findings of the Environmental Impact Study.

Natural Hazards

The *natural hazards* designation reflects the *flooding hazard* and *erosion hazard* limits associated with Lake Huron, as defined by provincial standards. According to the Shoreline

Management Plan prepared by the St. Clair Region Conservation Authority (SCRCA), the subject land is within Shoreline Management Area 1 (SMA1) [a high hazard *flooding hazard* area] and Shoreline Management Area 2 (SMA2) [a medium hazard *erosion hazard* area between the limits of Area 1 and the Stable Slope Allowance plus a 30m erosion allowance].

The Official Plan does not permit lot creation within Shoreline Management Areas 1 and 2. However, the creation of lots that extend into SMA1 and SMA2 may be permitted, provided that new buildings and structures conform with applicable requirements, and the hazardous lands area is appropriately zoned and/or registered on the title of the lands [Policy 4.3.2(3.1)].

To support lot creation that extends into shoreline management areas – a Coastal Study, prepared by a qualified person, is required to demonstrate that flooding and erosion hazards can be appropriately addressed.

Urban Residential
Further to the above, any development in an Urban Residential area would be required to be compatible with the scale, existing & planned physical character and patterns of surrounding development, and contingent upon the availability of adequate servicing infrastructure.

Zoning By-law
The subject land is zoned “Urban Residential 1 (UR1)” and “Shoreline Management Area 1 and 2” by Map 3 of Zoning By-law 85 of 2002. The City’s Zoning By-law is available online at https://www.sarnia.ca/planning-zoning-by-law-document/.

The applicant has proposed a site specific zoning for the proposed development.

Next Steps to Advance this Proposal

1. Coordinate review of EIS with SCRCA.
2. Submit complete applications for combined Official Plan and Zoning By-law Amendment.

PART 3: Preliminary Technical Review Comments

1. If the Official Plan and Zoning By-law Amendments are approved by Council a Plan of Subdivision application will be required.
2. All road excavation and lot servicing to be constructed as per current City of Sarnia Standards.
3. Existing services on Lakeshore Road will be required to be videotaped to be reviewed by the Engineering Department, minimum service size to be 150mm.
4. Water services to be excavated to verify size, minimum size shall be 20mm diameter.
5. The existing watermain running between Tudor Close East and West shall remain.
6. Engineer reports for servicing, geology and stormwater management will be required.
7. The County of Lambton will require a 3.05m (10 ft.) road widening along Lakeshore Road to provide for the County's planned arterial road width of 26.2m (86 ft.).
8. All new driveways along Lakeshore Road would require an entrance permit.

St. Clair Region Conservation Authority

- The concept plan received does not correctly identify the shoreline management areas. With the initial application a report was prepared by Shoreplan Engineering detailing the location of the shoreline hazards.
- With regards to the significant woodland, SCRCA has previously provided extensive comments on the application. With the information provided to date, there has been no substantial change in the application. The study prepared by Natural Resource Solutions Inc. submitted with the initial application identified the woodland as significant. The proposal continues to include lots within a significant woodland, which is not supported through the Official Plan policies.

Conservation Authority's fees for the application.

- Official Plan Amendment - $1,040 (Hazard & Heritage)
- Zoning By-law Amendment - $1,040 (Hazard & Heritage)
- Environmental Impact Study - $1,375.00

The Conservation Authority's fees are reviewed annually by our Board of Directors and will be updated effect January 1, 2020. The Environmental Impact Study fee should be paid when the report is submitted. The application fees can be paid when the application is made.

Fees can be paid by credit card by calling into the office at 519-245-3710 extension 228 or by cheque made payable to St. Clair Region Conservation Authority.

PART 4: Required Applications

NOTE: Based on the information submitted and reviewed to-date, the following planning applications will be required to advance the proposal:

City of Sarnia Applications

Sarnia City Council

Official Plan Amendment (OPA)	☒	Zoning By-Law Amendment (ZBA)	☒
Draft Plan of Subdivision (DPS)	☐	Draft Plan of Condominium (DPC)	☐
Final Plan of Subdivision (FPS)	☐	Final Plan of Condominium (FPC)	☐

Delegated Authority

Site Plan Control		Committee of Adjustment	
New Agreement (SPC)	☐	Minor Variance (MV)	☐
Major Amendment	☐	Consent	☐
		Permission	☐

External Agency Applications

NOTE: Upon the receipt of a formal application, review and approval of the proposal may be required from external agencies. This may result in additional applications and/or permit fees beyond those identified above and below through this Pre-Application review:

St. Clair Region Conservation Authority (SCRCA)	☒
County of Lambton	☒
CN Rail	☐
Ministry of Transportation	☐

PART 5: Planning Application Submission Requirements

Required Planning Approvals & Anticipated Submission Requirements	Combined OPA/ZBA
Plans for Submission:	
Conceptual Site Plan	**X**
Floor Plans	
Architectural Elevations	
Grading Plan	
Landscaping Plan	
Site Plan Drawing Package	
Draft Plan of Subdivision/Condominium	
Final Subdivision Drawing Package	
Reports for Submission:	
Planning Justification	**X**
Demonstration Report	
Servicing Report	**X**
Stormwater Management Report	**X**
Tree Inventory Study	
Tree Preservation Plan	
Traffic Impact Study	
Parking Study	
Geotechnical/Hydrogeology Study	**X**
Environmental Impact Study	**X**
Noise / Vibration Study	
Environmental Site Assessment (Phase1)	
Record of Site Condition	
Archaeological Report	
Heritage Impact Statement (HIS)	
Urban Design Study	
Sun/Shadow Study	
Coastal Study	**X**

PART 6: Making a Future Planning Application

Requirements for a Complete Application

All future applications for this proposal **will not proceed without:**

1. Completed application form(s); and
2. Submission of all of the technical requirements identified in this form; and
3. Payment in full of all required fees.

It is important to note that the need for additional studies and plans may result during a future formal application review. If this is the case, city planning staff will notify the applicant of outstanding materials that are required within the 30 day application review period under the *Planning Act*.

Potential for Additional Submission Requirements

Detailed compliance with all land use planning requirements is not completed as part of a Pre-Application. This is completed during the processing stage of a formal complete application. As such, any additional amendments or non-compliance identified as part of a future application review may cause delays and / or require additional applications and / or submission requirements in support of the proposal. All applicants are advised to seek the support of professionals when moving forward with a planning application.

PART 7: Required Fees and Additional Costs

Planning Application Fees

For planning application fees, please refer to the most current Planning Fees for Service to confirm the fee estimate for the planning applications identified in this report. Please note all fees generally increase **January 1st of each year** and all fees are generated based on the day an application is submitted.

Additional Fees and Costs

It is important to remember that the planning application fees are not the only fees that will be required to advance a potential proposal. There are many other fees and general project costs associated with the lifecycle of a development project and it is important to be aware of these costs and to understand what fees and costs are collected at what time in the lifecycle of a project.

To support customers with their decision making, we have provided the following list as a guide to highlight where required fees are generally charged in the lifecycle of a project, or where an additional future fee may come from, to provide clarity and support.

This list is a guide and as such, not all fees and costs apply to each and every application and there may be additional financial requirements not identified herein.

Planning Services:

- Preparing Technical Studies
- Preparing Plans
- Legal Survey
- Planning Application Fees
- Public Notice Sign Costs
- Updates to Technical Studies
- Peer Review of Technical Studies
- Outside Agency Fees
- Property Taxes
- Security Requirements
- Legal Fees for Preparation and Registration of Agreements
- Cash-in-Lieu payments & Appraisal Fee
- Land Conveyance Costs
- Future Security Release Fees
- Engineering review fee

Building Services:

- Preparing Detailed Submission Drawings
- Building Permit Fees
- Changes to Detailed Submission Drawings
- Preparation of an Alternative Solution
- Impost Fees
- Development Charges

Appendix A: Mapping Package

NOTE: Please find enclosed the mapping package that informs the planning context for this proposal as well as the original submission that was evaluated through this review:

SCRCA Comments – September 14, 2018

Pre-Application Meeting Notes – January 20, 2017

Applicants Submission Materials

Appendix II
Agency Comments on 2017 EIS and NRSI Responses

St. Clair Region Conservation Authority – Comments on November 2017 EIS (dated September 14, 2018)

Comment Number	Comment	Response
1.	The proposed development would require compensation planting of 0.38 ha of woodland, under the conditions described in the Sarnia Official Plan policy of reforestation requirements. Map 3 of the EIS shows the proposed building envelope and grading limits, which would represent the area of tree removal. Based on this map, there does not appear to be sufficient space available on the property to accommodate the required trees on site. Before moving forward, the proponent will need to identify a suitable area on which to conduct tree planting. SCRCA is available to review proposed options to ensure they meet the City of Sarnia's natural heritage objectives. (Pg. 3-4)	The updated EIS incorporates discussion about the City's Official Plan policy requirements for woodland compensation, what this requirement would amount to for the proposed development, and some guiding principles that will be followed in planning for the compensation woodland area planting. This would include the need to consider appropriate landscape context, desired species composition, adjacency to existing city natural heritage sites, and ecological function objectives for the compensation woodland area. The area of woodland compensation planting has been updated based on the revised development plan as described in Section 5.3.1 of the EIS. The EIS also recognizes that if municipal dual-zoning of the lots and/or restrictive covenants, such that the residual Significant Woodland is placed under protective zoning, is not feasible as an impact mitigation measure, then the entirety of the Significant Woodland area on the subject property will need to be compensated for at the off-site location. The proponent will identify a suitable woodland compensation site in consultation with Project Team members, and SCRCA and City staff, in conjunction with the ongoing development approvals process.
2.	If any alterations to this plan are required, the EIS should be updated to reflect any additional impacts to the significant woodland (e.g. additional tree clearing) and mitigation. (Pg. 4)	Section 5.0 of the EIS (Impact Assessment) has been updated to reflect the revised development plan for the property. This includes updates to the direct impacts that will occur, additional consideration for post-development human disturbances to the woodland, and associated recommendations for mitigation and compensation.
3.	SCRCA does not support the installation of a permanent fence within the significant woodland feature, which would further fragment the remaining woodland. SCRCA recommends instead the use of minimally invasive permanent markers. (Pg. 4)	Noted. The EIS has been updated to replace the recommendation for rear-lot permanent fencing with the use of lot boundary markers.
4.	NRSI has recommended that site-specific zoning be used to protect the remaining natural heritage features in the rear-	The updated Impact Assessment (Section 5.0 of the EIS) has been structured to consider scenarios in which protective dual-zoning of the lots and/or restrictive

	yards of the proposed lots. Municipal staff should consider if this type of site-specific zoning is available for this subdivision, and what enforcement measures can be utilized by the City. (Pg. 4)	covenants is and is not a feasible option for mitigating induced impacts to the residual Significant Woodland. It is not known at the time of writing whether dual-zoning and/or restrictive covenants represent feasible mechanisms for mitigation.
5.	As the completion of development will be taking place through multiple landowners, agreements must be in place moving forward to ensure that all mitigation measures are implemented. It should be clear how and when tree planting, landscaping plans, landowner education, Species at Risk (e.g. bat) mitigation activities are taking place, and when review and sign off is required by approval authorities. (Pg. 4)	As stated in Section 5.6, restoration of the remaining woodland area on the subject property would take place prior to the sale of lots and subsequent lot-level vegetation clearing to accommodate the individual customized house plans. Restoration would occur after the proponent has completed construction of the cul-de-sac extension and servicing installations on the property. The details and timing of bat habitat mitigation activities will be determined in consultation with the MECP. Installation of bat boxes, if required, will occur in conjunction with the woodland restoration plan and prior to the sale of lots to individual owners. Review and sign-off of these activities by SCRCA and/or City staff will be undertaken following their completion and prior to the sale of individual lots to new owners. Landowner educational materials will be provided to each new homeowner upon their purchase of a lot.
6.	Policy 5.12.5 of the official plan regarding tree preservation plans…also states that a tree preservation plan shall "*indicate a plan for the replacement of all removed trees with suitable quality stock, preferably of indigenous species and the maintenance of replacement trees to a free-to-grow stage*". It does not specify that dead, dying or non-native species are exempt from replacement, which the report seems to suggest. (Pg. 4-5)	The EIS report has been updated to account for all trees requiring removal, regardless of condition, in determining tree compensation requirements.
7.	NRSI have stated that the woodland in its current state is degraded and would benefit from improvements, such as the removal of invasive species and planting of native species within the site to restore diversity and habitat function. … While the removal of <u>invasive</u> non-native species may be beneficial to the woodland, the removal of	The removal of non-native species as part of the restoration and enhancement plan will primarily target invasive species such as Norway Maple as clarified in the updated Section 5.6.

	non-invasive non-native species may cause more disruption to the ecosystem than leaving them in place, unless the process is carefully managed. (Pg. 5)	
8.	The proposed removal of non-native species and infill of native species within the remaining woodland would require several years of monitoring and management to establish. Given the landscape context, invasive species are likely to continue to move into the woodland from the adjacent properties and from the existing seedbank. Therefore, SCRCA has concerns with the long-term feasibility of maintaining the "improved quality" of the woodland in this manner. Policy 5.12.6 of the Sarnia Official Plan states "*to avoid restoration efforts that are well-intentioned but ineffective, restoration strategies shall e) be self-sustaining once completed, requiring minimum maintenance or operation*". (Pg. 5)	The proposed restoration or forest enhancement is intended to remove non-native species and open the canopy of the forest. Black Oak woodlands which historically extended along the shoreline in the vicinity of the study area are reliant on disturbance, historically fire, to maintain an open forest structure that allows for ongoing oak recruitment and persistence of associated understorey species. The proposed removals are intended to emulate a burn and provide this discrete disturbance event. The focus of the removals will be non-native species, many of which are also considered invasive (e.g. Norway Maple, Tree of Heaven, Siberian Elm, etc.). "Policy 5.12.6 of the Sarnia Official Plan states "to avoid restoration efforts that are well-intentioned but ineffective, restoration strategies shall e) be self-sustaining once completed, requiring minimum maintenance or operation." The proposed restoration efforts will be effective in achieving the desired forest structure. The notion that restoration efforts will be self-sustaining is perhaps not practical or applicable to this undertaking. Specifically, Black Oak woodlands are themselves not self-sustaining without periodic disturbance. They are also relatively uncommon provincially and provide important habitat for a wide range of plant and wildlife species.
9.	Restoration alone will lead to a net loss of forest cover, while the official plan encourages improved forest cover. … Therefore, if development is approved, the removed woodland should be replaced at twice the rate of the area removed. Given the current proposed site plan, it does not appear that there would be available space on the property to complete the plantings, therefore planting off-site, in an area that would contribute to Sarnia's natural heritage system, would need to be considered. (Pg. 5-6)	See response to comment #1.
10.	Although the proposed building envelopes appear to be sufficiently large to accommodate a house, SCRCA believes it is likely that future landowners will desire additional clearing of the lots to allow for accessory structures, pools, lawn, etc. similar to neighbouring lots. This additional tree removal has not been accounted for with the current design.	If site-specific zoning of the lots and/or restrictive covenants can be implemented as recommended in the EIS, then active amenity areas of the lots (e.g., including sodded areas, gardens, sheds or other accessory structures) would be restricted to the limit of grading as shown on EIS Map 3. Individuals who are interested in purchasing the future lots would be made aware of the zoning restrictions and that structures and certain activities (e.g., tree cutting/vegetation removal, yard waste

	If trees are removed in the future, there will be no mechanism for compensation or mitigation. (Pg. 6)	disposal) within the rear-lot woodland area is prohibited under the zoning by-law. Furthermore, the registration of restrictive covenants on title for each lot that would restrict the removal of vegetation provides a legal mechanism for additional protection. The EIS acknowledges that some degree of disturbance may still occur under this scenario; however, it is impossible to accurately estimate whether or the degree to which additional tree removals may occur for the purposes of informing the proponent's compensation requirements. Nonetheless, the proponent has indicated a willingness to provide more than the minimum compensation requirement, which can be considered to account for some additional level of unauthorized post-development tree cutting. In this absence of this site-specific zoning and/or restrictive covenants, whereby there is increased risk of post-development degradation of the feature, it is understood that the entire Significant Woodland area on the subject property must be compensated for through the establishment of new woodland tree plantings at a 2:1 ratio in an off-site location in accordance with SCRCA and City requirements.
11.	Restrictive zoning which identifies acceptable activities on the proposed lots is needed and enforcement by the municipality would be required. The Municipality must determine if the policies and resources are available to facilitate the required enforcement. SCRCA has concerns that landowner education alone will not be sufficient to protect the remaining natural heritage feature. (Pg. 6)	See response to Comment #4.

Appendix III
Terms of Reference and Agency Comments

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

May 18, 2017 1889

Nancy Bourgeois
City of Sarnia
255 Christina Street North, PO Box 3018
Sarnia, Ontario N7T 7N2

Sarah Hodgkiss
St. Clair Region Conservation Authority
205 Mill Pond Crescent
Strathroy, Ontario N7G 3P9

Dear Ms. Bourgeois and Ms. Hodgkiss,

Re: 834 Lakeshore Road, Sarnia
Environmental Impact Study Terms of Reference

On behalf of Natural Resource Solutions Inc. (NRSI), I am pleased to provide the draft Terms of Reference (TOR) for an Environmental Impact Study (EIS) associated with the proposed residential development on an approximately 1.3ha property located at 834 Lakeshore Road in the City of Sarnia. An EIS is to accompany an application for Official Plan Amendment associated with the proposed development.

The subject property contains a wooded area identified as “Natural Area – Type B” on Map 5 of the City of Sarnia Official Plan (City of Sarnia 2016). This designation reflects the presence of a City-mapped Significant Woodland on the subject property. The subject property also contains a shoreline area that is designated as “Natural Hazards” as shown on Maps 7 and 8 of the Official Plan, which are also referred to as “Great Lakes Shoreline Management Areas” on Map 6 of the Official Plan. The subject property therefore contains lands regulated by the St. Clair Region Conservation Authority (SCRCA) associated with the lakeshore hazard lands and adjacent areas. The Lambton County Official Plan identifies the subject property as containing a portion of Primary Corridor along the Lake Huron shoreline. Primary Corridor is considered a “Group C Feature”, and this designation occurs on both Map 2 of the draft Official Plan update as well as the current Official Plan that is in force (County of Lambton 2017, 1998).

Due to the presence of SCRCA-regulated lands, and the presence of City- and County-designated Natural Heritage System features on the property, an EIS is required to demonstrate that the proposed development will not negatively impact the existing natural features or their ecological functions in accordance with the applicable policies.

The attached TOR for the EIS outlines the steps required to complete the EIS for the proposed development in accordance with SCRCA, City and County policies.

Sincerely,
Natural Resource Solutions Inc.

Ryan Archer, M.Sc.
Terrestrial and Wetland Biologist

834 Lakeshore Road, Sarnia
Environmental Impact Study
Terms of Reference
May 18, 2017

Study Area General Description and Location

The subject property is located at the civic address 834 Lakeshore Road in the City of Sarnia. The property contains a single residential dwelling and is primarily wooded. Driveway access to the property is from Centennial Avenue and crosses an existing residential property and a City-owned park (Centennial Parkette). The lot is deep and narrow, with a width of approximately 40m and depth of 337m, and a total area of approximately 1.3ha. The subject property is surrounded on the west, east, and south sides by long-established residential development, and abuts Lake Huron to the north with a narrow lakeshore frontage. The woodland community on the subject property has been preliminarily mapped as extending onto adjacent off-site lands to the east (private properties) and west (Centennial Parkette). Herein, the subject property and surrounding areas within 120m are considered the EIS "study area". See Map 1 for the subject property location and surrounding study area.

The subject property is designated "Urban Residential" in the Sarnia Official Plan while the shoreline area is designated "Natural Hazards" as shown on Maps 7 and 8 of the Official Plan (City of Sarnia 2016). The City Structure Plan identifies the subject property as a "Stable Residential Area", and as part of the City's Natural Heritage System coinciding with the lakeshore area as shown on Map 1 of the Official Plan.

Proposed Undertaking

The proponent, Wicks Construction and General Contracting Ltd., is seeking an Official Plan Amendment to permit the development of five residential lots on the subject property. A Plan of Subdivision will be prepared by the proponent as part of the application. The proposed development concept includes an extension of Tudor Close West onto the subject property as a cul-de-sac. The existing house on the property would be removed and replaced with a new residential dwelling within the existing single lot that backs onto the lakeshore zone. Two lots would be developed fronting the south side of the Tudor Close West cul-de-sac extension, while an additional two lots would front Lakeshore Road at the south end of the property. See Appendix I for the conceptual development layout.

Policy Context and Considerations

A preliminary review of background information and relevant policy documents was undertaken in preparation of this TOR. Based on this review, it is understood that the subject property contains a wooded feature that is designated as a "Type B Natural Area" in the City's Official Plan (Map 5), which corresponds to a feature considered to be Significant Woodland within the City's Natural Heritage System. Section 4.3.3.4 of the City's Official Plan states that development should be directed away from Natural Areas, but that development or site alteration may be permitted in Type B features provided that it can be demonstrated in an EIS that the development will not cause negative impacts to the feature or its ecological functions. Under this policy, an EIS must also demonstrate:

- *"no alternative location exists that is outside of the Natural Area designation;*
- *the affected area is not a wetland, floodplain, or hazardous area (e.g., unstable slopes, soils or sinkholes);*
- *groundwater will be protected, particularly in vulnerable areas;*
- *the St. Clair Region Conservation Authority, and other appropriate agencies, shall be consulted; and,*
- *the development must not be severed from the holding on which it is located"* (City of Sarnia 2016).

Development in Type B Natural Areas is also conditional on natural environment enhancements, such as forest improvement, reforestation, linkages, stewardship agreements and conservation agreements as stated in Section 4.3.3.4.

Although Significant Woodland has been mapped on the subject property, City staff have acknowledged that no detailed information is available for the woodland feature, and that its ecological functions and level of significance have not been determined (N. Bourgeois, City of Sarnia, email dated January 20, 2017). An evaluation of the functional value and ecological significance of the woodland will therefore represent a key component of the required EIS. Woodland significance on the property will be evaluated against the existing City criteria (Official Plan Section 4.3.3) and will also include assessments of other levels of significance that are defined in the Provincial Policy Statement (OMMAH 2014) and the City Official Plan, including Species at Risk (SAR) habitat and Significant Wildlife Habitat (SWH). The boundaries of the Significant Woodland feature must be refined, surveyed and mapped in accordance with Section 4.3.3.5 of the Official Plan (City of Sarnia 2016).

The subject property also contains a shoreline area that is designated as "Natural Hazards" as shown on Maps 7 and 8 of the Official Plan, which are also referred to as "Great Lakes Shoreline Management Areas" on Map 6 of the Official Plan. Section 4.3.2 of the Official Plan states that development should avoid natural hazard areas, including flooding, erosion, and dynamic beach hazards related to the Great Lakes system.

The subject property is also regulated by the St. Clair Region Conservation Authority (SCRCA) due to the presence of lakeshore hazard lands based on the SCRCA's *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation* (Ontario Regulation 171/06). Development and site alteration are not permitted in regulated lands unless permitted by the SCRCA in accordance with O. Reg. 171/06.

Furthermore, the subject property falls within the SCRCA's Shoreline Management Plan Area 1 (flood hazard) and Area 2 (stable slope allowance, plus 30m erosion allowance). New lots are not permitted within Shoreline Areas 1 or 2. However, the City's Official Plan states that "*the creation of lots that extend into Shoreline Management Areas 1 and 2 may be permitted provided that new buildings and structures conform with applicable requirements. Hazardous lands will be zoned accordingly and/or registered on title and non-compatible uses enforced*" (SCRCA 2017). New dwellings are not permitted in Shoreline Area 1 and may only be permitted in Shoreline Area 2 if it has been demonstrated that flooding and/or erosion hazards are appropriately addressed (SCRCA 2017).

The subject property contains lands designated as Primary Corridor within the Lambton County Official Plan (1998) and draft Official Plan update (2017). Primary Corridor is considered a "Group B feature" within the County's Natural Heritage System. The

Primary Corridor that extends through the subject property corresponds to the Lake Huron shoreline within the County boundaries. As a Group B feature, development may be permitted provided it can be demonstrated that no negative impacts on the feature or its ecological functions will result (County of Lambton 1998). Woodland on the subject property may also be considered Significant Woodland as defined by the County if it is located within land designated as Primary Corridor, as per Official Plan Section 8.1.3.2. County-designated Significant Woodlands also fall within the category of Group B natural heritage features.

Provincially Threatened and Endangered species and their associated habitat that may be identified within the study area are protected under the *Endangered Species Act* (ESA). NRSI will consult with the MNRF on necessary steps to ensure compliance with the ESA should Threatened or Endangered species, or their habitats, be identified within the study area.

Associated Studies

To meet the requirements of development application, associated reporting will be completed to provide detailed information on site topography, and shoreline geotechnical hazard limits. These additional studies will confirm the extent of lakeshore hazard limits on the property to further inform on-site constraint mapping. This information will supplement the natural feature characterization reporting to be completed by NRSI and will inform the impact assessment for the EIS. Additional technical reporting or mapping to be completed will be summarized and referenced in the EIS.

Background Information Review

In order to determine a study approach for the EIS, existing natural heritage information was gathered and reviewed to identify key natural heritage features and species that are known, or have the potential to occur in the vicinity of the study area within up to 10km. Background information sources that were referenced include the following:

- St. Clair Region Conservation Authority
- Natural Heritage Information Centre database (MNRF 2015a);
- Ontario Ministry of Natural Resources and Forestry, Aylmer District;
- Lambton County Official Plan and draft Official Plan update (County of Lambton 1998, 2017);
- Sarnia Official Plan (City of Sarnia 2016);
- Ontario Breeding Bird Atlas (BSC et al. 2008);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2015);
- Atlas of the Mammals of Ontario (Dobbyn 1994);
- Ontario Butterfly Atlas (McNaughton et al. 2016); and,
- Ontario Odonata Atlas (MNRF 2017a).

To further inform the background information review, NRSI submitted requests for existing natural heritage information and species records for the study area vicinity to the MNRF Aylmer District and the SCRCA on April 12, 2017. To date, a response was received from the SCRCA on April 18, 2017.

This background information will be integrated with original data collected by NRSI during the 2017 field surveys to inform the characterization component of the EIS.

Significant Species Screening

Based on the results of preliminary background information review, potential habitat for Species at Risk (SAR) was screened for the study area. SAR are those listed on the Species at Risk in Ontario List (MNRF 2017b). These include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered, Threatened, or Special Concern. Species listed as Endangered or Threatened are protected by the provincial ESA, which includes protection of their habitat.

Species considered Special Concern are included in the definition of Species of Conservation Concern (SCC), which includes the following:

- species designated provincially as Special Concern,
- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the Natural Heritage Information Centre, and
- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the COSSARO. These species are protected by the federal Species at Risk Act but not provincially by the Endangered Species Act.

Habitats of SCC are considered a form of SWH (OMNR 2010) which is afforded protection under the Provincial Policy Statement (OMMAH 2014) and various municipal natural heritage protection policies.

Based on the results of preliminary background information review, SAR with occurrence records within 10km of the study area were identified. In accordance with MNRF recommendations, SAR known to occur elsewhere within the upper-tier municipality (Lambton County) were also considered in the habitat screening (MNRF 2016). Based on the habitat preferences/requirements for these species (e.g., OMNR 2000) and an assessment of existing study area habitat features based on NRSI's current knowledge of the on-site features, a screening for suitable habitats was completed for the study area. Note that this preliminary review and screening may be updated based on input provided by the MNRF. This preliminary screening information further informed the surveys required as part of the EIS scope.

Based on the results of the preliminary screening, the following SAR that are regulated under the ESA were identified as having potentially suitable habitat in the study area:

Threatened and Endangered Species Regulated Under the ESA

- American Chestnut (*Castanea dentata*) – provincially and federally Endangered
- Butternut (*Juglans cinerea*) – provincially and federally Endangered
- Chimney Swift (*Chaetura pelagica*) – provincially Endangered; listed as nationally endangered by COSEWIC
- Common Five-lined Skink (*Plestiodon fasciatus*) (Carolinian population) – provincially and federally Endangered
- Dwarf Hackberry (*Celtis tenuifolia*) – provincially and federally Threatened
- Kentucky Coffee-tree (*Gymnocladus dioicus*) – provincially and federally Threatened
- Little Brown Myotis (*Myotis lucifugus*) – provincially and federally Endangered
- Northern Myotis *(Myotis septentrionalis*) – provincially and federally Endangered
- Tri-colored Bat (*Perimyotis subflavus*) – provincially and federally Endangered

Although the subject property provides suitable habitat conditions for Common Five-lined Skink, because the on-site woodland feature is relatively small, isolated and surrounded by urban development, and because a record of this species was not identified for the subject property vicinity by the NHIC online database (MNRF 2015a), this species is considered absent on the subject property. As noted above, a background information request to the MNRF Aylmer District is still pending.

See below for SCC whose habitats were screened as potentially occurring on the subject properties.

Significant Wildlife Habitat Screening

The collection and review of background information was used to complete a preliminary screening for SWH within the study area. This review compared conditions within the study area with criteria in the SWH Ecoregion 7E Criterion Schedule (MNRF 2015b) to determine the presence of any candidate SWH. The results of the SWH screening have informed surveys required to confirm such habitat within the study area.

Based on the preliminary screening, the following were identified as Candidate SWH types pending further assessment during site investigations:

- Bat Maternity Colonies
- Snake Hibernaculum
- Bald Eagle and Osprey Nesting, Foraging and Perching Habitat
- Potential Habitat for the following SCC:
    - Bald Eagle (*Haliaeetus leucocephalus*)
    - Eastern Wood-Pewee (*Contopus virens*)
    - Red-headed Woodpecker (*Melanerpes erythrocephalus*)

Environmental Impact Study - Field Surveys

Field surveys within the subject property will be undertaken between spring and summer 2017 to adequately characterize the on-site natural features and ecological functions for the purposes of the EIS. The following is a description of the surveys that will be conducted:

Vegetation Community Mapping

Vegetation communities within the subject property, including any natural features adjacent to the property within 120m based on site access or air photo interpretation, will be mapped and classified following the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998). Details on the vegetation communities will be recorded including species composition, dominance, uncommon species or features, surficial soil types, and evidence of human impact.

Woodland Boundary Mapping

In conjunction with ELC mapping, NRSI staff will delineate the boundary of the woodland community on the subject property. The woodland boundary will be defined by flagging the dripline of the feature. The woodland dripline boundary on adjacent properties may be flagged depending on site access, or will be interpreted from an air photo. NRSI will arrange a site meeting with City staff to review and confirm the woodland dripline boundary in the field. The confirmed boundary will then be surveyed using a GPS with sub-50cm accuracy.

Vascular Flora Inventories

A two-season (spring and summer) vegetation inventory will be conducted to record all species of vascular flora within the subject property. A spring-based survey will be completed during late May 2017 while a summer-based survey will be completed during July 2017. The property will be systematically searched for plant species and any rare species and their location(s) will be recorded with a handheld GPS unit. Vascular flora species will be recorded by ELC polygon.

Tree Inventory

All trees ≥10cm diameter at breast height (DBH) within the subject property, including shared property boundary trees and off-site trees within 10m where access permits, will be inventoried by Certified Arborists and assessed for health condition and potential for structural failure. For each inventoried tree, the following information will be recorded:

- Species common and scientific name,
- DBH,
- Crown radius (metres),
- General condition/health (excellent, good, fair, poor, very poor), including characteristics of any cavities from bat maternity perspective;
- Tree identification number,
- Potential for structural failure (low, medium, high),
- Tree location (UTM coordinates), and
- General comments (i.e. disease, aesthetic quality, development constraints, sensitivity to development)

Bat Habitat Tree Assessment

An inspection of trees within the property will be completed to determine the likelihood of suitable maternity colony or roosting habitat for bats. The habitat tree assessment will be completed in conjunction with the tree inventory during the leaf-off period. Habitat tree assessments will be completed by staff experienced in such surveys and will follow guidelines for the identification of suitable bat habitat outlined in the MNRF's *Bats and Bat Habitats: Guidelines for Wind Power Projects* (OMNR 2011) as well as the *Survey Protocol for Species at Risk Bats in Treed Habitats* (MNRF 2017c). This information will be used to assess the potential occurrence of Bat Maternity Colony SWH and habitat for SAR bats. NRSI staff will report on the occurrence of suitable habitat within the feature in completion of the EIS. If habitat trees are observed within the subject property, NRSI will consult with the MNRF on necessary next steps to meet the requirements of the ESA.

Breeding Bird Surveys

Two early morning breeding bird surveys will be completed between late May and early July 2017 in accordance with Ontario Breeding Bird Atlas (OBBA) protocol (BSC 2001). Surveys will be completed between a half-hour before sunrise and 10:00am. Surveys will be timed to occur at least 10 days apart. Surveys will be completed through a comprehensive area search of the subject property and immediately adjacent lands as access permits. Standard breeding evidence codes will be recorded based on OBBA. Any observations of significant species will be recorded in detail, including their specific observation location(s), observed behaviour and highest level of breeding evidence.

Reptile Emergence Survey and Habitat Assessment

An area search of the subject property will be completed, timed to coincide with the period of spring emergence. The visual area search will focus on the occurrence of any basking reptile species, which are most conspicuous following spring emergence. Any on-site features that have potential to provide overwintering habitat, such as old stone foundations, will be closely investigated. This information will be used to assess the potential occurrence of snake overwintering SWH on the subject property. If multiple reptiles are observed on the property, particularly if they are observed congregated in one area, additional surveys will be undertaken in the spring or fall to assess the occurrence and location of an on-site hibernaculum feature. NRSI biologists will also complete area searches of suitable habitat during all other daytime survey visits to identify the presence of basking reptiles. In all cases, NRSI biologists will carefully scan the areas of suitable habitat with binoculars prior to slowly approaching the habitat areas, to avoid individuals taking cover prior to identification.

Terrestrial Habitat Assessments and Documentation of Other Wildlife

During all site visits, NRSI biologists will assess wildlife habitats within the subject property. Any features that may be indicative of Significant Wildlife Habitat or habitat for Species at Risk will be documented in detail, photographed, and georeferenced using a hand-held GPS unit. Any incidental observations of all wildlife will be recorded during all field surveys including reptiles, amphibians, butterflies, odonates, and mammals. In addition to direct observations, any evidence such as dens, tracks, and scat will also be documented.

Identification of Development Opportunities and Constraints

The boundaries and ecological significance of the on-site woodland areas will be assessed and mapped based on the outcome of the fieldwork program. This will include an assessment of wildlife and vegetation species presence and their relative sensitivity and rarity, incidences of existing ecological disturbance, presence of significant wildlife habitats and the overall functional value of the woodland in the context of the surrounding landscape and its location adjacent to the Lake Huron shoreline. This information will be used to determine the boundaries of the Significant Woodland on and adjacent to the subject property, with regard for significance criteria identified in the City's Official Plan (City of Sarnia 2016) and the MNRF's Natural Heritage Reference Manual (OMNR 2010). Implications of the proposed development in relation to significant natural features or wildlife habitat will be identified, including City and County Official Plan policies, SCRCA regulation, and the Provincial Policy Statement.

Suitable buffers will be recommended from significant features and habitat where required based on the significance and sensitivity of the feature and in reference to any policy-based requirements. These features and their protective buffers will be identified as constraints to be considered in confirming development limits on the subject property. Other setbacks where required, such as those associated with shoreline hazard lands, will also be incorporated into EIS mapping.

Impact Assessment

The proposed development plan will be reviewed and compared to the existing conditions within the subject property to inform the impact assessment. Any areas of

conflict between natural feature constraints and the development that cannot be avoided will be discussed with the study team and options for avoiding or minimizing impacts will be recommended. The assessment of potential development impacts will be divided into:

- Direct impacts associated with natural feature removal or wildlife displacement caused by the actual proposed 'footprint' of the development.

- Indirect impacts associated with changes in site conditions such as drainage and water quantity/quality as well as construction-related impacts.

- Induced impacts associated with post-construction stresses on the natural features caused by human habitation and use of the new lots.

Recommendations to avoid, or otherwise mitigate impacts to significant natural features and functions will be made in the EIS.

In accordance with City Official Plan policy, the EIS will investigate opportunities for ecological enhancement or restoration of Significant Woodland areas that are to be located outside of the development area. Monitoring recommendations will be provided where necessary to ensure the effectiveness of recommended mitigation measures and to track compliance with construction-stage mitigation measures.

Tree Inventory and Preservation Plan

A Tree Inventory and Preservation Plan (TIPP) will be prepared and appended to the EIS. The TIPP will describe and summarize all trees inventoried on-site, identify trees to be removed, retained or potentially relocated based on the extent of proposed grading and the tree's overall health (excellent to poor) and/or potential for structural failure (high to low). All inventoried and assessed trees will be accurately mapped against an overlay of the proposed development plan, identifying those trees requiring removal due to site grading. Opportunities for tree retention, and other recommendations to maintain and protect retained trees during- and post-construction, will also be provided. The location and type of tree protection fencing will also be mapped for the subject property.

A mitigation plan and compensation strategy will be prepared in accordance with City requirements to address required tree removals within the property. A TIPP report will be prepared providing a summary of tree inventory results and recommendations for tree management, mitigation and compensation. The tree compensation plan will inform and coincide with the ecological enhancement and restoration recommendations that will be provided in the EIS.

References

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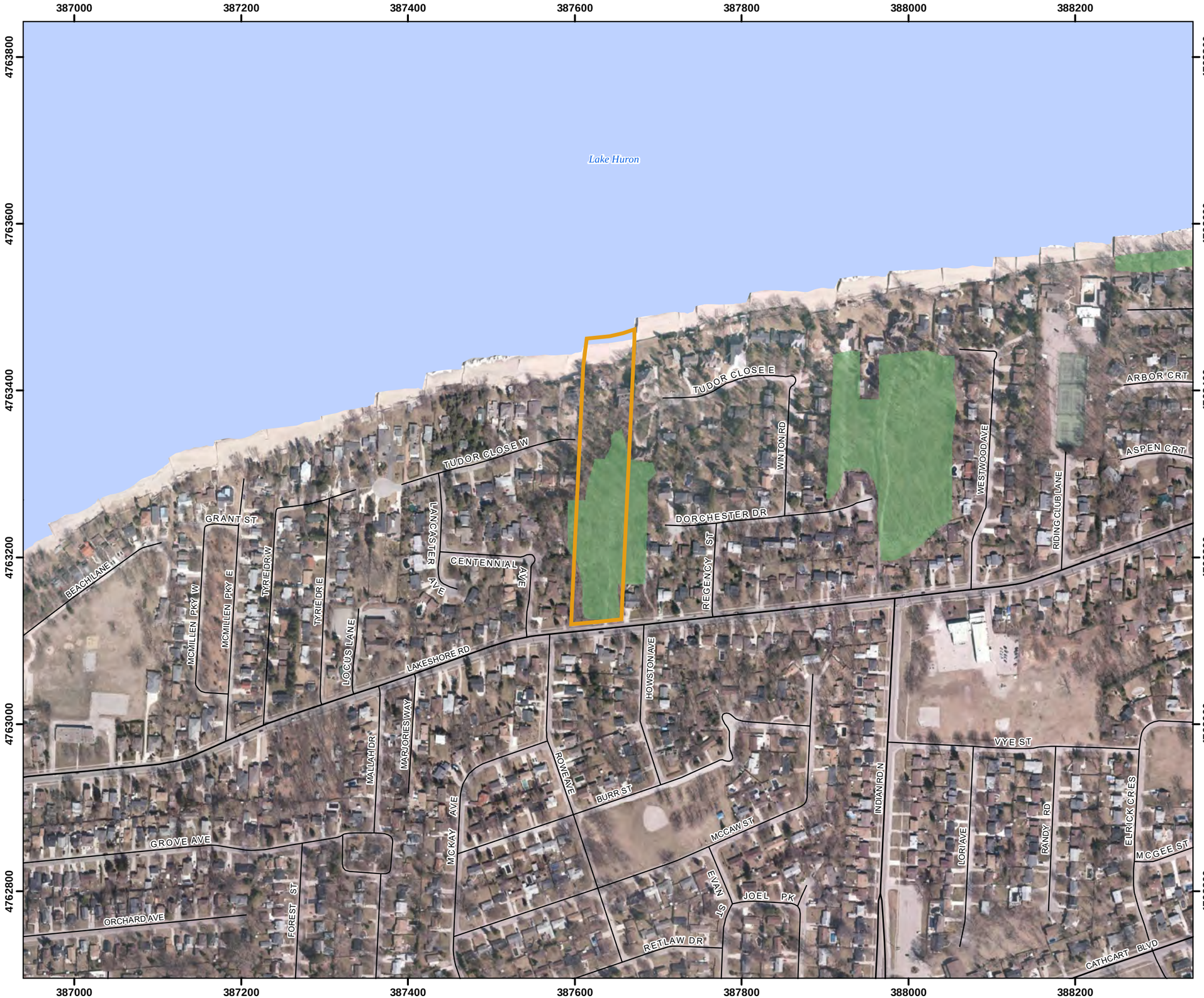
MAPS



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Map 1

834 Lakeshore Road, Sarnia

Study Area

Legend

- Subject Property
- Primary Road
- Secondary Road
- Water Body
- Wooded Area

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

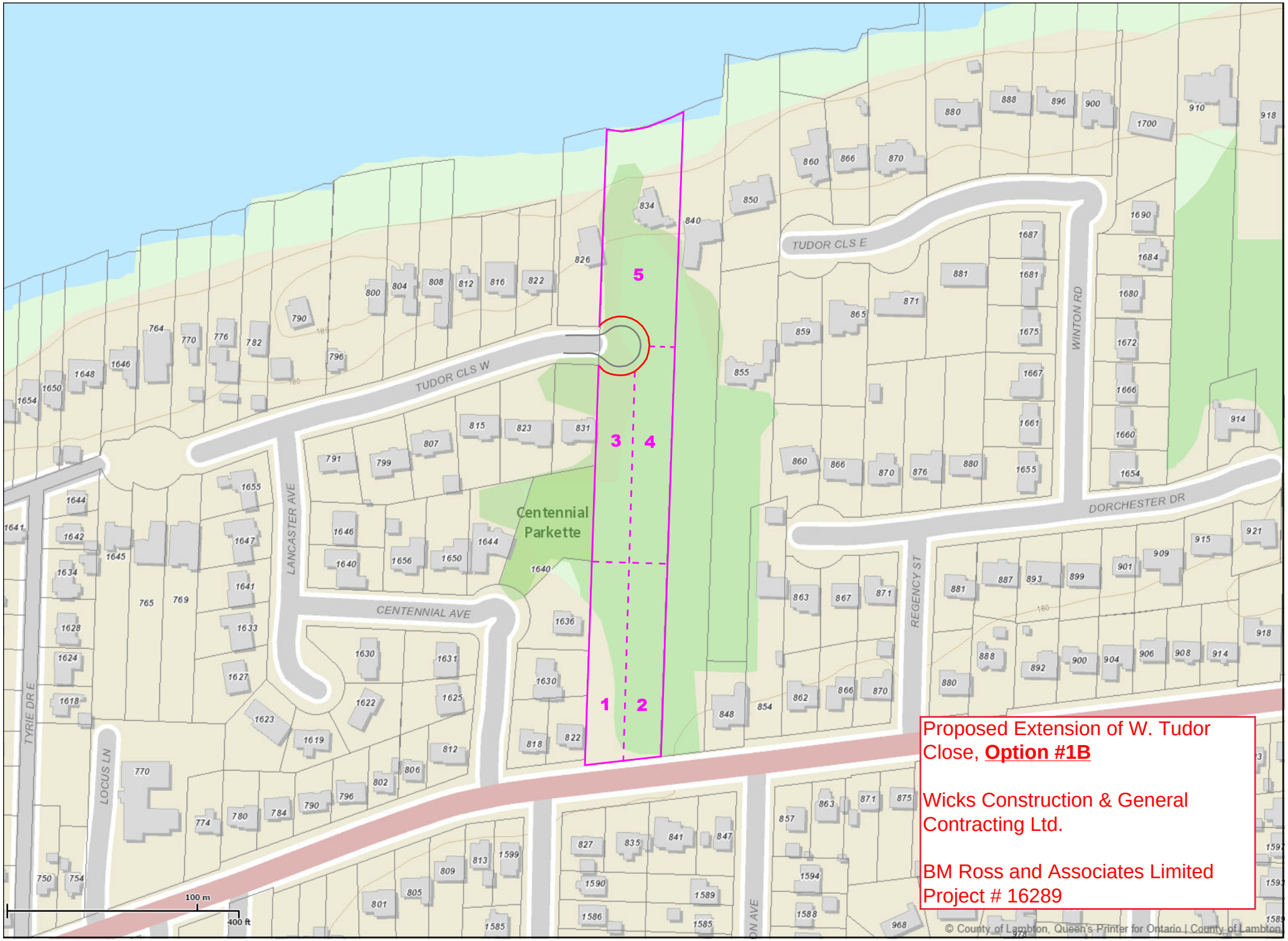
Project: 1889
Date: May 18, 2017

NAD83 - UTM Zone 17
Size: 11x17"
1:4,500

N

0 50 100 150 200 250 Metres

APPENDIX I
Proposed Conceptual Development Layout (BM Ross and Associates 2017)



Subject: RE: 834 Lakeshore Rd., Sarnia - Draft EIS Terms of Reference
From: Sarah Hodgkiss <shodgkiss@scrca.on.ca>
Date: 06/06/2017 11:44 AM
To: Ryan Archer <rarcher@nrsi.on.ca>, "nancy.bourgeois@sarnia.ca" <nancy.bourgeois@sarnia.ca>
CC: "wicks1@live.ca" <wicks1@live.ca>, Matt Pearson <mpearson@bmross.net>, "Curt Bladon (cbladon@bmross.net)" <cbladon@bmross.net>

Thanks Ryan,

We are fine with the Terms of Reference as written.

Sarah

From: Ryan Archer [mailto:rarcher@nrsi.on.ca]
Sent: Thursday, May 18, 2017 12:34 PM
To: nancy.bourgeois@sarnia.ca; Sarah Hodgkiss <shodgkiss@scrca.on.ca>
Cc: wicks1@live.ca; Matt Pearson <mpearson@bmross.net>; Curt Bladon (cbladon@bmross.net) <cbladon@bmross.net>
Subject: 834 Lakeshore Rd., Sarnia - Draft EIS Terms of Reference

Hi Nancy and Sarah,

Please see attached the draft EIS Terms of Reference associated with the proposed residential development at 834 Lakeshore Road in Sarnia. Please note that in order to meet seasonal timing requirements we have initiated some of the field surveys that are described in the TOR.

Let me know of any comments or questions associated with this draft TOR. Based on any input received I will update and finalize the document for recirculation to this group.

Regards,

--

Ryan Archer M.Sc.
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Attachments:

834 Lakeshore ToR Review May 2017 memo.pdf 82.6 KB

Appendix IV
Plant Species Recorded Within the Study Area

Appendix III
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC[1]	SRANK[2]	SARO[3]	COSEWIC[4]	SARA Schedule[5]	Lambton County[6]	NRSI Observed
Gymnosperms	**Conifers**							
Cupressaceae	**Cypress Family**							
Juniperus virginiana	Eastern Red Cedar	4	S5				X	X
Pinaceae	**Pine Family**							
Picea abies	Norway Spruce		SE3					X
Picea glauca	White Spruce	6	S5					X
Pinus strobus	Eastern White Pine	4	S5				X	X
Pinus sylvestris	Scots Pine		SE5					X
Dicotyledons	**Dicots**							
Aceraceae	**Maple Family**							
Acer negundo	Manitoba Maple	0	S5				X	X
Acer platanoides	Norway Maple		SE5				I	X
Anacardiaceae	**Sumac or Cashew Family**							
Rhus aromatica	Fragrant Sumac	8	S5				R3	X
Rhus hirta	Staghorn Sumac	1	S5				X	X
Toxicodendron rydbergii	Poison-ivy	0	S5				X	X
Apocynaceae	**Dogbane Family**							
Vinca minor	Periwinkle		SE5				I	X
Aquifoliaceae	**Holly Family**							
Ilex aquifolium	English Holly		SR					X
Araliaceae	**Ginseng Family**							
Hedera helix	English Ivy		SNA					X
Asteraceae	**Composite or Aster Family**							
Achillea millefolium ssp. millefolium	Common Yarrow		SE?					X
Ambrosia artemisiifolia	Common Ragweed	0	S5				X	X
Antennaria parlinii ssp. parlinii	Parlin's Pussytoes		SU					X
Arctium minus ssp. minus	Common Burdock		SE5				I	X
Cirsium vulgare	Bull Thistle		SE5				I	X
Conyza canadensis	Horseweed	0	S5				X	X
Erigeron annuus	Daisy Fleabane	0	S5					X
Eupatorium rugosum	White Snakeroot	5	S5				X	X
Solidago canadensis	Canada Goldenrod	1	S5				X	X
Solidago gigantea	Giant Goldenrod	4	S5				X	X
Symphyotrichum laeve	Smooth Aster		S5					X
Taraxacum officinale	Common Dandelion		SE5				I	X
Berberidaceae	**Barberry Family**							
Berberis thunbergii	Japanese Barberry		SE5				I	X
Bignoniaceae	**Bignonia Family**							
Catalpa speciosa	Northern Catalpa		SE1					X
Boraginaceae	**Borage Family**							
Hackelia virginiana	Virginia Stickweed	5	S5				X	X
Myosotis scorpioides	Mouse-ear Scorpion-grass		SNA					X
Brassicaceae	**Mustard Family**							
Alliaria petiolata	Garlic Mustard		SE5				I	X
Hesperis matronalis	Dame's Rocket		SE5				I	X
Lepidium densiflorum	Common Pepper-grass		SE5				X	X
Campanulaceae	**Bellflower Family**							
Campanula rapunculoides	Creeping Bellflower		SE5				I	X
Caprifoliaceae	**Honeysuckle Family**							
Lonicera tatarica	Tartarian Honeysuckle		SE5				I	X
Caryophyllaceae	**Pink Family**							
Arenaria serpyllifolia	Thyme-leaved Sandwort		SE5				I	X
Cerastium glomeratum	Mouse-ear Chickweed		SE2					X
Saponaria officinalis	Bouncing-bet		SE5				I	X
Silene latifolia	Bladder Campion		SE5				I	X

Appendix III
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC[1]	SRANK[2]	SARO[3]	COSEWIC[4]	SARA Schedule[5]	Lambton County[6]	NRSI Observed
Celastraceae	**Staff-tree Family**							
Celastrus scandens	Climbing Bittersweet	3	S5				X	X
Euonymus alata	Winged Spindle Tree		SE2					X
Euonymus europaea	Spindle Tree		SE2					X
Cornaceae	**Dogwood Family**							
Cornus foemina ssp. racemosa	Red Panicled Dogwood	2	S5				X	X
Fabaceae	**Pea Family**							
Medicago lupulina	Black Medick		SE5				I	X
Robinia pseudo-acacia	Black Locust		SE5				I	X
Fagaceae	**Beech Family**							
Quercus alba	White Oak	6	S5				X	X
Quercus rubra	Red Oak	6	S5				X	X
Quercus velutina	Black Oak	8	S4				X	X
Geraniaceae	**Geranium Family**							
Geranium maculatum	Spotted Crane's-bill	6	S5				X	X
Geranium robertianum	Herb Robert		SE5				I	X
Hippocastanaceae	**Buckeye Family**							
Aesculus hippocastanum	Horse Chestnut		SE2				I	X
Juglandaceae	**Walnut Family**							
Juglans nigra	Black Walnut	5	S4				X	X
Lamiaceae	**Mint Family**							
Glechoma hederacea	Creeping Charlie		SE5				I	X
Leonurus cardiaca ssp. cardiaca	Common Motherwort		SE5				I	X
Prunella vulgaris ssp. lanceolata	Heal-all	5	S5					X
Lauraceae	**Laurel Family**							
Sassafras albidum	Sassafras	6	S4				X	X
Moraceae	**Mulberry Family**							
Morus alba	White Mulberry		SE5				I	X
Oleaceae	**Olive Family**							
Forsythia viridissima	Golden-bells		SE2					X
Fraxinus americana	White Ash	4	S5				X	X
Ligustrum vulgare	Common Privet		SE5				I	X
Syringa vulgaris	Common Lilac		SE5				I	X
Onagraceae	**Evening-primrose Family**							
Circaea lutetiana ssp. canadensis	Yellowish Enchanter's Nightshade	3	S5				X	X
Oxalidaceae	**Wood Sorrel Family**							
Oxalis stricta	Upright Yellow Wood-sorrel	0	S5				X	X
Plantaginaceae	**Plantain Family**							
Plantago lanceolata	Ribgrass		SE5				I	X
Plantago major	Common Plantain		SE5				I	X
Ranunculaceae	**Buttercup Family**							
Anemone quinquefolia var. quinquefolia	Wood Anemone	7	S5				X	X
Thalictrum dioicum	Early Meadow-rue	5	S5				X	X
Rosaceae	**Rose Family**							
Crataegus species	Hawthorn species							X
Fragaria virginiana	Wild Strawberry		S5					X
Geum aleppicum	Yellow Avens	2	S5				R2	X
Geum canadense	White Avens	3	S5				X	X
Malus domestica	Apple							X
Potentilla inclinata	Downy Cinquefoil		SNA					X
Prunus serotina	Black Cherry	3	S5				X	X
Prunus virginiana ssp. virginiana	Choke Cherry	2	S5				X	X
Rosa blanda	Smooth Rose	3	S5				X	X
Rubus flagellaris	Prickly Raspberry	4	S4				X	X
Rubus idaeus ssp. idaeus	Red Raspberry		SE1					X
Rubus occidentalis	Thimble-berry	2	S5				X	X

Appendix III
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC[1]	SRANK[2]	SARO[3]	COSEWIC[4]	SARA Schedule[5]	Lambton County[6]	NRSI Observed
Rubiaceae	**Madder Family**							
Galium odoratum	Sweet Woodruff		SE1					X
Rutaceae	**Rue Family**							
Zanthoxylum americanum	American Prickly-ash	3	S5				X	X
Scrophulariaceae	**Figwort Family**							
Verbascum thapsus	Common Mullein		SE5				I	X
Simaroubaceae	**Ailanthus Family**							
Ailanthus altissima	Tree-of-heaven		SE5				I	X
Solanaceae	**Nightshade Family**							
Solanum dulcamara	Bitter Nightshade		SE5				I	X
Ulmaceae	**Elm Family**							
Celtis occidentalis	Common Hackberry	8	S4				X	X
Ulmus americana	White Elm	3	S5				X	X
Ulmus pumila	Siberian Elm		SE3				I	X
Urticaceae	**Nettle Family**							
Pilea fontana	Spring Clearweed	5	S4				R1	X
Vitaceae	**Grape Family**							
Parthenocissus vitacea	Woodbine	3	S5				X	X
Parthenocissus quinquefolia	Virginia-creeper	6	S4?				X	X
Parthenocissus tricuspidata	Boston-ivy		SE1					X
Vitis riparia	Riverbank Grape	0	S5				X	X
Monocotyledons	**Monocots**							
Cyperaceae	**Sedge Family**							
Cyperus lupulinus ssp. macilentus	Slender Cyperus	7	S4				X	X
Carex muhlenbergii var. muhlenbergii	Muhlenberg's Sedge	7	S4S5				X	X
Carex pensylvanica	Pennsylvania Sedge	5	S5				X	X
Carex spicata	Spiked Sedge		SE5				I	X
Liliaceae	**Lily Family**							
Allium canadense var. canadense	Wild Garlic	8	S5				X	X
Convallaria majalis	Lily-of-the-valley		SE5				I	X
Hemerocallis fulva	Orange Day-lily		SE5				I	X
Maianthemum racemosum ssp. racemosum	False Solomon's Seal	4	S5				X	X
Maianthemum stellatum	Star-flowered Solomon's Seal	6	S5				X	X
Polygonatum pubescens	Hairy Solomon's Seal	5	S5				X	X
Orchidaceae	**Orchid Family**							
Epipactis helleborine	Common Helleborine		SE5				I	X
Poaceae	**Grass Family**							
Danthonia spicata	Poverty Oat Grass	5	S5				X	X
Elymus repens	Quack Grass		SE5				I	X
Poa annua	Annual Blue Grass		SE5				I	X
Poa pratensis ssp. pratensis	Kentucky Bluegrass	0	S5				X	X
Smilacaceae	**Catbrier Family**							
Smilax herbacea	Herbaceous Carrion Flower	5	S4				VU	X
Smilax lasioneura	Hairy-nerved Carrion Flower	5	S4				X	X

[1]Oldham et al. 1995; [2]MNRF 2015a; [3]MNRF 2017b; [4]COSEWIC 2017; [5]Government of Canada 2017; [6]Oldham 1993

Appendix III
Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC[1]	SRANK[2]	SARO[3]	COSEWIC[4]	SARA Schedule[5]	Lambton County[6]	NRSI Observed
LEGEND								
SRANK								
S1 Critically Imperiled								
S2 Imperiled								
S3 Vulnerable								
S4 Apparently Secure								
S5 Secure								
SU Unrankable								
SNA Unranked								
SX Presumed Extirpated								
SH Possibly Extirpated (Historical)								
S#? Rank Uncertain								
COSSARO								
END Endangered								
THR Threatened								
SC Special Concern								
NAR Not at Risk								
DD Data Deficient								
EXP Extirpated								
COSEWIC								
E Endangered								
T Threatened								
SC Special Concern								
NAR Not at Risk								
DD Data Deficient								
XT Extirpated								
SARA Schedule								
Schedule 1 Officially Protected under SARA								
Schedule 2 Threatened/endangered; may be reassessed for consideration for inclusion to Schedule 1								
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1								

Appendix V
Species at Risk and Species of Conservation Concern Habitat Assessment

Appendix IV. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[9,10.11, 12]	Background Source	Suitable Habitats within Study Area	Observed by NRSI
Birds									
Empidonax virescens	Acadian Flycatcher	S2S3B	END	E	Schedule 1	mature, shady, deciduous forests; heavily wooded ravines; creek bottoms or river swamps; availability of good quality habitat is limiting factor; needs at least 30 ha of forest	MNRF 2016	No	No
Haliaeetus leucocephalus	Bald Eagle	S2N, S4B	SC	NAR		require large continuous area of deciduous or mixed woods around large lakes, rivers; require area of 255 ha for nesting, shelter, feeding, roosting; prefer open woods with 30 to 50% canopy cover; nest in tall trees 50 to 200m from shore; require tall, dead, partially dead trees within 400 m of nest for perching	MNRF 2016	Yes	No
Riparia riparia	Bank Swallow	S4B	THR	T		sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water	BSC et al. 2008	No	No
Hirundo rustica	Barn Swallow	S4B	THR	T		farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water	MNRF 2016	No	No
Tyto alba	Barn Owl	S1	END	E	Schedule 1	open areas such as fields, agricultural lands with scattered woodlots, buidlings and/or orchards; grasslands, sedge meadows, marshes; snow-cover limits ability to catch prey; nests in hollow trees and live trees >46 cm dbh; also nests in barns, abandoned buildings	MNRF 2016	No	No
Chlidonias niger	Black Tern	S3B	SC	NAR		wetlands, coastal or inland marshes; large cattail marshes, marshy edges of rivers, lakes or ponds, wet open fens, wet meadows; returns to same area to nest each year in loose colonies; must have shallow (0.5 to 1 m deep) water and areas of open water near nests; requires marshes >20 ha in size; feeds over adjacent grasslands	MNRF 2016	No	No

Appendix IV. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[9,10.11, 12]	Background Source	Suitable Habitats within Study Area	Observed by NRSI
Dolichonyx oryzivorus	Bobolink	S4B	THR	T		large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes;	MNRF 2016	No	No
Setophaga cerulea	Cerulean Warbler	S3B	THR	E		mature deciduous woodland of Great Lakes- St. Lawrence and Carolinian forests, sometimes coniferous; swamps or bottomlands with large trees; area sensitive species needing extensive areas of forest (>100 ha)	MNRF 2016	No	No
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T		commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water	BSC et al. 2008	Yes	Yes
Chordeiles minor	Common Nighthawk	S4B	SC	T	T	open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs	BSC et al. 2008	No	No
Sturnella magna	Eastern Meadowlark	S4B	THR	T		open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size	MNRF 2016	No	No
Caprimulgus vociferus	Eastern Whip-poor-will	S4B	THR	T	Schedule 1	dry, open, deciduous woodlands of small to medium trees; oak or beech with lots of clearings and shaded leaflitter; wooded edges, forest clearings with little herbaceous growth; pine plantations; associated with >100 ha forests	MNRF 2016	No	No
Ammodramus henslowii	Henslow's Sparrow	SHB	END	E	Schedule 1	large, fallow, grassy area with ground mat of dead vegetation, dense herbaceous vegetation, ground litter and some song perches; neglected weedy fields; wet meadows; cultivated uplands; a moderate amount of moisture needed; requires a minimum tract of grassland of 40 ha, but usually in areas >100 ha	MNRF 2016	No	No

Appendix IV. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[9,10.11, 12]	Background Source	Suitable Habitats within Study Area	Observed by NRSI
Ixobrychus exilis	Least Bittern	S4B	THR	T	Schedule 1	deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; intolerant of loss of habitat and human disturbance	MNRF 2016	No	No
Rallus elegans	King Rail	S2B	END	E	Schedule 1	large, shallow, fresh water marshes, shrubby swamps, marshy borders of lakes and ponds with abundant vegetation: an 'edge' species	MNRF 2016	No	No
Lanius ludovicianus	Loggerhead Shrike	S2B	END	E	Schedule 1	Grazed pasture, marginal farmland with scattered hawthorn shrubs, hedgerows; fence posts, wires and associated low-lying wetland; located on core areas of limestone plain adjacent to Canadian Shield; greatest threat is fragmentation of suitable habitat due to natural succession; probably needs at least 25 ha of suitable habitat.	MNRF 2016	No	No
Parkesia motacilla	Louisiana Waterthrush	S3B	SC	SC	Schedule 1	prefers wooded ravines with running streams; also woodlands swamps; large tracts of mature deciduous or mixed forests; canopy cover is essential; has strong affinity to nest sites; nests on ground	MNRF 2016	No	No
Colinus virginianus	Northern Bobwhite	S1	END	E	Schedule 1	grassland, prairie or hay fields with woody cover in form of thickets, tangles of vines, shrubs; fence rows or woodland edges; cropland growing corn, soybeans or small grains and clover or grass; well-drained sandy or loamy soil; pond edges	MNRF 2016	No	No
Falco peregrinus anatum/tundrius	Peregrine Falcon	S3B	SC	SC	Schedule 1	rock cliffs, crags, especially situated near water; tall buildings in urban centres	BSC et al. 2008	No	No
Charadrius melodus	Piping Plover	S1B	END	E (ssp. *circumcinctus*)	Schedule 1	dry, sandy outer beaches; upper stretches near dunes, usually large open, grassless areas, but sometimes with sparse scattering of beach grass	MNRF 2016	No	No

Appendix IV. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[9,10.11, 12]	Background Source	Suitable Habitats within Study Area	Observed by NRSI
Protonotaria citrea	Prothonotary Warbler	S1B	END	E	Schedule 1	area sensitive species preferring 100 ha of flooded or swampy woodlands with standing or flowing water and maore than 25% canopy cover with numerous stumps and snags; stream borders or flooded bottomlands; soft, dead trees with dbh >10cm; Carolinian species	MNRF 2016	No	No
Melanerpes erythrocephalus	Red-headed Woodpecker	S4B	SC	T	Schedule 1	open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; feeds on insects and stores nuts or acorns for winter; loss of habitat is limiting factor; requires cavity trees with at least 40 cm dbh; require about 4 ha for a territory	MNRF 2016	Yes	No
Icteria virens	Yellow-breasted Chat	S2B	END	E	Schedule 1	thickets, tall tangles of shrubbery beside streams, ponds; requires tracts of grassland >50 ha overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines etc.	MNRF 2016	No	No
Herpetofauna									
Emydoidea blandingii	Blanding's Turtle (*Great Lakes/St Lawrence pop.*)	S3	THR	T		shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps, or banks	Ontario Nature 2015	No	No
Coluber constrictor foxii	Blue Racer	S1	END	E	Schedule 1	Abandoned fields, grasslands, sparse bushy areas along prairie land, open woodland. Pelee Island only	MNRF 2016	No	No
Thamnophis butleri	Butler's Gartersnake	S2	END	E	Schedule 1	wet meadows, pastures, margins of marshes and streams, and open country	MNRF 2016; Ontario Nature 2015	No	No
Plestiodon fasciatus	Common Five-lined Skink (*Carolinian population*)	S2	END	E	Schedule 1	Moderately dense or open deciduous or mixed woodlands with logs and slash piles; damp spots under logs, leaf litter or sawdust	MNRF 2016; Ontario Nature 2015	Yes (however, not known from the vicinity)	No

Appendix IV. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[9,10.11, 12]	Background Source	Suitable Habitats within Study Area	Observed by NRSI
Thamnophis sauritus septentrionalis	Eastern Ribbonsnake	S3	SC	SC		sunny grassy areas with low dense vegetation near bodies of shallow permanent quiet water; wet meadows, grassy marshes or sphagnum bogs; borders of ponds, lakes or streams	MNRF 2016	No	No
Sternotherus odoratus	Eastern Musk Turtle	S3	SC	SC	Schedule 1	Aquatic, except when laying eggs; shallow, slow moving water of lakes, streams, marshes and ponds	MNRF 2016	No	No
Graptemys geographica	Northern Map Turtle	S3	SC	SC	Schedule 1	large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water; home range size is larger for females (about 70 ha) than males (about 30 ha) and includes hibernation, basking, nesting and feeding areas; aquatic corridors (e.g. stream) are required for movement	MNRF 2016	No	No
Regina septemvittata	Queensnake	S2	END	E		margins of streams with slow currents and gravel bottoms; shorelines with rocks and debris; old quarries; canals; aquatic habitat with overhanging trees, particularly willows	MNRF 2016	No	No
Sistrurus catenatus catenatus pop. 2	Eastern massasauga Rattlesnake *(Carolinian population*)		END	E		use upland, old field in summer; marsh, shrub swamp or bog; rivers and streams that provide sedge or low vegetation growth; in fal and winter; hibernate underground in mammal burrows, under rotting stumps, in rock crevices	MNRF 2015	No	No
Chelydra serpentina serpentina	Snapping Turtle	S3	SC	SC		permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites	MNRF 2016; Ontario Nature 2015	No	No
Apalone spinifera spinifera	Spiny Softshell	S3	THR	E	Schedule 1	Intolerant of pollution; large river systems, shallow lakes and ponds with muddy bottoms and aquatic vegetation; basks on sandbars, mudflats, grassy beaches, logs or rocks	MNRF 2016	No	No

Appendix IV. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[9,10.11, 12]	Background Source	Suitable Habitats within Study Area	Observed by NRSI
Pseudacris triseriata pop. 1	Western Chorus Frog *(Carolinian Population)*	S4	NAR	NAR		roadside ditches or temporary ponds in fields; swamps or wet meadows; woodland or open country with cover and moisture; small ponds and temporary pools	Ontario Nature 2015	No	No
Mammals									
Taxidea taxus jacksoni	American Badger	S2	END	E		open grasslands and oak savannahs	MNRF 2016	No	No
Myotis leibii	Eastern Small-footed Bat	S2S3	END			Roosts in caves, mines shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; forages in forests	Environment Canada 2015	No	No
Myotis lucifuga	Little Brown Myotis	S3?	END	E		uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges	Environment Canada 2015	Yes	No
Myotis septentrionalis	Northern Myotis	S3	END	E		hibernates during winter in mines or caves; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy	Environment Canada 2015	Yes	No
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	Schedule 1	Open woods near water; roosts in trees, cliff crevices, buildings or caves; hibernates in damp, draft-free warm caves, mines or rock crevices	Environment Canada 2015	Yes	No
Microtus pinetorum	Woodland Vole	S3?	SC	SC	Schedule 1	Mature deciduous forest in the Carolinian forest zone, with loose sandy soil and deep humus; grasslands, meadows and orchards with groundcover of duff or grass	MNRF 2016	No	No
Insects									
Papaipema aweme	Aweme Borer Moth		END	END	Schedule 1	May live in prairie habitats, such as sand dunes and oak savannas; four of five areas where the species has been collected in North America are along the Great Lakes shoreline	MNRF 2016	No	No
Danaus plexippus	Monarch	S2N, S4B	SC	SC	Schedule 1	Host plant is Milkweed (*Asclepias* spp.)	Jones et al. 2013	No	No
Cicindela patruela	Northern Barrens Tiger Beetle		END	END	Schedule 1	occurs in natural or other openings in sandy oak-pine woodlands and savannah; prefers area with sparse understory vegetation over coarse-grained sand deposits	MNRF 2016	No	No

Appendix IV. Federally and Provincially Significant Species Known from the Study Area and Vicinity

Scientific Name	Common Name	SRANK[1]	COSSARO[2]	COSEWIC[3]	SARA Schedule[4]	Habitat Preference[9,10.11, 12]	Background Source	Suitable Habitats within Study Area	Observed by NRSI
Bombus affinis	Rusty-patched Bumblebee	S1	END	E	Schedule 1	can be found in open habitat such as mixed farmland, urban settings, savannah, open woods and sand dunes	MNRF 2016	No	No
Fish									
Acipenser fulvescens	Lake Sturgeon	S2	THR	T	No Schedule	Bottoms of lakes and large rivers, usually 5 to 10 m deep, over clay, mud, sand and gravel; preferred water temperature range 15-17°C.	MNRF 2015	No	No

[1]MNRF 2014; [2]MNRF 2016a; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Richardson and Martin 1999, [6]Martin 1996; [7]Regional Municipality of Waterloo 1985; [8]Grealey 2010; [9]OMNR 2000; [10]MNRF 2014b; [11]Michigan Flora Online 2016

[12]MNRF 2017b

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SNA Unranked
B Breeding
N Non-breeding
S#? Rank Uncertain
COSSARO/COSEWIC
END/E Endangered
THR/T Threatened
SC/SC Special Concern
NAR Not at Risk
SARA Schedule
Schedule 1 Officially Protected under SARA
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1

Appendix VI
Tree Inventory

834 Lakeshore Road, Sarnia Tree Preservation Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native / Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
1	Red Oak	*Quercus rubra*	Native	1	73	6.5	Possible	Fair	Onsite	Remove	Site Grading	Yes	Large and small branch dieback
2	Eastern Red Cedar	*Juniperus virginiana*	Native	1	17	1.5	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Dieback, unbalanced due to competition
3	Black Walnut	*Juglans nigra*	Native	1	16	4.0	Probable	Poor	Onsite	Remove	Site Grading/Health	No	Dieback, grapevine in canopy, unbalanced crown
4	Manitoba Maple	*Acer negundo*	Native	1	12	2.5	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Lean, grapevine in canopy, dieback
5	Manitoba Maple	*Acer negundo*	Native	1	11	3.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Lean over southwest into lines, decay in pruned stems
6	Black Walnut	*Juglans nigra*	Native	1	67	6.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Some dieback
7	Manitoba Maple	*Acer negundo*	Native	1	15	2.5	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Phototrophic growth into lines under adjacent walnut, grapevine in canopy, dieback, epicormic shoots
8	Eastern Red Cedar	*Juniperus virginiana*	Native	1	10	0.5	Probable	Dead	Onsite	Remove	Site Grading/Health	No	Dead
9	Norway Maple	*Acer platanoides*	Non-Native	2	12	3.0	Possible	Fair	Onsite	Remove	Site Grading	No	Fence through stem, lean, some dieback, growing adjacent to walnut
10	Manitoba Maple	*Acer negundo*	Native	1	21	2.5	Probable	Poor	Onsite	Remove	Site Grading/Health	No	Epicormic shoots, bark cracks up leader, mostly dead
11	Red Oak	*Quercus rubra*	Native	1	62	5.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Dieback on small & large branches, old pruned scaffold branch, seam with callous, history of branch failure
12	Manitoba Maple	*Acer negundo*	Native	2	47	6.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Large codominant stems, epicormic shoots, some dieback, cavity present but used for nesting and not suitable for bats
13	Norway Maple	*Acer platanoides*	Non-Native	1	14	2.0	Possible	Fair	Onsite	Remove	Site Grading	No	Some dieback & bark cracks with bacterial staining
14	Norway Maple	*Acer platanoides*	Non-Native	1	23	2.5	Improbable	Fair	Onsite	Remove	Site Grading	No	Corrected lean, some dieback
15	Norway Maple	*Acer platanoides*	Non-Native	1	27	3.0	Possible	Fair	Onsite	Remove	Site Grading	No	Slight lean and dieback
16	Scots Pine	*Pinus sylvestris*	Non-Native	1	11	1.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Reduced crown
17	Scots Pine	*Pinus sylvestris*	Non-Native	1	14	1.5	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Reduced crown
18	Red Oak	*Quercus rubra*	Native	1	13	2.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Reduced crown, some dieback
19	Norway Maple	*Acer platanoides*	Non-Native	1	33	3.0	Possible	Fair	Onsite	Remove	Site Grading	No	Bark cracks, shallow roots, some dieback
20	Black Oak	*Quercus velutina*	Native	1	14	3.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Dieback, unbalanced crown
21	Scots Pine	*Pinus sylvestris*	Non-Native	1	23	1.0	Probable	Dead	Onsite	Remove	Site Grading/Health	No	Dead
22	Norway Maple	*Acer platanoides*	Non-Native	1	17	3.5	Possible	Fair	Onsite	Remove	Site Grading	No	Some dieback, slight lean
23	Red Oak	*Quercus rubra*	Native	1	30	5.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Girdling roots, some dieback
24	Red Oak	*Quercus rubra*	Native	1	24	3.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Lean, grapevine in canopy, dieback
25	Red Oak	*Quercus rubra*	Native	1	13	1.5	Possible	Fair	Onsite	Remove	Site Grading	Yes	Dieback, history of branch failure
26	Norway Maple	*Acer platanoides*	Non-Native	1	25	3.5	Possible	Fair	Onsite	Remove	Site Grading	No	Lean, some dieback
27	Scots Pine	*Pinus sylvestris*	Non-Native	1	14	1.0	Possible	Fair	Onsite	Remove	Site Grading	No	Reduced crown
28	Norway Maple	*Acer platanoides*	Non-Native	1	14	2.5	Possible	Fair	Onsite	Remove	Site Grading	No	Some dieback, exposed root, lean
29	Manitoba Maple	*Acer negundo*	Native	1	12	1.5	Possible	Fair	Onsite	Remove	Site Grading	Yes	Epicormic shoots, dieback
30	Scots Pine	*Pinus sylvestris*	Non-Native	1	15		Probable	Dead	Onsite	Remove	Site Grading/Health	No	Dead
31	Scots Pine	*Pinus sylvestris*	Non-Native	1	16	1.0	Possible	Fair	Onsite	Remove	Site Grading	No	Reduced crown
32	Black Oak	*Quercus velutina*	Native	1	14	1.5	Possible	Fair	Onsite	Remove	Site Grading	Yes	Dieback, lean, reduced crown
33	Scots Pine	*Pinus sylvestris*	Non-Native	1	15		Probable	Dead	Onsite	Remove	Site Grading/Health	No	Dead
34	White Elm	*Ulmus americana*	Native	1	25	3.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Dieback, history of branch failure
35	Scots Pine	*Pinus sylvestris*	Non-Native	1	13	1.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Reduced crown
36	Black Oak	*Quercus velutina*	Native	1	31	4.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Dieback, history of branch failure
37	Scots Pine	*Pinus sylvestris*	Non-Native	1	13	1.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Reduced crown
38	Black Walnut	*Juglans nigra*	Native	1	27	3.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Unbalanced crown, dieback
39	Black Walnut	*Juglans nigra*	Native	1	26	3.5	Possible	Fair	Onsite	Remove	Site Grading	Yes	Dieback
40	Black Walnut	*Juglans nigra*	Native	1	11	1.5	Possible	Fair	Onsite	Remove	Site Grading	Yes	Lean due to phototrophic growth, dieback

Tree Number	Common Name	Scientific Name	Native / Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
41	Black Walnut	*Juglans nigra*	Native	1	16	4.0	Probable	Poor	Onsite	Remove	Site Grading/Health	No	Extreme lean on one side, leader arches 6m in, few living buds remain
42	Norway Maple	*Acer platanoides*	Non-Native	2	33	6.0	Possible	Fair	Onsite	Remove	Site Grading	No	Some dieback, codominant stems with split, girdling roots
43	Eastern Red Cedar	*Juniperus virginiana*	Native	1	18	1.5	Possible	Dead	Onsite	Retain			Dead
44	Norway Maple	*Acer platanoides*	Non-Native	1	21	2.0	Possible	Fair	Onsite	Retain			Dieback
45	White Mulberry	*Morus alba*	Non-Native	1	19	4.0	Possible	Poor	Onsite	Retain			Lean, dieback, staining
46	Norway Maple	*Acer platanoides*	Non-Native	1	38	5.0	Possible	Fair	Onsite	Retain			Girdling roots, some dieback
47	White Spruce	*Picea glauca*	Native	1	21	2.0	Possible	Fair	Onsite	Retain			Unbalanced crown
48	White Spruce	*Picea glauca*	Native	1	26	1.0	Possible	Poor	Onsite	Retain			Reduced crown
49	White Spruce	*Picea glauca*	Native	1	24	1.0	Possible	Poor	Onsite	Retain			Reduced crown, dieback
50	Norway Maple	*Acer platanoides*	Non-Native	1	16	3.0	Improbable	Good	Onsite	Retain			Minimal dieback
51	White Spruce	*Picea glauca*	Native	1	18	2.0	Improbable	Fair	Onsite	Retain			Some dieback
52	White Spruce	*Picea glauca*	Native	1	16	1.5	Possible	Dead	Onsite	Retain			Dead
53	Manitoba Maple	*Acer negundo*	Native	1	15	2.5	Possible	Fair	Onsite	Retain			Unbalanced crown, dieback
54	White Spruce	*Picea glauca*	Native	1	22	1.0	Probable	Dead	Onsite	Retain			Dead
55	White Spruce	*Picea glauca*	Native	1	17	1.5	Possible	Dead	Onsite	Retain			Dead
56	White Spruce	*Picea glauca*	Native	1	13	1.0	Possible	Dead	Onsite	Retain			Dead
57	Black Cherry	*Prunus serotina*	Native	1	19	3.5	Possible	Fair	Onsite	Retain			Dieback, codominant branches
58	White Oak	*Quercus alba*	Native	1	34	3.5	Possible	Fair	Adjacent Property	Retain			History of branch failure, dieback, gypsy moth egg mass
59	White Oak	*Quercus alba*	Native	1	50	5.0	Possible	Fair	Adjacent Property	Retain			Unbalanced crown, dieback
60	Black Cherry	*Prunus serotina*	Native	1	13	2.5	Possible	Fair	Adjacent Property	Retain			Dieback
61	Red Oak	*Quercus rubra*	Native	1	76	6.5	Possible	Fair	Adjacent Property	Retain			Staining down scaffold branch union, dieback, history of branch failure
62	White Oak	*Quercus alba*	Native	1	68	7.0	Possible	Fair	Adjacent Property	Retain			Dieback, history of branch failure
63	White Elm	*Ulmus americana*	Native	1	23	5.0	Possible	Fair	Onsite	Retain			Dieback
64	White Oak	*Quercus alba*	Native	2	48	6.5	Possible	Fair	Onsite	Retain			Dieback, history of branch failure, one stem with more branch failure
65	Norway Maple	*Acer platanoides*	Non-Native	1	58	5.0	Probable	Poor	Onsite	Retain			Large scaffold branch tore off stem with callous, other scaffold branch failures, dieback
66	White Oak	*Quercus alba*	Native	1	64	7.0	Possible	Fair	Onsite	Retain			Unbalanced crown, history of branch failure, dieback
67	Black Oak	*Quercus velutina*	Native	1	48	5.0	Probable	Poor	Onsite	Retain			Extensive branch failure including scaffold branches, staining, dieback, potential bat cavity tree
68	Sweet Cherry	*Prunus avium*	Non-Native	1	17	4.0	Possible	Fair	Onsite	Retain			Fair health, some potential for structural failure
69	Black Cherry	*Prunus serotina*	Native	1	11	1.0	Improbable	Good	Onsite	Retain			S-bend, some dieback
70	Norway Maple	*Acer platanoides*	Non-Native	1	17	2.0	Improbable	Good	Onsite	Retain			Some exposed roots, bend in stem, otherwise okay
71	White Oak	*Quercus alba*	Native	1	48	8.0	Possible	Fair	Onsite	Retain			History of branch failure, dieback, heavy lean
72	White Oak	*Quercus alba*	Native	1	76	6.0	Probable	Dead	Onsite	Retain			Dead
73	Manitoba Maple	*Acer negundo*	Native	1	32	5.0	Possible	Fair	Onsite	Retain			Epicormic shoots, open cankers on both codominant branches, minimal dieback
74	Black Cherry	*Prunus serotina*	Native	1	35	3.0	Possible	Fair	Onsite	Retain			Poor structure, bent leader, epicormic growth, dieback
75	Manitoba Maple	*Acer negundo*	Native	2	24	4.5	Probable	Poor	Onsite	Retain			One stem is dead, lean, epicormic shoots, dieback, branch failure
76	Norway Maple	*Acer platanoides*	Non-Native	1	44	4.5	Improbable	Good	Onsite	Retain			Girdling root, few branch failures
77	Norway Maple	*Acer platanoides*	Non-Native	1	14	3.0	Possible	Fair	Onsite	Retain			Unbalanced crown, s-bend, dieback
78	Eastern White Pine	*Pinus strobus*	Native	1	11	1.5	Improbable	Fair	Adjacent Property	Retain			Sparse crown, gummosis
79	Black Oak	*Quercus velutina*	Native	1	63	1.0	Probable	Dead	Onsite	Retain			Dead
80	White Spruce	*Picea glauca*	Native	1	19	1.5	Possible	Fair	Onsite	Retain			One-sided crown
81	Manitoba Maple	*Acer negundo*	Native	1	31	4.0	Possible	Fair	Onsite	Retain			Staining, epicormic shoots, dieback
82	Manitoba Maple	*Acer negundo*	Native	1	23	5.0	Probable	Poor	Onsite	Retain			Lean, dieback, grapevine in canopy, open wound
83	Manitoba Maple	*Acer negundo*	Native	1	18	1.0	Probable	Poor	Onsite	Retain			Bark cracks, cankers, epicormic shoots
84	White Oak	*Quercus alba*	Native	2	31	5.0	Possible	Fair	Onsite	Retain			Dieback, grapevine, codominant stems with included bark
85	Black Cherry	*Prunus serotina*	Native	1	26	3.5	Possible	Fair	Onsite	Retain			Dieback, unbalanced crown, s-bend
86	Black Cherry	*Prunus serotina*	Native	1	16	3.0	Possible	Fair	Onsite	Retain			Dieback, s-bend, history of branch failure
87	Norway Maple	*Acer platanoides*	Non-Native	1	12	2.0	Improbable	Good	Onsite	Retain			Minimal dieback, exposed roots
88	Black Oak	*Quercus velutina*	Native	1	39	5.0	Probable	Poor	Onsite	Retain			Large codominant branch failed, stem with bark cracks, dieback
89	Manitoba Maple	*Acer negundo*	Native	1	13	2.0	Probable	Poor	Onsite	Retain			Epicormic shoots, dieback, staining, bark cracks

Tree Number	Common Name	Scientific Name	Native / Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
90	Black Cherry	*Prunus serotina*	Native	1	17	3.0	Possible	Fair	Onsite	Retain			Dieback, gravel piled around base
91	White Oak	*Quercus alba*	Native	1	33	3.5	Possible	Fair	Onsite	Retain			Dieback, unbalanced crown, bend in stem
92	Norway Maple	*Acer platanoides*	Non-Native	1	26	3.0	Improbable	Fair	Onsite	Retain			Exposed roots, dieback, bend in stem
93	White Oak	*Quercus alba*	Native	1	16	1.0	Possible	Poor	Onsite	Retain			Sapsucker damage, dieback throughout, epicormic shoots
94	Norway Maple	*Acer platanoides*	Non-Native	1	18	3.0	Possible	Fair	Onsite	Retain			Dieback, wound on upper stem due to rubbing against adjacent tree
95	White Oak	*Quercus alba*	Native	1	40	6.5	Possible	Fair	Onsite	Retain			Heavy crown, codominant branches, epicormic shoots
96	Black Oak	*Quercus velutina*	Native	1	78	8.0	Possible	Fair	Onsite	Retain			Staining at root flare and in upper canopy, fungi on dead limb, history of branch failure, cavity on scaffold branch suitable for bats
97	Norway Maple	*Acer platanoides*	Non-Native	1	22	4.0	Improbable	Fair	Onsite	Retain			Exposed roots, gravelly sand on roots, dieback, bend in upper stem
98	Black Cherry	*Prunus serotina*	Native	1	17	1.0	Possible	Poor	Onsite	Retain			Vine up stem and in crown, lean, leader snapped
99	Black Cherry	*Prunus serotina*	Native	1	15	2.5	Possible	Poor	Onsite	Retain			Vine up stem, decay in one codominant branch, dieback
100	Black Oak	*Quercus velutina*	Native	1	54	7.0	Possible	Fair	Onsite	Retain			Staining from small cavity, history of branch failure, some dieback, heavy crown
101	Horsechestnut	*Aesculus hippocastanum*	Non-Native	1	20	3.0	Possible	Fair	Onsite	Retain			Exposed roots, dieback
102	Manitoba Maple	*Acer negundo*	Native	1	18	6.0	Probable	Poor	Adjacent Property	Retain			Lean, dieback, grapevine in crown, epicormic shoots
103	Black Cherry	*Prunus serotina*	Native	1	27	3.0	Probable	Poor	Onsite	Retain			Epicormic shoots, large wound on stem, dieback
104	White Oak	*Quercus alba*	Native	1	47	1.0	Probable	Dead	Onsite	Retain			Armillaria rot present
105	Norway Maple	*Acer platanoides*	Non-Native	1	28	4.0	Improbable	Fair	Onsite	Retain			Some dieback, slight bend, exposed roots
106	White Oak	*Quercus alba*	Native	1	26	0.5	Probable	Dead	Onsite	Retain			Dead
107	Norway Maple	*Acer platanoides*	Non-Native	1	11	2.0	Improbable	Fair	Onsite	Retain			No leader, dieback
108	Norway Maple	*Acer platanoides*	Non-Native	2	36	4.5	Possible	Fair	Onsite	Retain			Codominant stems with included bark and staining
109	Norway Maple	*Acer platanoides*	Non-Native	1	20	3.0	Improbable	Fair	Onsite	Retain			Adjacent tree rubbing stem, dieback, exposed roots
110	White Oak	*Quercus alba*	Native	1	18		Probable	Dead	Onsite	Retain			Dead
111	White Oak	*Quercus alba*	Native	1	37	3.5	Improbable	Fair	Onsite	Retain			Some dieback, history of branch failure
112	White Oak	*Quercus alba*	Native	1	29	4.0	Possible	Fair	Onsite	Retain			Unbalanced crown, sand/gravel piled next to tree
113	Norway Maple	*Acer platanoides*	Non-Native	1	31	3.5	Possible	Fair	Onsite	Retain			Bark cracks, calloused cracks, some dieback
114	Black Cherry	*Prunus serotina*	Native	1	15	3.3	Possible	Fair	Onsite	Retain			Calloused wounds, epicormic shoots, lean, reduced crown
115	Black Oak	*Quercus velutina*	Native	1	44		Probable	Dead	Onsite	Retain			Dead
116	Black Cherry	*Prunus serotina*	Native	1	14	1.0	Possible	Fair	Onsite	Retain			Large stem wound with callous, lean, dieback
117	White Oak	*Quercus alba*	Native	1	42	4.7	Improbable	Good	Onsite	Retain			Unbalanced crown, epicormic shoots, dieback
118	Norway Maple	*Acer platanoides*	Non-Native	1	21	4.0	Improbable	Fair	Onsite	Retain			Epicormic shoots, history of branch failure, dieback
119	Norway Maple	*Acer platanoides*	Non-Native	1	24	3.0	Improbable	Fair	Onsite	Retain			Bend in upper stem, exposed roots, some dieback
120	Black Cherry	*Prunus serotina*	Native	1	45	6.0	Possible	Fair	Onsite	Retain			History of branch failure, calloused wounds, epicormic shoots
121	Black Cherry	*Prunus serotina*	Native	1	15	2.0	Possible	Fair	Onsite	Retain			Reduced crown, dieback
122	Norway Maple	*Acer platanoides*	Non-Native	1	25	3.0	Improbable	Fair	Onsite	Retain			Exposed roots, epicormic shoots, some dieback
123	Norway Maple	*Acer platanoides*	Non-Native	1	22	3.5	Improbable	Fair	Onsite	Retain			Lean, dieback, unbalanced crown
124	Norway Maple	*Acer platanoides*	Non-Native	1	34	5.0	Improbable	Fair	Boundary	Retain			Exposed roots, girdling roots, vigorous crown
125	White Oak	*Quercus alba*	Native	1	32	3.0	Improbable	Fair	Adjacent Property	Retain			Located in gravel shoulder, epicormic shoots, some dieback
126	Black Oak	*Quercus velutina*	Native	1	47	5.0	Possible	Fair	Adjacent Property	Retain			Bacterial staining, lean, epicormic shoots, evidence of rot, history of branch failure, cavities (not suitable for bats), dieback
127	Norway Maple	*Acer platanoides*	Non-Native	1	31	3.5	Improbable	Fair	Boundary	Retain			Bend in stem, some dieback
128	Black Cherry	*Prunus serotina*	Native	1	22	4.5	Possible	Fair	Adjacent Property	Retain			Dieback, unbalanced crown
129	Black Oak	*Quercus velutina*	Native	1	64	6.5	Possible	Fair	Adjacent Property	Retain			Calloused wound with frass, heavy crown, some dieback, history of branch failure, cavity on stem (not suitable bats)
130	Black Cherry	*Prunus serotina*	Native	1	17	2.5	Possible	Fair	Boundary	Retain			One codominant branch dead, other in fair condition
131	Norway Maple	*Acer platanoides*	Non-Native	1	19	3.0	Improbable	Good	Onsite	Retain			Bend in stem, otherwise vigorous
132	Norway Maple	*Acer platanoides*	Non-Native	1	27	3.3	Improbable	Fair	Onsite	Retain			Exposed roots, bend in stem, some dieback
133	Black Oak	*Quercus velutina*	Native	1	52	2.0	Probable	Dead	Onsite	Retain			Dead
134	Black Cherry	*Prunus serotina*	Native	1	27	4.0	Possible	Fair	Onsite	Retain			Some dieback, history of branch failure, vine up stem, lean
135	Black Cherry	*Prunus serotina*	Native	1	13	1.0	Possible	Fair	Onsite	Retain			Lean, dieback
136	Black Cherry	*Prunus serotina*	Native	1	19	2.5	Improbable	Fair	Onsite	Retain			Some dieback

Tree Number	Common Name	Scientific Name	Native / Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
137	Black Oak	*Quercus velutina*	Native	1	24	3.0	Improbable	Fair	Onsite	Retain			Slight lean, some dieback
138	Black Cherry	*Prunus serotina*	Native	1	22	3.0	Possible	Poor	Onsite	Retain			Vine up stem, some deadwood, gummosis, fungi
139	Black Cherry	*Prunus serotina*	Native	1	16	2.0	Possible	Poor	Onsite	Retain			Gummosis, reduced and unbalanced crown, dieback
140	Black Walnut	*Juglans nigra*	Native	1	13		Probable	Dead	Onsite	Retain			Dead
141	Black Oak	*Quercus velutina*	Native	1	75	7.0	Possible	Poor	Onsite	Retain			Codominant branches (one dead), bark cracks off main stem, cavity in dead stem (not suitable for bats)
142	Black Cherry	*Prunus serotina*	Native	1	25	2.0	Probable	Dead	Onsite	Retain			Dead
143	Norway Maple	*Acer platanoides*	Non-Native	1	21	3.5	Improbable	Good	Onsite	Retain			Bend in stem, otherwise vigorous
144	Norway Maple	*Acer platanoides*	Non-Native	1	22	3.5	Improbable	Fair	Onsite	Retain			Lean, dieback, unbalanced crown, exposed roots
145	Black Oak	*Quercus velutina*	Native	1	15	2.0	Improbable	Fair	Onsite	Retain			Lean, unbalanced crown, dieback
146	Black Cherry	*Prunus serotina*	Native	1	21	3.0	Possible	Fair	Onsite	Retain			Dieback, unbalanced crown, epicormic shoots
147	Norway Maple	*Acer platanoides*	Non-Native	1	27	3.0	Improbable	Good	Onsite	Retain			Bend in upper stem, otherwise vigorous
148	Black Oak	*Quercus velutina*	Native	1	46	4.0	Possible	Poor	Onsite	Retain			Unbalanced crown, basal rot, history of branch failure, large limb extends over sidewalk
149	Black Walnut	*Juglans nigra*	Native	1	11	2.5	Improbable	Good	Adjacent Property	Retain			Codominant leaders
150	Scots Pine	*Pinus sylvestris*	Non-Native	1	27	2.0	Improbable	Fair	Onsite	Remove	Site Grading	No	Slightly unbalanced crown, minor dieback, squirrel nest
151	Red Pine	*Pinus resinosa*	Non-Native	1	54	2.5	Probable	Dead	Adjacent Property	Remove	Site Grading/Health	No	Previously topped, dead branches, heartwood rot
152	Black Walnut	*Juglans nigra*	Native	1	17	3.0	Improbable	Good	Adjacent Property	Remove	Site Grading	Yes	Crooked stem at top
153	Red Oak	*Quercus rubra*	Native	1	23	3.5	Improbable	Good	Adjacent Property	Retain			Two dead branches
154	Scots Pine	*Pinus sylvestris*	Non-Native	1	13	1.0	Probable	Dead	Onsite	Remove	Site Grading/Health	No	All branches dead, shedding bark, supporting a leaning dead tree
155	Norway Maple	*Acer platanoides*	Non-Native	1	31	4.0	Improbable	Good	Onsite	Remove	Site Grading	No	One girdling root, one scaffold branch with poor union
156	Scots Pine	*Pinus sylvestris*	Non-Native	1	18	0.5	Possible	Dead	Onsite	Remove	Site Grading/Health	No	Shedding bark, insect galleries, all branches dead
157	Black Oak	*Quercus velutina*	Native	1	15	3.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Irregular crown with some dieback
158	Scots Pine	*Pinus sylvestris*	Non-Native	1	18	0.5	Probable	Dead	Onsite	Remove	Site Grading/Health	No	Woodpecker damage, no living crown
159	Eastern Red Cedar	*Juniperus virginiana*	Native	1	11	0.8	Possible	Very Poor	Onsite	Remove	Site Grading/Health	No	Extensive crown dieback, stem stil relatively solid
160	Red Oak	*Quercus rubra*	Native	1	39	5.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Some light pruning in scaffold branches, good root flare
161	Sugar Maple	*Acer saccharum ssp. saccharum*	Native	1	22	3.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Solid stem with full crown
162	Manitoba Maple	*Acer negundo*	Native	3	11	2.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Epicormic shoots, insect feeding with some rot
163	Black Walnut	*Juglans nigra*	Native	1	35	5.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Slightly one-sided crown, otherwise solid, healthy tree
164	Black Walnut	*Juglans nigra*	Native	1	38	5.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Full, healthy crown with solid stem, good root flare
165	Eastern Red Cedar	*Juniperus virginiana*	Native	1	24	1.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Off-property with minimal crown over subject property
166	Eastern Red Cedar	*Juniperus virginiana*	Native	1	21	1.5	Improbable	Good	Onsite	Remove	Site Grading	Yes	Relatively full crown
167	Eastern Red Cedar	*Juniperus virginiana*	Native	1	31	1.3	Improbable	Fair	Onsite	Remove	Site Grading	Yes	One-sided crown due to competition for sunlight with adjacent cedar, off-property, growing very close to fence
168	Manitoba Maple	*Acer negundo*	Native	2	21	2.3	Possible	Fair	Onsite	Remove	Site Grading	Yes	Codominant stems with some included bark, some crown dieback, epicormic growth
169	Black Walnut	*Juglans nigra*	Native	1	11	1.5	Improbable	Good	Onsite	Remove	Site Grading	Yes	Minimal dieback, solid stem
170	Red Oak	*Quercus rubra*	Native	2	14	2.5	Improbable	Good	Onsite	Remove	Site Grading	Yes	Relatively full crown with minimal light pruning
171	Scots Pine	*Pinus sylvestris*	Non-Native	1	14	0.3	Probable	Dead	Onsite	Remove	Site Grading/Health	No	Dead
172	Norway Maple	*Acer platanoides*	Non-Native	1	20	2.3	Improbable	Good	Onsite	Remove	Site Grading	No	Full crown with solid stem
173	Scots Pine	*Pinus sylvestris*	Non-Native	1	25	3.5	Possible	Fair	Onsite	Remove	Site Grading	No	One-sided crown with slight lean
174	Scots Pine	*Pinus sylvestris*	Non-Native	1	22	2.8	Possible	Fair	Onsite	Remove	Site Grading	No	Crown growing on 45 degree angle, some insect feeding
175	Norway Maple	*Acer platanoides*	Non-Native	1	14	2.5	Improbable	Good	Onsite	Remove	Site Grading	No	Relatively full crown with solid stem
176	Red Oak	*Quercus rubra*	Native	1	30	4.5	Improbable	Good	Onsite	Remove	Site Grading	Yes	Full crown with solid stem, minimal scaffold dieback
177	Scots Pine	*Pinus sylvestris*	Non-Native	1	28	2.0	Possible	Fair	Onsite	Remove	Site Grading	No	Minimal woodpecker damage
178	Scots Pine	*Pinus sylvestris*	Non-Native	1	18	1.5	Possible	Fair	Onsite	Remove	Site Grading	No	Narrow crown due to competition for sunlight, growing on slight angle

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179	Scots Pine	*Pinus sylvestris*	Non-Native	1	18	1.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	One-sided crown with quite a bit of dieback
180	Norway Maple	*Acer platanoides*	Non-Native	1	23	4.0	Improbable	Good	Onsite	Remove	Site Grading	No	Full crown with solid stem, growing close to existing laneway
181	Red Oak	*Quercus rubra*	Native	2	36	4.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Slightly reduced crown, solid stem, some scaffold dieback
182	Black Oak	*Quercus velutina*	Native	1	38	6.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Large, full crown, minimal scaffold dieback
183	Red Oak	*Quercus rubra*	Native	2	12	0.3	Possible	Dead	Onsite	Remove	Site Grading/Health	No	Some bark loss, crown draped in grapevine
184	Red Oak	*Quercus rubra*	Native	1	16	1.5	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Reduced crown draped in grapevine, dieback, stem still relatively solid
185	Tree-of-Heaven	*Ailanthus altissima*	Non-Native	1	25	4.0	Improbable	Good	Onsite	Retain			Girdling roots, one stem with codominant leaders
186	Black Walnut	*Juglans nigra*	Native	1	16	2.5	Improbable	Good	Onsite	Retain			Some crown dieback, solid stem
187	Black Walnut	*Juglans nigra*	Native	1	21	3.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Codominant stems with included bark, full crown with solid stem
188	Black Willow	*Salix nigra*	Native	1	24	2.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Codominant leaders with included bark, few dead branches
189	Manitoba Maple	*Acer negundo*	Native	1	15	2.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Epicormic growth, shedding bark on two upper branches, unbalanced crown
190	Trembling Aspen	*Populus tremuloides*	Native	1	32	4.0	Improbable	Good	Onsite	Retain			Tight branch angle, growing against fence
191	Black Walnut	*Juglans nigra*	Native	1	28	4.0	Possible	Fair	Onsite	Retain			Slightly one-sided crown, few bark wounds on main stem and scaffold branches
192	Manitoba Maple	*Acer negundo*	Native	1	76	9.0	Possible	Fair	Onsite	Retain			One-sided crown, growing on extreme angle, history of branch failure,epicormic growth, small cavity at root flare (not suitable for bats)
193	Tree-of-Heaven	*Ailanthus altissima*	Non-Native	1	20	3.0	Improbable	Good	Onsite	Retain			Compartmentalized stem wound
194	White Mulberry	*Morus alba*	Non-Native	1	13	2.0	Improbable	Fair	Onsite	Retain			Exposed feeder roots, slight lean, reduced crown
195	White Spruce	*Picea glauca*	Native	1	22	2.0	Possible	Dead	Onsite	Retain			Dead crown, shedding bark
196	White Oak	*Quercus alba*	Native	1	24	4.0	Improbable	Fair	Onsite	Retain			Codominant stems with included bark, few dead branches
197	Norway Maple	*Acer platanoides*	Non-Native	1	19	3.0	Improbable	Fair	Onsite	Retain			Somewhat crooked stem, compartmentalized wounds
198	Black Cherry	*Prunus serotina*	Native	1	14	2.5	Improbable	Fair	Onsite	Retain			Slight lean, phototrophic growth
199	Black Oak	*Quercus velutina*	Native	1	48	6.0	Improbable	Good	Onsite	Retain			Growing on slight angle, some light pruning in lower scaffold branches
200	Black Cherry	*Prunus serotina*	Native	1	16	2.8	Improbable	Fair	Onsite	Retain			Fungus on one branch, slightly reduced crown due to competition with adjacent tree
201	White Spruce	*Picea glauca*	Native	1	16	2.0	Possible	Dead	Onsite	Retain			Dead crown, shedding bark, insect galleries
202	White Spruce	*Picea glauca*	Native	1	12	0.5	Possible	Dead	Onsite	Retain			Dead crown, shedding bark, insect galleries
203	Manitoba Maple	*Acer negundo*	Native	2	13	3.5	Improbable	Fair	Adjacent Property	Retain			Epicormic growth, growing on edge of driveway, compartmentalized wounds
204	Black Cherry	*Prunus serotina*	Native	2	14	2.5	Improbable	Fair	Adjacent Property	Retain			Unbalanced crown, crooked stem
205	Norway Maple	*Acer platanoides*	Non-Native	1	13	2.0	Improbable	Good	Onsite	Retain			Slightly suppressed crown, otherwise good
206	White Elm	*Ulmus americana*	Native	1	24	3.0	Improbable	Fair	Onsite	Retain			Slightly one-sided crown, some dieback
207	Black Cherry	*Prunus serotina*	Native	1	41	5.0	Possible	Fair	Onsite	Retain			Some scaffold branch dieback, history of branch failure
208	Manitoba Maple	*Acer negundo*	Native	4	25	4.5	Improbable	Good	Adjacent Property	Retain			Two stems with intertwining growth, full crown, growing on edge of driveway
209	White Elm	*Ulmus americana*	Native	1	22	2.5	Improbable	Fair	Boundary	Retain			Reduced crown, some insect feeding
210	Black Cherry	*Prunus serotina*	Native	1	32	2.5	Possible	Fair	Onsite	Retain			Reduced crown, some scaffold dieback, staining on root flare
211	Red Oak	*Quercus rubra*	Native	1	49	3.8	Possible	Poor	Onsite	Retain			Unbalanced crown, crown dieback
212	Norway Maple	*Acer platanoides*	Non-Native	1	11	2.3	Improbable	Good	Onsite	Retain			Full, relatively vigorous crown
213	Norway Maple	*Acer platanoides*	Non-Native	1	23	3.0	Improbable	Good	Onsite	Retain			Slightly phototrophic growth, minimal dieback
214	Norway Maple	*Acer platanoides*	Non-Native	1	13		Imminent	Dead	Onsite	Retain			No crown, extensive rot, open cavities (not suitable for bats)
215	Black Cherry	*Prunus serotina*	Native	1	32	3.0	Probable	Poor	Onsite	Retain			Wounds on main stem, narrow, unbalanced crown, crown dieback
216	Norway Maple	*Acer platanoides*	Non-Native	4	16	0.3	Probable	Very Poor	Onsite	Retain			Main stem dead, smaller stems with DBH of <10cm, shedding bark
217	White Elm	*Ulmus americana*	Native	1	15	3.0	Possible	Poor	Onsite	Retain			Dieback, unbalanced crown, wound in upper crown
218	Black Oak	*Quercus velutina*	Native	1	48	6.5	Possible	Fair	Onsite	Retain			Unbalanced crown, some dieback, one large dead scaffold limb

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219	Red Oak	*Quercus rubra*	Native	1	37		Probable	Dead	Onsite	Retain			No crown, missing bark
220	White Elm	*Ulmus americana*	Native	1	26		Probable	Dead	Onsite	Retain			No crown, shedding bark
221	Red Oak	*Quercus rubra*	Native	1	50	4.0	Probable	Dead	Onsite	Retain			No living crown, missing bark
222	Black Cherry	*Prunus serotina*	Native	1	27	2.5	Probable	Very Poor	Onsite	Retain			Extensive crown dieback, some rot in lower stem
223	Norway Maple	*Acer platanoides*	Non-Native	1	13	3.0	Possible	Fair	Onsite	Retain			Suppressed crown, some dieback
224	Norway Maple	*Acer platanoides*	Non-Native	1	19	3.0	Possible	Fair	Onsite	Retain			Suppressed crown, some dieback
225	Manitoba Maple	*Acer negundo*	Native	1	20	4.0	Probable	Poor	Onsite	Retain			Entire crown leaning toward off-property house, dieback, epicormic growth
226	Norway Maple	*Acer platanoides*	Non-Native	1	27	4.0	Possible	Good	Onsite	Retain			Minimal dieback, otherwise relatively full crown
227	Black Oak	*Quercus velutina*	Native	1	45	6.0	Possible	Poor	Boundary	Retain			Growing on 20 degree angle, crown dieback
228	Red Oak	*Quercus rubra*	Native	1	55	7.5	Possible	Fair	Onsite	Retain			Phototrophic growth in main leader, some scaffold dieback
229	Red Oak	*Quercus rubra*	Native	1	47	5.0	Improbable	Good	Onsite	Retain			Some crown dieback, relatively solid stem
230	Black Cherry	*Prunus serotina*	Native	1	17	3.0	Improbable	Fair	Onsite	Retain			Suppressed crown with some dieback
231	Manitoba Maple	*Acer negundo*	Native	1	20	2.5	Possible	Poor	Onsite	Retain			Narrow, suppressed crown with dieback, epicormic growth
232	White Oak	*Quercus alba*	Native	1	43	5.3	Improbable	Fair	Onsite	Retain			Slight lean with some dieback
233	Manitoba Maple	*Acer negundo*	Native	1	21	3.0	Possible	Fair	Onsite	Retain			Epicormic growth, some dieback
234	Black Cherry	*Prunus serotina*	Native	1	25	3.0	Possible	Poor	Onsite	Retain			Narrow crown with dieback, gypsy moth eggs
235	Black Cherry	*Prunus serotina*	Native	1	34	4.0	Possible	Fair	Onsite	Retain			Some woodpecker damage on main stem, one-sided crown with dieback
236	Norway Maple	*Acer platanoides*	Non-Native	1	54	6.0	Possible	Fair	Onsite	Retain			On slight lean, few sapsucker holes, small wound on lower stem, full crown
237	Manitoba Maple	*Acer negundo*	Native	1	12	2.0	Possible	Poor	Onsite	Retain			Narrow crown with dieback, evidence of some decay
238	Norway Maple	*Acer platanoides*	Non-Native	1	21	2.0	Possible	Fair	Onsite	Retain			Narrow, one-sided crown, relatively solid stem
239	Norway Maple	*Acer platanoides*	Non-Native	1	14	2.0	Improbable	Good	Onsite	Retain			Crown slightly suppressed, otherwise in good condition
240	Manitoba Maple	*Acer negundo*	Native	1	18	0.8	Probable	Poor	Onsite	Retain			Narrow crown with dieback, epicormic growth, evidence of rot on root flare
241	White Oak	*Quercus alba*	Native	1	36	3.0	Possible	Fair	Adjacent Property	Retain			Slight phototrophic growth, some dieback
242	Black Oak	*Quercus velutina*	Native	1	61	6.5	Possible	Good	Boundary	Retain			History of branch failure, relatively full crown, solid stem
243	Black Cherry	*Prunus serotina*	Native	1	13	4.0	Probable	Very Poor	Onsite	Retain			Minimal living crown, epicormic growth, rot on main stem
244	Norway Maple	*Acer platanoides*	Non-Native	1	21	3.8	Improbable	Good	Onsite	Retain			Slightly reduced crown due to competition with adjacent trees, otherwise relatively healthy
245	Norway Maple	*Acer platanoides*	Non-Native	1	22	3.5	Improbable	Good	Onsite	Retain			Slightly suppressed crown, otherwise relatively healthy
246	White Oak	*Quercus alba*	Native	1	33	4.0	Possible	Fair	Onsite	Retain			Some crown dieback, some insect feeding, irregular crown
247	Black Cherry	*Prunus serotina*	Native	1	17	3.0	Improbable	Good	Onsite	Retain			Relatively full crown, some sand up against root flare
248	Manitoba Maple	*Acer negundo*	Native	3	12	2.0	Probable	Poor	Onsite	Retain			Crack up main stem, some dieback
249	Black Cherry	*Prunus serotina*	Native	1	12	2.0	Improbable	Fair	Onsite	Retain			Suppressed crown due to competition with adjacent trees, minimal dieback
250	Manitoba Maple	*Acer negundo*	Native	1	17	2.5	Possible	Poor	Onsite	Retain			Crown dieback, upper crown on 50 degree angle
251	Black Cherry	*Prunus serotina*	Native	1	38	5.0	Possible	Poor	Onsite	Retain			Girdling root, scaffold branch dieback, poison ivy
252	Black Cherry	*Prunus serotina*	Native	1	14	2.0	Improbable	Fair	Onsite	Retain			Slightly suppressed crown with some dieback
253	Black Cherry	*Prunus serotina*	Native	2	14	3.0	Possible	Very Poor	Onsite	Retain			Extensive crown dieback, epicormic growth, draped in grapevine
254	White Mulberry	*Morus alba*	Non-Native	1	16	2.8	Possible	Very Poor	Adjacent Property	Retain			Extensive crown dieback, draped in grapevine, main stem still relatively solid
255	White Mulberry	*Morus alba*	Non-Native	1	14	2.3	Probable	Poor	Adjacent Property	Retain			Crown dieback, draped in grapevine, suppressed crown
256	Red Pine	*Pinus resinosa*	Non-Native	1	38	1.0	Probable	Dead	Adjacent Property	Retain			Extensive rot, exfoliating bark
257	Manitoba Maple	*Acer negundo*	Native	1	25	4.5	Possible	Very Poor	Adjacent Property	Retain			Main leaders snapped, epicormic growth, crown dieback
258	Norway Maple	*Acer platanoides*	Non-Native	1	18	3.0	Improbable	Fair	Onsite	Retain			Codominant leaders, slight pistol butt
259	Manitoba Maple	*Acer negundo*	Native	1	22	4.0	Possible	Fair	Onsite	Retain			Minor dieback, codominant leaders, two former stems cut with heartwood rot
260	Black Oak	*Quercus velutina*	Native	1	55	6.5	Improbable	Fair	Onsite	Retain			Large codominant leaders, unbalanced crown, poor branch structure, potential bat cavity but nesting material is present
261	Black Oak	*Quercus velutina*	Native	1	56	1.0	Probable	Dead	Onsite	Retain			Previously topped, hyphae under bark, shedding bark, dead branches
262	Eastern White Pine	*Pinus strobus*	Native	1	21	3.5	Improbable	Fair	Onsite	Retain			Pitch from a stem wound, crown thinning

Tree Number	Common Name	Scientific Name	Native / Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
263	Black Cherry	*Prunus serotina*	Native	1	23	4.0	Improbable	Fair	Onsite	Retain			Poor branch structure, epicormic growth
264	Norway Maple	*Acer platanoides*	Non-Native	1	26	4.5	Improbable	Fair	Onsite	Retain			Sand in root zone, unbalanced crown, two dead branches
265	Black Cherry	*Prunus serotina*	Native	2	14	2.5	Possible	Poor	Onsite	Retain			Former leader dead, thin crown
266	Black Cherry	*Prunus serotina*	Native	1	22	4.5	Possible	Poor	Onsite	Retain			Codominant leaders with included bark, bark wound near base, history of branch failure
267	Norway Maple	*Acer platanoides*	Non-Native	1	12	2.0	Improbable	Fair	Onsite	Retain			Compartmentalized wounds on stem, poor branch structure
268	Norway Maple	*Acer platanoides*	Non-Native	1	13	2.5	Possible	Fair	Onsite	Retain			Former leader dead, poor branch union
269	Black Oak	*Quercus velutina*	Native	1	37	5.5	Possible	Fair	Onsite	Retain			Unbalanced crown, leaning north, one broken branch with fruiting bodies, minor dieback
270	Black Cherry	*Prunus serotina*	Native	1	13	2.5	Possible	Poor	Onsite	Retain			Stem wounds with sap exuding, suppressed crown, branch rubbing adjacent tree
271	Black Cherry	*Prunus serotina*	Native	1	22	4.5	Probable	Very Poor	Onsite	Retain			Large surface root, codominant leaders with included bark, major bark wound on main branch
272	Black Oak	*Quercus velutina*	Native	1	44		Possible	Dead	Onsite	Retain			Topped snag
273	White Oak	*Quercus alba*	Native	1	31		Possible	Dead	Onsite	Retain			Topped snag, shedding bark
274	Norway Maple	*Acer platanoides*	Non-Native	1	19	3.5	Improbable	Fair	Onsite	Retain			Crooked stem, poor branch structure
275	Black Cherry	*Prunus serotina*	Native	1	18	6.0	Possible	Poor	Onsite	Retain			Heavy lean north, thin crown, one dead branch
276	Norway Maple	*Acer platanoides*	Non-Native	1	24	4.0	Possible	Fair	Boundary	Retain			Poor branch structure showing some leaders have failed in past, codominant leaders
277	Norway Maple	*Acer platanoides*	Non-Native	1	18	4.0	Improbable	Fair	Adjacent Property	Retain			Tall crown, poor branch structure at top, compartmentalized wounds on main stem
278	Black Oak	*Quercus velutina*	Native	1	57	10.0	Possible	Fair	Adjacent Property	Retain			One main limb broken then pruned, remaining limb leans heavily to east, one dead branch
279	Black Cherry	*Prunus serotina*	Native	1	21	3.5	Possible	Poor	Onsite	Retain			Significant dieback, minor epicormic growth
280	Norway Maple	*Acer platanoides*	Non-Native	1	17	3.0	Improbable	Fair	Onsite	Retain			Small stem crack, pronounced root flare
281	Black Cherry	*Prunus serotina*	Native	1	18	2.0	Possible	Fair	Onsite	Retain			Poor branch structure, minor epicormic growth
282	Black Cherry	*Prunus serotina*	Native	1	18	2.5	Possible	Fair	Onsite	Retain			Crooked stem, fruiting bodies on two branches
283	White Oak	*Quercus alba*	Native	1	26	5.0	Improbable	Fair	Onsite	Retain			Codominant leaders, two dead branches, lean north
284	Black Cherry	*Prunus serotina*	Native	1	16	3.0	Improbable	Fair	Onsite	Retain			Lower branches dead, poor branch structure
285	Black Cherry	*Prunus serotina*	Native	1	20	2.0	Possible	Fair	Onsite	Retain			Crooked stem, three dead branches
286	Black Cherry	*Prunus serotina*	Native	1	23	3.0	Improbable	Fair	Onsite	Retain			Codominant leaders
287	Norway Maple	*Acer platanoides*	Non-Native	1	31	3.5	Possible	Good	Onsite	Retain			Two large codominant leaders, bark wound on surface root, minor stem crack
288	Black Cherry	*Prunus serotina*	Native	1	23	3.5	Improbable	Fair	Onsite	Retain			Unbalanced crown, one dead branch
289	Black Cherry	*Prunus serotina*	Native	1	24	2.5	Improbable	Fair	Onsite	Retain			Crooked stem, unbalanced crown, two dead branches
290	Black Oak	*Quercus velutina*	Native	1	40	4.0	Probable	Dead	Onsite	Retain			Dead crown, shedding bark, lean east
291	Norway Maple	*Acer platanoides*	Non-Native	1	30	4.0	Improbable	Good	Onsite	Retain			Tight branch angles near top of crown
292	Norway Maple	*Acer platanoides*	Non-Native	1	10	2.5	Improbable	Fair	Onsite	Retain			Unbalanced crown
293	Norway Maple	*Acer platanoides*	Non-Native	1	22	6.0	Improbable	Fair	Onsite	Retain			Several branch stubs healing well, poor branch structure, one dead branch
294	Black Cherry	*Prunus serotina*	Native	1	21	2.0	Possible	Fair	Onsite	Retain			Codominant leaders with included bark, crooked stem, epicormic growth
295	Black Cherry	*Prunus serotina*	Native	1	25	3.0	Possible	Fair	Onsite	Retain			Codominant leaders with included bark, two dead branches
296	Black Cherry	*Prunus serotina*	Native	1	18	3.0	Possible	Poor	Onsite	Retain			Significant dieback, fruiting bodies on two branches, lean north
297	Black Cherry	*Prunus serotina*	Native	1	11	3.0	Improbable	Fair	Onsite	Retain			Slight lean north, thin crown
298	Red Oak	*Quercus rubra*	Native	1	40	4.5	Possible	Fair	Onsite	Retain			One larger scaffold with dieback and splitting, main leader in good condition
299	Black Oak	*Quercus velutina*	Native	1	46	4.0	Possible	Fair	Onsite	Retain			Irregular crown growth with some dieback, main stem relatively solid
300	Eastern White Pine	*Pinus strobus*	Native	1	22	3.0	Possible	Poor	Onsite	Retain			Relatively extensive scaffold dieback, some woodpecker damage
301	Black Oak	*Quercus velutina*	Native	1	43	5.0	Improbable	Good	Onsite	Retain			Minimal crown dieback, some scaffold dieback
302	Norway Maple	*Acer platanoides*	Non-Native	1	22	3.0	Improbable	Good	Onsite	Retain			Solid stem with very minimal dieback
303	Norway Maple	*Acer platanoides*	Non-Native	1	34	4.0	Improbable	Good	Onsite	Retain			A few minor cracks in lower stem, good root flare
304	Red Oak	*Quercus rubra*	Native	1	43	6.0	Probable	Dead	Onsite	Retain			Although dead, main stem appears relatively solid
305	Red Oak	*Quercus rubra*	Native	1	40	4.5	Improbable	Good	Onsite	Retain			Slight phototrophic growth in crown, some history of branch failure
306	Norway Maple	*Acer platanoides*	Non-Native	1	24	4.5	Improbable	Good	Adjacent Property	Retain			Very full and vigorous crown, growing next to laneway
307	White Oak	*Quercus alba*	Native	1	43	6.0	Possible	Fair	Adjacent Property	Retain			A few larger scaffold with dieback, some epicormic growth, prune if retained

Tree Number	Common Name	Scientific Name	Native / Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
308	Norway Maple	*Acer platanoides*	Non-Native	1	28	4.0	Improbable	Good	Onsite	Retain			Vigorous crown with minimal dieback, slightly unbalanced root flare
309	Norway Maple	*Acer platanoides*	Non-Native	1	14	3.5	Improbable	Good	Onsite	Retain			Phototrophic growth, minimal dieback
310	Norway Maple	*Acer platanoides*	Non-Native	1	29	4.5	Improbable	Good	Onsite	Retain			Minimal scaffold dieback
311	Norway Maple	*Acer platanoides*	Non-Native	1	26	3.5	Improbable	Good	Onsite	Retain			Slightly narrow crown due to competition with adjacent trees
312	Norway Maple	*Acer platanoides*	Non-Native	2	27	3.3	Possible	Good	Onsite	Retain			Minor girdling roots with slight lean, full crown
313	Norway Maple	*Acer platanoides*	Non-Native	1	27	4.0	Improbable	Good	Onsite	Retain			Narrow wound with compartemtalization, full crown
314	White Oak	*Quercus alba*	Native	1	50	7.0	Improbable	Good	Onsite	Retain			A couple large dead scaffold, prune if retained
315	Black Oak	*Quercus velutina*	Native	1	49	4.3	Possible	Fair	Onsite	Retain			Aome history of branch failure
316	Eastern White Pine	*Pinus strobus*	Native	1	27	4.0	Improbable	Fair	Onsite	Retain			Competition for sunlight, unbalanced crown
317	Eastern White Pine	*Pinus strobus*	Native	1	14	3.0	Improbable	Fair	Onsite	Retain			Unbalanced crown due to competition with adjacent tree, some dieback
318	Black Oak	*Quercus velutina*	Native	1	51	5.0	Improbable	Fair	Adjacent Property	Retain			Growing on 5 degree angle, slightly unbalanced crown
319	Norway Maple	*Acer platanoides*	Non-Native	1	20	3.0	Improbable	Fair	Adjacent Property	Retain			Some crown dieback, competition with adjacent tree
320	Black Cherry	*Prunus serotina*	Native	1	11	3.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Growing on 10 degree angle, suppressed crown
321	Black Cherry	*Prunus serotina*	Native	1	22	0.8	Possible	Poor	Onsite	Retain			very narrow crown with dieback
322	Black Cherry	*Prunus serotina*	Native	1	17	4.0	Improbable	Fair	Onsite	Retain			Narrow crown, growing on slight lean
323	Black Oak	*Quercus velutina*	Native	1	24	4.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Some crown dieback, crown narrow
324	White Oak	*Quercus alba*	Native	1	51	6.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Minimal dieback
325	Norway Maple	*Acer platanoides*	Non-Native	1	25	4.5	Improbable	Good	Onsite	Remove	Site Grading	No	A couple of cracks with compartemtalization
326	Norway Maple	*Acer platanoides*	Non-Native	1	17	4.0	Improbable	Good	Onsite	Remove	Site Grading	No	Slightly unbalanced crown due to competition with adjacent trees
327	Norway Maple	*Acer platanoides*	Non-Native	1	29	4.0	Improbable	Good	Onsite	Remove	Site Grading	No	Very little dieback, solid stem
328	Black Oak	*Quercus velutina*	Native	1	42	2.0	Probable	Dead	Onsite	Remove	Site Grading/Health	No	Dead
329	Black Oak	*Quercus velutina*	Native	1	55	6.5	Possible	Fair	Onsite	Remove	Site Grading	Yes	Nearing poor condition, three cavities potentially suitable for bats
330	Norway Maple	*Acer platanoides*	Non-Native	1	22	4.0	Improbable	Fair	Onsite	Remove	Site Grading	No	Unbalanced crown with minimal dieback
331	Norway Maple	*Acer platanoides*	Non-Native	1	27	4.0	Improbable	Good	Adjacent Property	Remove	Site Grading	No	Light pruning in lower scaffold, full crown
332	White Spruce	*Picea glauca*	Native	1	25	3.0	Improbable	Fair	Adjacent Property	Retain			Narrow crown with some dieback
333	White Spruce	*Picea glauca*	Native	1	20	3.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Some crown dieback, unbalanced root flare
334	White Spruce	*Picea glauca*	Native	1	20	4.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Some dieback
335	Black Locust	*Robinia pseudoacacia*	Non-Native	1	24	3.0	Improbable	Fair	Onsite	Remove	Site Grading	No	Wound with compartemtalization, narrow crown with some dieback
336	Eastern White Pine	*Pinus strobus*	Native	1	34	4.5	Improbable	Good	Onsite	Remove	Site Grading	Yes	Minimal light pruning in lower scaffold
337	Scots Pine	*Pinus sylvestris*	Non-Native	1	23	2.5	Improbable	Good	Onsite	Remove	Site Grading	No	Very minimal dieback
338	Black Oak	*Quercus velutina*	Native	1	63	7.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Wound healing, some dieback, one cavity potentially suitable for bats
339	White Spruce	*Picea glauca*	Native	1	22	2.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Crown dieback throughout, suppressed by adjacent tree
340	Eastern White Pine	*Pinus strobus*	Native	1	31	3.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	One-sided crown with some light pruning, growing on slight lean
341	Eastern White Pine	*Pinus strobus*	Native	1	22	2.3	Improbable	Good	Onsite	Remove	Site Grading	Yes	Some light pruning, otherwise healthy
342	Eastern White Pine	*Pinus strobus*	Native	1	13	1.5	Improbable	Good	Onsite	Remove	Site Grading	Yes	Suppressed by adjacent oak, otherwise good condition
343	Red Oak	*Quercus rubra*	Native	1	57	6.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Some dieback, recommend pruning a few scaffold branches, slightly unbalanced crown
344	Norway Maple	*Acer platanoides*	Non-Native	1	27	4.0	Improbable	Good	Onsite	Retain			Minimal included bark, full crown
345	Eastern White Pine	*Pinus strobus*	Native	1	20	2.0	Improbable	Good	Onsite	Retain			Minimal dieback
346	Black Oak	*Quercus velutina*	Native	1	40	7.0	Improbable	Good	Onsite	Retain			Unbalanced crown due to competition with adjacent trees, otherwise vigorous crown and solid stem
347	Black Oak	*Quercus velutina*	Native	1	80	8.0	Possible	Fair	Onsite	Retain			Minimal bark loss at root flare with evidence of rot, irregular growth
348	Eastern White Pine	*Pinus strobus*	Native	1	24	3.0	Improbable	Good	Onsite	Retain			Full vigorous crown, growing on very slight lean
349	Norway Maple	*Acer platanoides*	Non-Native	1	55	3.0	Possible	Fair	Onsite	Remove	Site Grading	No	Leader previously pruned off with some rot, small girdling root, mower damage on feeder roots with compartemtalization
350	White Spruce	*Picea glauca*	Native	1	32	3.5	Improbable	Good	Onsite	Remove	Site Grading	Yes	Minimal dieback, some mower damage on feeder roots
351	White Spruce	*Picea glauca*	Native	1	34	3.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Narrow crown with some dieback, one-sided root flare
352	White Spruce	*Picea glauca*	Native	1	22	4.3	Improbable	Good	Onsite	Remove	Site Grading	Yes	One-sided crown due to competition with adjacent trees, otherwise healthy

Tree Number	Common Name	Scientific Name	Native / Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Rationale for Removal	Compensation Required	Comments
353	Norway Spruce	*Picea abies*	Non-Native	1	64	7.0	Improbable	Good	Onsite	Remove	Site Grading	No	Epicormic growth from old prune cuts on root flare, vigorous crown
354	Black Oak	*Quercus velutina*	Native	1	41	5.0	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Unbalanced crown due to competition with adjacent tree, some included bark in upper branch unions
355	Black Oak	*Quercus velutina*	Native	1	25	5.5	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Phototrophic growth with 20 degree lean
356	Black Oak	*Quercus velutina*	Native	1	31	6.5	Improbable	Fair	Onsite	Remove	Site Grading	Yes	Phototrophic growth, narrow crown with some dieback
357	Scots Pine	*Pinus sylvestris*	Non-Native	1	28	3.0	Possible	Fair	Onsite	Remove	Site Grading	No	Unbalanced crown, some insect feeding up main stem
358	Tree-of-Heaven	*Ailanthus altissima*	Non-Native	1	40	5.5	Possible	Fair	Onsite	Remove	Site Grading	No	Some evidence of rot on root flare, some dieback
359	Scots Pine	*Pinus sylvestris*	Non-Native	1	23	3.8	Improbable	Fair	Onsite	Remove	Site Grading	No	Sapsucker damage, light pruning in lower scaffold
360	Black Oak	*Quercus velutina*	Native	1	12	4.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Full vigorous crown
361	Black Oak	*Quercus velutina*	Native	1	28	4.3	Improbable	Good	Onsite	Remove	Site Grading	Yes	Slightly unbalanced crown due to competition with adjacent tree, otherwise good
362	Black Oak	*Quercus velutina*	Native	1	54	5.0	Possible	Fair	Onsite	Remove	Site Grading	Yes	Old wound on lower stem with some rot but also compartemtalization, one larger dead scaffold
363	Scots Pine	*Pinus sylvestris*	Non-Native	1	24	3.0	Improbable	Fair	Onsite	Remove	Site Grading	No	One-sided crown, minimal woodpecker damage
364	Scots Pine	*Pinus sylvestris*	Non-Native	1	37	5.0	Improbable	Fair	Onsite	Remove	Site Grading	No	Some sapsucker damage, some crown dieback
365	Scots Pine	*Pinus sylvestris*	Non-Native	1	22	3.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Growing up through crown of adjacent trees, suppressed with dieback, some sapsucker damage
366	Black Oak	*Quercus velutina*	Native	1	50	5.0	Possible	Poor	Onsite	Remove	Site Grading/Health	No	Poor structure, crown dieback, squirrel damage
367	Black Oak	*Quercus velutina*	Native	1	50	8.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Solid stem with relatively full crown
368	Scots Pine	*Pinus sylvestris*	Non-Native	1	23	2.0	Possible	Fair	Onsite	Remove	Site Grading	No	Insect feeding, some crown dieback
369	Norway Spruce	*Picea abies*	Non-Native	1	46	3.0	Possible	Fair	Onsite	Remove	Site Grading	No	Rot on one side of root flare, minimal dieback
370	White Mulberry	*Morus alba*	Non-Native	9	20	5.0	Improbable	Good	Onsite	Remove	Site Grading	No	Slightly suppressed due to competition with adjacent tree, minimal dieback
371	Black Oak	*Quercus velutina*	Native	1	63	6.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	A few larger scaffold branches that could be pruned off, old cuts compartmentalized
372	Norway Spruce	*Picea abies*	Non-Native	1	41	3.0	Improbable	Good	Onsite	Remove	Site Grading	No	Slightly unbalanced root flare
373	Black Oak	*Quercus velutina*	Native	1	62	8.0	Improbable	Good	Onsite	Remove	Site Grading	Yes	Irregular growth, very minimal dieback, cavity in old prune cut but not suitable for bats
374	White Oak	*Quercus alba*	Native	1	48	7.0	Improbable	Good	Onsite	Retain			Growing adjacent to laneway, two upper scaffold branches to prune if retained
375	White Spruce	*Picea glauca*	Native	1	36	2.0	Possible	Fair	Onsite	Retain			Very narrow crown with some dieback, mower damage on feeder roots
376	Black Oak	*Quercus velutina*	Native	1	71	8.0	Improbable	Good	Onsite	Retain			Old prune cut cavity (not suitable for bats), one girdling root
377	Norway Spruce	*Picea abies*	Non-Native	1	50	5.0	Improbable	Good	Adjacent Property	Retain			Some light pruning in lower scaffold branches
378	White Spruce	*Picea glauca*	Native	1	34	3.0	Possible	Fair	Adjacent Property	Retain			One-sided root flare, some evidence of rot on root flare
379	White Mulberry	*Morus alba*	Non-Native	1	24	3.5	Possible	Fair	Adjacent Property	Retain			Old prune cut with staining, epicormic growth from lower prune cut
380	Black Oak	*Quercus velutina*	Native	1	63	4.0	Improbable	Good	Adjacent Property	Retain			Minimal dieback that could be pruned off, prune cuts compartmentalized

Appendix VII
Bird Species Reported From the Study Area and Vicinity

Appendix VI
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] Square 17LH86	NRSI Observed
Anatidae	**Ducks, Geese & Swans**						
Branta canadensis	Canada Goose	S5				CO	
Cygnus olor	Mute Swan	SNA				CO	
Aix sponsa	Wood Duck	S5				CO	
Anas rubripes	American Black Duck	S4				CO	
Anas platyrhynchos	Mallard	S5				CO	PO
Columbidae	**Pigeons & Doves**						
Columba livia	Rock Pigeon	SNA				CO	
Zenaida macroura	Mourning Dove	S5				CO	PO
Cuculiformes	**Cuckoos & Anis**						
Coccyzus americanus	Yellow-billed Cuckoo	S4B					PO
Coccyzus erythropthalmus	Black-billed Cuckoo	S5B				PR	
Caprimulgidae	**Goatsuckers**						
Chordeiles minor	Common Nighthawk	S4B	SC	T	Schedule 1	PR	
Apodidae	**Swifts**						
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	CO	PO
Trochilidae	**Hummingbirds**						
Archilochus colubris	Ruby-throated Hummingbird	S5B				PO	
Rallidae	**Railes, Gallinules & Coots**						
Fulica americana	American Coot	S4B	NAR	NAR		PR	
Charadriidae	**Plovers**						
Charadrius vociferus	Killdeer	S5B, S5N				CO	
Scolopacidae	**Waders**						
Scolopax minor	American Woodcock	S4B				CO	
Actitis macularia	Spotted Sandpiper	S5				PR	
Laridae	**Gulls, Terns & Skimmers**						
Larus delawarensis	Ring-billed Gull	S5B, S4N					OB
Larus argentatus	Herring Gull	S5B, S5N					OB
Sterna hirundo	Common Tern	S4B	NAR	NAR		PR	
Cathartidae	**Vultures**						
Cathartes aura	Turkey Vulture	S5B					OB
Accipitridae	**Hawks, Kites, Eagles & Allies**						
Accipiter striatus	Sharp-shinned Hawk	S5	NAR			CO	OB
Accipiter cooperii	Cooper's Hawk	S4	NAR	NAR		CO	

Appendix VI
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] Square 17LH86	NRSI Observed
Strigidae	**Typical Owls**						
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR		CO	
Bubo virgianus	Great Horned Owl	S4				CO	
Alcedinidae	**Kingfishers**						
Megaceryle alcyon	Belted Kingfisher	S4B				CO	PO
Picidae	**Woodpeckers**						
Melanerpes carolinus	Red-bellied Woodpecker	S4				PR	PO
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B				CO	OB
Picoides pubescens	Downy Woodpecker	S5				CO	OB
Colaptes auratus	Northern Flicker	S4B				CO	OB
Falconidae	**Caracaras & Falcons**						
Falco peregrinus anatum/tundrius	Peregrine Falcon	S3B	SC	SC	Schedule 1	CO	
Tyrannidae	**Tyrant Flycatchers**						
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC		CO	PO
Empidonax traillii	Willow Flycatcher	S5B				PO	
Empidonax minimus	Least Flycatcher	S4B				PR	
Sayornis phoebe	Eastern Phoebe	S5B					OB
Myiarchus crinitus	Great Crested Flycatcher	S4B				CO	PO
Tyrannus tyrannus	Eastern Kingbird	S4B				CO	
Vireonidae	**Vireos**						
Vireo gilvis	Warbling Vireo	S5B				CO	
Vireo olivaceus	Red-eyed Vireo	S5B				CO	PO
Corvidae	**Crows & Jays**						
Cyanocitta cristata	Blue Jay	S5				CO	PR
Corvus brachyrhynchos	American Crow	S5B				CO	PO
Hirundinidae	**Swallows**						
Tachycineta bicolor	Tree Swallow	S4B				CO	
Stelgidopteryx serripennis	Northern Rough-winged Swallow	S4B				CO	OB
Riparia riparia	Bank Swallow	S4B	THR	T		CO	
Hirundo rustica	Barn Swallow	S4B	THR	T		CO	
Paridae	**Chickadees & Titmice**						
Poecile atricapillus	Black-capped Chickadee	S5				CO	OB
Baeolophus bicolor	Tufted Titmouse	S4				PR	OB
Sittidae	**Nuthatches**						
Sitta canadensis	Red-breasted Nuthatch	S5				PR	OB
Sitta carolinensis	White-breasted Nuthatch	S5					OB

Appendix VI
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] Square 17LH86	NRSI Observed
Certhiidae	**Creepers**						
Certhia americana	Brown Creeper	S5B					OB
Troglodytidae	**Wrens**						
Troglodytes aedon	House Wren	S5B				CO	PR
Thryothorus ludovicianus	Carolina Wren	S4					PO
Polioptilidae	**Gnatcatchers**						
Polioptila caerulea	Blue-gray Gnatcatcher	S4B				PR	
Regulidae	**Kinglets**						
Regulus satrapa	Golden-crowned Kinglet	S5B					OB
Regulus calendula	Ruby-crowned Kinglet	S4B					OB
Turdidae	**Thrushes**						
Catharus guttatus	Hermit Thrush	S5B					OB
Turdus migratorius	American Robin	S5B				CO	CO
Mimidae	**Mockingbirds, Thrashers & Allies**						
Dumetella carolinensis	Gray Catbird	S4B				CO	PO
Toxostoma rufum	Brown Thrasher	S4B				PR	
Sturnidae	**Starlings**						
Sturnus vulgaris	European Starling	SNA				CO	PO
Bombycillidae	**Waxwings**						
Bombycilla cedrorum	Cedar Waxwing	S5B				CO	PR
Passeridae	**Old World Sparrows**						
Passer domesticus	House Sparrow	SNA				CO	OB
Fringillidae	**Finches & Allies**						
Carpodacus mexicanus	House Finch	SNA				CO	
Spinus tristis	American Goldfinch	S5B				CO	PO
Parulidae	**Wood Warblers**						
Mniotilta varia	Black-and-white Warbler	S5B					PO
Geothylpis trichas	Common Yellowthroat	S5B				CO	
Setophaga ruticilla	American Redstart	S5B				CO	PR
Setophaga fusca	Blackburnian Warbler	S5B				PO	
Setophaga petechia	Yellow Warbler	S5B				CO	
Setophaga palmarum	Palm Warbler	SNRB					OB
Setophaga coronata	Yellow-rumped Warbler	S5B				PO	
Setophaga virens	Black-throated Green Warbler	S5B					PO
Cardellina canadensis	Canada Warbler	S4B	SC	T	Schedule 1		PO

Appendix VI
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] Square 17LH86	NRSI Observed
Emberizidae	**New World Sparrows & Allies**						
Spizella passerina	Chipping Sparrow	S5B				CO	PO
Spizella pusilla	Field Sparrow	S4B				CO	
Passerculus sandwichensis	Savannah Sparrow	S4B				CO	
Melospiza melodia	Song Sparrow	S5B				CO	
Melospiza georgiana	Swamp Sparrow	S5B				CO	
Zonotrichia leucophrys	White-crowned Sparrow	S4B					OB
Junco hyemalis	Dark-eyed Junco	S5B					OB
Cardinalidae	**Cardinals, Grosbeaks & Allies**						
Cardinalis cardinalis	Northern Cardinal	S5				CO	PR
Pheucticus ludovicianus	Rose-breasted Grosbeak	S4B				PR	
Passerina cyanea	Indigo Bunting	S4B				CO	
Icteridae	**Blackbirds**						
Agelaius phoeniceus	Red-winged Blackbird	S4				CO	
Quiscalus quiscula	Common Grackle	S5B				CO	
Molothrus ater	Brown-headed Cowbird	S4B				CO	
Icterus galbula	Baltimore Oriole	S4B				CO	PO

[1]MNRF 2015a; [2]MNRF 2017b; [3]COSEWIC 2017; [4]Government of Canada 2017; [5]BSC et al 2008

Appendix VI
Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] Square 17LH86	NRSI Observed
LEGEND							
SRANK							
S1 Critically Imperiled							
S2 Imperiled							
S3 Vulnerable							
S4 Apparently Secure							
S5 Secure							
SU Unrankable							
SNA Unranked							
SX Presumed Extirpated							
SH Possibly Extirpated (Historical)							
S#? Rank Uncertain							
COSSARO							
NAR Not at Risk							
SC Special Concern							
THR Threatened							
END Endangered							
EXP Extirpated							
DD Data Deficient							
COSEWIC							
NAR Not at Risk							
SC Special Concern							
T Threatened							
E Endangered							
XT Extirpated							
DD Data Deficient							
SARA Schedule							
Schedule 1 Officially Protected under SARA							
Schedule 2 Threatened/endangered; may be reassessed for consideration for inclusion to Schedule 1							
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1							

Appendix VIII
Herpetofauna Species Reported From the Study Area and Vicinity

Appendix VII
Reptile and Amphibian Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Ontario Reptile and Amphibian Atlas[5]	NRSI Observed
Turtles							
Chelydra serpentina serpentina	Snapping Turtle	S3	SC	SC	Schedule 1	X	
Chrysemys picta marginata	Midland Painted Turtle	S5				X	
Emydoidea blandingii	Blanding's Turtle (*Great Lakes/St Lawrence population*)	S3	THR	T	Schedule 1	X	
Lizards							
Plestiodon fasciatus	Common Five-lined Skink (*Southern Shield population*)	S3	SC	SC	Schedule 1	X	
Snakes							
Storeria dekayi dekayi	Northern Brownsnake	S5	NAR	NAR		X	
Thamnophis sirtalis sirtalis	Eastern Gartersnake	S5				X	
Salamanders							
Necturus maculosus	Mudpuppy	S4	NAR	NAR		X	
Toads and Frogs							
Anaxyrus americanus	American Toad	S5				X	
Hyla versicolor	Tetraploid Gray Treefrog	S5				X	
Pseudacris triseriata pop. 1	Western Chorus Frog *(Carolinian Population)*	S4	NAR	NAR		X	
Pseudacris crucifer	Spring Peeper	S5				X	
Lithobates pipiens	Northern Leopard Frog	S5	NAR	NAR		X	

[1]MNRF 2015a; [2]MNRF 2017b; [3]COSEWIC 2017; [4]Government of Canada 2017; [5]Ontario Nature 2015

Legend
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SU Unrankable
SNA Unranked
SX Presumed Extirpated
SH Possibly Extirpated (Historical)
S#? Rank Uncertain
COSSARO
END Endangered
THR Threatened
SC Special Concern
NAR Not at Risk
DD Data Deficient
EXP Extirpated
COSEWIC
E Endangered
T Threatened
SC Special Concern
NAR Not at Risk
DD Data Deficient
XT Extirpated
SARA Schedule
Schedule 1 Officially Protected under SARA

Appendix IX
Mammal Species Reported From the Study Area and Vicinity

Appendix VIII
Mammal Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Ontario Mammal Atlas[5]	NRSI Observed
Didelphimorphia	**Opossums**						
Didelphis virginiana	Virginia Opossum	S4				X	
Insectivora	**Shrews and Moles**						
Blarina brevicauda	Northern Short-tailed Shrew	S5				X	
						X	
Chiroptera	**Bats**						
Eptesicus fuscus	Big Brown Bat	S4				X	
Lasionycteris noctivagans	Silver-haired Bat	S4				X	
Lasiurus borealis	Eastern Red Bat	S4				X	
Myotis lucifugus	Little Brown Myotis	S4	END	E	Schedule 1	X	
						X	
Lagomorpha	**Rabbits and Hares**						
Lepus europaeus	European Hare	SNA				X	
Sylvilagus floridanus	Eastern Cottontail	S5				X	X
						X	
Rodentia	**Rodents**						
Marmota monax	Woodchuck	S5				X	
Microtus pennsylvanicus	Meadow Vole	S5				X	
Mus musculus	House Mouse	SNA				X	
Ondatra zibethicus	Muskrat	S5				X	
Peromyscus leucopus	White-footed Mouse	S5				X	
Peromyscus maniculatus	Deer Mouse	S5				X	
Rattus norvegicus	Norway Rat	SNA				X	
Sciurus carolinensis	Eastern Gray Squirrel	S5				X	X
Tamiasciurus hudsonicus	Red Squirrel	S5				X	
Tamias striatus	Eastern Chipmunk	S5				X	
Zapus hudsonius	Meadow Jumping Mouse	S5				X	
						X	
Carnivora	**Carnivores**						
Canis latrans	Coyote	S5				X	
Mephitis mephitis	Striped Skunk	S5				X	
Mustela vison	American Mink	S4				X	
Procyon lotor	Northern Raccoon	S5				X	
Vulpes vulpes	Red Fox	S5				X	

Appendix VIII
Mammal Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Ontario Mammal Atlas[5]	NRSI Observed
Artiodactyla	**Deer and Bison**						
Odocoileus virginianus	White-tailed Deer	S5				X	

[1]MNRF 2015a; [2]MNRF 2017b; [3]COSEWIC 2017; [4]Government of Canada 2017; [5]Dobbyn 1994

Legend
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
COSSARO
NAR Not at Risk
SC Special Concern
THR Threatened
END Endangered
EXP Extirpated
COSEWIC
NAR Not at Risk
SC Special Concern
T Threatened
E Endangered
SARA Schedule
Schedule 1 Officially Protected under SARA
Schedule 2 Threatened/endangered; may be reassessed for consideration for inclusion to Schedule 1
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1

Appendix X
Technical Memorandum to MNRF Re. Bat Habitat Assessment Results and Comments

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Memo

Project No. 1889

To: **Cam McCauley, MNRF (Aylmer District)**

From: **Ryan Archer, Natural Resource Solutions Inc.**

Date: **April 28, 2017**

Re: **Bat Habitat Assessmentand Bat Species at Risk (SAR) Potential**
834 Lakeshore Road, Sarnia, ON

NRSI was retained by Wicks Construction Ltd. to complete an Environmental Impact Study (EIS) for a proposed 5-lot residential subdivision located at 834 Lakeshore Road in the City of Sarnia.The focus of the EIS was to evaluate woodland significance and boundaries on the property to determine a feasible development plan. As part of the EIS a bat habitat assessment was also completed to assess the potential for occurrence of Bat Maternity Colony SWH and habitat for SAR bats within the subject property. This memo summarizes the results of the assessment and is intended to initiate discussion with MNRF staff regarding the potential for SAR bat habitat occurrence on the subject property. A follow-up analysis will be completed to assess the presence or absence of Bat Maternity Colony SWH based on MNRF criteria.

The subject property contains a single residential dwelling and is primarily wooded. The woodland community has been identified as Black Oak dominated deciduous forest, while the north end of the property contains a manicured lawn groundcover associated with the existing residence. The lot has a total area of approximately 1.3ha. The property is surrounded on the west, east, and south sides by long-established residential development, and abuts Lake Huron to the north with a narrow lakeshore frontage. See Map 1 for the subject property location and surrounding study area.

A preliminary review of background information was completed for the subject property, which included a screening of SAR occurrence records within 10km of the study area. Results from this screening indicate that three SAR bats; Little Brown Myotis (*Myotis lucifugus*), Northern Myotis *(Myotis septentrionalis*), and Tri-colored Bat (*Perimyotissubflavus*) may have potentially suitable habitat within the study area.

NRSI completed a comprehensive inventory of trees ≥10cm diameter-at-breast-height (DBH) within the subject property on April 5 and April 17, 2017. In conjunction with the tree inventory, NRSI staff undertook anassessmentof suitable snags and cavity treesin accordance with the MNRF guidance document *Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis & Tri-Colored Bat* (MNRF 2017). bat habitat assessment was completed during leaf-off conditions to facilitate the proper

inspection of trees for habitat features. Since this work was completed in conjunction with a comprehensive tree inventory, the property was completely surveyed for the presence of suitable bat habitat trees.

Trees were inspected for features (e.g., cavities, crevices) that provide suitable maternity colony/roosting habitat for bats based on guidelines provided by the MNRF (OMNRF 2017)as well as the document *Bats and Bat Habitats: Guidelines for Wind Power Projects* (OMNR 2011). The cavity tree inspection was completed by staff familiar with the MNRF bat habitat assessment guidelines. All observed cavity trees were flagged with flagging tape, georeferenced with a hand-held GPS unit, photographed, and described on standardized field forms (e.g., DBH, tree height, tree species, percent canopy cover). In addition, the cavities themselves were described, including the number of cavities per tree, and height above ground.

As shown on Map 1, six (6) suitable habitat trees were identified on the subject property while one (1) additional habitat tree was identified immediately adjacent to the property within a municipal parkette to the west. Of the seventotal identified trees,six (6) were identified as Black Oak (*Quercusvelutina*) ranging from 47.6 to 77.5 cm DBH while one (1) was Black Locust (*Robiniapseudoacacia*), which had a DBH of 51 cm. These 7 suitable habitat trees were identified among a total of 299 inventoried trees ≥10cm DBH, therefore representing 2.3% of the total number of inventoried trees.

Due to the presence of seven suitable bat maternity colony/roosting trees within the subject property woodland, and in relation to the total number of trees on the property, NRSI would like to discuss if the woodland feature located on the subject property should be considered to contain potential bat SAR habitat. It is NRSI's understanding that assessments of bat SAR habitat presence are determined by the MNRF on a case by case basis based primarily on the density of suitable bat cavity trees within the surrounding woodland (i.e., the degree of bat SAR habitat function provided by the woodland). The information provided within this memo is provided to MNRF to further consult on whether bat SAR habitat functions are present within the subject property woodland and whether removal of the identified cavity trees would or would not represent a predicted negative impact to SAR bats.

I trust that the information included within this memo provides an adequate starting point from which to discuss potential SAR bat occurrence with MNRF. Please contact the undersigned with any comments or questions for clarification.

Sincerely,
Natural Resource Solutions Inc.

Ryan Archer

Terrestrial and Wetland Biologist

References

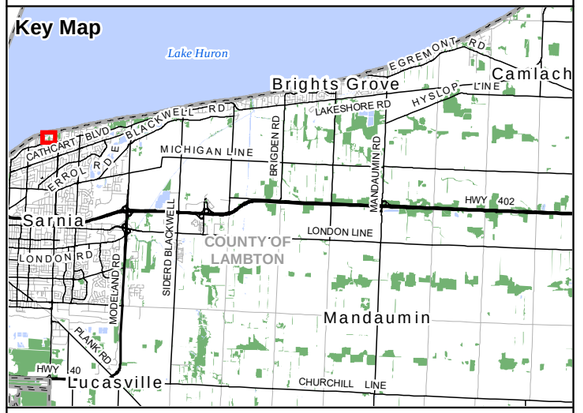
Ontario Ministry of Natural Resources (OMNR). 2011. Bats and Bat Habitats Guidelines for Wind Power Projects. July 2011.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2017. Survey Protocol for Species at Risk Bats within Treed Habitats: Little Brown Myotis, Northern Myotis & Tri-Colored Bat. April 2017. Guelph District.

Map 1

834 Lakeshore Road, Sarnia

Bat Habitat Assessment



Legend

- Subject Property
- Bat Cavity Tree

Project: 1889 Date: April 28, 2017	NAD83 - UTM Zone 17 Size: 11x17" **1:1,500**

0 25 50 75 Metres

N

Path: X:\1889_LakeshoreRoadSarnia\NRSI_1889_Map1_BatHabitatAssessment_2K_2017_04_28_LEH.mxd

Subject: RE: InfoRequest 834 LakeshoreRd Sarnia
From: "ESA-Aylmer (MNRF)" <ESA.Aylmer@ontario.ca>
Date: 25/05/2017 10:55 AM
To: Ryan Archer <rarcher@nrsi.on.ca>
CC: "MNRF Ayl Planners (MNRF)" <MNRF.Ayl.Planners@ontario.ca>

Hello Ryan,

MNRF Aylmer District has completed the species at risk (SAR) information request for Wicks Construction & General Contracting Ltd.'s proposed residential development located at 834 Lakeshore Road in the City of Sarnia, Lambton County.

The Species at Risk in Ontario (SARO) List is Ontario Regulation 230/08 issued under the *Endangered Species Act*, *2007* (ESA 2007). The ESA 2007 came into force on June 30, 2008, and provides both species protection (section 9) and habitat protection (section 10) to species listed as endangered or threatened on the SARO List. The current SARO List can be found on e-laws (http://www.e-laws.gov.on.ca/navigation?file=home&lang=en).

There are no known occurrences of SAR on the property, however, there are known occurrences of the following SAR in the general area with potential to also occur on the property:

- Eastern Flowering Dogwood (END, species and regulated habitat protection)
- Butternut (END, species and general habitat protection)
- SAR bats (END, species and general habitat protection)

Please note that this is an initial screening for SAR and the absence of an element occurrence does not indicate the absence of species. The province has not been surveyed comprehensively for the presence or absence of SAR, and MNRF data relies on observers to report sightings of SAR. Field assessments by a qualified professional are recommended since there is a high likelihood for SAR species and/or habitat to occur within the property.

Regarding your separate email (attached) specific to SAR bats, MNRF Aylmer District has reviewed NRSI's SAR bat habitat inventory memo. Based on the information provided and the calculated snag density, the 6-7 snag trees identified would likely be considered habitat for SAR bats, however, their removals would likely not be considered a contravention of section 10 (habitat protection) of the ESA 2007 as long as mitigation measures are implemented (i.e. alter layout to avoid some/all snag trees, removing trees outside sensitive timing windows, and enhancing the remaining woodland by installing bat boxes). Also, for future SAR bat reporting within Aylmer District, please note that it is requested that the numbers of inventoried and suitable habitat trees with 25 cm or greater DBH also be included, for comparison with the numbers based on 10 cm or greater DBH.

It is important to note that changes may occur in both species and habitat protection which could affect whether proposed projects may have adverse effects on SAR. The Committee on the Status of Species at Risk in Ontario (COSSARO) meets regularly to evaluate new species for listing and/or re-evaluate species already on the SARO List. As a result, species designations may change, which could in turn change the level of protection they receive under the ESA 2007. Also, habitat protection provisions for a species may change if a species-specific habitat regulation comes into effect.

Thank you,

Catherine Jong
Management Biologist
MNRF Aylmer District
615 John Street North
Aylmer, ON N5H 2S8

From: Ryan Archer [mailto:rarcher@nrsi.on.ca]
Sent: April-12-17 11:59 AM
To: Hernould, Cara (MNRF)
Subject: Background information request - 834 Lakeshore Rd., Sarnia

Hi Cara,

See attached a request for background information for a property located at 834 Lakeshore Road in Sarnia. Specifically, we would be interested to know of any Species at Risk records or habitats that have been identified within or inn the vicinity of this property that we should be aware of in completion of an EIS for the site.

Let me know if you have any questions about this.

Regards,

--

file:///S:/Pr

Ryan Archer M.Sc.
Terrestrial and Wetland Biologist
Natural Resource Solutions Inc.
1-225 Labrador Drive
Waterloo, ON N2K 4M8
(p) 519-725-2227 (f) 519-725-2575
(m) 519-580-0758
(w) www.nrsi.on.ca (e) rarcher@nrsi.on.ca

Attachments:

NRSI_1889_Background Request Letter_MNRF.PDF	580 KB
ForwardedMessage.eml	887 KB

Appendix XI
Butterfly Species Reported From the Study Area and Vicinity

Appendix X
Butterfly Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Butterfly Atlas[5] (17NH86)	NRSI Observed
Hesperiidae	**Skippers**						
Anatrytone logan	Delaware Skipper	S4				X	
Epargyreus clarus	Silver-spotted Skipper	S4				X	
Erynnis baptisiae	Wild Indigo Duskywing	S4				X	
Erynnis icelus	Dreamy Duskywing	S5				X	
Euphyes vestris	Dun Skipper	S5				X	
Pholisora catullus	Common Sootywing	S3				X	
Polites peckius	Peck's Skipper	S5				X	
Polites themistocles	Tawny-edged Skipper	S5				X	
Pyrgus communis	Common Checkered	SNA				X	
Thymelicus lineola	European Skipper	SNA				X	
Wallengrenia egeremet	Northern Broken Dash	S5				X	
Papilionidae	**Swallowtails**						
Papilio glaucus	Eastern Tiger Swallowtail	S5				X	
Papilio polyxenes	Black Swallowtail	S5				X	
Pieridae	**Whites and Sulphurs**						
Colias eurytheme	Orange Sulphur	S5				X	
Colias philodice	Clouded Sulphur	S5				X	
Pieris rapae	Cabbage White	SNA				X	X
Lycaenidae	**Harvesters, Coppers,**						
Cupido comyntas	Eastern Tailed Blue	S5				X	
Lycaena hyllus	Bronze Copper	S5				X	
Satyrium calanus	Banded Hairstreak	S4				X	
Nymphalidae	**Brush-footed Butterflies**						
Aglais milberti	Milbert's Tortoiseshell	S5				X	
Cercyonis pegala	Common Wood-Nymph	S5				X	
Coenonympha tullia	Common Ringlet	S5				X	
Danaus plexippus	Monarch	S2N, S4B	SC	SC	Schedule 1	X	
Junonia coenia	Common Buckeye	SNA				X	
Lethe appalachia	Appalachian Brown	S4				X	
Limenitis archippus	Viceroy	S5				X	
Limenitis arthemis astyanax	Red-spotted Purple	S5				X	
Megisto cymela	Little Wood-Satyr	S5				X	
Nymphalis antiopa	Mourning Cloak	S5				X	X
Phyciodes cocyta	Northern Crescent	S5				X	
Phyciodes tharos	Pearl Crescent	S4				X	
Polygonia comma	Eastern Comma	S5				X	
Polygonia comma	Eastern Comma/Hop	S5				X	
Speyeria cybele	Great Spangled Fritillary	S5				X	
Vanessa atalanta	Red Admiral	S5				X	X
Vanessa cardui	Painted Lady	S5				X	
Vanessa virginiensis	American Lady	S5				X	

[1]MNRF 2015a; [2]MNRF 2017b; [3]COSEWIC 2017; [4]Government of Canada 2017; [5]McNaughton et al. 2017

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SU Unrankable
SNA Unranked
SX Presumed Extirpated
SH Possibly Extirpated (Historical)
S#? Rank Uncertain
COSSARO
NAR Not at Risk
SC Special Concern
THR Threatened
END Endangered
EXP Extirpated
DD Data Deficient
COSEWIC
NAR Not at Risk
SC Special Concern
T Threatened
E Endangered
XT Extirpated
DD Data Deficient
SARA Schedule
Schedule 1 Officially Protected under SARA
Schedule 2 Threatened/endangered; may be reassessed for consideration for inclusion to Schedule 1
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1

Appendix XII
Odonate Species Reported From the Study Area and Vicinity

Appendix XI
Dragonfly and Damselfly Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Odonate Atlas[5]	NRSI Observed
Lestidae	**Spreadwings**						
Lestes disjunctus	Common Spreadwing	S5				X	
Lestes rectangularis	Slender Spreadwing	S5				X	
						X	
Coenagrionidae	**Narrow-winged Damselflies**						
Enallagma antennatum	Rainbow Bluet	S4				X	
Enallagma basidens	Double-striped Bluet	S3				X	
Enallagma civile	Familiar Bluet	S5				X	
Enallagma ebrium	Marsh Bluet	S5				X	
Enallagma exsulans	Stream Bluet	S5				X	
Ischnura verticalis	Eastern Forktail	S5				X	
						X	
Aeshnidae	**Darners**						
Aeshna constricta	Lance-tipped Darner	S5				X	
Anax junius	Common Green Darner	S5				X	
						X	
Libellulidae	**Skimmers**						
Celithemis elisa	Calico Pennant	S5				X	
Celithemis eponina	Halloween Pennant	S4					
Libellula luctuosa	Widow Skimmer	S5				X	
Libellula pulchella	Twelve-spotted Skimmer	S5				X	
Pantala flavescens	Wandering Glider	S4				X	
Sympetrum costiferum	Saffron-bordered Meadowhawk	S4				X	

[1]MNRF 2015a; [2]MNRF 2017b; [3]COSEWIC 2017; [4]Government of Canada 2017; [5]MNRF 2017a

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SU Unrankable
SNA Unranked
SX Presumed Extirpated
SH Possibly Extirpated (Historical)
S#? Rank Uncertain
COSSARO
NAR Not at Risk
SC Special Concern
THR Threatened
END Endangered
EXP Extirpated
DD Data Deficient
COSEWIC
NAR Not at Risk
SC Special Concern
T Threatened
E Endangered
XT Extirpated
DD Data Deficient
SARA Schedule
Schedule 1 Officially Protected under SARA
Schedule 2 Threatened/endangered; may be reassessed for consideration for inclusion to Schedule 1
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1

Appendix XIII
Significant Wildlife Habitat Assessment

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					
Rationale: Habitat important to migrating waterfowl	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. - Fields with seasonal flooding and waste grain in the Long Point, Rondeau, Lake. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	Fields with sheet water during Spring (mid March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available[cxlviii] Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[cclxi] • Any mixed species aggregations of 100[l] or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependant on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii]. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMIST[cxlix] Index #7 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					
Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district	Canada Goose Cackling Goose Snow Goose Green-winged Teal American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Blue-winged Teal Hooded Merganser Common Merganser Red-breasted Merganser Lesser Scaup Greater Scaup Common Goldeneye Bufflehead Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Canvasback Redhead Ruddy Duck Brant White-winged Scoter Black Scoter	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). Information Sources • Environment Canada • Naturalist clubs often are aware of staging/stopover areas • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100[l] or more of listed species for 7 days[j], results in >700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[cxlix] • The combined area of the ELC ecosites and a 100m radius area is the SWH[cxlviii] • Wetland area and shorelines associated with sites identified within the SWHTG[cxlviii] Appendix K[cxlix] are significant wildlife habitat. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[cclxi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMIST[cxlix] Index #7 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shorebird Migratory Stopover Area					
Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. Information Sources • Western hemisphere shorebird reserve network • Canadian Wildlife Service (CWS) Ontario Shorebird Survey • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000[l] shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100[l] Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area[cxlviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[cxcxi] • SWHMIST[cxlix] Index #8 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**
Wildlife Habitat: Raptor Wintering Area					
Rationale: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class. Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW Bald Eagle: Forest Community Series: FOD, FOM, FOC, SWD, SWM, or SWC, on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering (hawk/owl) sites need to be > 20ha[cxlviii, cxlix] with a combination of forest and upland[xvi, xvii, xviii, xix, xx, xxi]. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands[cxlix] Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water and large trees and snags aviable for roosting[cxlix] Information Sources • OMNRF Districts • Natural clubs • Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from CAs • Results of Christmas Bird Counts	Studies confirm the use of these habitats by: • One or more Short-eared Owls, or, One of more Bald Eagles or; at least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds[l]. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[cxcxi] • SWHMIST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	Open field habitat is not present within the study area. Not SWH

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Hibernacula					
Rationale: Bat hibernacula, are rare habitats in all Ontario landscapes.	Big Brown Bat Eastern Pipistrelle/Tri-colored Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered The locations of bat hibernacula are relatively poorly known. Information Sources • OMNRF for possible locations and contact for local experts • Natural Heritage Information Centre (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts	• All sites with confirmed hibernating bats are SWH[i]. • The area includes 200m radius around the entrance of the hibernaculum[cxlviii, ccvii, i]. for the development types and 1000m for wind farms [ccv]. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the[ccv]."Bats and Bat Habitats: Guidelines for Wind Power Projects" [ccv] • SWHMIST[cxlix] Index #1 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**
Wildlife Habitat: Bat Maternity Colonies					
Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in building [sxxii, xxv, xxvi, xxvii, xxxi] (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario[xxii]. • Maternity colonies located in Mature deciduous or mixed forest stands[ccix, ccx] with >10/ha large diameter (>25cm dbh) wildlife trees[ccvii]. • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3[ccxiv] or class 1 or 2[ccxii]. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred[ccx]. Information Sources • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts	Maternity Colonies with confirmed use by: • >10 Big Brown Bats[i] • >5 Adult Female Silver-haired Bats[i] • The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies[i]. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"[ccv]. • SWHMIST[cxlix] Index #12 provides development effects and mitigation measures.	Suitable cavity tree density within woodland on the subject property is too low to meet significance criteria. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Migratory Stopover Area					
	Hoary Bat Eastern Red Bat Silver-haired Bat	No specific ELC types.	Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migrations concentrate these species of bats at stopover areas. The location and characteristics of stopover habitats are generally unknown. Information Sources • OMNR for possible locations and contact for local experts • University of Waterloo, Biology Department	Long Point (42°35'N, 80°30'E to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired Bats, due to significant increases in abundance, activity and feeding that was documented during fall migration[ccxv]. • The confirmation criteria and habitat areas for this SWH are still being determined. • SWHDSS[cxlix] Index #38 provides development effects and mitigation measures.	The subject property is not near Long Point. **Not SWH**
Wildlife Habitat: Turtle Wintering Area					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles: ELC Community Classes: SW, MA, OA and SA ELC Community Series: FEO and BOO Northern Map Turtle: Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen[cix, cx, cxi, cxviii]. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH Information Sources • EIS studies carried out by Conservation Authorities • Field naturalists clubs • OMNRF Ecologist or Biologist • Natural Heritage Information Centre (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant[l]. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant[l]. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – Apr)[cvii]. Congregation of turtles is more common where wintering areas are limited and therefore significant[cix, cx, cxi, cxii]. • SWHMIST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	Suitable habitat is not present within the study area. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Reptile Hibernaculum					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake	For all snakes, habitat may be found in any ecosite in southern Ontario other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. The existence of rock piles or slopes, stone fences, and crumbling foundations assist in identifying candidate SWH.	For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line[xliv, l, li, lii, cxii]. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information available from CAs • Local naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • Natural Heritage Information Centre (NHIC)	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp., or, individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp., or, individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)[l]. • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWH[l]. • SWHMIST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula.	The subject property contains an old stone foundation and an existing house. These areas were searched during the spring and no reptile congregations were found. No reptiles were documented on-site during any of the site visits. **Not SWH**
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from CAs • Ontario Breeding Bird Atlas[ccv]. • Bird Studies Canada: Nature Counts http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlvix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests[ccvii]. • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #4 provides development effects and mitigation measures.	Suitably large lakeshore bank habitat is not present in the study area. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas[ccv], colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from CAs • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of 2 or more active nests of Great Blue Heron or other list species. • The habitat extends from the the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH[cc, ccvii]. • Confirmation of active colonies must be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMIST[cxlix] Index #5 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					
Rationale: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. Information Sources • Ontario Breeding Bird Atlas[ccv], rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of >25 active nests for Herring Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern[l]. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant[l]. • Presence of 5 or more pairs for Brewer's Blackbird[l]. • The edge of the colony and a minimum 150m radius area of the habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH[cc, ccvii]. • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #6 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Migratory Butterfly Stopover Areas					
Rationale: Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter	Painted Lady Red Admiral Special Concern: Monarch	Combination of ELC Community Series; need to have present one Community Series from each landclass: Field: CUM CUT CUS Forest: FOC FOD FOM CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10ha in size with a combination of field and forest habitat present, and will be located within 5km of Lake Ontario and Erie[cxlix]. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south [xxxii, xxxiii, xxxiv, xxxv, xxxvi]. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat [cxlviii, cxlix]. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes [xxxvii, xxxviii, xxxix, xl, xli]. Information Sources • MNRF District Offices • Natural Heritage Information Centre (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[xliii]. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur[xl, xlii]. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or White Admiral's is to be considered significant[l]. • SWHMIST[cxlix] Index #16 provides development effects and mitigation measures.	The subject property is not located within 5km of Lakes Erie or Ontario. **Not SWH**
Wildlife Habitat: Landbird Migratory Stopover Areas					
Rationale: Sites with a high diversity of species as well as high numbers are most significant	All migratory songbirds Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >5 ha[l] in size and within 5km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario and Erie. If woodlands are rare in an area of shoreline, woodland fragments 2-5ha can be considered for this habitat • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Erie or Ontario are more significant[cxlix]. • Sites have a variety of habitats: forest, grassland and wetland complexes[cxlix]. • The largest sites are more significant[cxlix] • Woodlots and forest fragments are important habitats to migrating birds[ccxviii], these features located along the shore and located within 5km of Lake Ontario and Lake Erie are Candidate SWH[cxlviii]. Information Sources • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the habitat by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates[l]. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (March/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #9 provides development effects and mitigation measures.	The subject property is not within 5km of Lake Erie or Lake Ontario. **Not SWH**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Deer Winter Congregation Areas					
Rationale: Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions [cxlviii]	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations (CUP) smaller than 50 ha may also be used.	• Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots>50ha[i]. • Deer movement during winter in Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii]. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha[ccxxiv]. • Woodlots with high densities of deer due to artificial feeding are not significant[i]. Information Sources • MNRF District Offices • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF[cxlviii]. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF[i]. • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques[ccxxiv], ground or road surveys, or a pellet count deer density survey[ccxxv]. • SWHMIST[cxlix] Index #2 provides development effects and mitigation measures.	Suitable deer overwintering habitat is not present in the study area. **Not SWH**

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Cliff and Talus Slopes					
Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii] • SWHMIST[cxlix] Index #21 provides development effects and mitigation measures.	Vegetation community type is not present within the study area. **Not SWH**
Sand Barrens					
Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	A sand barren area >0.5ha in size Information Sources • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens[lxxviii] • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp)[i]. • SWHMIST[cxlix] Index #20 provides development effects and mitigation measures.	Vegetation community type is not present within the study area. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Alvar					
Rationale: Alvars are extremely rare habitats in Ecoregion 7E	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species:** 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 7E[cxlix]	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover[lxxviii].	An Alvar site > 0.5ha in size[lxxv]. Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie[cxcix]. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi]. • Ontario Nature – Conserving Great Lakes Alvars[ccviii]. • Natural Heritage Information Centre (NHIC) has location information available on their website • OMNRF Staff • Field Naturalist clubs • Conservation Authorities	Field studies identify four of the five **Alvar indicator species**[lxxv] at a candidate Alvar site is Significant • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses[lxxv]. • SWHMIST[cxlix] Index #17 provides development effects and mitigation measures.	Vegetation community type is not present within the study area. **Not SWH**
Old Growth Forest					
Rationale: Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old growth forests are characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland area is >0.5ha Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Districts • Field naturalist clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat[cxlviii]. • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities [cxlviii] (cut stumps will not be present) • Determine ELC Vegetation Type for forest area containing the old growth characteristics[lxxviii]. • SWHMIST[cxlix] Index #23 provides development effects and mitigation measures.	Vegetation community type is not present within the study area. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Savannah					
Rationale: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)[cc].	No minimum size to site[i] Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location data available on their website • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present[i]. Note: Savannah plant spp. list from Ecoregion 7E should be used. • Area of the ELC Vegetation type is the SWH[lxxviii]. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMIST[cxlix] Index #18 provides development effects and mitigation measures.	Suitable habitat is not present within the subject property. Not SWH
Tallgrass Prairie					
Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)[cc].	No minimum size to site[i]. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Centre (NHIC has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in[lxxv] Appendix N should be present[i]. Note: Prairie plant spp. list from Ecoregion 7E should be used. • Area of the ELC Vegetation Type is the SWH[lxxviii]. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMIST[cxlix] Index #19 provides development effects and mitigation measures.	Vegetation community type is not present within the study area. **Not SWH**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Other Rare Vegetation Communities					
Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG[cxlviii]. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M[cxlviii]. The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Centre (NHIC) has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG[cxlviii]. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMIST[cxlix] Index #37 provides development effects and mitigation measures.	Rare vegetation community types are not present within the study area. **Not SWH**

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Nesting Area					
Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends: 120m[cxlix] from a wetland (>0.5ha) or a wetland (>0.5ha) with small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120m of each individual wetland where waterfowl nesting is known to occur[cxlix]. • Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards[j], or, • Presence of 10 or more nesting pairs for listed species including Mallards[j]. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMIST[cxlix] Index #25 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					
Rationale: Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario • MNRF values information (LIO/NRVIS) will list known nesting locations, Note: data from NRVIS is provided as a point format and does not include all the habitat. • Nature Counts, Ontario Nest Records Scheme data • OMNRF Districts • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area[cxlviii]. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWH[ccvii], maintaining undisturbed shorelines with large trees within this area is important[cxlviii]. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi, ccvii]. Area of the habitat from 400-800m is dependant on site lines from the nest to the development and inclusion of perching and foraging habitat[cvi]. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥3 years or suspected of not being used for >5 years before being considered not significant[ccvii]. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #26 provides development effects and mitigation measures.	Deciduous forest with mature trees is present within the subject property, abutting the Lake Huron shoreline. No large stick nests were observed, nor were Ospreys or Bald Eagles observed in the study area during site investigations. **Not SWH**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Woodland Raptor Nesting Habitat					
Rationale: Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands combined >30ha or with >4ha of interior habitat[bxxxviiii, bxxxix, xc, xci, xciii, xciv, xcv,xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii]. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. Information Sources • OMNRF Districts • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • Presence of 1 or more active nests from species list is considered significant[cxlviii]. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha of habitat is the SWH[ccvii].(the 28ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH[ccvii]. • Broad-winged Hawk and Coopers Hawk – A 100m radius around the nest is the SWH[ccvii]. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH[ccvii]. • Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMIST[cxlix] Index #27 provides development effects and mitigation measures.	Forest habitat on the subject property is too small to support provincially significant woodland raptor nesting habitat. **Not SWH**
Wildlife Habitat: Turtle Nesting Area					
Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. Information Sources • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) Field naturalist clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles[i] • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[i] • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH[cxlviii]. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat[cxlix]. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observation studies observing the turtles nesting is a recommended method. • SWHMIST[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Suitable habitat is not present within the subject property. Not SWH

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Seeps and Springs					
Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system[cxvii, cxlix]. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species[cxix, cxx, cxxi, cxxii, cxiii, cxiv]. Information Sources • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped	Field Studies confirm: • Presence of a site with 2 or more[f] seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation of the habitat[cxlviii]. • SWHMIST[cxlix] Index #30 provides development effects and mitigation measures.	The study area is not located within a headwaters area. No groundwater seepages or watercourses occur within the subject property. **Not SWH**
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx]. Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii]. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts and wetland evaluations • Field naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. • A combination of observational study and call count surveys [cviii] will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of woodland area[lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi]. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWHMIST[cxlix] Index #14 provides development effects and mitigation measures.	Suitable amphibian breeding habitat (wetlands and vernal pools) is not present on the subject property. **Not SWH**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
Rationale: Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario Landscapes	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500m^2 (about 25m diameter)[ccvii] supporting high species diversity are significant: some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats[clxxxiv]. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from CAs	Studies confirm: • Presence of breeding population of 1or more of the listed newt/salamander species or 2 or more of the listed frog or toad species and with at least 20 breeding individuals (adults and eggs masses)[lxxi, lxxiii] or 2 or more of the listed frog/toad species with Call Level of 3. or; Wetland with confirmed breeding Bullfrogs are significant[j]. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys cviii to determine breeding/larval stages will be required during the spring (May March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMIST[cxlix] Index #15 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**
Wildlife Habitat: Woodland Area-Sensitive Bird Breeding Habitat					
Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30ha[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxxv, cxxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix]. • Interior forest habitat is at least 200m from forest edge habitat[clxiv]. Information Sources • Local birder clubs • Canadian Wildlife Service (CWS) for the location of forest bird monitoring • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species. • Reports and other information available from CAs	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species[j]. • Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH[j]. • Conduct field investigations in early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #34 provides development effects and mitigation measures.	Woodland within the study area is too small to support area-sensitive bird breeding habitat. **Not SWH**

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Marsh Bird Breeding Habitat					
Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites	• Nesting occurs in wetlands • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present[cxxiv]. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • OMNRF Districts and wetland evaluations • Field naturalist clubs • Natural Heritage Information Centre (NHIC) • Reports and other information available from CAs • Ontario Breeding Bird Atlas[ccv]	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species[j]. • Note: any wetland with breeding of 1 or more Trumpeter Swans, Black Terns, Green Heron or Yellow Rail is SWH[j]. • Area of the ELC ecosite is the SWH • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #35 provides development effects and mitigation measures	Suitable habitat is not present within the study area. **Not SWH**
Wildlife Habitat: Open Country Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30ha[clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix]. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years)[j]. Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources • Agricultural land classification maps Ministry of Agriculture • Local birder clubs • Ontario Breeding Bird Atlas[ccv] • EIS Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species[j]. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #32 provides development effects and mitigation measures	Suitable habitat is not present within the study area. **Not SWH**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat such as woodland area for some bird species.	Large natural field areas succeeding to shrub and thicket habitats >10ha[clxiv] in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years)[i]. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species[clxxiii]. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[i]. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat[i]. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #33 provides development effects and mitigation measures.	Suitable habitat is not present within the subject property. Not SWH
Wildlife Habitat: Terrestrial Crayfish					
Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. [Ccii]	Chimney or Digger Crayfish (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998.	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites[cci]. • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the large ecosite area is the SWH • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult [cci] • SWHMIST[cxlix] Index #36 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. **Not SWH**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Special Concern and Rare Wildlife Species					
Rationale: These species are quite rare or have experienced significant population declines in Ontario	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites[lxxviii]. Information Sources • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists and element occurrences for these species. • NHIC Website: "Get Information" http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas[ccv] • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat neess to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat for foraging habitat. • SWHMIST[cxlix] Index #37 provides development effects and mitigation measures.	No breeding habitat for SCC was identified on the subject property (probable/confirmed habitat for SCC birds) No provincially rare vegetation species/SCC documented on the property. **Not SWH**

Significant Wildlife Habitat Assessment Tables

Table 5. Characteristics of Animal Movement Corridors for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Movement Corridors					
Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Blue-spotted Salamander Spotted Salamander Four-toed Salamander Gray Treefrog Northern Leopard Frog Pickerel Frog Western Chorus Frog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	Movement corridors between breeding habitat and summer habitat[clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi] Movement corridors must be considered when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule[i]. Information Sources • MNRF District Office • Natural Heritage Information Centre NHIC • Reports and other information available from CAs • Field naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant[cxlix]. • Corridors should have at least 15m of vegetation on both sides of waterwaycxlix or be up to 200m widecxlix of woodland habitat and with gaps <20m[cxlix] • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat[cxlix]. • SWHMIST[cxlix] Index #40 provides development effects and mitigation measures.	Wetland habitat is not present within or adjacent to the study area. **Not SWH**

Appendix XIV
Proposed Lot Layout (Zelinka Priamo 2019)

SHORELINE AREA 1

SHORELINE AREA 2

TUDOR CLOSE WEST

EXISTING SEAWALL

TOE OF SLOPE

TOP OF SLOPE

5.0

5.0

98.021

98.855m

80.808m

18.35m

19.81m

20.01m

6.00m

R11.5m

5.969m

3.83m

19.84m

19.84m

19.29m

PROPOSED BUILDING ENVELOPES (typ)

EXISTING DRIP LINE PER NRSI

PROPOSED BUILDING ENVELOPES (typ)

121.324m

103.246m

102.283m

19.806

19.806

PROPOSED BUILDING ENVELOPES (typ)

107.133m

104.002m

100.871m

20.00m

20.076m

20.076m

6.00m

5

6

3

4

2

1

LEGEND

PARCEL LIMITS

PROPOSED DEVELOPMENT PARCELS

PROPOSED BUILDING ENVELOPES

0 20 40m

LAKESHORE ROAD

County of Lambton | County of Lam