Seaglass in Port Stanley

Scoped Environmental Impact Study

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained in July 2016 by Wastell Homes to complete an Issues Scoping Report (ISR) and Scoped Environmental Impact Study (EIS) for a proposed residential development at 391 George Street in Port Stanley, Ontario. The property is located approximately 500m from the Lake Erie shoreline and consists of an agricultural field, woodlands, and the Lake Road municipal drain (Not Rated) in the Kettle Creek Watershed within the County of Elgin.

The Municipality of Central Elgin requires that all new development applications include an ISR and Species at Risk (SAR) Screening to assess the significance of existing natural heritage features and their functions. An ISR was prepared and approved by to the municipality in December 2016. A copy of the ISR is appended to this report (Appendix I), which includes the Terms of Reference (TOR) for the current scoped EIS. The ISR summarizes background information on natural heritage features, the proposed undertaking, provides a preliminary assessment of the significance, sensitivity, and function of natural features within the study area, and addresses potential cumulative effects on natural features resulting from the proposed undertaking. The ISR was prepared in accordance with the Elgin County Official Plan (ECOP) (2015) and the Central Elgin Official Plan (CEOP) (2013).

This scoped EIS provides a summary of the ISR and expands upon the previously reported information to include the results of original field surveys, and detailed analyses of SAR habitat, Significant Wildlife Habitat (SWH), the identification of any natural feature constraints in association with land use policy designations, and the assessment of potential impacts and mitigation measures associated with details of the proposed development. This impact study has been developed in accordance with the ECOP (2015) and CEOP (2013), as well as guidance provided by the Kettle Creek Conservation Authority (KCCA) and the Ministry of Natural Resources and Forestry (MNRF) Aylmer District. Correspondence with agency staff is provided in Appendix II of this report.

The subject property, approximately 23.6ha in area, is generally bounded by the Kettle Creek Golf and Country Club to the north, vacant industrial land and Carlow Road

(County Road 20) to the east, George Street to the south, and single-family homes and a woodland to the west (Map 1). A dirt driveway / vehicle turn-around area is in the southwest corner of the property. Up the slope and to the west of the driveway is a pipeline easement and access lane that extends along the western boundary of the subject property to the proposed residential Block near the northwest corner. No other infrastructure or structures are present within the subject property. A single residential lot is located west of the subject property and contains a house, and an outbuilding. The majority of the subject property is currently characterized by agricultural fields planted with a rotation crop of corn or soy, and winter wheat. A steep slope is present on the west side of the property, which is vegetated with trees and shrubs, terminating near the Lake Road municipal drain. A buried municipal drain runs parallel to George Street on the south side of the subject property. The subject property is located within Ecoregion 7E.

For the purposes of this report, the term “subject property” refers to the lands owned by the proponent including the area where the development is proposed to occur. The term “study area” refers to the subject property plus the surrounding area (approximately 120m) for which additional information was collected and reviewed (as could be gathered without direct access to these areas). The subject property boundary and surrounding study area is illustrated on Map 1. Legacy data collected from agencies and wildlife atlases encompassed an area of approximately 1km around the property to ensure that all surrounding natural features were considered.

1.1 Description of the Proposed Undertaking

The proposed development on the subject site consists of a residential subdivision, apartment residential blocks, a public park, a stormwater management block, and a residential block at the top of the slope in the northwest corner. The majority of the development area will consist of detached single-family homes. Development limits for the apartment blocks and the residential block at the top of the slope have been established and impacts from these development areas are addressed in this report.

The boundaries of significant natural features and their associated setbacks were provided to the study team to guide the development proposal. This information was combined with other physical and planning constraints to come up with a suitable

development plan for the property that respects the natural environment features and wildlife habitat present. The details of the undertaking are shown on Map 2, Seaglass Draft Plan of Subdivision prepared by Monteith and Brown Planning Consultants (MBPC 2018).

1.2 Project Scoping

The need for an ISR and EIS was identified due to the presence of possible natural heritage features within the subject property as mapped in the ECOP and CEOP. The ISR was prepared to provide a brief overview of the property, discuss relevant policies and regulations, present a screening of SAR, and identify potential impacts for the proposed undertaking. A TOR was prepared as part of the ISR, that identified specific areas for further study, as well as proposed field surveys. The ISR also provides details on the background information review, including comprehensive species lists, and identification of key natural heritage features within the study area. For a detailed discussion of background information and relevant policies, please see the ISR (Appendix I). A summary of the information collected and reviewed, and species lists, which include NRSI observations, are provided in this scoped EIS. Detailed species lists are provided in Appendices III through VIII. Tree inventory data is provided in Appendix IX.

Based on the background review and initial wildlife species lists that were compiled for the ISR, 19 SAR and 31 species of Conservation Concern (SCC) were identified within the study area. A preliminary screening exercise was conducted for these species to identify whether suitable habitat is present within the study area. The results of this screening exercise are presented in the ISR. The initial species lists and SAR screening were used to guide the scope and type of wildlife surveys required and to ensure that the potential presence of all SAR and SCC were adequately addressed in this EIS.

Potential suitable habitat was identified within the study area for 8 regulated SAR during the SAR screening:

- Butternut (*Juglans cinerea)*
- Northern Bobwhite (*Colinus virginianus*),
- Wood Thrush (*Hylocichla mustelina*),
- Yellow-breasted Chat (*Icteria virens*)

- Red-headed Woodpecker (*Melanerpes erythrocephalus*),
- Eastern Meadowlark (*Sturnella magna*)
- Little Brown Myotis (Myotis *lucifugus*), and
- American Badger (*Taxidea taxus jacksoni*)

These species are discussed further in this report under their respective biota subsections (e.g., Birds). Full results of the SAR screening exercise are provided in Appendix I, appended to the ISR.

A preliminary screening for the presence of SWH was also completed for the study area as part of the ISR (Appendix I). Based on the results of this preliminary screening exercise, the following were identified as candidate SWH for the study area:

- Raptor Wintering Areas
- Bat Maternity Colonies
- Landbird Migratory Stopover Areas
- Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat
- Woodland Raptor Nesting Habitat
- Seeps and Springs

These candidate SWH types are discussed further in the Significance and Sensitivity section of this report. Full results of the SWH screening are provided in Appendix I, attached to the ISR.

Based on the findings described above, a TOR for the EIS was prepared by NRSI and submitted to the Municipality of Central Elgin, along with the ISR, on December 23, 2016 for review and comment. The municipality, on behalf of the KCCA, reviewed the TOR, and on January 17, 2017 approved the ISR and Scoped EIS TOR. The TOR is attached to the ISR in Appendix I of this report.

2.0 Relevant Policies, Legislation, and Planning Studies

For the purposes of this EIS report and the ISR (NRSI 2016), information on the natural heritage features within the subject property was collected and assessed for significance. To help inform suitable land-use concepts, guide the layout of development, and identify areas to be protected, these features are evaluated against the following relevant policies, legislation, and planning studies. Detailed descriptions of the applicable policies, legislation and planning studies are provided in Sections 2.3 to 2.13 of the ISR. Table 1 provides a summary of these documents.

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 2010a) and the Significant Wildlife Habitat Technical Guide (OMNR 2000, OMNR 2015) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS.	• Based on the background information review and details provided in the ISR, 4 natural features were identified within the study area which have implications under the PPS: o Potential habitat for endangered and threatened species, o Candidate SWH, o Fish Habitat, and o Adjacent lands
Endangered Species Act	• The original ESA, written in 1971, underwent a year-long review which resulted in several changes, which came into force in 2007. • The ESA prohibits killing, harming, harassing, or capturing Endangered and Threatened species and protects their habitats from damage and destruction.	• Based on a preliminary analysis, several regulated SAR were identified as having the potential to occur within the study area based on habitat present. • These include trees, birds, and mammals.

Policy/Legislation	Description	Project Relevance
Canadian Fisheries Act	• Manages threats to the sustainability and productivity of Canada's commercial, recreational, and Aboriginal fisheries. • The Act prohibits "serious harm to fish" including destruction of habitat • DFO has developed an online, self-assessment tool, where proponents can determine whether their projects require DFO review based on the type of water body the work is occurring in and the nature of the proposed activity.	• The Lake Road municipal drain provides direct fish habitat. • No work will occur within or adjacent to the Lake Road municipal drain. • A setback to the Lake Road municipal drain has been identified and is discussed in this report.
Ontario Drainage Act	• The Act provides legislation and policies for the creation, maintenance, and repair of municipal drains in Ontario • DFO's drain classification system includes 7 categories that help to simplify the review and approval process for municipal drain works	• The Lake Road municipal drain does not have a DFO classification or rating. • No drain maintenance or in water work will occur as part of the proposed undertaking
Migratory Birds Convention Act (MBCA)	• The MBCA protects migratory game birds, insectivorous birds, and other non-game migratory birds, their nests, and eggs from harm, harassment, and destruction. • The act provides protection for these birds throughout the year, and is not specific to peak breeding bird seasons.	• The MBCA applies to the construction phase of the proposed undertaking, when there is the potential for 'incidental take' to occur. • The construction schedule must consider the peak migratory bird season (May 1 to July 31) during site clearing and grubbing, and the stockpiling of material. • Bird nest searches are required for tree clearing during the peak breeding season, and encouraged during the general nesting season (mid-March to late August).
Fish and Wildlife Conservation Act	• The act provides protection for certain bird species not covered by the MBCA including raptors, as well as furbearing mammals, their dens, and habitual dwellings	• Several furbearers are reported from the study area and fall under the protection of this Act.

Policy/Legislation	Description	Project Relevance
Elgin County Official Plan (ECOP) (2015)	• The ECOP provides direction for the land use planning in the County, and identifies objectives and policies for the Natural Heritage System (NHS), water resources, and natural hazards. • The Plan also provides direction on the preparation of EISs for the County.	• Specific policies for the protection of Significant Woodlands are provided in the ECOP and are applicable to the woodlands within the study area. • Watercourses in the county are considered environmentally significant features, which includes the Lake Road municipal drain on the subject property. • This EIS has been prepared in accordance with the ECOP policies.
Municipality of Central Elgin Official Plan (CEOP) (2013)	• The CEOP includes specific policies for the protection of natural features within the municipality, as well as area specific policies for each town and hamlet in its authority. • Area specific policies for Port Stanley are covered under Schedule G. • Guidance for the preparation of Issues Scoping Reports and Environmental Impact Studies are provided in the CEOP. • The Plan requires that an Issues Scoping Report (ISR) and Species at Risk (SAR) screening are prepared for lands under consideration for development. Specific guidance is provided in the CEOP • An Environmental Impact Study (EIS) may be required after the completion of an ISR to identify impacts to natural features and provide mitigation measures where impacts are anticipated to occur. • The EIS should also include an Environmental Management Plan (EMP) that discusses natural feature protection and enhancement.	• In accordance with the CEOP an ISR and Species at Risk screening was prepared and submitted to the Municipality. A recommendation was provided in the report for the completion of a scoped EIS to address the presence of candidate Significant Wildlife Habitat, and SAR present within the study area. • A TOR for the EIS was appended to the ISR and approved by the municipality on January 17, 2017. • This EIS has been prepared in accordance with the CEOP (2013) and the EIS Guidelines in Appendix B of the CEOP.

Policy/Legislation	Description	Project Relevance
KCCA Regulation 181/06	• The Kettle Creek watershed is 520km^2 and drains into Lake Erie. The KCCA regulation (181/06) was approved in 2006 and regulates watercourses and their corridors/valleys/floodplains, natural hazards, shorelines, and wetlands. • .	• The subject property includes the following regulated features: o A watercourse and its floodplain, and o Hazard lands • A permit will be required from the KCCA occurs within or adjacent to these regulated areas. • The Municipality of Central Elgin is responsible for reviewing development applications under the Ontario Regulation 181/06. This report will be sent to the Municipality for review.
Elgin County Woodlands Conservation By-law Number 05-03	• The 2005 By-law includes policies for the protection and management of trees and woodlands within the County. • Proposed changes to the By-law were submitted in 2016 and are currently under review. • Several of the proposed changes are related to tree removal on slopes. • Review of the appropriate documentation for tree removal will be undertaken by the Municipality.	• The subject property includes treed areas on slopes. • The proposed undertaking must consider tree removal on or near these slopes. • The proposed development is included in the exemptions listed under Section 3 d) of this by-law once the Plan of Subdivision has been approved, and therefore will not require a permit for the removal of trees as part of the approved Plan of Subdivision
Elgin County By-law No. 16-17 Being a By-law to Amend By-law 05-03 (Woodlands Conservation By-law)	• A permit is required to authorize the harvest, destruction, or injury of any tree or trees within a Woodlands Slope Area • A report prepared by a qualified arborist must be prepared identifying the tree or trees to be harvested, destroyed, or injured, a description of the health of such tree or trees, and recommendations as to the necessary operations.	• In areas where tree removal is required a tree inventory and protection plan is recommended. • Further protection and requirements for inventory will be implemented if any trees require removal, specifically in treed areas on identified slopes.

3.0 Field Methods

The type and scope of study methods was determined in consultation with the Kettle Creek Conservation Authority (KCCA), the Ministry of Natural Resources and Forestry (MNRF), and the Municipality of Central Elgin, and is detailed in a TOR, which is appended to this report (Appendix I). Table 2 provides details on all site visits including survey type and date, protocols applied, length of each survey, weather, and participating biologists.

Table 2. Field Survey Summary

Survey Type	Protocol	Date	Start and End Time (24 hrs)	Air Temp. (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers
Initial Site Visit	N/A	September 12, 2016	1000 - 1530	24	1	0	None	N. Hardie J. Bannon
Aquatic Habitat Assessment	Stanfield 2013		1015-1410	24	1	0	None	N. Hardie
Ecological Land Classification	Lee et. al 1998		1000 – 1530	24	1	0	None	J. Bannon
Vascular Flora Inventory	Systematic search by ELC polygon		1000 – 1530	24	1	0	None	J. Bannon
Dripline Survey	N/A	November 24, 2016	1030 – 1500	6	1	100	Fog, None	J. Bannon
Badger Survey	OMNR 2010	May 16, 2017	1045 – 1400	10	3-4	100	Light Rain	N. Hardie J. Bannon
Significant Wildlife Habitat Screening	N/A		1045 – 1530	10	3-4	100	Light Rain	N. Hardie J. Bannon
Vascular Flora Inventory	Systematic search by ELC polygon		1045 – 1530	10	3-4	100	Light Rain	J. Bannon
Badger Survey	OMNR 2010	June 6, 2017	0629 – 0902	13	2-5	80	None	N. Hardie J. Bannon
Breeding Bird Survey	OBBA (2001)		0629 – 0902	13	2-5	80	None	N. Miller
Breeding Bird Survey	OBBA (2001)	June 19, 2017	0650 – 0915	20	0	10	None	T. Brenton
Butternut Health Assessment	MNRF 2014a		0650 – 0915	20	0	10	None	T. Brenton
Odonate and Butterfly Survey	N/A	July 4, 2017	0630 – 1000	20	1	0	None	N. Miller
Vascular Flora Inventory	Systematic search by ELC polygon		0630 – 1000	20	1	0	None	J. Bannon

Survey Type	Protocol	Date	Start and End Time (24 hrs)	Air Temp. (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers
Butternut Sample Collection	N/A	August 30, 2017	0900-1200	20	1	0	None	M. Benner
Cavity Tree Assessment	MNRF 2014b MNRF 2017	October 16, 2017	1200-1400	11	2	10	None	P. Anderson K. Broadbelt
Tree Inventory and Assessment	N/A	December 19, 2017	10:00-15:00	-5	3	100	None	J. Bannon L. Hockley
		January 8, 2018	11:00-15:00	0	3	100	Snow	
		January 18, 2018	10:35-14:45	5	4	80	Light Rain	

3.1 Terrestrial Field Surveys

Terrestrial field surveys were undertaken on the subject property to characterize natural features, and identify significant and sensitive natural heritage features and species that have potential to be adversely affected by the proposed development. A total of 9 field visits were completed between September 2016 and October 2017. A variety of field surveys were undertaken, which are described in detail below. Surveys conducted were undertaken in accordance with provincial and local guidance documents as indicated below.

3.1.1 Vegetation Surveys

Vegetation community delineation was completed using aerial photography and thorough investigations in the field on September 12, 2016. The standard Ecological Land Classification (ELC) System for southern Ontario was applied (Lee et al. 1998), and updated as required throughout the following 2017 vegetation surveys. Details of vegetation communities were recorded including species composition, dominance, uncommon species or features, evidence of human impact, and surficial soil characterization.

All observed species of vascular flora were recorded during field surveys on September 12 and November 24, 2016, as well as May 16, June 6, and July 4 2017. A three-season detailed botanical survey was completed during these visits.

The woodland dripline within the subject property was flagged and surveyed by NRSI biologists November 24, 2016 to inform the final site plan footprint.

3.1.2 Tree Inventory

A comprehensive inventory of all trees ≥10cm in Diameter at Breast Height (DBH) with the potential to be impacted by the proposed development was completed by NRSI Certified Arborists on December 19, 2017, and January 8 and 18, 2018. Inventories were conducted in the leaf-off period; therefore, NRSI was able to assess the overall health and potential for structural failure of trees within the subject property, but not the foliar characteristics of deciduous individuals or the root flare in areas with high snow cover. Individual trees that were ≥10cm in DBH were tagged with a pre-numbered

aluminum forestry tag and assessed by a Certified Arborist. The location of trees inventoried was subsequently surveyed using a TopCon HiPer SR Site Receiver with cellular RTK Network corrections by the Certified Arborist and are shown on Map 3. A complete list of the trees that were assessed and their overall health and potential for structural failure is included in Appendix IV.

The following information was recorded for each tree:

- species,
- DBH,
- crown radius (metres),
- general health (excellent, good, fair, poor, very poor, dead),
- potential for structural failure (improbable, possible, probable, imminent),
- tree location (on-site/off-site)**,** and,
- general comments (i.e. disease, aesthetic quality, development constraints, sensitivity to development, lean, if any).

The overall health of each tree was assessed based on the criteria outlined in Table 3, and the potential for structural failure was assessed based on the criteria outlined in Table 4. In carrying out these assessments, NRSI has exercised a reasonable standard of care, skill and diligence as would be customarily and normally provided in carrying out these assessments. The assessments have been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. None of the trees examined on the property were dissected, cored, probed, or climbed and detailed root crown examinations involving excavation were not undertaken. The conditions for this assessment, including restrictions, professional responsibility, and third-party liability can be found in Appendix X.

Table 3. Tree Health Assessment Criteria

Assessment Criteria*	Definition[1]
Excellent	Represents a tree in near perfect form, health, and vigor. This tree would exhibit no deadwood, no decline, and no visible defects.
Good	Represents a tree ranging from a generally healthy tree to a near perfect tree in terms of health, vigor, and structure. This tree exhibits a complete, balanced crown structure with little to no deadwood and minimal defects as well as a properly formed root flare.
Fair	Represents a tree with minor health, balance, or structural issues with minimal to moderate deadwood. Branching structure shows signs of included bark or minor rot within the branch connections or trunk wood. The root flare shows minimal signs of mechanical injury, decay, poor callusing, or girdling roots. Trees in the category require minor remedial actions to improve the vigor and structure of the tree.
Poor	Represents a tree that exhibits a poor vigor, reduced crown size (<30% of crown typical of species caused by overcrowding or decline), extreme crown unbalance, or extensive rot in the branching and trunk wood. Fungus could be seen from these rotting areas, suggesting further decay. These trees have extensive crown die back with a large amount of deadwood, and possibly dead sections. These weakened areas can lead to a potential failure of tree sections. Rooting zones show signs of extensive root decay or damage (fruiting bodies or mechanical damage) or girdling roots. Trees in this category require more extensive actions to prevent failure. A tree identified as poor would be a candidate for removal in the near future.
Very Poor	Represents a tree that exhibits major health and structural defects. Quite often the defects or diseases affecting this tree will be fatal. Large quantities of fungus, large dead sections with possible cavities and bark falling off all are signs that a tree is in a major state of decline and would be identified as very poor. These trees have a probable or imminent potential for structural failure. These trees should be identified for removal.
Dead	Represents a tree that exhibits no sign of new growth, including buds, foliage, or shoot growth. These trees have a probable or imminent potential for structural failure. These trees should be identified for removal.

[1]Dunster 2009

Table 4. Tree Risk Assessment Criteria

Assessment Criteria*	Definition[1]
Improbable	The tree or branch is not likely to fail during normal weather conditions and may not fail in many severe weather conditions within the specified time frame.
Possible	Failure could occur, but it is unlikely during normal weather conditions within the specified time frame.
Probable	Failure may be expected under normal weather conditions within the specified time frame.
Imminent	Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load. This is a rare occurrence for a risk assessor to encounter, and it may require immediate action to protect people from harm.
*A specified time frame of 1 year will be used when assessing potential for structural failure.	

[1]International Society of Arboriculture 2013

3.1.3 Butternut Surveys

An area search for Butternut (*Juglans cinerea*) trees was conducted throughout the subject property by a certified Butternut Health Assessor (BHA). The BHA assessed the health of each identified Butternut tree in accordance with the Butternut Assessment Guidelines: Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007* (MNRF 2014). The BHA determined the following for each Butternut tree:

- The class of the Butternut tree (Category 1, 2, or 3),
- Whether or not the tree is a putative hybrid, and
- Whether the tree is believed to be naturally occurring or cultivated.

NRSI BHA staff recorded the following information during each Butternut Health Assessment:

- An identification number for each Butternut tree,
- The UTM coordinates of the Butternut tree,
- Assessment of the tree crown,
- Diameter at breast height (DBH) of the tree,
- Length of main stem below live crown, and
- Assessment of the main stem, including epicormic branches, bark type, callused wounds, and cankers.

For any assessed Butternuts that are confirmed to be Category 2 (Retainable) or Category 3 (Archivable), a sample was collected and sent for genetic testing to confirm the purity of the tree.

3.1.4 Breeding Bird Surveys

Breeding bird surveys were completed on June 6 and June 19, 2017 and data was recorded using standard OBBA call codes (OBBA 2001). Surveys consisted of detailed area searches by habitat type (ELC community), which occurred between dawn and 1000hrs. All visual and auditory observations of birds were recorded as well as the highest level of breeding evidence exhibited for each recorded species.

3.1.5 Butterfly and Odonate Surveys

Butterfly and odonate surveys were completed to address the potential presence of SAR within the subject property. A detailed survey was completed on July 4, 2017 and all odonates or butterflies observed were documented during the 2017 field season. Area searches within suitable habitat were carried out with the use of binoculars, an insect net, and a hand lens. All representative habitats (ELC ecosites) were surveyed methodically.

3.1.6 American Badger Surveys

American Badger den, burrow, and habitat surveys were completed on May 16 and June 6, 2017. Timing of these searches was intended to aid in the successful observation of dens in the spring when vegetation is less dense, and during the most active seasonal period for American Badger (summer). Survey methods were consistent with the Recovery Strategy for American Badger (OMNR 2010b) and guidance provided by the MNRF Aylmer district (K. Diemer pers. comm. 2016).

A focused transect approach was used by NRSI biologists to identify the presence of Badger activity and Badger / prey species dens in potentially suitable habitat. Transects were completed throughout the entire site, with emphasis on transitional areas between forest and field or agricultural areas, as well as the northern cultural meadow. Transects were no further than 10 metres apart in the forested communities, and 20 metres apart across the remainder of the subject property.

All den locations were inventoried with a GPS and examined for the following characteristics:

- "D" shaped burrow entrance (i.e. bottom of burrow entrance is wider than the height of the burrow);
- large mound ($1m^2$) of burrow material (e.g. sand and soil);
- tracks in fresh soil;
- claw marks along edges of burrow entrance;
- notable mustelid odour (e.g. skunks and weasels), and
- active burrow entrances are free of debris (e.g. leaves).

In addition, for each burrow: representative photos and dimensions were taken; exteriors were examined for claw marks; interior edges were examined for claw marks with a flashlight; and interiors were examined for Badger hairs. Note that supplemental searches for Badger burrows were completed on many additional dates throughout the 2017 field season (e.g., during avifaunal, herpetofaunal and vegetation surveys).

Dens and burrows that were evaluated as having a potential for badger residence were monitored using two motion-triggered wildlife cameras for 7 weeks starting on May 16, 2017. Cameras were positioned to capture any movement around the entrance to the den. Each camera was programmed to take still photographs when triggered by motion, and to take bursts of 3 photos per second once triggered. Batteries and memory cards were replaced as needed in each camera during the June 6 and June 19 site visits, and cameras were removed on July 4, 2017. All photos were reviewed by NRSI staff to identify any recorded wildlife.

3.1.7 Bat Habitat Surveys

The Ministry of Natural Resources and Forestry (MNRF) recently released revised guidelines for the identification of suitable bat roosting habitat as per the *Survey Protocol for Species at Risk Bats within Treed Habitats, Little Brown Myotis, Northern Myotis and Tri-colored Bat (April 2017).* This guidance document, along with the survey methodology for buildings and isolated trees (MNRF 2014) provides a phased approach for the identification of suitable bat maternity roosts, which are protected under the Endangered Species Act (2007). Given the presence of woodlands and isolated trees within and adjacent to the proposed development footprint, bat habitat assessments were conducted to determine the presence of roosting habitats based on these revised MNRF guidelines.

Identification of suitable maternity roosts within forests/woodlands and isolated trees includes examining every tree ≥10cm DBH in the field for signs of loose bark, cracks and/or cavities that would provide suitable roosting habitat for Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis septentrionalis*). All trees ≥10cm DBH with loose exfoliating bark, or suitable cracks and crevices are to be considered suitable roosting habitat for these species. Habitat for Tri-colored Bat (*Perimyotis subflavus*) includes dead foliage on live trees (e.g. along a broken branch), particularly oak and

maple species, dogwood leaves, accumulations of pine needles, squirrel nests, and cavities. Surveys to identify Tri-colored Bat habitat were conducted for oak and maple trees ≥10cm DBH that overlap the proposed development footprint.

The proposed development footprint overlaps with several trees along the east side of the Lake Road municipal drain and the southwest corner of the eastern woodland. Surveys for suitable bat roosting habitat were carried out on October 16, 2017, and during the tree inventory (December 19, 2017 and January 8 and 18, 2018) for trees that overlap the proposed development footprint, and trees along the perimeter of the development area.

3.1.8 Additional Wildlife

All observations of mammals, birds, odonates, lepidoptera and herpetofauna were documented on all field visits. This included actual direct observations of individuals, as well as signs of wildlife presence (i.e. tracks, scats, dens, nests etc.).

3.2 Aquatic Field Surveys

Aquatic biologists from NRSI conducted an aquatic habitat assessment on September 12, 2016. The assessment was focused on characterizing the Lake Road municipal drain on the subject property. The entire length of the drain within the subject property was walked during the preliminary site investigation. The following information was recorded for each aquatic feature within the subject property to characterize aquatic habitats:

- substrate type;
- channel depth, width, etc.;
- water temperature;
- dissolved oxygen;
- bank stability;
- aquatic vegetation cover; and
- critical life stage areas (i.e. spawning, nursery habitat, etc.).

The assessment provided a detailed description of the structure of the Lake Road municipal drain, and its suitability for aquatic species habitat. Evidence of groundwater

discharge within the drain was recorded, if present, to inform the characterization. The Lake Road municipal drain and the surveyed reaches are identified on Map 5.

4.0 Existing Conditions

4.1 Soils, Terrain, and Drainage

The glacial history of the Port Stanley area includes the advancement and retreat of the Lake Erie ice lobe, which covered the current Lake Erie shoreline. As the Wisconsian glacier receded several glacial lakes occupied the area around Port Stanley and St. Thomas. These lakes left large deposits of fine sediments within the County of Elgin (Chapman and Putnam 1984). The local terrain and landforms are dominated by Kettle Creek, which is 500m to the east, and its historic valley.

Background information indicates that the dominant soil type found within the study area is imperfectly drained lacustrine material with variable soil textures (Schut 1992). Beverly Loam soils and Tuscola soils are found throughout the study area, and are surrounded by unmapped areas, and landforms associated with eroded channels and valley complexes. Tuscola soils dominate the slope and table land on the west side of the subject property. Much of the subject property is mapped by Schut as 'VC' or Valley Complex. This refers to an area of undifferentiated material with side walls and terraces or floodplains of valleys associated with creeks, rivers and their major tribulates. Soil textures are variable within this designation. The landform is described as a 'U' shaped valley having a nearly level floodplain and strongly to very steeply sloping side walls (>15%). These landform types occur within the County of Elgin in association with Big Otter Creek, Catfish Creek, Kettle Creek, and Talbot Creek (Schut 1992).

Over time, Kettle Creek has formed a deep valley with steep sides and a flat valley floor (Chapman and Putnam 1984). The wooded slope on the west side of the subject property is a remnant of the historic Kettle Creek valley wall. The development area occupies the historic valley floor, is relatively flat and extends east towards the centre of town and Kettle Creek.

Within the subject property, the Lake Road municipal drain is situated along the eastern edge of the wooded slope to the west. The drain flows east, then north along the toe of the valley wall slope, and takes a sharp eastern turn at the edge of the property. From here it flows along a narrow hedgerow, consisting of a single row of trees, cultural meadow, and active golf course (CUM1 and CGL_1 on Map 4) between the Kettle Creek

Golf and Country Club and the agricultural field. The drain follows the hedgerow and golf course to the northeast corner of the subject property then turns sharply north and enters the golf course property. It continues north and flows under Carlow Road, emptying into Kettle Creek west of the railroad bridge.

4.2 Designated Natural Areas

Information on designated natural areas and SWH (e.g. deer yards, bat hibernacula), was obtained from the NHIC (2013) database, background requests sent to the MNRF (K. Diemer pers. comm. 2016), and other background sources (e.g. Official Plans). According to background information collected, there are no provincially or regionally significant wetlands or Areas of Natural and Scientific Interest (ANSI) within the subject property (K. Diemer pers. comm. 2016). An evaluation of woodland significance was completed as part of the ISR (Appendix I). Based on this evaluation, the western woodland is a Significant Woodland, while the eastern woodland is not significant. See the ISR and the Significance and Sensitivity section of this report for more information on woodland significance.

4.3 Vegetation

4.3.1 Vegetation Communities

Most of the subject property consists of agricultural lands, with lowland forest and cultural thicket communities. A summary of ELC communities identified within the study area is provided in Table 3. ELC communities are described below in detail and shown on Map 4.

Table 5. Vegetation Communities Identified within the Study Area

Cultural	
CUM1	Dry-Moist Old Field Meadow Type
CUT1	Mineral Cultural Thicket Ecosite
CUT1-1	Sumac Cultural Thicket Type
CUT1-4	Gray Dogwood Cultural Thicket Type
Plantation	
CUP3	Coniferous Plantation
CUP3-2	White Pine Coniferous Plantation Type
Deciduous Forest	
FOD5-2	Dry - Fresh Sugar Maple - Beech Deciduous Forest Type
FOD7	Fresh - Moist Lowland Deciduous Forest Ecosite
FOD7-2	Fresh - Moist Ash Lowland Deciduous Forest Type

Agricultural Row Crop (AG)

This community has been planted with wheat. It consists of several herbicide-tolerant species including Lamb's Quarters (*Chenopodium album* var. *album*), Russian Pigweed (*Axyris amaranthoides*), and Velvetleaf (*Abutilon theophrasti*). Large areas of bare soil are present within this community, particularly following harvest.

Dry-Moist Old Field Meadow Type (CUM1)

Weedy and invasive species characterize this small Cultural Meadow community, including Tall Goldenrod (*Solidago altissima var. altissima*), Canada Thistle (*Cirsium arvense*), Common Dandelion (*Taraxacum officinale*), and Lamb's Quarters.

Mineral Cultural Thicket Ecosite (CUT1)

This community is in the northeast corner of the subject property and extends off-site surrounding the eastern extent of the FOD7-2 community. The most abundant species within the community are European Buckthorn (*Rhamnus cathartica*) and Gray Dogwood (*Cornus foemina* ssp. *racemose*). The ground layer consists largely of Tall Goldenrod and Garlic Mustard (*Alliaria petiolata*).

Sumac Cultural Thicket (CUT1-1)

This cultural community occurs in 2 locations within the subject property: at the highest point of land in the northwest corner, and in the southwest corner adjacent to the CUM community. The most abundant species within the community is Staghorn Sumac (*Rhus hirta*), with Red Raspberry (*Rubus idaeus ssp. idaeus*) and Alleghany Blackberry (*Rubus allegheniensis*). The ground layer consists largely of Tall Goldenrod and Field Horsetail (*Equisetum arvense*).

Dry-Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-2)

The upper portion of the steep slope contains a Sugar Maple - Beech forest type. This forest canopy and sub-canopy contains abundant Sugar Maple (*Acer saccharum* ssp. *saccharum*), American Beech (*Fagus grandifolia*) and White Ash (*Fraxinus americana*). The understory includes Tartarian Honeysuckle (*Lonicera*

tartarica) and Multiflora Rose (*Rosa multiflora*). The ground layer includes White Avens (*Geum canadense*) and Spinulose Wood Fern (*Dryopteris carthusiana*).

Fresh-Moist Lowland Deciduous Forest Ecosite (FOD7)

The lower portion of the steep slope contains a Lowland Deciduous Forest. This forest canopy contains Black Walnut (*Juglans nigra*), Black Locust (*Robinia pseudo-acacia*), and Sugar Maple. The understory includes Tartarian Honeysuckle, Multiflora Rose, and Alternate-leaved Dogwood (*Cornus alternifolia*). The ground layer includes Canada Goldenrod (*Solidago canadensis*), Garlic Mustard, Ostrich Fern (*Matteuccia struthiopteris var. pensylvanica)* and Skunk Cabbage *(Symplocarpus foetidus)*. Seeps were observed above the Skunk Cabbage-dominated areas with intermittent groundwater flow over the slope surface.

Fresh-Moist Ash – Lowland Deciduous Forest Type (FOD7-2)

This community is present on the eastern portion of the subject property on a north- and west-facing slope. The canopy and sub-canopy contains Green Ash (*Fraxinus pennsylvanica)*, Eastern Cottonwood (*Populus deltoides*), and Large-tooth Aspen (*Populus grandidentata*). The understory consists of Alternate-leaved Dogwood and European Buckthorn. The ground layer includes Wood Nettle (*Laportea canadensis*), Tall Goldenrod, and Tickseed Sunflower (*Bidens polylepis*). This community extends east of the subject property and is surrounded by a CUT1 community to the east. Emerald Ash Borer is confirmed to be present within this community, and most of Ash are showing signs of decline, if not already dead. Areas where the canopy has become open contain dense colonies of European Buckthorn, indicating that this community may become dominated by this species following the decline of the dominant ash canopy. The northwestern edge of this community contains a few mature maples that are largely independent from the rest of the FOD7-2 community.

Additional vegetation communities were noted to the east of the subject property during an investigation of the eastern woodland and were assessed from the property line in as much detail as possible. These communities include Mineral Cultural Thicket (CUT1), Gray Dogwood Cultural Thicket (CUT1-4), Coniferous Plantation (CUP3) and White Pine

Coniferous Plantation (CUP3-2). A description of each of these communities is provided below.

Mineral Cultural Thicket Ecosite (CUT1)

This community is in the northeast corner of the subject property and extends off-site surrounding the eastern extent of the FOD7-2 community. The most abundant species within the community are European Buckthorn and Gray Dogwood (*Cornus foemina* ssp. *racemose*). The ground layer consists largely of Tall goldenrod and Garlic mustard.

Gray Dogwood Cultural Thicket (CUT1-4)

Located entirely off-site and to the east of the FOD7-2 community, this Gray Dogwood thicket extends along the height of the slope. It is a largely open area, with dense areas of Gray Dogwood, Silky Dogwood (*Cornus amomum* ssp. *obliqua*) and occasionally Canada Soapberry (*Shepherdia canadensis*). The ground layer consists largely of Flat-topped Bushy Goldenrod (*Euthamia graminifolia*) and Canada Goldenrod.

Coniferous Plantation (CUP3)

This community is located near the northeast corner of the subject property adjacent to an area of Gray Dogwood Cultural Thicket and includes Eastern Tamarack (*Larix laricina*) and White Pine (*Pinus strobus*). Understory and ground-cover species could not be observed from the subject property.

White Pine Coniferous Plantation Type (CUP3-2)

This community is present east of the golf course, north of a Mineral Cultural Thicket area. Understory and ground-cover species could not be observed from the subject property.

4.3.1 Vascular Flora

Detailed vegetation inventories were conducted during site visits and 125 species were identified. Background information (MNRF 2013) and SAR screening indicates that 17 significant plant species are reported from within 1km of the study area. Appendix III provides a complete list of all identified species, and their current status ranks. This

includes 77 (62%) native species and 48 non-native species (38%). Vascular flora along the edges of the agricultural field contained the highest proportion of non-native species, with more native composition present in the interior of the lowland deciduous community to the west. One regulated SAR species was observed during Vascular Flora inventories; Butternut. Several Butternuts were observed, and assessed, as detailed below.

4.3.2 Butternut Health Assessments

Butternut is an Endangered species under the ESA (2007) and its preferred habitat consists of stream banks and swamps, as well as upland Beech-Maple, Oak-Hickory, and mixed hardwood stands (Reznicek et al. 2011). A total of 9 Butternut or Butternut hybrids were found on the subject property during butternut surveys. Each of these Butternuts was assessed for health based on physical characteristics according to MNRF guidance documents for Butternut Health Assessments (MNRF 2015, MNRF 2014a). Of the 9 individuals observed, 4 were assessed to be Category 1: Non-Retainable. Samples of the remaining 5 Butternuts were collected and sent to the Ontario Forest Research Institute to determine the hybridity status of each individual tree. Of these trees, 3 were determined to be hybrids. Hybrid Butternuts are not protected by the Endangered Species Act (2007). Of the remaining 2 Butternuts, 1 is Category 2: Retainable, and 1 is Category 3: Archivable. These 2 Butternut individuals are shown Map 6 with a 50m General Habitat zone. Due to the presence of these butternuts, this zone is to be treated as Regulated Habitat and any removal of vegetation within this zone requires compensation for the habitat. One additional Butternut was found in December 2017 during the tree inventory process. This butternut, located in the FOD7 community to the west, is located farther than 50m from any proposed development, and will not require a detailed Butternut Health Assessment. Further discussion regarding Butternut trees is provided in the Direct Impacts section of this report.

4.3.3 **Tree Inventory**

In total, 147 trees were inventoried, including 21 species. Of the trees inventoried and assessed, 127 (86.4%) are native species and 20 (13.6%) are non-native. A complete list of trees inventoried is provided in Appendix IX and tree locations within the subject property are shown on Map 3.

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								
American Basswood	*Tilia americana*			13				13
Black Cherry	*Prunus serotina*			1				1
Black Walnut	*Juglans nigra*		5	19	1			25
Black Willow	*Salix nigra*			1				1
Eastern Cottonwood	*Populus deltoides*		6	13	2	1		22
Eastern Red Cedar	*Juniperus virginiana*		1					1
Green Ash	*Fraxinus pennsylvanica*				2			2
Hawthorn species	*Crataegus* sp.			1				1
Hop Hornbeam	*Ostrya virginiana*			1				1
Large-tooth Aspen	*Populus grandidentata*			3				3
Manitoba Maple	*Acer negundo*			1	7	6	1	15
Staghorn Sumac	*Rhus typhina*			2	4	1	2	9
Sugar Maple	*Acer saccharum* ssp. *saccharum*	5	2	1			1	9
White Ash	*Fraxinus americana*			10	8	4	1	23
White Spruce	*Picea glauca*			1				1
Total		5	14	67	24	13	5	128
Non-Native Species								
Common Apple	*Malus domestica*			1	1			2
Crack Willow	*Salix fragilis*			9	6	2		17
Sweet Cherry	*Prunus avium*			1				1
Total				11	7	2		20
Overall Total		5	14	78	31	15	5	148

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 fair health with an improbable to 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	5	14	45	1	1		66
Possible			31	15	2	1	49
Probable			2	15	11	4	32
Imminent							0
Total	5	14	78	31	14	5	147

4.4 Wildlife

4.4.1 Birds

A total of 106 birds are reported from the vicinity of the study area based on the OBBA (BSC *et al.* 2008). The data found in the OBBA includes those species that have been observed in the area (10 x 10km range), are reported to nest in the area, and/or have exhibited some evidence of breeding in the area. Following breeding bird surveys and incidental observations throughout 2016 and 2017 surveys, 53 species were documented within the subject property. Signs of breeding, such as males singing, females carrying food or nest materials, and the presence of fledged young, were exhibited by 47 species. Refer to Appendix IV for a list of bird species reported from and observed within the study area, and their current status ranks.

The most abundant species observed during point count surveys include Yellow Warbler (*Setophaga petechia*), Red-winged Blackbird (*Agelaius phoeniceus*) and European Starling (*Sturnus vulgaris*). The highest diversity of species was observed in the Lowland Deciduous Forest community to the west.

Bird species that were observed included 3 regulated SAR and 1 species of Conservation Concern. Regulated SAR that were observed consist of Wood Thrush (*Hylocichla mustelina*), Barn Swallow *Hirundo rustica*) and Chimney Swift (*Chaetura pelagica*). Wood Thrush depends on forested habitats for foraging and breeding habitat, however both Chimney Swift and Barn Swallow are considered aerial insectivores and

use open meadows and agricultural fields for foraging. Nesting habitat for these species is not present in the proposed development area.

4.4.2 Mammals

According to the Mammal Atlas of Ontario (Dobbyn 1994), 22 mammal species are reported from within 10km of the study area. Within the subject property, 6 of these species were observed by NRSI staff during field surveys conducted in 2016 and 2017. Appendix V provides a complete list of mammal species reported from and observed within the study area as well as their current status ranks.

Following detailed active den and burrow searches, one potential American Badger den was found and monitored for activity during the 2017 spring and summer season using motion activated wildlife cameras. No technical difficulties were encountered, and all photos were checked for the presence of American Badger. All species recorded by the wildlife cameras were also documented and are included in their relevant taxa lists appended to this report (Appendix III through Appendix VIII). No American Badger observations were made during the site visits or wildlife camera monitoring, and therefore no further study is required.

White-tailed Deer (*Odocoileus virginianus*) activity was noted from the photos, and through observations on the property, including tracks, scat, and adult individuals. In addition, Northern Raccoon (*Procyon lotor*) was observed during these surveys. No mammals observed within the study area are considered regulated SAR or species of Conservation Concern.

A bat habitat assessment was conducted for trees that overlap the proposed development footprint as described in the Methods section of this report. The assessment was carried out for 3 areas on October 16, 2017, and for all trees inventoried in December 2017 and January 2018. These areas include the southwest corner and perimeter of the FOD7-2 community, the eastern edge of the Significant Woodland, and trees along the perimeter of the development area. No suitable habitat was observed in the southwest corner of the FOD7-2 community; however, 1 potential cavity tree was identified on the northwest corner at the edge of the FOD7-2 community. This tree (tagged 1468) is a mature, 98.8cm DBH White Ash in very poor health, with a

probable potential for structural failure. Large, dead overextended branches and probable Emerald Ash Borer (EAB) activity have compromised the structural integrity of the tree, which contains a single cavity providing potential bat habitat. It is recommended that this tree be removed in consultation with the MNRF and outside of the bat active period (April 30 to September 30). Potential suitable cavities were observed in 3 trees along the eastern edge of the Significant Woodland on the east side of the Lake Road municipal drain (tagged 1385, 1390 and 1404). All 3 trees are large Crack Willows (*Salix fragilis*) that contain multiple potentially suitable cavities. Another potential cavity tree was identified on the eastern property boundary, south of the eastern woodland. This tree (tagged 657) is a mature 127.4cm DBH Sugar Maple in fair health with a probable potential for structural failure, and contains cavities near the stem and included bark. It is recommended that pruning reduce the overextended dead branches to reduce the potential for structural failure. Pruning of tree 657 should be done in consultation with the MNRF so that the thermal properties of the habitat are not impacted by the removal of branches. Bat exit surveys are recommended for these trees, which is required to be conducted in the month of June. Exit surveys are required to be conducted during the month of June. If bats are observed using the cavities, SAR specific surveys may be required prior to authorization to remove these trees. Any activity (including pruning) to be undertaken to the above described trees, or to trees within the FOD7-2 community providing potential SAR bat habitat, must be done in consultation with MNRF Aylmer district staff, and must receive approval before activities are initiated.

4.4.3 Butterflies and Odonata

According to the Ontario Butterfly Atlas (Jones et al. 2012), 39 butterfly species are reported to occur within the study area. NRSI biologists observed 11 species during surveys completed on the subject property. A complete list of species observed is provided in Appendix VI.

Monarch (*Danaus plexippus*), was the only butterfly species of Conservation Concern observed within the subject property. Observations of monarch included a caterpillar sighting on June 19, 2017, and butterflies on September 12, 2016 and August 30 2017. Common Milkweed (*Asclepias syriaca*) was observed in limited quantities in the study area, however, this is only present in fringe transition areas between agricultural fields

and the treed boundaries of the subject property. Monarchs begin to gather along the northern shores of the Great Lakes in August and September, and begin their migration in September and October each year. Despite some presence of Common Milkweed and Monarch, and the proximity to Lake Erie, this habitat is not considered SWH due to the level of disturbance through farming and ploughing activities, the limited number of observed individual plants and Monarchs, and an area significantly lower than the required 10 ha.

According to the Ontario Odonata Summary Atlas (NHIC 2005), 31 Odonata (dragonfly and damselfly) species are reported from the study area. During field surveys conducted within the subject property, 2 species of Odonata were observed. A complete list of species observed is provided in Appendix VII.

No Odonate species of Conservation Concern were observed within the subject property.

4.5 Aquatic Habitat

The Lake Road municipal drain is located along the base of a slope on the western side of the subject property. The drain enters the property at the southwest corner and flows northeast towards the northern property boundary. From there, the drain turns east and flows along a single row of trees between the Kettle Creek Golf and Country Club and the subject property. The drain exits the subject property in the northeast corner where it turns north and flows through the golf course.

The Lake Road municipal drain was subdivided into 4 aquatic habitat stations, which were assessed including one on the west side of the CUM1 vegetation community in the southwest corner of the subject property. The other 3 stations were spread out along the length of the drain (Map 5). Detailed measurements were taken at the Aquatic Habitat Points identified on Map 5.

<u>AHY-001</u>

The first aquatic habitat station is in the southwest corner of the subject property, west of the CUM1 vegetation community. A short section of channel is present between 2 culverts. The upstream culvert (culvert 1) is a plastic corrugated pipe that is

approximately 600mm in diameter. A small deposit of sand and pebbles is present immediately downstream of culvert 1. Culvert 2 is a 900mm corrugated steel pipe that is partially blocked with bank material, vegetation, and small woody debris. A summary of channel dimensions and other characteristics is provided in Table 4. Vegetation adjacent to the drain consists of meadow species, and scattered shrubs and trees are present between Spring Street to the east and an embankment created by a pipeline easement on the west. Channel banks are well vegetated with grasses and are stable with some bank scour occurring at the bank toe. A small pool and riffle are present, as well as small amounts of woody debris, which provide some fish habitat. Coarse substrate is present immediately upstream of culvert 2. Fish were observed within this section of the channel; however, the species could not be identified from the shore. Downstream of the CUM1 vegetation community culvert 2 is perched and a large tree is blocking the channel, which is causing water to be diverted and erode the banks.

AHY-002

The second aquatic habitat station is located downstream of the large tree that is blocking the channel and diverting flow. Riparian vegetation along this reach consists of scattered deciduous trees with an understory composed of meadow vegetation, including reed canary grass and goldenrod species. AHY-002 is located adjacent to the agricultural field and is separated from the field by a few scattered deciduous trees. The west side of the channel consists of meadow vegetation and shrubs along the bottom of the slope. Evidence of groundwater seepage west of AHY-002 was observed during spring and summer field surveys on the property through the presence of abundant skunk cabbage and mucky soils along the base of the western slope. The Lake Road municipal drain is situated within a deeply cut channel with nearly 90° side slopes, resulting from the construction of the drain. A summary of channel dimensions and other characteristics are provided in Table 4. The channel banks are vegetated with sparse grasses and some meadow vegetation; however, the density of bank vegetation is quite low. The sandy composition of bank material and the low density of bank vegetation contribute to banks that are unstable and susceptible to erosion. This section of the drain contains poor quality fish habitat. Evidence of pools, riffles, instream vegetation or coarse substrates was not observed during the field survey. Undercut banks and some small amounts of woody debris are present, which may provide refuge for fish within the drain. The channel substrate was composed of a thin layer of sandy

silt overlying hardpan clay. Water temperature measured in the drain on September 12, 2016, and the presence of seepage areas to the west suggest that the channel is fed by groundwater.

Table 8. Summary of Channel Characteristics

Reach Name	Bankfull Width (m)	Bank Height (m)	Wetted Width (m)	Substrate Composition (%)	Water Temp. (°C)	Air Temp. (°C)
AHY-001	3.38-4.0	0.27-0.36	0.4-2.2	Sandy silt clay with gravel, pebbles, and detritus (30/30/20/10/5/5)	11.5	20
AHY-002	2.57-3.43	0.6-1.0	0.85-1.1	Sandy silt (80/20)	12	21
AHY-003	4.52-4.75	0.16-0.56	0.91-1.36	Sandy silt (90/10)	18	22
AHY-004	3.42-3.5	0.26-0.41	0.5-0.7	Sandy silt (90/10)	19	28

AHY-003

This reach is located where the drain takes a nearly 90° bend and flows east along the boundary between the subject property and the Kettle Creek Golf and Country Club. The drain is wider and less confined in this reach compared to upstream portions of the channel. The bank slopes are less steep than the upstream reaches and range from 130-140°. Bank stability is moderate through reach AHY-003 and the banks are vegetated with grasses, goldenrod species and Red Raspberry. Fish habitat is poor through this section of the drain due to the lack of pools, riffles, backwater areas, cover objects and overhanging vegetation. Small areas of undercut banks are present; however, these undercuts are causing the banks to erode and slump. Upstream and to the west of the drain, groundwater seepage areas were observed during spring and summer (2017) field visits, which likely contribute cool water to the drain. The lack of overhanging vegetation, shallow water, and the wider channel in AHY-003 result in warmer water temperatures as compared to the upstream reaches.

AHY-004

As shown on Map 5, this reach is located along the north boundary of the subject property adjacent to the Kettle Creek Golf and Country Club, downstream of a woody debris jam. The riparian corridor is narrow in this location and consists of goldenrod species, grasses, scattered deciduous trees, red raspberry, and multiflora rose. The banks are gently sloping (approximately 150°) with dense overhanging vegetation that provides good shading of the channel. Fish habitat continues to be poor quality through

the drain. Pools, riffles, backwater areas, woody debris, and undercut banks were absent through reach AHY-004. A distinct low flow channel (i.e. thalweg) is present through this portion of the channel. No fish were observed in this reach, nor were fish observed in reaches AHY-002 and AHY-003.

5.0 Significance and Sensitivity

5.1 Significant Woodlands

The woodland in the western portion of the subject property provides habitat for a variety of bird species, deer, and the documented Butternuts. This woodland is present on a relatively steep slope and aids in slope stabilization and erosion and sediment control. This woodland also contains seeps of fresh water along the slope surface. The ISR includes a brief discussion of woodland significance. According to the ECOP (2015) and CEOP (2013), the western woodland is considered significant based on size and the proximity of the woodland to fish habitat (i.e. the Lake Road municipal drain). During the preliminary site investigation, this woodland was mapped using ELC (Map 4). The western woodland is part of a contiguous 39ha woodland that extends west of the subject property. Any woodland greater than 10ha is considered significant under the ECOP (2015). The CEOP states that woodlands greater than 2ha within the municipality of Central Elgin are significant due to the general lack of wooded area in the municipality (2013). A woodland significance evaluation was completed for the western woodland using the ECOP and CEOP policies, as well as guidance and criteria provided in the Natural Heritage Reference Manual (NHRM) (OMNR 2010a). Based on this evaluation, the western woodland is Significant.

The same evaluation was completed for the eastern woodland, using the ECOP and CEOP policies and the NHRM criteria (OMNR 2010a). Due to the size of the woodland (1.59ha) and the distance between this community and the next closest woodland feature, the eastern woodland is not significant.

5.2 Significant Wildlife Habitat

The results of a comprehensive background review identified 6 candidate SWH types within the study area. Based on the background information review, desktop analysis, and field studies, 2 of these SWH types were confirmed for the study area, 3 SWH types were maintained as candidate SWH, and 1 candidate SWH type was ruled out as occurring in the study area. The confirmed and candidate habitats are discussed in detail in the following sections.

5.2.1 Seasonal Concentration Areas

5.2.1.1 Raptor Wintering Area

Raptor species listed in the Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000 Appendix G) were observed in limited numbers within the suitable western FOD7 habitat. Those species that were recorded by NRSI staff were observed soaring over the agricultural field. Specific numbers of wintering raptors were not determined, and therefore the FOD7 community within the study area remains as candidate habitat.

Although the FOD7-2 vegetation community currently meets the definition for Raptor Wintering Area SWH, the feature is dominated by ash with signs of Emerald Ash Borer activity. Based on these observations, it is predicted that the woodland will soon become dominated by Buckthorn, given that colonization is already occurring in areas of open canopy. As such, the FOD7-2 community will not meet the definition of SWH once this colonization materializes in the near future and hazard trees are removed.

5.2.1.2 Bat Maternity Colonies

A bat habitat assessment was completed for portions of the FOD7 and FOD7-2 vegetation communities that overlap the proposed development footprint, and trees along the perimeter of the development area. Suitable roosting habitat was observed for 3 trees along the eastern edge of the Significant Woodland. No suitable habitat was observed in the southwest corner of the eastern woodland; however, 1 tree with suitable habitat was observed on the northwest side of the wooded feature. Another tree containing suitable habitat was identified on the eastern property boundary, south of the FOD7-2 community. Suitable roosting habitat may be present within trees in the woodlands on or off the property. Removal of any trees with suitable bat habitat will require consultation with MNRF Aylmer District, and potentially bat exit surveys and/or SAR specific acoustic monitoring. Given that most of the forested communities on the subject property will not be impacted by the proposed development, confirmation of Bat Maternity Colonies SWH was not deemed necessary. The forested communities identified on the mapping within the subject property remain candidate SWH for Bat Maternity Colonies.

5.2.1.3 Landbird Migratory Stopover Habitat

The subject property is located within 5km of Lake Erie and suitable habitat is present within the woodlands on the subject property. High numbers of migratory birds were observed throughout the subject property during breeding bird surveys. Detailed surveys aimed at confirming Landbird Migratory Stopover habitat through assessing the specific numbers of birds during migration seasons were not completed. However, due to the numbers and diversity of bird species observed during field surveys in 2016 and 2017, the existing vegetation communities, and proximity of the subject property to Lake Erie, it is expected that this habitat is present. The Significant Woodland on the west side of the subject property is assumed to be significant habitat for landbird migration. The proposed development footprint overlaps with several trees along the eastern edge of the Significant Woodland, within the FOD7 community. These trees are isolated from the majority of the Significant Woodland by the Lake Road municipal drain. Should these trees be removed, no negative environmental impacts will occur to the ecological function of the Landbird Migratory Stopover Habitat, given the sufficient availability of trees and open areas within the feature. Apart from trees along the edge of the Significant Woodland, the feature will be protected from the proposed development by a vegetated transition zone, which includes the drain and its setback. Although the FOD7-2 vegetation community currently meets the definition for Landbird Migratory Stopover SWH, the feature is dominated by ash with signs of Emerald Ash Borer activity. Based on these observations, it is predicted that the woodland will soon become dominated by Buckthorn, given that colonization is already occurring in areas of open canopy. As such, and following the removal of hazard trees within the feature as identified in this report, the FOD7-2 community will not meet the definition of SWH in the near future.

5.2.2 Rare Vegetation Communities

No rare vegetation communities were observed throughout the subject property.

5.2.3 Specialized Wildlife Habitat

5.2.3.1 Bald Eagle and Osprey Nesting, Foraging and Perching Habitat

As part of the SWH screening exercise, potential nesting, foraging and perching habitat for Bald Eagle (*Haliaeetus leucocephalus*) and Osprey (*Pandion haliaetus*) was identified for the subject property. The screening identified that further field surveys

were required to confirm the significance of this potential habitat. During field surveys conducted in 2016 and 2017 no stick nests, Bald Eagle or Osprey were observed. Based on the results of field surveys, it has been confirmed that Bald Eagle and Osprey Nesting, Foraging and Perching Habitat is not present.

5.2.3.2 Seeps and Springs

A total of 3 seeps were identified during field surveys on the eastern slope of the Significant Woodland on the west side of the Lake Road municipal drain. Dense areas of Skunk Cabbage (*Symplocarpus foetidus*) were observed along the base of the slope in the location of each seep. Overland flow was observed from these locations into the drain along the edge of the forest feature. These seeps are depicted on Map 5 as approximate areas. The map shows 2 general areas, due to the proximity of 2 of the seeps. Based on the presence of 3 seepage areas, this SWH has been confirmed for the subject property.

5.2.4 Habitat for Species of Conservation Concern

Based on background information collected from the various wildlife atlases 31 species of Conservation Concern were reported from the vicinity of the study area. Candidate habitat for 17 of these species was identified within the subject property by comparing the results of vegetation community mapping to the habitat requirements for each of these species outlined in the SWHTG (OMNR 2000 Appendix G). Based on the results of wildlife-specific field surveys detailed in the Field Methods section of this report, Eastern Wood-pewee and Monarch were the only species of Conservation Concern observed within the subject property. The forested communities on the subject property are considered SWH for Eastern Wood-pewee. However, the FOD7-2 vegetation community is dominated by ash with significant decline due to Emerald Ash Borer activity, and Buckthorn is beginning to colonize these new areas of open canopy. Based on these observations, the composition of this woodland is changing, and it will not meet the definition of SWH in the near future. Due to this habitat decline, Eastern Wood-Pewee is not expected to be impacted by limited tree removal within this area. Habitat for Monarch was observed to be extremely limited, with only a small number of Common Milkweed plants observed. Monarch individuals were also very limited. Due to the minimal habitat available for this species, and limited number observed during Lepidoptera surveys, protected habitat for this species has been confirmed as absent from the subject property.

5.2.5 Animal Movement Corridors

No animal movement corridors were observed within the subject property.

5.3 Habitat of Endangered and Threatened Species

Based on background information collected from the various wildlife atlases 19 Endangered and Threatened species are reported to occur near the study area. Potential habitat for 9 of these species was identified within the subject property by comparing the results of vegetation community mapping to the habitat requirements for each of these species outlined in the SWHTG (OMNR 2000 Appendix G). Based on the results of wildlife-specific field surveys detailed in Wildlife Existing Conditions section, habitat was confirmed for 6 of these species within the subject property.

A total of 3 SAR bat species may be present within the wooded features on the subject property; Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Eastern Small-Footed Myotis (*Myotis leibii*). Although Tri-colored Bat (*Perimyotis subflavus*) is not currently reported from the study area, there is a high likelihood that it may be present. The FOD7 community provides potential habitat for foraging along the stream, roosting, and raising young. Bat habitat assessments were completed for trees that overlap the proposed development footprint along the edges of the forested communities, and for isolated trees along the perimeter of the development area. Suitable habitat was observed for 3 trees on the east side of the Lake Road municipal drain, 1 in the northwest corner of the eastern woodland, and 1 on the eastern property boundary, south of the eastern woodland. None of these trees were suitable for Tri-colored Bat habitat. Any removal of trees with potential bat habitat will require consultation with the MNRF.

Wood thrush was observed within the upland forest community, and has the potential to use the forested communities throughout the site, particularly within the western portion.

5.5 Summary of Natural Feature Constraints

Table 5 provides a summary of features identified as a constraint to development within the study area.

Table 9. Summary of Study Area Constraints

Natural Feature Constraint	Regulatory and Permitting Considerations	Project Considerations
Significant Woodland	• Provincial Policy Statement • Central Elgin Official Plan • Elgin County Official Plan • Elgin County Woodlands Conservation By-law No. 05-03 • Elgin County By-law No. 16-17	• Development and site alteration are not permitted within the Significant Woodland unless it can be demonstrated that the proposed development will not impact the feature or its ecological function. • Development and site alteration are not permitted within the Adjacent Lands to the Significant Woodland (120m), unless it has been demonstrated that there will be no negative impacts to the feature or its ecological functions will occur. This EIS has demonstrated that removal of several trees along the eastern edge of the Significant Woodland will not have negative impacts on the feature or its ecological function. • The adjacent lands to the Significant Woodland consist of actively farmed agricultural field. • The Significant Woodland shall be protected from incompatible land uses and the boundaries of the feature will be refined. • A TPP has been prepared for trees along the edge of the development, including the eastern edge of the Significant Woodland. The TPP is included in this EIS. Where impacts to trees may occur, the TPP will identify if these trees can be retained or will require removal. • A permit for tree removal is not required as the proposed development will be exempt under Section 3 d), once the Plan of Subdivision has been approved. The Significant Woodland shall be protected from incompatible land uses and the boundaries of the feature will be refined based on this EIS. • The CEOP requires that setbacks from Significant Woodlands be identified.
Significant Wildlife Habitat	• Provincial Policy Statement • Central Elgin Official Plan • Elgin County Official Plan	• Significant habitat for Seeps and Springs and Species of Conservation Concern (Eastern Wood Pewee) have been confirmed within the subject property and are contained within the Significant Woodland • The Significant Woodland has also been identified as potential Landbird Migratory Stopover habitat and is assumed to be Significant based on the field surveys conducted during 2016 and 2017. • Development or site alteration are not permitted within the confirmed and assumed SWH unless it has been demonstrated that there will be no negative impacts to the feature or its ecological functions will occur;, this EIS has demonstrated that the removal of several trees along the edge of the Significant Woodland will not impact the feature or its ecological functions.
Fish Habitat	• Provincial Policy Statement • Central Elgin	• The subject property contains fish habitat within the municipal drain • Development and site alteration are not permitted within

Natural Feature Constraint	Regulatory and Permitting Considerations	Project Considerations
	Official Plan • Elgin County Official Plan • Kettle Creek Conservation Authority • Federal Fisheries Act (1985) • Drainage Act (1990)	fish habitat except in accordance with provincial and federal requirements. • The Drainage Act supersedes the PPS policy (as stated above). Drainage works are permitted within fish habitat. • The ECOP considers all watercourses in the County to be environmentally significant • According to the CEOP, Fish habitat shall be protected from incompatible land uses and Setbacks from fish habitat are required through the preparation of an ISR and EIS. • The proposed development respects the Lake Road municipal drain and a setback is provided to protect the feature, as is described later in this report.
Habitat of Endangered and Threatened Species	• Provincial Policy Statement • Central Elgin Official Plan • Elgin County Official Plan • Ministry of Natural Resources and Forestry • Endangered Species Act (2007)	• Development and site alteration are not permitted within habitat of endangered and threatened species except in accordance with provincial and federal requirements. • Within the subject property, habitat for Eastern Wood Pewee, Butternut, and American Badger has been identified. Potential habitat for Little Brown Myotis, Northern Myotis, Eastern Small-footed Myotis, and Tri-colored Bat may be present within the woodlands. • Habitat for Eastern Wood Pewee will not be affected by the proposed development. • No American Badger activity was documented on the subject property, and the potential burrow currently not in use is already protected from all construction activities. • Permits and compensation are required prior to the removal of vegetation within the 50m General Habitat zone of the Category 2 and 3 Butternut trees in the northwest corner of the subject property. • Tree removal along the edge of the Significant Woodland may require bat exit surveys to be completed for trees identified as suitable habitat as part of the cavity assessment and if trees are removed during the period of high bat activity. SAR specific acoustic surveys, in consultation with the MNRF Aylmer district, may also be required prior to tree removal during the period of high bat activity, if bats are observed using the identified cavities.

6.0 Impact Analysis and Mitigation Measures

Potential impacts arising from the proposed undertaking are determined by comparing the details of the proposed undertaking 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 that will be discussed.

- Direct impacts to the natural features on the subject lands associated with disruption or displacement caused by the actual proposed 'footprint' of the undertaking.
- Indirect impacts associated with changes in site conditions such as drainage and water quantity/quality.
- Induced impacts associated with impacts after the development is constructed such as subsequent demand on the resources created by increased habitation/use of the area and vicinity.

Notwithstanding the policies provided in the PPS, the NHRM provides guidance for the assessment of impacts that recommends including an assessment of residual impacts and the significance of said impacts after applying mitigation measures and/or compensation measures as required (Section 13.5.2.9) (OMNR 2010a). The significance of the residual impacts is discussed below in the Net Effects section.

6.1 Direct Impacts and Mitigations

The approach to identifying and delineating the natural features and associated setbacks was aimed at avoiding direct impacts from development on important natural features. The delineation of natural features and evaluation of their ecological function are the basis for the development layout. Direct impacts to these natural features have been avoided where at all possible. Based on the proposed development footprint, direct impacts to natural features will include tree removal along the eastern edge of the Significant Woodland and in the southwest corner of the FOD7-2 community, and impacts to wildlife and their habitats resulting from tree removal. A tree inventory was completed for all trees that overlap the proposed development, as well as trees along the perimeter of the development area. An assessment of the need to remove trees based on the proposed development is provided in the Tree and Vegetation Removal section below.

6.1.1 Tree and Vegetation Removal

The County of Elgin Woodlands Conservation By-Law dictates that “no person through their own actions or through any other person shall harvest, destroy, or injure any living tree…” in accordance with specific forestry and circumference limit classifications. The proposed development falls under the exemptions identified in Section 3 d) of the By-Law, which states that the By-Law does not apply to “The injuring or destruction of trees imposed as a condition to the approval of site plan, a plan of subdivision or a consent under section 41, 51, or 53, respectively, of the Planning Act or as a requirement of a site plan agreement or subdivision agreement entered into under those sections”. The proposed undertaking will result in the removal of several trees along the eastern edge of the Significant Woodland, at the southwest corner of the eastern woodland and along the eastern edge of the subject property (see Map 3). Removal of trees along the eastern edge of the Significant Woodland will not have a significant impact on the form or function of the feature since these trees are set apart from the Significant Woodland unit. The Lake Road municipal drain that flows northeast along the edge of the Significant Woodland provides a defined break in tree cover within the feature.

Several butternuts were identified within the Significant Woodland during field surveys. Butternuts that have been assessed as Category 1, or that have been determined through genetic testing to be hybrids do not require protection under the Endangered Species Act. The 2 documented pure retainable or archivable (Category 2 and 3) butternuts (see Map 6) require protection from any disturbance or activity within a 50m radius from the trunk of the individual. A permit, issued by the MNRF, is required for any works in these areas. The removal of the Category 2 and 3 butternuts will not occur at this time. See Section 4.3.2 regarding further details on the results of the Butternut Health Assessments.

Trees within the FOD7-2 community include Green Ash, Eastern Cottonwood, and Large-tooth Aspen. As indicated in the FOD7-2 vegetation community description in this report, Emerald Ash Borer is present within this woodland, and European Buckthorn is colonizing the areas of open canopy, created by the dying ash. Removal of hazard trees is recommended along the edge of the eastern woodland; non-hazard trees should be

retained, where possible. Given the decline of the woodland and the encroachment of invasive species within this vegetation community, tree removal at the southwest corner of the woodland is not anticipated to have a substantial impact on the health or function of the woodland or on the habitat it provides for wildlife.

A bat habitat assessment was conducted for trees along the eastern edge of the Significant Woodland, in the southwest corner of the FOD7-2 community, and along the perimeter of the development area. Potentially suitable bat habitat was identified along the eastern edge of the Significant Woodland (3 individuals), in the FOD7-2 community (1 individual) and along the eastern edge of the subject property south of the FOD7-2 community (1 individual). Some of these trees are recommended for removal or pruning. If these trees will be removed between April 30 and September 30, bat exit surveys are required to identify if bats are using these trees. Bat exit surveys must be conducted in the month of June. Should bats be observed using the cavities, further SAR specific acoustic surveys may be required prior to the removal of these trees. These surveys are to be conducted in consultation with the MNRF.

Compensation is required where tree removal is recommended as per the CEOP (2013), policy 3.1.1.2 f) i), which states that trees that are removed are to be replaced in sufficient amount and maturity to compensate for the losses. Not all of the trees that are candidate for removal need to be removed immediately, therefore the engineering drawings should show the trees to be removed, associated compensations, and areas where tree plantings will occur. A conceptual planting strategy is provided in the Environmental Management Plan section of this report. Where possible, trees should be planted on-site; however, off-site options may be explored with the municipality should available space on-site be limited.

Tree removal and retention was based on 2 considerations:

1) Trees identified as having a probable or imminent potential for structural failure or poor or very poor health, or identified as dead and may pose safety concerns. This is particularly important where trees are located within striking distance of a component of the proposed development, or existing off-site sidewalks, roads, or buildings.

2) Trees that 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 3.

Of the 147 trees inventoried, 88 are anticipated to be removed. This includes 47 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 5 trees in these conditions have been recommended for retention due to their overall size, distance from the proposed development, or potential for providing safe wildlife habitat.

The remaining 41 trees 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 due to grading activities. Most of these trees are in fair health with a possible to improbable potential for structural failure, and range in size from 13.0cm DBH to 81.8cm DBH. Approximately 85% of these trees are native and are dominated by Manitoba Maple (*Acer negundo*), Ash species (*Fraxinus* sp.), American Basswood (*Tilia americana*) and Black Walnut (*Juglans nigra*). Non-native trees are dominated by Crack Willow (*Salix fragilis*).

Error! Reference source not found. provides a summary of the trees inventoried hroughout the property, total number proposed for removal and the proposed compensation plan. A complete list of inventoried trees, including a determination of whether trees require compensation, is provided in Appendix IV.

Table 10. Summary of Trees to be Removed and Recommended Compensation Plan

Tree Inventory	**Total**
Total number of trees inventoried	147
Total number of trees to be removed	88
→ Non-native trees to be removed	12
→ Native trees to be removed	76
Tree Compensation	
Native/Non-native trees in poor to very poor health and/or a probable or imminent potential for structural failure (exempt from compensation)	47
Native/Non-native trees in excellent to fair health to be removed	41
2:1 Compensation for native/non-native trees in excellent to fair health	**82**

Within the development area, 2.05ha of vegetation will be removed, in addition to the areas where tree removal will occur. This vegetation consists of 0.3ha of the CUM1 community in the southwest corner of the subject property, and 1.0ha of grasses and herbaceous vegetation in the southeast corner of the subject property. Within the residential development blocks, 0.75ha of vegetation is proposed for removal at the top of the western slope, in the northwest corner of the subject property, and along the existing pipeline easement that is the proposed access road. The proposed vegetation removal consists of a CUT1-1 community and some trees on either side of the pipeline easement. The exact details of the proposed access road leading to the residential block in the northwest corner of the subject property and the details of the development in this area are not currently available. The landowner intends to maintain these areas into the future until development plans have been determined and approved. A holding provision will be set for the residential block that will not be removed until the Category 2 (retainable) and Category 3 (archivable) Butternut trees protected under the Endangered Species Act (ESA 2007) no longer represent a constraint to development. This will be determined either through the completion of a future Butternut Health Assessment (BHA) approved by the Ministry of Natural Resources and Forestry (MNRF) that identifies these trees as Category 1 (non-retainable) or through the completion of the compensation requirements in Ontario Regulation 242/08 of the ESA and/or a C-Permit approved by the MNRF that shows Overall Benefit for these trees. A permit provided by the MNRF under the ESA will be required to remove any vegetation within the 50m General Habitat zone surrounding the Category 3 Butternut. The Category 2 Butternut requires that a Notice of Impact be submitted to the MNRF, with compensation measures following the ESA Ontario Regulation 242-08 (MNRF 2016).

6.1.2 Impacts to Wildlife and Their Habitats

According to the Canadian Wildlife Service (CWS), the core breeding period for migratory birds that nest in forested habitat in the Lower Great Lakes / St. Lawrence Plain (Area 13) in Ontario is between May 1 and July 31 (CWS 2012). The Migratory Birds Convention Act (MHBC) protects migratory birds, their eggs, and nests from being harmed or destroyed. During the May 1 to July 31 period, CWS recommends that no vegetation clearing occurs. CWS also advises that nest searches, as a measure to mitigate impact to nesting birds during the core breeding period, do not occur within "complex" habitats such as woodlands where the likelihood of observing all nests and

eggs is low while the potential to disturb nesting birds is high (2013). This is particularly critical for the woodlands within the subject property as they are SWH for Landbird Migratory Stopover. Given the important habitat that these woodlands provide for migrating birds, it is recommended that the period where tree removal is to be avoided is extended from April 15 to September 15. Most of the song birds that will utilize the woodlands will migrate through and breed in the area during this time, and impacts to these birds can be avoided by adhering to this time frame.

The MNRF Aylmer district has identified American Badger habitat on the subject property, and requested specific surveys be carried out to identify potential activity. A potential American Badger den was identified along the slope in the Significant Woodland. Wildlife camera monitoring, as described in the Existing Conditions section of this report, did not record any American Badger activity. As such, and based on the condition of the potential den, this feature is historic and is not being used this year. The den is located approximately 75m from the proposed development, and is therefore, well protected from construction activities, should wildlife inhabit the area in the future. Since American Badger habitat has been identified by the MNRF across the subject property, it is recommended that 1 field survey prior to the beginning of initial construction, and 1 survey during construction be completed to ensure no further activity on the located burrows has occurred. This will ensure due diligence has been completed in ensuring SAR habitat is not being impacted. Should an active den be discovered, a 5m area around the den will be protected (as per correspondence with Kristen Diemer at the Aylmer District MNRF (2016)). No other wildlife burrows or dens were observed within the subject property.

The proposed development has been designed to avoid impacts to wildlife habitat where at all possible. Tree removal along the eastern edge of the Significant Woodland and in the southwest corner of the FOD7-2 community is required based on overlaps with the proposed development footprint. Given the abundance of woodland areas surrounding the subject property, and the existing conditions of the Significant Woodland edge and the eastern woodland, tree removal in these areas is not anticipated to have a negative impact on available wildlife habitat in the study area, particularly if recommendations provided in the Environmental Management Plan are implemented.

6.2 Indirect Impacts and Mitigations

The following section outlines potential sources of indirect impacts associated with the proposed development.

- Surface water runoff changes, and compaction of soils from grading activities
- Injury to trees or their root systems from construction activities
- Indirect Impacts to Wildlife and Vegetation Communities, including noise and dust impacts
- Sedimentation and erosion

6.2.1 Surface Water Runoff Changes and Soil Compaction

This section of the impact analysis focuses on the potential changes to the flow patterns and quantity of surface water directed to the municipal drains. Surface water collected within the agricultural field and the adjacent lands is directed as shown on Figure 2 of the Ricor Engineering Servicing report (2018). The south portion of the site drains toward the George Street municipal pipe drain and enters the system via catchbasins. A berm was created by the placement of fill on the east and south side of the Lake Road municipal drain when it was constructed. Flows from the northwest portion of the site drain to the Lake Road municipal drain. This berm prevents diffuse overland flow from the agricultural lands from entering the drain along the entire length of the feature. Near the downstream end of the drain, at the northeast corner of the property, 2 tile drain outlets are present that provide some surface flow access for the lands on the north section of the agricultural fields through the berm. Based on observations by NRSI biologists during several site visits, seepage areas are present along the bottom of the slope within the Significant Woodland and on the west side of the Lake Road municipal drain. Groundwater contributions to these seepage areas are located on the west side of the drain and will not be affected by the proposed development. The residential block in the northwest corner of the subject property will need to consider groundwater contributions to these seepage areas when plans for this development are underway.

In order to maintain the existing water contributions to the Lake Road municipal drain, surface water quantities reaching the drain should be maintained. A portion of the catchment area will be converted, to impervious areas (i.e. houses, paved areas, roads, etc.) post-development. The existing surface water drainage patterns will be maintained where possible as shown on Figure 3 of the servicing report (Ricor 2018). The medium

density block and park block will outlet to the Lake Road municipal drain. The south portion of the site will be directed to the stormwater management pond that has been sized to provide both quantity and quality control of the stormwater generated from the proposed development. The stormwater management pond is in the southeast corner of the subject property (Map 6). Stormwater that is collected from the streets, driveways, and rooftops of houses will be directed to the stormwater pond, which will outlet to the George Street municipal sewer. To reduce the impacts of diverting surface water runoff from the development to the stormwater pond, infiltration will be provided from yards, including shallow rear-yard swales. It is recommended that rain water collected from rooftops be directed to these swales rather than to the stormwater management pond.

It is recommended that the volume of water currently delivered to the Lake Road municipal drain be replicated for the post-construction (i.e. developed) scenario. In order to reduce the potential for erosion by concentrating flow to a single, or multiple locations along the drain, it is recommended that erosion control materials, such as riprap, vegetated swales, etc., be used for any outlet locations. Based on the current proposed development and utilization of the above stormwater management recommendations, it is anticipated that no impacts to the hydroperiod or flow volume for the Lake Road municipal drain will occur.

care should be taken to avoid excessive compaction activities adjacent to the Significant Woodland, the eastern woodland, and the Lake Road municipal drain to maintain the infiltration capacity of soils within the development area and natural feature setbacks. Soil amendments, consisting of applying topsoil to an approximate depth of 30cm should be considered for setbacks adjacent to natural features, and lawn and garden areas surrounding the houses. Additional topsoil will provide added pore space for water retention and a good growth medium for grass and other planted material. Opportunities for groundwater infiltration should be incorporated into the development design, including soak away pits, rain gardens, and dry swales.

To reduce the potential for water and soil contamination during construction, machinery maintenance should occur at a designated location away from the natural areas on-site. No storage of equipment, materials or fill is to occur within the natural areas.

6.2.2 Injury to Trees or Their Root Systems

Given the proximity of the development area to the Significant Woodland and eastern woodland boundary, injury to tree limbs or their root systems from construction activities (e.g. grading, excavation, etc.) and machinery may occur. Soil compaction adjacent to the woodlands could cause damage to trees through the reduction in soil water retention and infiltration of water around the tree roots. To protect the trees, and their root systems from harm during construction activities, the development limit is to be delineated using sediment fence or temporary tree protection fencing, as shown on Map 3. This fencing will protect trees and their root systems from construction activities; however, should any limbs or roots of trees to be retained be damaged during construction appropriate arboricultural techniques should be used to prune the affected areas. A combined sediment and erosion control fence and tree protection fence is recommended where trees are situated adjacent to the limit of disturbance.

6.2.3 Indirect Impacts to Wildlife and Vegetation Communities

Potential indirect impacts to wildlife and vegetation communities may arise from noise and dust associated with construction activities and unnatural lighting resulting from the development. To reduce impacts to wildlife from noise and vibrations daily activities should be restricted to between 7:00am and 7:00pm. Noise associated with construction is anticipated to be temporary; therefore, significant effects on wildlife from noise are not expected.

During construction activities such as tree clearing and grubbing, dust can potentially lead to the following issues:

- Large amounts of dust may induce changes in vegetation due to increased heat absorption and decreased transpiration
- High levels of dust can fall into aquatic or wetland systems, causing adverse effects to plants and/or wildlife that are not adapted to high levels of sedimentation, and
- Dust produces an immediate visual impact

It is recommended that dust suppression methods be utilized during periods of dry weather to reduce the impact of dust on wildlife and vegetation communities. Dust suppression methods include spraying water over exposed soils or other areas subject

to dust concerns, and placing stockpiles of topsoil and other materials in areas where wind levels are reduced.

During site preparation and construction activities involving a lot of noise, such as site grubbing and grading activities, wildlife may temporarily avoid the area. Given that the woodlands in the study area are likely Landbird Migratory Stopover SWH, construction activities resulting in high noise levels or high amounts of dust within 25m of the Significant Woodland should be scheduled to occur between September 16 to April 14. Restricting these activities to this period will reduce the impact of noise and dust on migrating birds that are using the Significant Woodland. If activities involving high amounts of dust or noise occur during the period from April 15 to September 15, they should be completed in a timely manner to shorten the period of impact.

In addition, artificial lighting resulting from the development can have impacts on wildlife in the woodlands. The lighting design should include directional lighting for all areas of road, and areas within 30m of significant natural features to eliminate light-wash.

6.2.4 Erosion and Sedimentation

The Lake Road municipal drain is susceptible to sedimentation from erosion on the subject property during construction. Areas of bare soil that are exposed during construction have the potential to erode during rainfall events. In the event of a heavy rain, sediment laden runoff has the potential to impact fish that may reside in the drain, or transfer sediment downstream where it can clog up spawning areas. To protect on-site and off-site fish habitat, a sediment and erosion control plan should be developed prior to any construction activities on the site.

Based on the soil type and slopes within the development area, the potential for erosion on the site is low. The topography within the development area is quite flat, and the soils are lacustrine in origin, which typically includes a high clay content. Soils dominated by clay are harder to erode; however, once the clay becomes suspended in water it is extremely difficult to remove. Care should be taken to avoid entrainment and erosion of soils within the development area. An erosion and sediment control plan is required prior to the start of construction. This plan will detail the methods of erosion control and how sedimentation of the Lake Road municipal drain will be prevented.

Recommendations within this plan should also include locations of stockpiled material (i.e. away from natural features), locations and design details for sediment fencing, and methods to stabilize areas of bare ground following the completion of construction (e.g. establishment of vegetation, placement of riprap, etc.).

The sediment and erosion control plan should consider the following:

- sediment fencing adjacent to the drain, at the limit of disturbance, erected prior to grading or stripping, all disturbed areas or areas of bare soil should be graded and re-vegetated as soon as possible (within 30 days of inactivity) to avoid gullying and erosion, or stabilized using other erosion control techniques.
- inspections of erosion control materials should be conducted frequently and deficiencies should be corrected immediately.,
- slopes greater than 5:1 must be stabilized using suitable geotextile material, or seeded / sodded as soon as possible, with an erosion control blanket installed after seeding, particularly for stockpiles and slopes that will be present for long periods
- during construction, slopes must be protected from erosion with methods such as a dense cover of grass.

Sediment and erosion control measures must be installed prior to, and maintained during construction.

An environmental monitoring program is recommended to ensure that the sediment and erosion control measures are installed, maintained, and functioning as intended.

6.3 Induced Impacts and Mitigations

Induced impacts are described as those that are not directly related to the construction or operation of the facilities in question, but rather arise from the use of the natural areas resulting from the development. The simplest example is the increased use of a natural area by residents, feral domestic wildlife, and unauthorized trail/pathway construction. Once the development is completed, subsequent use of the natural areas by residents is difficult to control.

Natural areas and wildlife can be affected by the presence of residences and their occupants. There is an increase in the potential for interaction between humans and domestic pets and wildlife, also an increase in human access into the natural area. These can result in vegetation trampling, plant removal, dumping of refuse and yard waste, creation of unauthorized trails, tree damage, introduction of non-native plant species and wildlife predation and harassment by domestic pets. Education with respect to the values and implications of the neighbouring natural areas is one tool that can be used. Dense plantings of native trees and shrubs can be used to discourage human intrusion into sensitive areas.

The development includes setbacks and transition zones between the development and the natural areas. These areas function as physical separation between the occupants and the natural areas. In addition, rear yard fencing is recommended for the lots that back onto the significant natural features, such as 1.5m high chain link fence. Signage along the edge of the eastern woodland, the Lake Road municipal drain, and the Significant Woodland are recommended. The signage should identify that the areas are natural features that contain wildlife habitat and should direct residents not to trespass into these areas, or dump refuse or yard waste into the features. Other educational items such as homeowners' brochures can be used to educate residents about the importance of protecting the natural features surrounding their homes. The brochure should include guidance to reduce or eliminate the use of lawn or garden chemicals, especially for properties adjacent to significant natural features.

7.0 Environmental Management Plan

This section provides an Environmental Management Plan (EMP) for the Seaglass development. The EMP was prepared in accordance with the ECOP Appendix B EIS guidelines (2015) and the CEOP Section 3.4.2 EIS Policies (2013). According to Appendix B of the ECOP (2015), an EIS shall include a Management Plan that identifies how the adverse effects of the proposed development will be avoided and how environmental features and functions will be enhanced, where appropriate. The EMP shall also establish the limits of setbacks for watercourses, waterbodies, valleys, and wetlands. The EMP has been organized such that setbacks and transition zones are discussed up front, areas where encroachment into the natural features are identified, mitigation measures are proposed, and natural feature and edge enhancement is proposed. The net effects of the proposed undertaking following the implementation of the EMP is discussed in the last section.

7.1 Natural Feature Setbacks

Setbacks and transition zones are used around natural heritage features such as woodlands, wetlands, significant wildlife habitats, and watercourses to protect them from impacts during the construction of a proposed development and to reduce or prevent impacts post-construction. Woodland setbacks are prescribed based on protecting the trees and their root zones as well as providing associated open habitats required by forest species or for wildlife movement. Active agricultural activity is occurring adjacent to the wooded areas on the subject property. Currently, the field is farmed up to the edge of the wooded areas (see Map 4). The edges of both the Significant Woodland and the eastern woodland show signs of disturbance, human intrusion, and invasive species colonization including,

- refuse and debris piles,
- ash trees affected by Emerald Ash Borer,
- the presence of buckthorn in areas of open canopy, and
- fill placement in the form of a berm from the construction of the Lake Road municipal drain.

The FOD7-2 community is an ash lowland forest and signs of Emerald Ash Borer were observed by NRSI staff in this community. Many ash trees within the FOD7-2 community are dead. Buckthorn is establishing within the areas of open canopy created

by the dead and dying ash trees. The eastern edge of the Significant woodland consists of several scattered deciduous trees that are located on either side of the Lake Road municipal drain. This area is impacted by fill that was placed on either side of the drain during its construction. This fill forms a berm between the drain and the agricultural field. Open areas are present on either side of the drain that contain a variety of species such as goldenrods, Wild Rose, and dogwoods. The Lake Road municipal drain will require maintenance and clean out activities are expected to disturb the area on either side of the drain in the future.

Based on the existing conditions and proposed undertaking, as shown on Map 6, the eastern woodland should be protected to the dripline of the trees identified for retention, plus 1m, which will help protect the root zones of these trees from construction activities. Several trees have been identified for removal within the wooded area, as outlined in Section 6.1.1, particularly at the southwest corner of the eastern woodland. Before any tree removal, the setback is to be staked in the field and delineated during construction by Tree Protection Fencing, as outlined on Map 3.

The Significant Woodland will be protected by a vegetated transition zone that encompasses the Lake Road municipal drain setback and the 6m erosion allowance from the top of bank. This transition zone ranges in width from 15-22m, measured from the centerline of the Lake Road municipal drain. As with the eastern -woodland, several trees are proposed for removal along the eastern edge of the Significant Woodland. The development limit and edge of the Significant Woodland transition zone is to be staked in the field during the development process, and delineated using Tree Protection Fencing, or other indicators as detailed in this report.

A setback from the Lake Road municipal drain is required so that maintenance activities can be conducted without disturbing adjacent land uses. This setback will also protect the feature's function and the species currently present, and that may inhabit the drain in the future. Ricor's servicing report has established an erosion hazard limit that accounts for safe slopes and a 6m erosion access allowance.

The recommended setbacks are shown on Map 6. Permanent structures including roads, houses, driveways, and stormwater management blocks will be located outside of

the recommended setbacks. Tree removal is anticipated to be required in the southwest corner of the eastern woodland, as outlined on Map 3. These setbacks provide an ultimate limit of development, as shown on Map 6, which will assist in minimizing adverse impacts to natural features by reducing edge effects and providing opportunities for enhancement.

7.2 Monitoring Plan

The following monitoring plan identifies specific surveys and site investigations that should occur prior to, during, and post-construction. These monitoring recommendations will aid in reducing impacts to the natural features and wildlife present within the subject property.

7.2.1 Prior to Construction

Bat exit surveys may be required for trees that that contain suitable roosting habitat and need to be removed between April 30 and September 30. Bat exit surveys are conducted in the month of June. Should bat activity be observed (i.e. bats using available cavities, cracks, or crevices), SAR specific acoustic surveys may be required. These surveys are to be conducted in consultation with the MNRF.

If construction starts during spring, summer or fall, then immediately prior to the start of construction, a field survey to identify American Badger activity within the development area is recommended. Walking transects of the development area are to be conducted to identify the presence of any dens. Should a den be found, a 5m no-touch setback is to be delineated in the field during construction.

Temporary tree protection fencing will be situated where trees are adjacent to the limit of disturbance/grading as shown on Map 3. A combined sediment and erosion control fence (i.e. silt fence) and tree protection fence is recommended where trees are situated adjacent to the limit of disturbance.

The temporary tree protection fencing will be installed and maintained by the Developer. Prior to any construction activities (rough grading, vegetation, and tree removal), the tree protection fencing will be installed where indicated on Map 3 to protect the root systems of trees to be retained.

A number of trees are recommended for removal due to their probable or imminent potential for structural failure, that are located in areas that also contain trees to be retained. As such, prior to installation of the tree protection fence, these trees will need to be clearly marked for removal, felled and removed with minimal disturbance to neighbouring trees.

In addition, on-site inspections of Tree Protection Fencing and protection measures, as well as Erosion and Sediment control measures are to be conducted. These site inspections will ensure that these measures are installed properly and in appropriate locations, as identified on the Erosion and Sediment Control Plan and Map 3.

7.2.2 During Construction

Periodic monitoring during construction is recommended for the following to ensure that proper maintenance is occurring and that these controls are working effectively:

- Erosion and sediment control measures,
- Tree Protection Fencing, and
- Development limit fencing

A search for new American Badger activity and dens is recommended once during construction activities that occur during the warmer months (May to August). Should any dens be observed, a 5m area surrounding the den is to be protected from construction activities.

Pruning of any limbs or roots (of trees to be retained) disrupted during construction is to occur using appropriate arboricultural techniques and should be monitored by a Certified Arborist.

Temporary tree protection fencing is to be maintained by the Developer during the entire construction period to ensure that trees being retained and their root systems are protected. Any minimal damage (i.e. damage to limbs or roots) to trees to be retained during construction must be pruned using proper arboricultural techniques. Should any of the trees intended to be retained be seriously damaged or die as a result of construction activities, the owner will remove and replace the tree at their own expense

at 2:1 ratio with appropriate species. Watering and pruning of newly planted trees will be carried out by the owner/contractor as required during the warranty period (approximately 2 years).

7.2.3 Post Construction Monitoring

Monitoring of the effectiveness of stormwater management measures should be conducted in accordance with the recommendations of the associated design documentation.

Vegetation establishment monitoring is to be conducted for a 2-year period post-planting. This monitoring will ensure that the planted species and applied seed mix is establishing appropriately, during the 2-year warranty period. Any areas where the applied seed mix is not establishing are to be identified and re-seeded to prevent erosion and sedimentation of natural features.

As trees being retained are situated along the boundaries of residential lots, it is recommended that the temporary tree protection fencing be removed upon completion of construction activities and adjacent areas are stabilized with a vegetative cover (i.e. sod in urban area or native vegetation along buffer edge).

7.3 Net Effects of the Proposed Undertaking

A summary of potential impacts associated with the proposed development, with associated recommended mitigations and significance of impacts once mitigated, are presented in Table 6.

Recommendations are provided to minimize impacts and ensure that mitigative measures are installed and functioning. These include recommendations to mitigate direct, indirect, and induced impacts that may arise during the proposed development. If the recommendations provided in this report are followed, no negative impacts to the natural features are anticipated to occur.

Table 11. Summary of Potential Development Impacts and Mitigation

Potential Impact	Recommended Mitigation Measure(s)	Resulting Impact Significance
Direct Impacts		
Vegetation and tree removal	• A TPP is included in this EIS and identifies trees that can be retained and those required to be removed. Tree protection measures and details on compensation required for tree removal are provided in this report. • Tree and vegetation removal must adhere to the Migratory Bird Convention Act and should not occur between April 15 and September 15 to protect the SWH for Landbird Migratory Stopover within the subject property. • Limit unnecessary vegetation removal and degradation by clearly demarcating the boundaries of construction zones. • Where vegetation removal is anticipated within the 50m General Habitat Zone for Category 2 and Category 3 Butternut trees, permits are required from the MNRF prior to any activity occurring.	Not Significant
Impacts to wildlife and their habitats	• Tree and vegetation removal must adhere to the Migratory Bird Convention Act and should not occur between April 15 and September 15 to protect the SWH for Landbird Migratory Stopover within the subject property. • Prior to any tree or vegetation removal nest searches are to be conducted to identify if birds are nesting in the area. Nest searches should only be conducted in simple habitat such as isolated trees to increase the potential to identify nesting activities. • American Badger surveys are to be conducted once prior to and once during construction to ensure that any dens are protected from impacts.	Not Significant
Indirect Impacts		
Surface water runoff changes and soil compaction	• Seepage area contribution areas will not be impacted by the proposed development; however, the residential block in the northwest corner of the subject property should consider groundwater recharge and infiltration as part of its design. • Maintain existing contributions to the Lake Road municipal drain as much as possible • Incorporate rear-yard swales to infiltrate water collected by yards and rooftops, where possible. • Avoid excessive soil compaction activities adjacent to natural features.	Not Significant
Injury to trees and their root systems	• Delineate the construction limit using sediment fencing or other highly visible markers to avoid unnecessary soil compaction adjacent to natural features. • Tree Protection Fencing is to be installed 1m beyond the dripline for trees near construction activities. • Inspect fencing periodically to remove accumulated sediment or debris and immediately replace any damaged fencing. • Prune any tree limbs or roots damaged by construction using appropriate arboricultural techniques.	Not Significant

Potential Impact	Recommended Mitigation Measure(s)	Resulting Impact Significance
Indirect impacts to wildlife and vegetation communities	• Restrict the daily timing of construction activities to between 7:00 am and 7:00 pm. • These construction-related impacts are expected to be temporary, minimal, and localized. • Use dust suppression methods to reduce the impacts of dust associated with construction activities and adjacent natural features. • Restrict construction activities resulting in high noise levels or high amounts of dust within 25m of the Significant Woodland to between September 16 to April 14 or as otherwise detailed in this report • Use directional lighting for roads and properties adjacent to natural features to avoid lightwash.	Not Significant
Erosion and Sedimentation	• A Sediment and Erosion Control Plan should be developed and implemented. • Install sediment fencing along the boundaries of the construction zone, inspect on a regular basis, remove accumulated sediment and debris as needed and immediately replace any damaged fencing. • Consider mud mats at the entrance and exit to the construction area. • Grade and stabilize areas of bare soil as soon as possible to avoid erosion. • Slopes >5:1 must be stabilized using geotextile materials, seeded, or sodded, as soon as possible • Maintain any slopes with grass cover during construction.	Not Significant
Induced Impacts		

Disturbances to adjacent and retained natural features on property	• Prevent human intrusion and the creation of unauthorized trails through measures such as erection of 1.5m high chain link fencing along the rear yards of properties adjacent to the natural features and along the length of the vegetated transition zone and setbacks of these features
	• No dumping signs should be set up at intervals along the fence Garbage, leaf litter, and other debris should not be deposited within the adjacent natural features.
	• Homeowners brochures should be distributed to all new homeowners that educate them on the importance of the natural features surrounding their homes. The brochure should include information such as:
	  ○ The importance of reducing or eliminating the use of lawn or garden chemicals
	  ○ Landscape plantings should use native species to avoid the proliferation of non-native species within adjacent natural features.
	  ○ Household pets should not be permitted by the owners to roam within the adjacent natural features.
		Not Significant

8.0 Summary and Conclusion

NRSI was retained in July 2016 by Wastell Homes to complete an ISR and Scoped EIS for the subject property located in Port Stanley, Ontario. NRSI completed original field surveys between September 2016 and January 2018, including:

- ELC mapping
- 3-season vascular flora inventory,
- Woodland dripline survey,
- Aquatic habitat assessment,
- Breeding bird surveys,
- Butterfly and odonate surveys,
- SWH surveys,
- American Badger monitoring,
- Bat cavity assessments,
- Butternut Health Assessments, and
- Tree inventories.

These surveys, as well as a review of background information, including relevant policies and bylaws, and correspondence with agency staff informed the proposed development layout. The proposed development is a residential subdivision with single family home lots, a public park, residential development blocks, and a SWM block. This report provides information on the results of field surveys, an evaluation of the form, function, and significance of natural features and wildlife habitat on the subject property, an analysis of impacts, proposed mitigation measures and an EMP. Natural feature setbacks and vegetated transition zones have been identified that provide physical separation between the development, wildlife habitat, and natural features. A detailed inventory and assessment of trees with the potential to be impacted has been completed, including a retention analysis and recommended protection measures. Further studies and permits may be required for the removal of trees and vegetation within the study area, particularly within the eastern woodland, and in the northwest corner of the subject property where a Category 2 and Category 3 Butternut are located. Further studies, permits, and/or monitoring for SAR (Butternut, Little Brown Myotis, Northern Myotis, Tri-colored Bat, and American Badger) are required to be conducted in consultation with the MNRF Aylmer district for cases outlined in this report.

The proposed development is not anticipated to result in significant impacts to the natural features and wildlife habitat within the subject property if the recommended mitigation measures and EMP are implemented.

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MAPS

481200 481400 481600 481800

4724200 4724000 4723800 4723600

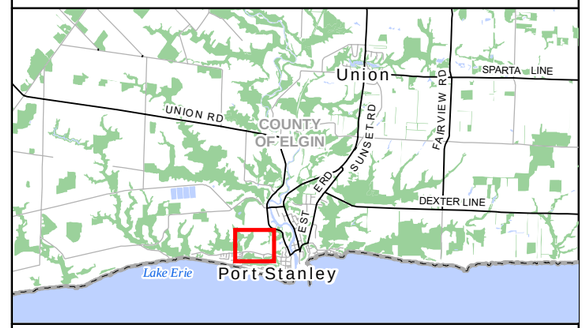
UNION RD
GEORGE ST
DOVER PL
MITCHELL ST
RIVER RD
VALLEY ST
LOWER SPRING ST
INVERERIE HTS LANE
TOWER HTS DR
BOLTVILLE PL
FRONT ST

185 190 195 200 205 210

Map 1

Seaglass in Port Stanley

Subject Property



Legend

- Subject Property
- Contour Line (5m Intervals)
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Water Body
- Wooded Area

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1823
Date: March 2, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

0 50 100 150 200 Metres

N

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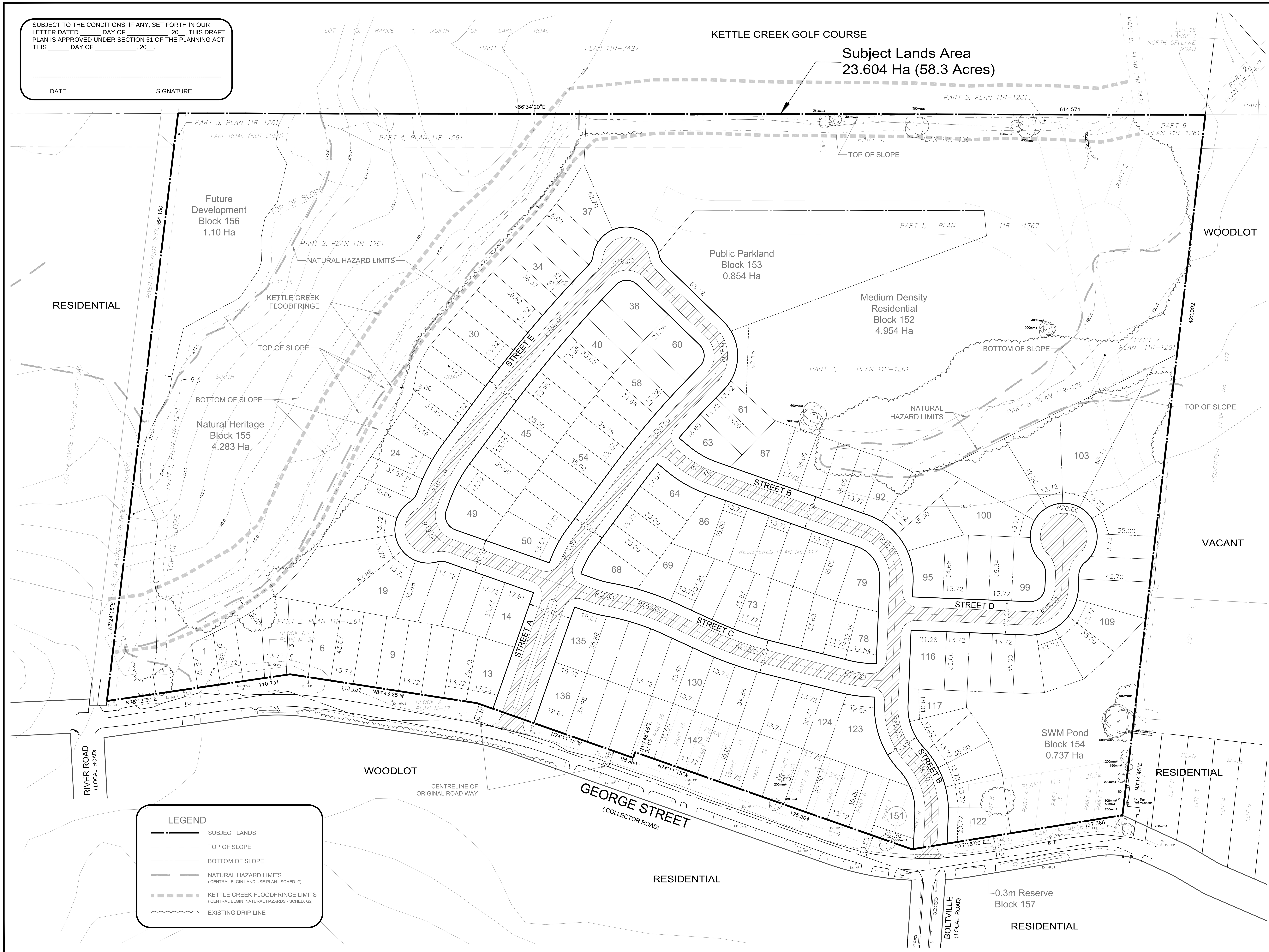
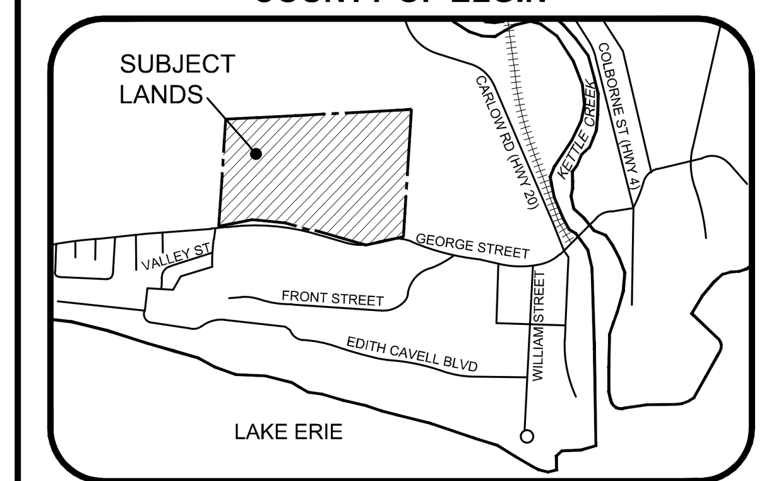

SUBJECT TO THE CONDITIONS, IF ANY, SET FORTH IN OUR LETTER DATED ______ DAY OF ____________, 20__, THIS DRAFT PLAN IS APPROVED UNDER SECTION 51 OF THE PLANNING ACT THIS ______ DAY OF ____________, 20__.
DATE
SIGNATURE
KETTLE CREEK GOLF COURSE
Subject Lands Area
23.604 Ha (58.3 Acres)
Future Development
Block 156
1.10 Ha
Natural Heritage
Block 155
4.283 Ha
Public Parkland
Block 153
0.854 Ha
Medium Density
Residential
Block 152
4.954 Ha
SWM Pond
Block 154
0.737 Ha
RESIDENTIAL
WOODLOT
VACANT
TOP OF SLOPE
BOTTOM OF SLOPE
NATURAL HAZARD LIMITS
KETTLE CREEK FLOODFRINGE
STREET A
STREET B
STREET C
STREET D
STREET E
GEORGE STREET
(COLLECTOR ROAD)
RIVER ROAD
(LOCAL ROAD)
BOLTVILLE
(LOCAL ROAD)
CENTRELINE OF ORIGINAL ROAD WAY
0.3m Reserve
Block 157
LEGEND
SUBJECT LANDS
TOP OF SLOPE
BOTTOM OF SLOPE
NATURAL HAZARD LIMITS
(CENTRAL ELGIN LAND USE PLAN - SCHED. G)
KETTLE CREEK FLOODFRINGE LIMITS
(CENTRAL ELGIN NATURAL HAZARDS - SCHED. G2)
EXISTING DRIP LINE

Monteith+Brown planning consultants

610 PRINCESS AVENUE, LONDON, ONTARIO N6B 2B9 Tel. (519) 686-1300 E-mail: mbpc@mbpc.ca

DRAFT PLAN OF SUBDIVISION

LOT 15, RANGE 1
South of Lake Road & PART OF LOT B, RP#117
(Geographic Township of Southwold)
MUNICIPALITY OF CENTRAL ELGIN,
COUNTY OF ELGIN



KEY PLAN
N.T.S.

OWNER'S CERTIFICATE

I hereby consent to the filing of this Plan in Draft Form.

Doug Wastell
President

Date

SURVEYOR'S CERTIFICATE

I hereby certify that the boundary of the lands to be subdivided as shown on this plan and their relationship to the adjacent lands are accurately and correctly shown.

MTE Ltd.
T. McNEIL, OLS

Date

REQUIREMENTS UNDER SECTION 51 (17) OF THE PLANNING ACT, 1990

a) as shown on plan
b) as shown on plan
c) as shown on key plan
d) as shown on land use schedule
e) as shown on plan
f) as shown on plan
g) as shown on plan
h) municipal water
i) sandy silt & silty sand
j) as shown on plan
k) municipal sewers
l) as shown on plan

LAND USE SCHEDULE

LAND USE	AREA in Ha	PERCENTAGE
SINGLE DETACHED LOTS 1 to 151	8.983	38.1
MEDIUM DENSITY BLOCK 152	4.954	21.0
PARKLAND BLOCKS 153	0.854	3.6
STORM WATER MANAGEMENT BLOCKS 154	0.737	3.1
NATURAL HERITAGE BLOCKS 155	4.238	18.0
FUTURE DEVELOPMENT BLOCK 156	1.100	4.7
ROADS & RESERVE BLOCK 157	2.738	11.6
TOTAL SITE AREA	23.604	100.0

No.	Revision	Date	Initial

CLIENT

WASTELL HOMES

SEAGLASS IN PORT STANLEY

BAR SCALE

1: 1,000

0 10 20 30 40m

ADDRESS

SEAGLASS IN PORT STANLEY
GEORGE STREET - PORT STANLEY

DRAWN BY:	CHECKED BY:	PROJECT No.:
BS	JMC	07-930
DESIGNED BY:	APPROVED BY:	DRAWING No.
BS	-	1
SCALE: on 24x36	DATE:	
1:1000	Sep 18, 2017	

Map 3

Seaglass in Port Stanley

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Inventoried Tree to be Retained (Crown to Scale)
- Inventoried Tree to be Pruned (Crown to Scale)
- Inventoried Tree to be Removed (Crown to Scale)
- Tree Protection Fencing*
- Future Development
- Development Limit
- Phase 1 Boundary
- Proposed Development
- Existing Contour
- Significant Woodland Setback
- Secondary Road
- Watercourse

*Exact fencing locations will be field-fit based on site conditions.

N

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1823
Date: March 2, 2018

NAD83 - UTM Zone 17
Size: 24'x36"
1:800

0 20 40 60
Meters

Future Residential Block

Natural Heritage Block

Residential Block

Residential Block

Residential Block

Residential Block

Public Parkland

PHASE 1

PHASE 2

SWM Pond

GEORGE ST

481400 481600 481800

4724000 4723800 4723600

CGL_1 CGL_1 CGL_1 CUP3-2 FOD5-2 CUM1 CUT1 CUT1-4 CUP3 CUT1-1 FOD5-2 CVR FOD7 FOD7-2 H CUM1 FOD5-2 AG CUT1-1 FOD7 CUM1 CVR CVR CVR CVR

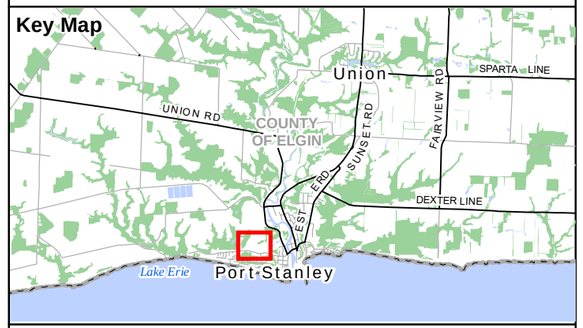
GEORGE ST DOVER PL RIVER RD VALLEY ST SPRING ST LOWER ST BOLTVILLE PL FRONT ST

Path: X:\1823_GeorgeStreetEIS\NRSI_1823_Map4_VegCommunities_3K_2018_03_02_LEH.mxd

Map 4

Seaglass in Port Stanley

Vegetation Communities



Legend

Subject Property

Ecological Land Classification (ELC)

(AG) Agriculture

(CGL_1) Golf Course

(CUM1) Dry-Moist Old Field Meadow Type

(CUP3) Coniferous Plantation

(CUP3-2) White Pine Coniferous Plantation Type

(CUT1) Mineral Cultural Thicket Ecosite

(CUT1-1) Sumac Cultural Thicket Type

(CUT1-4) Gray Dogwood Cultural Thicket Type

(CVR) Residential

(FOD5-2) Dry - Fresh Sugar Maple - Beech Deciduous Forest Type

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

(FOD7-2) Fresh - Moist Ash Lowland Deciduous Forest Type

(H) Hedgerow

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1823
Date: March 2, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:2,500

N

0 50 100 150 Metres

481200 481400 481600 481800

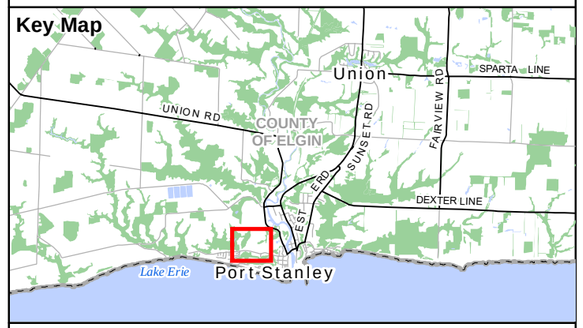
4724200 4724000 4723800 4723600

AHY-004
AHP-003
AHP-004
AHY-003
AHY-002
AHP-002
AHY-001
AHP-001
GEORGE ST
MITCHELL ST
DOVER PL
RIVER RD
VALLEY ST
LOWER SPRING ST
INVERERE HTS LANE
TOWER HTS DR
BOLTVILLE PL
FRONT ST

Map 5

Seaglass in Port Stanley

Aquatic Habitat



Legend

- Subject Property
- Detailed Aquatic Habitat Point
- Fish Observed
- Perched Culvert
- Woody Debris Jam
- Aquatic Habitat Reaches
- Secondary Road
- Downed Tree Blocking Channel
- Permanent Watercourse
- Intermittent Watercourse
- Seeps and Springs
- Water Body

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1823
Date: March 2, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

0 25 50 100 150 Meters

N

Path: X:\1823_GeorgeStreetEIS\NRSI_1823_Map5_AquaticHabitat_2018_03_01_LEH.mxd

481200 481400 481600 481800 482000

4724200 4724000 4723800 4723600

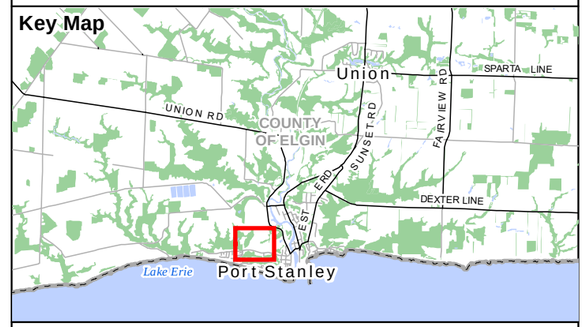
Residential Block
Residential Block
Future Residential Block
JUG-008
JUG-006
Natural Heritage Block
Public Parkland
Residential Block
Residential Block
SWM Pond
GEORGE ST
DOVER PL
RIVER RD
VALLEY ST
LOWER SPRING ST
TOWER HTS DR
BOLTVILLE PL
FRONT ST

Map 6

Seaglass in Port Stanley

Constraints and Opportunities

Key Map



Legend

- Subject Property
- Future Development
- Development Limit
- Erosion Hazard Limit
- Proposed Development
- Butternut Tree (JUG)
- Butternut General Habitat Area (50m)
- Dripline
- Significant Woodland Buffer
- Municipal Drain Setback
- Permanent Watercourse
- Intermittent Watercourse
- Water Body

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1823
Date: March 8, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

N

0 50 100 150 200 Metres

Path: X:\1823_GeorgeStreetEIS\NRSI_1823_Map6_Constraints_Opportunities_2018_03_08_KEF.mxd

481200 481400 481600 481800

4724200 4724000 4723800 4723600

Residential Block
Residential Block
Public Parkland
Residential Block
Residential Block
Future Residential Block
Natural Heritage Block
SWM Pond

GEORGE ST
MITCHELL ST
DOVER PL
RIVER RD
VALLEY ST
LOWER SPRING ST
INVERERIE HTS LANE
TOWER HTS DR
BOLTVILLE PL
FRONT ST

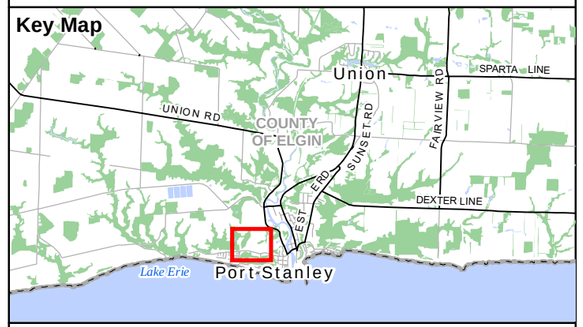
Path: X:\1823_GeorgeStreetEIS\NRSI_1823_Map7_ConceptualPlan_3K_2018_03_01_LEH.mxd

Map 7

Seaglass in Port Stanley

Conceptual Enhancement Plan

Key Map



Legend

- Subject Property
- Zone 1
- Zone 2*
- Future Development
- Proposed Development
- Permanent Watercourse
- Intermittent Watercourse
- Water Body

* Boundary to be refined based on the development plan for the Medium Density Residential block.

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1823
Date: March 2, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

N

0 50 100 150 200 Metres

APPENDIX I

George Street, Port Stanley Issues Scoping Report and Scoped Environmental Impact Study Terms of Reference

Issues Scoping Report

George Street, Port Stanley

Prepared for:
Wastell Homes
5-1895 Blue Heron Drive
London ON
N6H 5L9

Project No. 1823 | December 2016

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Issues Scoping Report
George Street, Port Stanley

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Report submitted on December 23, 2016

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by Wastell Homes in July 2016 to complete an Issues Scoping Report (ISR) and Species at Risk (SAR) screening for a proposed residential development on George Street in Port Stanley, Ontario. The property is located approximately 500m from the Lake Erie shoreline and consists of an agricultural field, woodlands, and a municipal drain (Not Rated) in the Kettle Creek Watershed.

The Municipality of Central Elgin (Central Elgin) requires that all new development applications include an ISR and SAR Screening to assess the significance of existing natural heritage features and their functions. For the George Street property, natural heritage features within the study area include woodlands, a municipal drain (Not Rated), and Natural Hazard Lands, according to the Central Elgin Official Plan (CEOP) (2013).

This report summarizes background information on natural heritage features, the proposed undertaking, provides a preliminary assessment of the significance, sensitivity and function of natural features within the study area, and addresses potential cumulative effects on natural features as a result of the proposed undertaking. This ISR and SAR screening have been prepared in accordance with the Elgin County Official Plan (ECOP) and the CEOP.

The subject property, approximately 23.6ha in area, is generally bounded by the Kettle Creek Golf and Country Club to the north, two brownfield sites and Carlow Road (County Road 20) to the east, George Street to the south, and Spring Street to the west (Map 1). A dirt driveway is present in the southwest corner of the subject property, as well as a culvert under a grassed laneway along the western boundary. The majority of the property is characterized by agricultural fields with a wooded area present along the western edge of the property and a wooded ‘peninsula’ that juts out from the eastern boundary towards the center of the subject property. The subject property is located within Ecoregion 7E.

For the purpose of this report, the term “subject property” refers to the lands owned by the proponent including the area where the development is proposed to occur. The term “study area” refers to the subject property plus the surrounding area (approximately 120m) for which additional information was collected and reviewed (as could be gathered without direct access to these areas). Legacy data collected from agencies and wildlife atlases encompassed an area of approximately 1km around the property to ensure that all surrounding natural features were considered.

1.1 Proposed Undertaking

Wastell Homes is proposing a residential development within the subject property that will include both single family and multi-family units. An outdoor hospitality park is proposed for the northeast corner of the subject property. Several locations are under review for the stormwater management facilities for this development.

2.0 Background Review

In order to determine a study approach and prepare the ISR, 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 study area. Background information on the natural environmental features within the study area was gathered from Natural Heritage Information Centre (NHIC) database, various wildlife atlases, relevant taxa-specific databases, and through background information requests sent to the Ministry of Natural Resources and Forestry (MNRF), Kettle Creek Conservation Authority (KCCA), and the Municipality of Central Elgin.

Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the study area using wildlife atlases including the Ontario Breeding Bird Atlas (Bird Studies Canada *et al*. 2008), Ontario Reptile and Amphibian Atlas (Ontario Nature 2015), the Ontario Mammal Atlas (Dobbyn 1994) and the Ontario Butterfly Atlas (Jones et al. 2013). In addition, the Natural Heritage Information Centre database was queried. These initial species lists were used to prepare the SAR and Significant Wildlife Habitat screenings.

Based on these initial species lists, a total of 19 Species at Risk (SAR) and 30 species of Conservation Concern were identified as having records from within the vicinity of study area. SAR are those species listed on the Species at Risk in Ontario List (MNRF 2016). 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 Endangered Species Act, 2007, which includes protection of their habitat.

Species considered Special Concern are included in the definition of Species of Conservation Concern, 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.

Species of Conservation Concern are discussed further within the context of Significant Wildlife Habitat (SWH).

2.1 Species at Risk Screening

A preliminary screening exercise was conducted to identify species that have suitable habitat within the study area. This involved cross-referencing the preferred habitat for reported SAR (OMNR 2000) against habitats known to occur on the subject property or adjacent lands. This was completed to ensure that the potential presence of all SAR and species of Conservation Concern within the study area was adequately assessed.

Potential suitable habitat is present for the following 8 regulated SAR species:

- Butternut (*Juglans cinerea*
- Northern Bobwhite (*Colinus virginianus*),
- Wood Thrush (*Hylocichla* mustelina),
- Yellow-breasted Chat (*Icteria virens*)
- Red-headed Woodpecker (*Melanerpes erythrocephalus*),
- Eastern Meadowlark (*Sturnella magna*)
- Little Brown Myotis (*Myotis* lucifugus), and
- American Badger (*Taxidea taxus jacksoni*)

Full results of the SAR screening exercise are provided in Appendix I.

2.2 Significant Wildlife Habitat Screening

A preliminary screening for the presence of SWH was also completed for the study area (Appendix II). The Significant Wildlife Habitat Technical Guide (SWHTG) is a guideline document that outlines the types of habitats that the MNRF considers significant in Ontario as well as criteria to identify these habitats (OMNR 2000, MNRF 2015). The SWHTG groups SWH into five broad categories: seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats of species of Conservation Concern, and animal movement corridors. A preliminary screening exercise was undertaken and is discussed in the Significance, Sensitivity and Function

section of this report. Full results of the preliminary SWH screening are provided in Appendix II.

2.3 Relevant Policies and Legislation

For the purpose of this ISR, background information on the natural heritage features within the subject property was collected and assessed for significance. To help inform suitable land-use concepts, guide the layout of development, and identify areas to be protected, these features are evaluated against the following relevant policies, legislation, and planning studies in Section 4.

2.4 Provincial Policy Statement

The Provincial Policy Statement (PPS) (OMMAH 2014) is issued under the authority of Section 3 of the Planning Act and came into effect on April 30, 2014, replacing the 2005 PPS. Section 3 requires that decisions affecting planning matters shall be consistent with policy statements under the Act. Section 4.4 of the PPS establishes that the PPS is to be read in its entirety and all relevant policies are to be applied to each situation. In this context, 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.' These features are broadly defined within the PPS and rely on the MNRF and the municipality to identify and delineate specific natural features. The Natural Heritage Reference Manual (NHRM) (OMNR 2010) and the SWHTG (OMNR 2000, OMNR 2015) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS. Within the subject property this includes candidate SWH, potential fish habitat, and potential habitat for Endangered or Threatened species. Each of these features is discussed below.

Section 2.1.5.of the PPS states that development or site alteration shall not be permitted in Significant Wildlife Habitat or other types of significant habitat unless it has been demonstrated that there will be no negative impacts on the features or their ecological functions.

Section 2.1.6.of the PPS states that development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

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.

In all cases, development and/or site alteration is not permitted under the PPS on adjacent lands to the natural heritage features and areas identified in policies 2.1.5 and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions (OMMAH 2014).

The Natural Heritage Reference Manual (OMNR 2010) provides technical guidance for implementing the natural heritage policies of the PPS. Although the NHRM was based on the 2005 PPS, its guidance may be applied to the 2014 PPS. The manual represents the province's recommended technical criteria and guidance for identifying and protecting significant natural features as defined in the PPS.

SWHs have the potential to occur within the subject property, and such habitats are protected from development under the PPS (OMMAH 2014). In addition, numerous Species at Risk are reported to occur within the study area and are protected under the Endangered Species Act (ESA) (2007).

The SWHTG was prepared to assist planning authorities and other participants in the land use planning system (OMNR 2000). The SWHTG is a detailed technical manual that provides information on the identification, description, and prioritization of SWH. The manual is intended for use in the municipal policy and development process under the Planning Act. An addendum to the SWHTG provides further detail on characterizing and identifying Significant Wildlife Habitat in Ecoregion 7E (OMNR 2015b).

2.5 Endangered Species Act

The original ESA, written in 1971, underwent a year-long review that resulted in a number of changes, which came into force in 2007. There is now a much stronger emphasis on science-based review and assessment of species that is completed by an

independent body named The Committee on the Status of Species at Risk in Ontario (COSSARO). Species designated as Threatened or Endangered receive legal protection under the ESA and their habitats are protected generally under the Act (i.e. areas essential for breeding, rearing, feeding, hibernation and migration). The ESA (Subsection 9(1)) states that:

"No person shall,

(a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

(b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,

(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,

(ii) any part of a living or dead member of a species referred to in subclause (i),

(iii) anything derived from a living or dead member of a species referred to in subclause (i); or

(c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii).

Clause 10(1)(a) of the ESA states that:

"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species"

In order to balance social and economic considerations with protection and recovery goals, the ESA also enables the MNRF to issue permits or enter into agreements with proponents in order to authorize activities that would otherwise be prohibited by subsections 9(1) or 10(1) of the Act provided the legal requirements of the Act are met.

2.6 Canadian Fisheries Act, 1985

The Canadian Fisheries Act, 1985 provides provisions for the protection of fish and fish habitat. In 2012, changes were made to the Fisheries Act to enhance the ability of Fisheries and Oceans Canada (DFO) to manage threats to the sustainability and productivity of Canada's commercial, recreational and Aboriginal fisheries.

The principle provision, Section 35 (1) states that no person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery.

Under the Act, Section 2 (2), “serious harm to fish”, is defined as the death of fish or any permanent alteration to, or destruction of, fish habitat.

Another important provision, Section 36 (3) states that no person shall deposit or permit the deposit of a deleterious substance of any type in water frequented by fish or in any place under any conditions where the deleterious substance or any other deleterious substance that results from the deposit of the deleterious substance may enter any such water.

These two provisions and the other habitat protection and pollution prevention sections of the Fisheries Act are meant to conserve and protect fish habitat.

DFO has developed the Fisheries Protection Policy Statement which came into effect November 25, 2013. It applies to proponents of existing or proposed works, undertakings or activities that are likely to result in impacts to fish or fish habitat that are part of or support commercial, recreational or Aboriginal fisheries. It was prepared by DFO to explain the fisheries protection provisions of the Fisheries Act and to outline how they will implement these provisions. DFO has also developed an online, self-assessment tool, where proponents can determine whether their projects require DFO review based on the type of water body the work is occurring in and the nature of the proposed activity. These tools are available to assist proponents through the DFO screening and review process.

2.7 Ontario Drainage Act, 1990

The Ontario Drainage Act provides legislation and policies for the creation, maintenance, and repair of municipal drains in Ontario. DFO developed a Municipal Drain Classification System that provides a balance between the Federal Fisheries Act and the Ontario Drainage Act and simplifies the review and approval process for drain

maintenance activities on fish habitat (Lamoureaux, date unknown). The DFO Classification system identifies 7 types of drains based on the flow regime (i.e. permanent or intermittent), thermal regime (warm, cool/cold water), and the presence of sensitive aquatic species. The municipal drain within the subject property has been identified as Not Rated by the KCCA indicating the limited to no information is available on the feature. Under the Ontario Drainage Act, improvement, maintenance, and repair activities are reviewed by a drainage engineer and authorized by the municipality. Any works proposed for the municipal drain within the subject property will require approval and permits from the Municipality of Central Elgin.

2.8 Migratory Birds Convention Act, 2013

The federal Migratory Birds Convention Act (MBCA) is applied through The Regulations Respecting the Protection of Migratory Birds that states that *"[…] no person shall disturb, destroy or take a nest, egg […] of a migratory bird.*" This law protects migratory game birds, insectivorous birds, and several other migratory non-game birds. Bird nests that are destroyed during the course of construction and other related activities are referred to as "incidental take" and this is illegal except under the authority of a permit obtained through the Canadian Wildlife Service.

Implications of the Migratory Birds Convention Act have potential to occur during site preparation and/or the construction phase of the project when the subject property is cleared and grubbed of vegetation, stockpiles are moved or altered, buildings are demolished, etc. The schedule of actual on-site work must consider the general nesting periods of migratory birds in Canada (Environment Canada 2016). The timing of the peak migratory bird breeding season in southern Ontario is between May 1 and July 31, although this is a general guideline since the Act applies to nesting at any time of the year. This legislation is applicable and should be considered if any formal Development Applications are filed in the future or in the context of any type of site alteration that has the potential to impact birds or their nests.

2.9 Fish and Wildlife Conservation Act, 1997

The provincial Fish and Wildlife Conservation Act contains provisions for the protection of certain bird species not protected by the Migratory Birds Convention Act such as raptors. It also protects furbearing mammals and their den or habitual dwellings, other

than for red fox (*Vulpes vulpes*) and striped skunk (*Mephitis mephitis*). Several furbearers are known from the project area and their dens cannot be destroyed without a permit from the MNRF.

2.10 Elgin County Official Plan

The Elgin County Official Plan (ECOP) came into effect October 9, 2013 and outlines goals, objectives, and strategies for land use planning within the county. The ECOP also identifies objectives and policies for the Natural Heritage System (NHS), water resources, and natural hazards. Details for the preparation of an Environmental Impact Study (EIS) are provided in the Natural Heritage section of the Official Plan. The County of Elgin has not yet completed a Natural Heritage System study

The County of Elgin considers woodlands greater than 10ha to be significant. Woodlands between 2 and 10ha are also significant if they are located within 30m of the boundary of a significant natural heritage feature (e.g. significant wetland, significant valleyland, fish habitat and/or watercourse). The ECOP also considers all watercourses in the County to be environmentally significant

2.11 Municipality of Central Elgin Official Plan

The Municipality of Central Elgin Official Plan (CEOP) came into effect on Feb 21, 2012, and includes specific policies for the protection of natural features within the Municipality and area specific policies for each town and hamlet within its jurisdiction. This includes policies on the natural heritage system, woodlands, fish habitat, wildlife habitat, SAR, adjacent lands, and other features such as natural hazard lands. Area specific mapping of the Natural Heritage System, watercourses and Natural Hazard Lands are provided in the Official Plan, with Port Stanley covered under Schedule G. The CEOP identifies the need for an ISR and SAR screening that assess the subject property using background information and identifies potential effects on natural heritage features within the development area and adjacent lands. A recommendation is provided within the ISR for a full or scoped EIS. Through the ISR and EIS process, buffers are to be identified, SWH is to be confirmed and mapped, the details of tree removal and compensation are to be outlined, and impacts to the features and adjacent lands are to be identified. The CEOP outlines information that is required as part of the EIS. This ISR was prepared in accordance with the CEOP policies.

A terms of reference for a scoped EIS is provided in Appendix III of this report, which details field investigations that are required to address the potential impacts, wildlife habitat and natural features within and adjacent to the proposed development.

Based on the woodland policies provided in the Official Plan, the woodland on the west side of the subject property is significant as it is greater than 2ha in area. The woodland on the east side of the subject property is not considered significant based on the size criteria.

2.12 Development, Interference with Wetlands and Alterations to Shorelines and Watercourses' Ontario Regulation 181/06

KCCA regulates a small watershed in southern Ontario, which falls under the Ontario Regulation 97/04 (Generic Regulation). Ontario Regulation 181/06 applies specifically to the KCCA and was approved in 2006 under 97/04. Both regulations are consistent with the PPS (2014) policies to manage resources in a sustainable way and protect public health and safety. The KCCA regulates natural features and activities that include development and activities in river or stream valleys, Great Lakes and large inland lakes' shorelines, hazardous lands and wetlands. The subject property includes natural features and lands that are regulated by the KCCA. A permit is required where development or site alteration occurs within, or adjacent to regulated areas.

2.13 Elgin County Woodlands Conservation By-Law 05-03

The Elgin County Woodlands Conservation By-law came into effect in 2005, and outlines policies for the protection and proper management of trees and woodlands in the County. The by-law states that no person, through their own actions or through any other person's actions, shall harvest, destroy, or injure any living tree unless the person who is harvesting, destroying, or injuring trees has done so in accordance with Good Forestry practices and within the Circumference Limit.

Proposed changes to by-law were submitted March 29, 2016 and are currently under review. These changes include:

- The submission of an Application to Harvest, Destroy or Injure Trees on Slopes
- Additional information including a geotechnical report and an arborist report to help identify and mitigate any slope stability concerns

Review of these documents would be undertaken by the Municipality of Central Elgin. Exemptions provided in the existing Woodlands Conservation by-law 05-03 and Municipal Act, 2001, remain unchanged by the proposed amendment. The subject property includes areas of sloped woodland. As such, any tree removal on or near the sloped areas may require a permit from Elgin County under by-law 05-03 if the amendment is approved.

3.0 Environmental Characterization

A preliminary site investigation was undertaken by NRSI on September 12, 2016 that included a fall vegetation inventory, vegetation community mapping using the Ecological Land Classification (ELC) system (Lee 2008) and an aquatic habitat assessment of the municipal drain. The site investigation was conducted to identify natural features that may be impacted by the proposed development, as well as to gather general information about the subject property.

Map 1 illustrates the approximate subject property boundaries as well as mapped natural heritage features, based on the Land Information Ontario (LIO) mapping database. According to the information from Map 1, as well as mapping available in the ECOP and CEOP, the subject property contains portions of 2 woodlands, a permanent watercourse, an intermittent watercourse, and natural hazard lands. Vegetation communities within the subject property are shown on Map 2.

3.1 Vegetation Communities

During the preliminary site visit, the subject property was characterized using Ecological Land Classification (ELC) mapping (Lee 2008). The majority of the subject property consists of an agricultural field, and portions of 1 Significant Woodland and 1 other woodland. A summary of ELC communities identified within the subject property is provided in Table 1. ELC communities are described below in detail and shown on Map 2.

Table 1. Vegetation Communities Identified within the Subject Property

Cultural	
Ag	Agricultural Row Crop
CUM	Cultural Meadow
CUT1	Dry - Fresh Deciduous Shrub Thicket Ecosite
CUT1-1	Sumac Cultural Thicket
Deciduous Forest	
FOD5-2	Dry – Fresh Sugar Maple – Beech Deciduous Forest Type
FOD7	Fresh – Moist Lowland Deciduous Forest Ecosite
FOD7-2	Fresh – Moist Green Ash - Hardwood Lowland Deciduous Forest Type
Hedgerow	
H	Hedgerow

Agricultural Row Crop (AG)

This community was not in rotation during the site investigation but has since been planted with winter wheat It consists of several herbicide-tolerant species including lamb's quarters (*Chenopodium album* var. *album*), Russian pigweed (*Axyris amaranthoides*), and velvetleaf (*Abutilon theophrasti*). Large areas of bare soil are present within this community.

Cultural Meadow (CUM)

Weedy and invasive species characterize this small Cultural Meadow community, including Tall goldenrod (*Solidago altissima var. altissima*), (Canada thistle (*Cirsium arvense*), common dandelion (*Taraxacum officinale*), and lamb's quarters.

Mineral Cultural Thicket Ecosite (CUT1)

This community is located in the northeast corner of the subject property and extends off site surrounding the eastern extent of the FOD7-2 community. The most abundant species within the community are European buckthorn and gray dogwood (*Cornus foemina* ssp. *racemose*). The ground layer consists largely of tall goldenrod and garlic mustard (*Alliaria petiolata*).

Sumac Cultural Thicket (CUT1-1)

This cultural community occurs in 2 locations within the subject property: at the highest point of land in the northwest corner, and in the southwest corner adjacent to the CUM community. The most abundant species within the community is staghorn sumac (*Rhus hirta*), red raspberry (*Rubus idaeus ssp. idaeus*), and Alleghany blackberry (*Rubus allegheniensis*). The ground layer consists largely of tall goldenrod and field horsetail.

Dry-Fresh Sugar Maple – Beech Deciduous Forest Type (FOD5-2)

The upper portion of the steep slope contains a Sugar Maple Beech forest. This forest canopy and sub-canopy contains abundant sugar maple (*Acer saccharum ssp. saccharum*), American beech (*Fagus grandifolia*) and white ash (*Fraxinus americana*). The understory includes tartarian honeysuckle (*Lonicera tartarica*)

and multiflora rose (*Rosa multiflora*). The ground layer includes white avens (*Geum canadense*) and spinulose wood fern (*Dryopteris carthusiana*).

Fresh-Moist Lowland Deciduous Forest Ecosite (FOD7)

The lower portion of the steep slope contains a Lowland Deciduous Forest. This forest canopy contains black walnut (*Juglans nigra*), black locust (*Robinia pseudo-acacia*), and sugar maple. The understory includes tartarian honeysuckle, multiflora rose and alternate-leaved dogwood (*Cornus alternifolia*). The ground layer includes Canada goldenrod (*Solidago canadensis*), garlic mustard, and ostrich fern (*Matteuccia struthiopteris var. pensylvanica*).

Fresh-Moist Ash – Lowland Deciduous Forest Type (FOD7-2)

This community is present on the eastern portion of the subject property on a north- and west-facing slope. The canopy and sub-canopy contains green ash (*Fraxinus pennsylvanica)*, eastern cottonwood (*Populus deltoides*), and large-tooth aspen (*Populus grandidentata*). The understory consists of alternate-leaved dogwood and European buckthorn (*Rhamnus cathartica*). The ground layer includes wood nettle (*Laportea canadensis*), tall goldenrod, and tickseed sunflower (*Bidens polylepis*). This community extends east of the subject property and is surrounded by a CUT1 community on the east. Emerald Ash Borer is confirmed to be present within this community, and the majority of ash are showing signs of decline. Areas where the canopy has opened contain dense colonies of European buckthorn, indicating that this community may become dominated by this species following the decline of the dominant ash canopy. The northwestern edge of this community contains a few older maples that are independent from the rest of the FOD7-2 community.

Hedgerow (H)

The hedgerow community is situated on either side of the drain and extends to the toe of the steep slope. It continues along the northern property boundary between the agricultural field and the Kettle Creek Golf and Country Club. This community has a very large diversity of species, with no dominant species in any particular layer. The canopy and sub-canopy includes black walnut, crack willow (*Salix fragilis*), and eastern cottonwood. The understory includes multiflora rose

and red osier dogwood (*Cornus stolonifera*). The ground layer includes tall goldenrod, coltsfoot (*Tussilago farfara*) and common ragweed (*Ambrosia artemisiifolia*).

Additional vegetation communities were noted to the east of the subject property during an investigation of the eastern woodland and were assessed from the property line in as much detail as possible. These communities include Mineral Cultural Thicket (CUT1), Gray Dogwood Cultural Thicket (CUT1-4), Coniferous Plantation (CUP3) and White Pine Coniferous Plantation (CUP3-2). A description of each of these communities is provided below.

Mineral Cultural Thicket Ecosite (CUT1)

This community is located in the northeast corner of the subject property and extends off site surrounding the eastern extent of the FOD7-2 community. The most abundant species within the community are European buckthorn and gray dogwood (*Cornus foemina* ssp. *racemose*). The ground layer consists largely of tall goldenrod and garlic mustard.

Gray Dogwood Cultural Thicket (CUT1-4)

Located entirely off site and to the east of the FOD7-2 community, this gray dogwood thicket extends along the height of the slope. Largely open in areas, with denser areas of gray dogwood, silky dogwood (*Cornus amomum* ssp. *obliqua*) and occasionally Canada soapberry (*Shepherdia canadensis*). The ground layer consists largely of flat-topped bushy goldenrod (*Euthamia graminifolia*) and Canada goldenrod.

Coniferous Plantation (CUP3)

This community is located near the northeast corner of the subject property adjacent to an area of Gray Dogwood Cultural Thicket and includes eastern tamarack (*Larix laricina*) and white pine (*Pinus strobus*). Understory and ground-cover species could not be observed.

White Pine Coniferous Plantation Type (CUP3-2)

This community is present east of the golf course, north of a Mineral Cultural Thicket area, and was observed from the property boundary. Understory and ground-cover species could not be observed.

3.2 Vascular Flora

Background information from the Natural Heritage Information Centre (NHIC) database indicates that 14 significant plant species are reported from within 1km of the study area. The SAR screening (Appendix I) identifies that suitable habitat for 5 of these species may be present within the subject property. These species, their current status ranks, and preferred habitats are available in Appendix I. Additional field surveys may be required to confirm the presence of significant plant species within the subject property.

3.3 Aquatic Habitat

Base mapping (MNRF 2011) identified the presence of a permanent watercourse and an intermittent watercourse within the subject property. According to the Municipality of Central Elgin's consultant, R.J. Burnside, the permanent watercourse within the subject property is a Class A municipal drain. However more recent information provided by KCCA as part of a background review request indicated that the municipal drain is classified as Not Rated This drain has not been identified or mapped by the Ontario Ministry of Agriculture Food and Rural Affairs (OMAFRA). The 'Not Rated' classification indicates that data is not available to classify the feature. The intermittent watercourse is shown in the northwest corner of the subject property extending down the slope to the municipal drain (Map 1)

The municipal drain generally flows from southwest to northeast, running along the edge of the western woodland towards the northern boundary of the study area. The drain bends 35 degrees and runs east between the agricultural field and the Kettle Creek Golf and Country Club.

An aquatic habitat assessment was conducted during the preliminary site visit on September 12, 2016. Fish were observed upstream of the subject property in a short section of channel between 2 culverts on the west side of the grassed laneway (see Map 3). The species could not be identified from the shore. Downstream of the grassed

laneway and through the subject property no fish were observed and limited aquatic habitat is present. The upstream half of the is undergoing erosion and bank scour as a result of low density vegetation on the banks and a blockage within the channel consisting of 2 large sections of a downed tree. The downstream portion of the channel contains dense vegetation and the channel appears to be more stable. The channel bed consists of sands and silt with limited amount of pebbles and cobbles. During the aquatic habitat assessment, water temperatures were taken at various locations along the drain within the subject property. Although temperatures were not taken during the time of year when thermal regime can be identified, the temperatures were indicative of a cool or coldwater system.

3.4 Natural Hazard Lands

Schedule G2 of the CEOP identifies Natural Hazards within the Community of Port Stanley. This map indicates that flood fringe for Kettle Creek is located within the subject property along the length of the municipal drain. The CEOP Schedule G indicates that the western significant woodland includes Natural Hazard Lands, a portion of which extends north of the woodland in the northwest corner of the subject property. The Natural Hazard Lands consist of an area of slope that is being investigated by a geotechnical engineer.

3.5 Significance, Sensitivity and Function

3.5.1 Woodlands

According to the ECOP and CEOP the western woodland within the subject property is significant. During the preliminary site investigation, this woodland was mapped using ELC (see Map 2). The western woodland is considered significant by the ECOP as it is part of a contiguous 39ha woodland. Any woodland greater than 10ha is considered significant under the ECOP. The CEOP states that woodlands greater than 2ha within the municipality of Central Elgin are significant due to the general lack of wooded area in the municipality. The eastern woodland is not significant as it is 1.59ha in area.

3.5.2 Significant Wildlife Habitat

Based on the results of a comprehensive background review, desktop analysis, and a preliminary site visit 9 candidate SWH types were identified within the study area. Field surveys are required to confirm or dismiss the candidate SWH types. A Terms of Reference for a scoped EIS is provided in Appendix III, which includes surveys to assess the candidate SWH types identified. The candidate SWH types identified during the screening process include:

- Raptor Wintering Areas
- Bat maternity Colonies
- Landbird Migration Stopover Areas
- Deer Winter Congregation Areas
- Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat
- Woodland Raptor Nesting Habitat
- Seeps and Springs
- Special Concern and Rare Wildlife Species, and
- Bat Migratory Stopover Area

Background information requests have been submitted to the MNRF, KCCA, and Municipality of Central Elgin. Available information will be incorporated into further assessment of the above listed SWH types as part of the Scoped EIS.

3.5.3 Habitat for Species of Conservation Concern

Based on background information collected from the various wildlife atlases, 30 species of Conservation Concern were reported from the vicinity of the study area. Candidate habitat for 17 of these species was identified within the subject property by comparing the results of preliminary vegetation community mapping to the habitat requirements for each of these species outlined in the SWHTG (OMNR 2000 Appendix G). The EIS Terms of Reference (Appendix III) includes surveys to confirm the presence of the SCC species identified.

3.6 Habitat of Endangered and Threatened Species

Based on background information collected from the various wildlife atlases, 19 Endangered and Threatened species are reported from the vicinity of the study area. Potential habitat for 8 of these species was identified within the subject property by

comparing the results of preliminary vegetation community mapping to the habitat requirements for each of these species outlined in the SWHTG (OMNR 2000 Appendix G). The EIS Terms of Reference (Appendix III) provides details on field surveys that will be conducted to confirm the presence of these species.

3.7 Aquatic Habitat

Based on an aquatic habitat assessment of the municipal drain on September 12, 2016, the drain contains poor quality habitat for aquatic species. There are some undercut banks along the length of the drain due to bank erosion, woody debris jams, and other obstructions. Overhanging vegetation is present through the downstream half of the drain; however this section is currently under review for a drain clean out, which will likely remove the vegetation. Based on water temperatures taken during the site investigation, the municipal drain may be a cool or coldwater feature. The presence of fish upstream of the subject property indicates that the drain has potential to support direct fish habitat with some enhancements to the riparian area, removal of obstructions, and adjustment to the perched culvert. Currently, however, the feature within the subject property appears only to support indirect fish habitat through the supply of coldwater to downstream reaches.

4.0 Potential Cumulative Effects and Impacts

Based on a review of the Preliminary Residential Development Concept, a preliminary site investigation, background information and mapping, as well as air photos, several potential effects and impacts have been identified. The following is a brief description of anticipated constraints, potential cumulative effects, and potential impacts based on the preliminary concept plan. This information will be used to scope the EIS (see Appendix III) and identify areas of potential conflict between the proposed development and existing natural features and habitats.

4.1 Potential Cumulative Effects

Based on the information currently available, no additional developments are planned for the Urban Settlement Area west of Kettle Creek. There are 2 areas of potential development, one immediately east of the subject property, which is mapped on Schedule G of the CEOP as Commercial-Industrial Lands. The second are is immediately north of the Kettle Creek Golf & Country Club, which is mapped as residential land use on Schedule G of the CEOP. The Kettle Creek Golf and Country Club is also mapped as residential on Schedule G. Should these lands become developed, impacts to the natural heritage features surrounding them would be under additional pressure. Potential effects from the development of all these lands could include:

- Increases in human activity within the significant woodlands and other woodlands,
- Introduction of invasive and prolific species into the wooded areas,
- Increased surface water runoff to the watercourses and drains nearby, including the municipal drain within the subject property,
- Decreased groundwater infiltration and therefore coldwater baseflow contributions to watercourses, drains, and the Kettle Creek watershed,
- Increased flashiness of local hydrographs and potential flooding concerns for Kettle Creek, and
- Potential reduction in wildlife habitat

These and other potential impacts within the subject property are discussed further below. Once detailed information is available, a thorough review of impacts from the proposed undertaking will be conducted and the results presented in the EIS.

4.2 Potential Impacts

4.2.1 Significant Woodland

The woodland located on the west side of the subject property is significant based on the criteria outlined in the ECOP and the CEOP. A buffer is required from the edge of a significant woodland and protection of the woodland is required during construction to avoid injuring or harming trees and wildlife habitat. The current location of the municipal drain and a hedgerow at the edge of the western significant woodland provides a natural buffer to the significant woodland. Based on the existing conditions, impacts to the significant woodland are not anticipated from the proposed undertaking.

Although the eastern woodland is not significant, there is potential for impacts to the woodland during and post-construction. The woodland includes ash species and the presence of Emerald Ash Borer (EAB) was confirmed by NRSI biologists while on site. Further discussion and recommendations for the eastern woodland will be provided in the Scoped EIS.

Impacts to the woodlands may include direct, indirect, or induced impacts such as:

- changes in topography and surface water runoff, and compaction of soils from grading activities
- injury to trees or their root systems from construction activities,
- changes in vegetation communities due to dust
- encroachment into the significant woodlands from human activity

Recommendations for buffers, mitigation, compensation, and protection during and after construction will be detailed in the EIS.

4.2.2 Wildlife Habitat

Section 3.5 of this report discusses SWH and habitat of endangered and threatened species. A total of 9 candidate SWH types have been identified through the screening process, along with potential habitat for 8 species of Conservation Concern, and 17 SAR. The EIS will include field surveys to confirm the SWH present within the subject property, as well as investigate the presence of SAR and SCC. Habitat for SAR must be protected during and after construction. Enhancement opportunities may be present and will be discussed in the EIS. Potential impacts to wildlife habitat include:

- Bird nest destruction
- Burrow and den destruction
- Tree and vegetation removal
- Temporarily increased noise and dust from construction activities
- Artificial lighting
- Increased human activity within the significant woodlands, including unauthorized trails

Each of these potential impacts will be discussed in the EIS when detailed information regarding the proposed undertaking is available.

4.2.3 Natural Hazard Areas

Natural hazard areas have been identified within the subject property through the CEOP and include steep slopes and flood fringe areas for Kettle Creek. The proposed residential lots have been located outside of the flood fringe as mapped in Schedule G2 of the CEOP. A slope stability assessment is currently underway to review the slopes within the eastern and western woodlands The EIS will include details from the geotechnical slope stability assessment to evaluate the potential impacts to natural hazards

4.2.4 Aquatic Habitat

A setback to the municipal drain is required for maintenance works, as well as flooding and potential erosion. This setback will provide enhancement opportunities for the

riparian area and aquatic habitat within the drain. Potential impacts to the drain from the proposed undertaking may include:

- Changes to surface water and groundwater inputs due to grading and stormwater management controls
- Changes to water quality from the use of pesticides and fertilizers on rear yards backing onto the drain
- Sedimentation and erosion during and after construction
- Sedimentation and changes to vegetation communities from dust
- Increased human activity within the buffer and the drain (e.g. fishing, unauthorized trails, dumping and debris)

Buffers, mitigation measures, and enhancement opportunities will be discussed in the EIS (see Appendix III).

5.0 Data Gaps and Next Steps

Based on the findings described above, a Terms of Reference for an EIS was prepared by NRSI. The Terms of Reference is attached as Appendix III. The TOR will be submitted to the Municipality of Central Elgin for approval.

Background information requests have been sent to the Municipality of Central Elgin, KCCA, and the MNRF to gather data regarding natural features, habitats, and wildlife present within and adjacent to the subject property. At this time, a response from KCCA has been received, which identified that the municipal drain is classified as Not Rated. No additional information was available from the KCCA. The MNRF provided a detailed list of potential habitat for several SAR within the study area. This information has been incorporated into the SAR and SWH screenings. A response has not yet been received from the Municipality of Central Elgin..

Based on the background review to date, the following is a list of data gaps and areas for further investigation. The methods for field surveys and proposed timing have been provided in the EIS Terms of Reference.

- Detailed vegetation inventory and sensitive species,
- Surveyed woodland driplines,
- Breeding birds present within the subject property,
- Cavity trees and habitat for bats
- SAR present within the subject property,
- Confirmed SWH,
    - Existing raptor nests
    - Bird migration stopover habitat
    - Other wildlife congregation or migratory stopover habitat, to be confirmed by the MNRF
    - Locations of seeps/springs, to be confirmed during the appropriate time of year (winter/spring), and
- Details regarding the proposed undertaking, including stormwater management controls and facility design, grading, tree and vegetation removal, etc.

Several of the above-listed information can be gathered through field surveys conducted by NRSI, as detailed in the EIS Terms of Reference. A Functional Servicing and Stormwater Management Report will be required to assess the impacts to the natural features within the subject property, particularly if outlets from storm sewers or stormwater management ponds will be directed towards the municipal drain. The remaining information will be gathered from Wastell Homes as the concept plan moves forward.

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MAPS

481200 481400 481600 481800

4724200 4724000 4723800 4723600

GEORGE ST
MITCHELL ST
DOVER PL
RIVER RD
VALLEY ST
LOWER SPRING ST
INVERERIE HTS LANE
TOWER HTS DR
BOLTVILLE PL
FRONT ST

Path: X:\1823_GeorgeStreetEIS\NRSI_1823_Map1_ SubjectProperty_Extents_2016_11_28_KED.mxd

Map 1

George Street, Port Stanley

Subject Property

Legend

- Subject Property
- Contour Line (5m Intervals)
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Water Body
- Wooded Area

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Project: 1823
Date: November 29, 2016

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

0 50 100 150 200 Metres

N

481200 481400 481600 481800 482000

4724200 4724000 4723800 4723600

CUP3-2
CUT1
CUT1-4
FOD5-2
CUT1-1
H
FOD7
FOD7-2
CUP3
CUT1-1
FOD7
CUM
GEORGE ST
DOVER PL
RIVER RD
VALLEY ST
LOWER SPRING ST
BOLTVILLE PL
FRONT ST
TOWER HTS DR
INVERERIE HTS LANE

Map 2

George Street, Port Stanley

Preliminary Ecological Land Classification

Legend

- Subject Property
- Secondary Road
- Water Body
- Ecological Land Classification

(CUM) Cultural Meadow

(CUP3) Coniferous Plantation

(CUP3-2) White Pine Coniferous Plantation Type

(CUT1) Mineral Cultural Thicket Ecosite

(CUT1-1) Sumac Cultural Thicket Type

(CUT1-4) Gray Dogwood Cultural Thicket Type

(FOD5-2) Dry - Fresh Sugar Maple - Beech Deciduous Forest Type

(FOD7) Fresh - Moist Lowland Deciduous Forest Ecosite

(FOD7-2) Fresh - Moist Ash Lowland Deciduous Forest Type

(H) Hedgerow

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Project: 1823
Date: December 23, 2016

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

N

0 50 100 150 200 Metres

Path: X:\1823_GeorgeStreetEIS\NRSI_1823_Map3_Prel_ELC_2016_12_23_KED.mxd

481200 481400 481600 481800

4724200 4724000 4723800 4723600

AHP-001 AHP-002 AHP-003 AHP-004

GEORGE ST

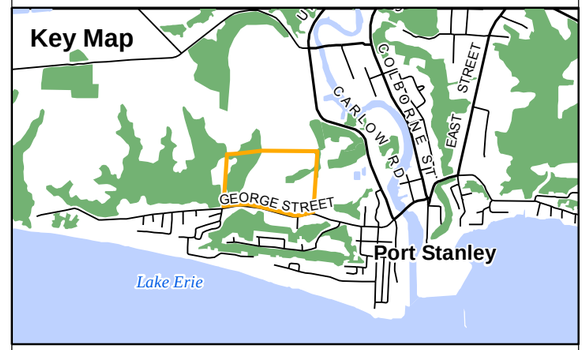
MITCHELL ST DOVER PL RIVER RD VALLEY ST LOWER SPRING ST INVERERIE HTS LANE TOWER HTS DR BOLTY VILLE PL FRONT ST

Path: X:\1823_GeorgeStreetEIS\NRSI_1823_Map4_Aquatic_2016_11_29_KED.mxd

Map 3

George Street, Port Stanley

Aquatic Stations and Features



Legend

- Subject Property
- Aquatic Habitat Points
- Fish Observed
- Potential Seepage
- Perched Culvert
- Woody Debris Jam
- Downed Tree Blocking Channel
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Water Body

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Project: 1823 Date: December 23, 2016	NAD83 - UTM Zone 17 Size: 11x17" **1:40,000**

0 25 50 100 150 Meters

N

APPENDIX I
Species at Risk Screening

Scientific Name	Common Name	S-RANK[1]	COSEWIC[2]	ESA/ COSSARO[3]	SARA	Background Source	Habitat Preference[4,5]	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Vascular Plants and Mosses										
Arisaema dracontium	Green Dragon	S3	SC	SC	Schedule 3	NHIC 2016	Wet bottomlands along rivers and creeks	Yes	Yes	The bottom of the municipal drain may provide habitat.
Castanea dentata	American Chestnut	S2	END	E	Schedule 1	MNRF Background Information Request (2016)	Moist to well drained forests on sand, occasionally heavy soils	No	No	Soil is not considered to be sandy in the project area.
Crataegus suborbiculata	Caughuawaga Hawthorn	S2				NHIC 2016	Old fields, poorly managed pastures, fencelines and roadsides	Yes	Yes	Project area borders a roadside. Further site assessment would be required to assess state of agricultural community
Cystopteris protrusa	Creeping Fragile Fern	S2				NHIC 2016	Talus and rocky slopes	No	No	Talus and rocky slopes are not present within the subject property
Enemion biternatum	False Rue-anemone	S2	THR	T	Schedule 1	NHIC 2016	Floodplain woods and rich wooded slopes	No	No	Project area does not contain suitable habitat
Gentianella quinquefolia	Stiff Gentian	S2				NHIC 2016	Moist soil, roadsides, streambanks and edges of woods; prairies	Yes	Yes	Project area is boarded by wooded areas and a roadside
Hydrophyllum appendiculatum	Appendaged Water-leaf	S2				MNRF Background Information Request (2016)	Deciduous woods	Yes	Yes	Deciduous woods are present on the subject property
Juglans cinerea	Butternut	S3?	END	E	Schedule 1	MNRF Background Information Request (2016)	Moist, well-drained deciduous forests; along streams; well-drained gravel sites; forest edges	Yes	Yes	Streams, forest edges, and well-drained deciduous forests are present within the subject property
Juncus acuminatus	Sharp-fruited Rush	S3				NHIC 2016	Sandy and gravelly shorelines, ditches and gravel pits	No	No	Project area does not contain suitable habitat
Monarda didyma	Scarlet Beebalm	S3				NHIC 2016	Moist woods, swampy thickets and roadsides	No	No	Project area does not contain suitable habitat (Extirpated; NHIC 2016)
Opuntia humifusa	Eastern Prickly Pear	S1	END	E	Schedule 1	NHIC 2016	Dry sandy soil in open savannahs, sand dunes and ridges	No	No	Project area does not contain suitable habitat (Extirpated; NHIC 2016)
Phegopteris hexagonoptera	Broad Beech Fern	S3	SC	SC	Schedule 3	NHIC 2016	Rich, moist soil in mature deciduous forests	Yes	Yes	Forest community needs to be further assed by site surveys
Polygonum erectum	Erect Knotweed	SH				NHIC 2016	Moist, silty, clay/loam soils in areas subject to persistent disturbance; edges of actively cultivated fields, dirt farm roads, trampled cattle pastures, farmyards; wet stream edges and floodplain washout areas	No	No	This species is Extirpated in Ontario (NHIC 2016)
Potentilla paradoxa	Bushy Cinquefoil	S4				NHIC 2016	Sandy shorelines	No	No	Project area does not contain suitable habitat
Solidago rigida ssp. Rigida	Eastern Stiff-leaved Goldenrod	S3				NHIC 2016	Dry, sandy soil, prairies and waste places	No	No	Project area does not contain suitable habitat
Vicia caroliniana	Wood Vetch	S2				NHIC 2016	Dry woods, thickets and prairies	Yes	Yes	Woodland to the west includes FOD5-2 (Dry-fresh deciduous forest community)
Viola striata	Striped Cream Violet	S3				NHIC 2016	Rich, floodplain forests and low,wet woods	No	No	Project area does not contain suitable habitat
Vulpia octoflora	Six-weeks Fescue	S2				NHIC 2016	Dry, sandy meadows; openings in dry sandy forests; open, stabilized dunes	No	No	Project area does not contain suitable habitat (Extirpated; NHIC 2016)
Weissia muhlenbergiana	Muhlenberg's Stubble Moss	S2				NHIC 2016	Wet meadows, open fields natural fields	No	no	Project area does not contain suitable habitat

Scientific Name	Common Name	S-RANK[1]	COSEWIC[2]	ESA/ COSSARO[3]	SARA	Background Source	Habitat Preference[4,5]	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Birds										
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	OBBA 2016	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water	No	No	Project area does not contain suitable habitat
Colinus virginianus	Northern Bobwhite	S1	END	E	Schedule 1	NHIC 2016	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	Yes	Yes	Woodland edges and cropland are present within the subject property Prarie habitat is not present
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC		OBBA 2016	Open, deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks	Yes	Yes	Field surveys required to confirm potential habitat, and possible presence of this species.
Dolichonyx oryzivorus	Bobolink	S4B	THR	T		OBBA 2016	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha	No	No	Crop type varies year over year; area requirementments are not met on the subject property
Empidonax virescens	Acadian Flycatcher	S2S3B	END	E	Schedule 1	OBBA 2016	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	No	No	Woodland within the subject property is disturbed, no wooded ravines or river swamps present
Haliaeetus leucocephalus	Bald Eagle	S2N, S4B	SC	NAR		MNRF Background Information Request (2016)	Requires large continuous area of deciduous or mixed woods around large lakes or 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 or partially dead trees within 400 m of nest for perching.	Yes	Yes	Project area includes large Significant woodland to the wes. Subject property is greater than 200m from the Lake Erie shoreline.
Hirundo rustica	Barn Swallow	S4B	THR	T		OBBA 2016	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water	No	No	Nesting habitat is not present within the subject property due to lack of buildings present.
Hylocichla mustelina	Wood Thrush	S4B	SC	T		OBBA 2016	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m	Yes	Yes	Suitable habitat may be present. Field surveys to confirm.
Icteria virens	Yellow-breasted Chat	S2B	END	E	Schedule 1	MNRF Background Information Request (2016)	Thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines etc.	Yes	Yes	Deciduous thicket areas are present near the drain feature.
Melanerpes erythrocephalus	Red-headed Woodpecker	S4B	SC	T	Schedule 1	OBBA 2016	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	Yes	Yes	Field surveys to confirm potential habitat, and possible presence of this species.
Parkesia motacilla	Louisiana Waterthrush	S3B	SC	SC	Schedule 1	OBBA 2016	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	No	No	Suitable habitat is not present within the subject property.

Scientific Name	Common Name	S-RANK[1]	COSEWIC[2]	ESA/ COSSARO[3]	SARA	Background Source	Habitat Preference[4,5]	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Riparia riparia	Bank Swallow	S4B	THR	T		OBBA 2016	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; nesting sites are limiting factor for species presence	No	No	Suitable habitat is not likely present. Field surveys to confirm potential habitat presence.
Sturnella magna	Eastern Meadowlark	S4B	THR	T	No Schedule	MNRF Background Information Request (2016)	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	Yes	Yes	Cultivated and weedy areas are present within the subject property.
Vireo griseus	White-eyed Vireo	S2B				MNRF Background Information Request (2016)	Prefers dense, swampy thickets and hillsides with blackberry and briar tangles; forest edges, and early successional fields. Territory is 1-2 ha			

Scientific Name	Common Name	S-RANK[1]	COSEWIC[2]	ESA/ COSSARO[3]	SARA	Background Source	Habitat Preference[4,5]	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Herpetofauna										
Apalone spinifera	Spiny Softshell	S3	THR	T	Schedule 1	NHIC 2016	Intolerant of pollution; large river systems, shallow lakes and ponds with muddy bottoms and aquatic vegetation; basks on sandbars, mud flats, grassy beaches, logs or rocks; eggs are laid near water on sandy beaches or gravel banks in areas with sun; requires acceptable feeding, nesting, habitat and natural, undisturbed corridors between these critical habitats	No	No	Project area does not contain suitable habitat; stream habitat too small to suport population
Chelydra serpentina serpentina	Snapping Turtle	S3	SC	SC	Schedule 1	Ontario Reptile and Amphibian Atlas 2015	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; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha	No	No	Suitable habitat is not present within the subject property.
Lampropeltis taylori triangulum	Eastern Milksnake	S4	NAR	SC		Ontario Reptile and Amphibian Atlas 2015	Farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods; hides under logs, stones, or boards or in outbuildings; often uses communal nest sites	No	No	Suitable habitat is not present within the subject property.
Sistrurus catenatus catenatus pop. 1	Eastern Massasauga Rattlesnake (*Great Lakes/St. Lawrence population*)	S3	THR	T	Schedule 1	Ontario Reptile and Amphibian Atlas 2015	Use upland, old field in summer; marsh, shrub swamp or bog; rivers and streams that provide sedge or low vegetative growth; in fall and winter; hibernate underground in mammal burrows, under rotting stumps, in rock crevices	No	No	Suitable habitat is not present within the subject property.
Thamnophis sauritus septentrionalis	Eastern Ribbonsnake	S3	SC	SC	Schedule 1	Ontario Reptile and Amphibian Atlas 2015	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; hibernates in groups	Yes	Yes	Suitable habitat may be present within the subject property; however the watercourse is deeply entrenched and has steep banks. Field surveys to confirm presence of suitable habitat.
Mammals										
Myotis leibii	Eastern Small-footed Bat	S2S3	END			Ontario Mammal Atlas 1994	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; hunts in forests	No	No	Suitable habitat is not present within the subject property.
Myotis lucifugus	Little Brown Myotis	S4	END	E	Schedule 1	Ontario Mammal Atlas 1994	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	Yes	Yes	Potential for snags and cavity trees within the wooded areas in the subject property. Field surveys to confirm potential habitat.
Taxidea taxus jacksoni	American Badger	S2	END	E	Schedule 1	MNRF Background Information Request (2016)	Open grasslands and oak savannahs; dens in new hole or enlarged existing hole; sometimes makes food caches. Tall grass prairie, sand barrens and farmland.	Yes	Yes	Woodland edges and farmland are present within the subject property. MNRF identified regulated habitat in the area.

Scientific Name	Common Name	S-RANK[1]	COSEWIC[2]	ESA/ COSSARO[3]	SARA	Background Source	Habitat Preference[4,5]	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Fish										
Macrhybopsis storeriana	Silver Chub			SC	Schedule 1	NHIC 2016	Large lakes and connecting rivers, up to 20m in depth	No	No	Watercourse within subject property is too shallow. Suitable habitat is not present within the subject property.
Insects										
Danaus plexippus	Monarch	S2N,S4B				TEA 2016	Open areas, meadows, agricultural fields with milkweed (Asclepias spp.) (Layberry et al. 1997).	Yes	Yes	Common Milkweed was observed during the preliminary site investigation. Suitable habitat is present within the subject property.
Enallagma basidens	Double-striped Bluet	S3				OMNR 2005	Ponds and lakes with sparse emergent vegetation (Paulson 2012).	No	No	Suitable habitat is not present within the subject property.
Epiaeschna heros	Swamp Darner	S2S3				NHIC 2016	Preferred habitats are shallow, shaded woodland ponds, including those that are sometimes temporary; also some swamps and slow streams.	Yes	Yes	Suitable habitat is present within the subject property. The watercourse is a slow moving municipal drain.
Euphyes conspicua	Black Dash	S3				TEA 2016	Found in or near sedge patches, nectaring on flowers including milkweeds (Asclepias spp.) and thistles (Cirsium spp. And Carduus spp.) Host Plant - Carex stricta (Hall et al. 2014)	Yes	Yes	Preliminary site investigation confirmed the presence of common milkweed and Cirsium spp. Suitable habitat is present within the subject property.
Pholisora catullus	Common Sootywing	S3				TEA 2016	Open habitat, mostly disturbed areas. Host Plant - Amaranthaceae and Chenopodiaceae (esp Lamb's quarters) (Hall et al. 2014)	Yes	Yes	Suitable habitat is present within the subject property, as well as members of the Amaranthaceae and Chenopodiaceae families.
Sympetrum corruptum	Variegated Meadowhawk	S3				OMNR 2005	Low and still water, often in open or barren areas (Paulson 2012).	Yes	Yes	Suitable habitat may be present within and adjacent to the municipal drain. Additional field surveys will confirm presence of habitat.

[1] S-Ranks (OMNR 2013)
S1-critically imperiled
S2-imperiled
S3-vulnerable
S4- apparently secure
S5- secure

[2] COSEWIC – Committee on the Status of Endangered Wildlife in Canada (2016)

[3] COSSARO- Committee on Species at Risk in Ontario (2015), ESA – Endangered Species Act (2007)

[4] COSEWIC – Committee on the Status of Endangered Wildlife in Canada (2013)

[5] OMNR 2000

Ranks
END/E- Endangered
SC- Special Concern
THR/T – Threatened
NAR- Not at Risk

APPENDIX II

Significant Wildlife Habitat Screening

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"[ccxi] • Any mixed species aggregations of 100[i] 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.	Correspondence with the landowner and a review of historic air photos indicates that suitable habitat is not present within the subject property. 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: 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[i] or more of listed species for 7 days[i], 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"[ccxi] • 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 subject property. Lake Erie shoreline is located approximately 500m to the south. 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"[ccxi] • SWHMIST[cxlix] Index #8 provides development effects and mitigation measures.	Due to the developed nature of the site and proximity to populated areas it is unlikely that the site would be utilized by migratory shorebirds. 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: 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"[ccxi] • SWHMIST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	Suitable habitat is present within the subject area. Background information included 2 of the listed species: Red-tailed Hawk and Northern Harrier. Field surveys are required to confirm the presence of this SWH. Candidate 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.	No caves, mineshafts, or other sutable habitat is present within the subject property. 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 habitat may be present within the woodland on the west side of the subject property, and hedgerows. A cavity tree assessment is required to confirm this SWH. Candidate 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.	This habitat is believed not to be present on the subject property. 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[i]. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant[i]. • 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.	No suitable habitat is present on the subject property. 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)[i]. • 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[i]. • SWHMIST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula.	Based on a preliminaary site investigation, suitable habitat is not present within the subject property. 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.	Suitable habitat is not present within the subject property. 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 in the subject property. 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[i]. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant[i]. • Presence of 5 or more pairs for Brewer's Blackbird[i]. • 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 in the subject property. 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[í]. • SWHMIST[cxlix] Index #16 provides development effects and mitigation measures.	Although forested habitat is present, undisturbed field areas are not present. Field surveys will confirm the presence of host plants and butterfly species. 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: 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[i] 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[i]. 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 within 5km of Lake Erie. Field surveys to confirm this SWH are required for both spring and fall migration seasons. Candidate SWH
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.	MNRF has been contacted for background information including deer winter congregation areas. The Significant Woodland on the west side of the subject property does not meet the minimum size requirement. 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.	Suitable habitat is not present within the subject property. 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.	Suitable habitat is not present within the subject property. 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.	Suitable habitat is not present within the subject property. 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.	Suitable habitat is not present within the subject property. 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[l] 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[bxxv] Appendix N should be present[l]. 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[l]. 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[bxxv] Appendix N should be present[l]. 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.	Suitable habitat is not present within the subject property. 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.	Suitable habitat is not present within the subject property. 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[l], or, • Presence of 10 or more nesting pairs for listed species including Mallards[l]. • 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 subject property. 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.	A preliminary site visit identified FOD communities within the western woodland. The watercourse within the subject property does not provide suitable habitat, however the Lake Erie shoreline is within 500m of the subject property. Site investigations will confirm the presense of suitable habitat. Candidate 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[lxxxviii, lxxxix, 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.	The western Significant Woodland meets the minimum size requirement. Field surveys to confirm presenceof suitable nesting habitat. Candidate 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[l] 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.	Several potential seeps were located during the preliminary site visit on the eastern slope of the western Significant Woodland. Additional field surveys to confirm the number and quality of seeps. Candidate 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 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: 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[l]. • 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 subject property. Not SWH
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[l]. • Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH[l]. • 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.	Suitable habitat is not present within the subject property. 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[i]. • Note: any wetland with breeding of 1 or more Trumpeter Swans, Black Terns, Green Heron or Yellow Rail is SWH[i]. • 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 subject property. 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)[i]. 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[i]. • 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 subject property. 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 subject property. 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.	Field surveys will confirm presence of suitable habitat for special concern and rare wildlife species. Candidate 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.	Watercourse within the subject property provides limited habitat for amphibian movement due to steep slopes, high entrenchment, and active bank erosion. Not SWH

Significant Wildlife Habitat Assessment Tables

Table 6. Exceptions for Ecodistricts within Ecoregion 7E.

	Wildlife Habitat and Species	Candidate SWH			Confirmed SWH	Study Area
		Ecosites	Habitat Description	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
EcoDistrict						
7E-2	Bat Migratory Stopover Area Rationale: Stopover areas for long distance migrant bats are important during fall migration. Hoary Bat Eastern Red Bat Silver-haired Bat	No specific ELC types		• Long distance migratory bats typically migrate during late summer and early fall migrating summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas. • This is the only known bat migratory stopover habitats based on current information. <u>Information Sources</u> • OMNRF 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. • SWHMIST[cxlix] Index #38 provides development effects and mitigation measures	MNRF will be contacted for background information including possible bat migratory stopover habitat. Candidate SWH.

APPENDIX III

Environmental Impact Study Terms of Reference

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

December 23, 2016 Project No. 1823

Julian Novick
Development Manager
Wastell Homes
5-1895 Blue Heron Drive
London, Ontario
N6H 5L9

Dear Mr. Novick

Re: George Street, Port Stanley – Environmental Impact Study
Terms of Reference

Natural Resource Solutions Inc. (NRSI) was retained by Wastell Homes to complete an Issues Scoping Report (ISR) and Species at Risk (SAR) screening for a portion of Lot 15 Range1 North of Lake Road Southwold, George Street in Port Stanley, Ontario. As a result of the ISR and SAR screening, it was determined that an Environmental Impact Study (EIS) is required for the proposed development of these lands. An EIS was triggered by the presence of a Significant Woodland, potential fish habitat, and the adjacent lands of these features. As a result, a Terms of Reference (TOR) for a scoped EIS was prepared as part of the ISR process. This TOR is submitted as an appendix to the ISR.

Based on the presence of a Significant Woodland, potential fish habitat, habitat for SAR, and adjacent lands, the following TOR is presented for a scoped EIS.

Project Background

The subject property is located on George Street, south of the Kettle Creek Golf and Country Club, west of Highway 20 and east of Spring Street. The study area contains a Significant Woodland, an unrated municipal drain that provides indirect fish habitat, and Natural Hazard Lands consisting of steep slopes and flood fringe. These features are mapped on Schedule G of the Municipality of Central Elgin's Official Plan (2013).

According to the requirements for development or site alteration activities outlined in the Central Elgin Official Plan (2013), an Issues Scoping Report is required to assess the significance and function of existing natural heritage features within the subject property, as well as identifying potential cumulative impacts. Based on the results of the ISR, it is felt that a scoped EIS is required. The following outlines tasks that are proposed for the completion of a scoped EIS.

Scoped Environmental Impact Study

Background Review

Background information on the biological features and species present within and in the lands adjacent to the study area has been collected as part of the ISR and SAR screening. Detailed species lists with background records as well as observations made

by NRSI will be appended to the EIS report. Data from the various wildlife atlases, as well as the Natural Heritage Information Centre (NHIC) database, and other sources, will be summarized and presented alongside NRSI's observations made during field surveys, described below. Background information requests were sent to the Municipality of Central Elgin, the Kettle Creek Conservation Authority (KCCA), and the Ministry of Natural Resources and Forestry (MNRF) as part of the ISR. Information was received from the MNRF and KCCA and was incorporated into the SAR and Significant Wildlife Habitat (SWH) screenings, appended to the ISR. Any additional information received from the Municipality of Central Elgin will be included in the EIS. A detailed description of applicable policies, regulations, and legislation was provided in the ISR; however a summary will be provided in the EIS.

Proposed Undertaking

The details of the proposed undertaking will be provided and discussed in the context of natural heritage features and wildlife habitat. NRSI will provide guidance and advice to Wastell Homes for the ultimate development layout.

Field Investigations and Methods

Based on the background information collected to date, the SAR and SWH screenings, and the results of the ISR the following field studies are proposed to augment the background information and facilitate the completion of the scoped EIS.

Terrestrial Field Surveys

Vegetation Inventory

In order to take advantage of the season, a fall vegetation inventory has been conducted, as well as mapping of vegetation communities using the Ecological Land Classification (ELC) system (Lee 2008). Spring and summer vegetation inventories are recommended in order to identify the presence of significant or sensitive plant species, and species that may provide critical habitat for wildlife (e.g. butterflies). The spring field surveys will be conducted between mid-May and mid-June, while the summer inventory will be conducted between mid-June and mid-July.

Woodland Dripline Survey

During a follow-up site investigation to assess the connectivity of woodlands to offsite features, the woodland dripline was surveyed by a NRSI Certified Arborist. This information will be used to accurately determine the boundary of the Significant Woodland and other treed areas on site. The Certified Arborist surveyed the dripline boundary in the field using a backpack GPS unit on November 24, 2016. Should the Municipality of Central Elgin wish to review the dripline with NRSI staff, a site visit can be arranged.

Breeding Bird Survey

Breeding bird surveys are recommended to identify the presence of SAR birds that may be utilizing the subject site. Surveys will be conducted in accordance with the Ontario Breeding Bird Atlas methodology (OBBA 2001), which includes 2 surveys. The first survey will be conducted between May 24 and June 15, and the second survey will be conducted between June 16 and July 10, depending on suitable weather conditions. Surveys will identify bird species within the study area, as well as evidence of breeding. Area searches of the woodlands and the open field area will be conducted during both surveys to capture all suitable habitats and the highest diversity of species.

Butterfly and Odonate Survey

Butterfly and odonate surveys are recommended to address the potential presence of SAR within the subject property. Surveys will be carried out in early to mid-May and late June. Each survey will be carried out from mid-morning to late afternoon on sunny and warm days (generally >15˚C) with low wind. Area searches within suitable habitat will be carried out with the use of binoculars, an insect net, and a hand lens. All representative habitats (ELC ecosites) will be surveyed methodically. Suitable habitat is present within the adjacent lands to the woodlands and municipal drain.

American Badger Surveys

Surveys for evidence of American Badger (*Taxidea taxus jacksoni*) will be completed by a biologist with relevant knowledge. Surveys will take place in the spring when signs of American Badger may be more visible due to lack of vegetation, and the summer, when the species is most active. Surveys will consist of transects no further than 20 metres apart across the entire subject property, but no further than 10 metres apart in the forested communities. Detailed photographs and GPS coordinates will be recorded for any burrows greater than 15 centimeters. If burrows or dens are found that may be used, or may have been used, by American Badger, additional surveys and protection will be discussed with the MNRF.

Significant Wildlife Habitat

A preliminary assessment of SWH has been conducted based on the ELC mapping and observations made during a preliminary site investigation, detailed in the ISR. The following candidate SWH was identified through the ISR:

- Raptor Wintering Areas
- Bat maternity Colonies
- Landbird Migration Stopover Areas
- Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat
- Woodland Raptor Nesting Habitat
- Seeps and Springs
- Special Concern and Rare Wildlife Species, and

Given that development and site alteration will not occur within the Significant Woodland and the current concept plan has development occurring outside of the Significant Woodland and municipal drain setbacks, and well away from the potential seepage areas, surveys for several of these SWH types are not required. Field surveys for bat maternity colonies may be required if tree removal is proposed, and surveys for special concerns and rare wildlife species will be conducted. These surveys will be included in the field investigations detailed in this TOR.

Incidental Observations

Incidental observations of all wildlife species will be recorded while on the subject property. This will include direct observations, as well as observations of signs such as tracks, scat, vocalizations, etc.

Aquatic Field Surveys

Aquatic Habitat Assessment
An aquatic habitat assessment was conducted during the preliminary site investigation. Details from this assessment will be provided in the scoped EIS.

Impact Assessment
As part of the EIS, an analysis of potential impacts will be conducted based on the details of the proposed undertaking available at the time. The details of the proposed undertaking will be reviewed and compared to the existing conditions as detailed in the EIS report. NRSI will work with the client throughout the process to inform the layout of buildings and proposed grading in order to avoid direct impacts to the natural features. Any areas of conflict between natural features and the proposed undertaking that cannot be avoided will be discussed with the study team and options for avoiding or minimizing impacts will be recommended. Impacts will be determined based on the direct, indirect, induced, and cumulative effects of the undertaking, and methods for assessing each will be provided in the EIS.

In describing the significance and sensitivity of features and functions, and assessing the impacts of the proposed undertaking, the EIS will demonstrate that the proposed plan conforms to the various applicable legislation and policies. These features will be identified as constraints to the development and will be mapped. The constraints and opportunities map will include vegetation communities, as mapped using the ELC system (Lee 2008), watercourses, significant species habitats and floodline mapping. Mapping will also indicate the recommended buffers for each identified constraint.

EIS Report
A scoped EIS report will be prepared in accordance with the Municipality of Central Elgin Official Plan (2012) and the Elgin County Official Plan (2015). The EIS will include the following:

- description of the proposed undertaking,
- characterization of the existing natural environment including comprehensive species lists that identify observations made during original field surveys,
- description of the local soils and topography,
- analysis of direct and indirect impacts,
- identification of potential linkage opportunities not currently identified in the Official Plans
- a Management Plan including recommendations for pre-, during, and post-construction, enhancement opportunities, mitigation measures, and enhancement opportunities and buffers

We have endeavored to provide a comprehensive description of the proposed scoped EIS to serve as a useful Terms of Reference. Should you have any questions or comments regarding the above information, please do not hesitate to contact the undersigned.

Sincerely,
Natural Resource Solutions Inc.

Nyssa Hardie
Stream Corridor & Environmental Analyst

APPENDIX II

Correspondence with Kettle Creek Conservation Authority (KCCA) and the Ministry of Natural Resources and Forestry (MNRF)

Subject: RE: Background Information Request - Port Stanley (proj1823)
From: Jennifer Dow <jennifer@kettlecreekconservation.on.ca>
Date: 10/21/2016 12:16 PM
To: "nhardie@nrsi.on.ca" <nhardie@nrsi.on.ca>

Hello Nyssa,

I have reviewed your study area and unfortunately, I don't have a lot of information for you.

We do not have any surface water monitoring sites nearby, nor do we collect benthic data from the nearby Lake Road Diversion drain. According to the new DFO mapping, the Lake Road Diversion drain is classified as Not Rated. Historically, it was classified as a Class A drain, indicating it has permanent cool or cold water flow but does not contain sensitive fish species and/or sensitive fish communities. Unfortunately I do not have any recent fish collection data for the study area.

Depending on what the proponent is considering for the nearby watercourse, you will have to consult with DFO with their self-assessment process or request a review of the project. Information for this process can be found here: http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html

As far as any significant flora and fauna records for the study area, I would also use the NHIC database.

Let me know if you have any questions.

Thank you,
Jennifer Dow

Water Conservation Supervisor
Kettle Creek Conservation Authority
Tel: (519) 631-1270 ext.228
Fax: (519) 631-5026
www.kettlecreekconservation.on.ca

cid:image001.jpg@01CF0DFB.E01B9490

From: Nyssa Hardie [mailto:nhardie@nrsi.on.ca]
Sent: Tuesday, October 11, 2016 10:54 AM
To: Jennifer Cole <jcole@kettlecreekconservation.on.ca>
Subject: Background Information Request - Port Stanley (proj1823)

Good morning Ms. Cole
Natural Resource Solutions Inc. has been retained by Wastell Homes to prepare an Issues Scoping Report and a scoped Environmental Impact Study for a property on George Street in Port Stanley. As part of our background information review I have prepared a background request letter to request any relevant information that may be available from the Kettle Creek Conservation Authority. Please see attached for the letter and a map illustrating the project area boundary.

Please forward this letter along should you not be the appropriate person to speak with in regards to this property.

Please contact me with any questions you may have.
Regards,
Nyssa
--

Nyssa Hardie M.Sc.
Stream Corridor and Environmental Analyst
Natural Resource Solutions Inc.
1-225 Labrador Drive
Waterloo, ON N2K 4M8
(p) 519-725-2227 (f) 519-725-2575
(w)www.nrsi.on.ca (e) nhardie@nrsi.on.ca
Please note the change of email address

Subject: FW: Background Information Request - Port Stanley (proj1823)
From: "ESA Screening Request Aylmer District (MNRF)" <ESAScreeningRequest.AylmerDistrict@ontario.ca>
Date: 11/30/2016 3:01 PM
To: "nhardie@nrsi.on.ca" <nhardie@nrsi.on.ca>

Hi Nyssa,

MNRF provides the following information in response to your request on behalf of Wastell Homes regarding a proposed development at George St, Port Stanley (shown in the attached), Part Lots 15 Range 1 North and South of Lake Road, Southwold, to assist the proponent in complying with the ESA 2007 and planning in consistency with the PPS 2014.

Species at Risk (SAR)
The Species at Risk in Ontario (SARO) List Ontario Regulation 230/08 issued under the *Endangered Species Act*, *2007* (ESA). The ESA 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.ontario.ca/laws/regulation/080230).

An initial SAR screening (Endangered and Threatened species) has been completed for the identified project area. MNRF recommends that the following species are considered to determine whether SAR or SAR habitat occurs/may occur on or adjacent to the site and has the potential to be impacted by the project. **If the proposed activity may contravene the ESA, the proponent should submit an Information Gathering Form to Aylmer MNRF for compliance advice and approvals** at ESAScreeningRequest.AylmerDistrict@ontario.ca prior to proceeding (IGF; http://www.forms.ssb.gov.on.ca/mbs/ssb/forms/ssbforms.nsf/FormDetail?OpenForm&ACT=RDR&TAB=PROFILE&ENV=WWE&NO=018-0180E)

There are known occurrences of SAR in the area with the potential to occur on or adjacent to the site, including:
- American Badger – endangered with regulated habitat protection
- False Rue-anemone – threatened with general habitat protection (this is likely the restricted species you encountered in records collection)
- Butternut – endangered with general habitat protection
- American Chestnut – endangered with general habitat protection
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- Barn Swallow – threatened with general habitat protection
- Bank Swallow – threatened with general habitat protection
- Chimney Swift – threatened with general habitat protection
- Bobolink – threatened with general habitat protection
- Eastern Meadowlark – threatened with general habitat protection
- Yellow-breasted Chat – endangered with general habitat protection
- SAR bats – species and 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 may be necessary if there is a high likelihood for SAR species and/or habitat to occur within the project footprint.

It is important to note the following:
- 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.
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If an activity or project will result in adverse effects to endangered or threatened species and/or their habitat, additional action would need to be taken in order to remain in compliance with the ESA. Additional action could be applying for an authorization under section 17(2)(c) of the ESA, or completing an online registry for an ESA regulation, if the project is eligible (http://www.ontario.ca/environment-and-energy/natural-resources-approvals).

Please be advised that applying for an authorization does not guarantee approval and the process can take several months.

Significant Wildlife Habitat (SWH)

Significant wildlife habitat (SWH) is likely to be present on or adjacent to (within 120 m) the above-noted subject lands (e.g., consider Raptor Wintering, Bat Maternity Colonies, Snake Hibernaculum, Migratory Butterfly Stopover, Landbird Migratory Stopover, Bald Eagle and Osprey Habitat, Shrub/Early Successional Habitat, Special Concern and Rare Wildlife, others as applicable).

Please consult the Significant Wildlife Habitat Technical Guide (SWHTG, OMNR 2000), the Natural Heritage Reference Manual (NHRM) and the Ecoregion Criteria Schedules for criteria on identifying and determining significance of wildlife habitat. SWH is identified by planning authorities using the criteria and processes recommended in the SWHTG and Ecoregion Criteria Schedules.

Link to the SWHTG: https://www.ontario.ca/environment-and-energy/guide-significant-wildlife-habitat
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The habitat of provincially rare (S1-S3, SH) and Special Concern species is considered SWH under the category of 'Special Concern and Rare Wildlife Species' in the SWHTG Ecoregion Criteria Schedules and consideration should be given to these species and whether their habitat occurs on or adjacent to the subject lands to address negative impacts.

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- Wood Thrush – SC
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- Louisiana Waterthrush – SC
- Red-headed Woodpecker – SC
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- White-eyed Vireo – S2B
- Monarch – SC
- Swamp Darner – S2S3
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- Broad Beech Fern – SC
- Appendaged waterleaf – S2
- Lowland Brittle Fern – S2
- Sharp-fruited Rush – S3

- Stiff Gentian – S2
- Eastern Stiff-leaved Goldenrod – S3
- Six-weeks Fescue – S2
- Carolina Vetch – S2
- Mühlenberg's Weissia – S2
- Erect Knotweed – SH

Areas of Natural and Scientific Interest (ANSIs)
There are no ANSIs within or adjacent to the study area identified.

Significant Woodlands
There appears to be woodland located within and adjacent to the study area that will likely meet criteria for significant woodland. We recommend you refer to applicable Official Plans for criteria to determine the significance of any woodland near the project location. The NHRM also contains information and criteria for determining significant woodlands.

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Significant Valleylands
MNRF does not possess significant valleylands mapping. We suggest you contact the applicable conservation authorities to find out if they have information pertaining to significant valleylands. The NHRM also provides guidance on evaluation criteria for determining significant valleylands.

Fish and Fish Habitat
MNRF does not have information for watercourses within and/or adjacent to the project area, however, Aquatic Resource Area data for the nearest downstream reach of Kettle Creek is as follows:

- Thermal regime: warm based on species present
- Fish species summary: black bullhead,black crappie,blackside darter,bluegill,bluntnose minnow,brown bullhead,channel catfish,common carp,common shiner,creek chub,eastern blacknose dace,emerald shiner,fathead minnow,freshwater drum,gizzard shad,golden shiner,johnny darter/tesselated darter,largemouth bass,longnose gar,mimic shiner,northern hog sucker,northern pike,pumpkinseed,quillback,rock bass,rosyface shiner,smallmouth bass,spotfin shiner,stonecat,white sucker,yellow perch

We recommend you contact the appropriate conservation authority and DFO for up-to-date fisheries, mussel, and drain information if needed.

Conservation Authorities and Official Plans may provide additional natural heritage information for this study.

Please be advised that it is your responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

Please note for future reference that to assist us in providing a more timely response we ask that clients provide the background information they have already available for us to add to or comment on.

If you have any questions or require additional information, please feel free to contact me.

Sincerely,

Kristen Diemer | Management Biologist
Ministry of Natural Resources & Forestry
P-519.773.4751 F-519.773.9014
615 John St N Aylmer ON N5H 2S8
kristen.diemer@ontario.ca

From: Nyssa Hardie [mailto:nhardie@nrsi.on.ca]
Sent: October-11-16 11:22 AM
To: Fleischhauer, Andrea (MNRF)
Subject: Background Information Request - Port Stanley (proj1823)

Good morning Ms. Fleischhauer
Natural Resource Solutions Inc. has been retained by Wastell Homes to prepare an Issues Scoping Report and a scoped Environmental Impact Study for a property on George Street in Port Stanley. As part of our background information review I have prepared a background request letter to request any relevant information that may be available from the MNRF Aylmer District. Please see attached for the letter and a map illustrating the project area boundary.

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Please contact me with any questions you may have.
Regards,
Nyssa
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file:///S:/Pr

Nyssa Hardie M.Sc.
Stream Corridor and Environmental Analyst
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1-225 Labrador Drive
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(p) 519-725-2227 (f) 519-725-2575
(w)www.nrsi.on.ca (e) nhardie@nrsi.on.ca
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Attachments:

NRSI 1823_George Street, Port Stanley_Background Request Letter_MNRF Aylmer_2016_10_11.pdf	103 kB
NRSI_1823_SubjectProperty_Extents_2016_08_31_JAS.pdf	497 kB

Subject: RE: FW: Background Information Request - Port Stanley (proj1823)
From: "Diemer, Kristen (MNRF)" <Kristen.Diemer@ontario.ca>
Date: 6/15/2017 4:51 PM
To: Nyssa Hardie <nhardie@nrsi.on.ca>
CC: Jeremy Bannon <jbannon@nrsi.on.ca>

Hi Nyssa,

Thank you for the additional information and sorry for the delay.

Good idea to put up cameras -- please let us know if you find anything of interest. If the potential habitat will be avoided/protected as per the species habitat regulation then it does not have to be definitively confirmed as a den, though it would be a good idea to do additional surveys closer to development commencing in areas that may be impacted since there is a chance for new acitivity.

With respect to butternut, you can determine eligibility of the proposed activities under section 23.7 of O Reg 242/08 and contact us if you require further advice. It is probably a good idea to conduct BHA this growing season on any trees that have the potential to be impacted if you are not yet sure, and submit to our office. I've added some further advice below.

Best regards,

Kristen

Current Interim guidance on the general habitat for Butternut under the ESA is as follows:

The general habitat of Butternut includes suitable areas within a 50 metre radius centred on the trunk or stem of each Butternut tree in Ontario. This area is intended to protect the critical root zone of individual trees, immediate habitat conditions surrounding the tree that support the growth and persistence of the tree over its lifetime (25m) and the surrounding habitat conditions and the core seedling establishment areas up to 50m from a parent tree. Guidance on suitable and unsuitable areas is provided below.

Category 1 (red) habitat: A Butternut individual and suitable areas within a 25m radius around the individual will be considered to have the lowest tolerance to alteration.

Category 2 (orange) habitat: Suitable areas between 25m – 50m from a tree will be considered to have a moderate tolerance to alteration.

Note that all references to "category" pertain to *habitat* categories as described in the policy document titled, *Categorizing and Protecting Habitat under the Endangered Species Act* (commonly referred to as the D&D policy). This does not make reference to the tree categories that are determined by a Butternut Health Assessor as that process of categorization ranks the degree to which the tree is affected by Butternut canker, and is a secondary process to the delineation of Butternut habitat.

Considerations

As an immobile species, Butternut individuals depend upon the areas where they are found continuously for the duration of their entire life span to carry out all their life processes.

Suitable areas within a 25m radius of a Butternut individual protects the critical root zone of the individual, as well as areas immediately adjacent to and surrounding the individual that the species depends up to carry out its life processes.

Suitable areas within 25m - 50m from a tree protects a core area that Butternut individuals depend upon for nut dispersal and seedling establishment, two critical components of successful reproduction. Protecting the area up to 50 m also helps to counter the effects of reproductive isolation that are known to increase extirpation risk (Lindenmayer and Fischer 2006, Burkey 1989, Goodman 1987).

One scientifically rigorous study using radiotelemetry on the seeds of a tree species with similar biology, habitat and dispersal mechanisms to Butternut, suggests that an area up to 50m should capture approximately 97% of seed pathways from the parent tree to the seedling establishment location (assuming squirrel dispersal is predominant, and results in a normal distribution of seeds) (Tamura et al., 1999).

Unlike many other species at risk, Butternut is a generalist species and its habitat is not rare (limited) within Ontario. Disease is the primary limiting factor for Butternut, although it is recognized that the habitat conditions (e.g., light levels) surrounding the tree influence the ability of individual trees to tolerate disease (Poisson, G., and M. Ursic. 2013). This reinforces the importance of maintaining suitable conditions (e.g., light levels, soil moisture, etc.) and functions within Butternut habitat to help increase disease tolerance in individual trees and to thereby reduce the impacts that disease has on this species as a whole in Ontario.

Unsuitable areas

From the Butternut Recovery Strategy "*Butternut can tolerate a large range of soil types. It typically grows best on rich, moist, well-drained loams often found along stream banks but can also be found on well-drained gravelly sites, especially of limestone origin. Butternut is intolerant of shade and competition, requiring sunlight from above to survive (Rink 1990)…*"

Areas that are considered to be unsuitable for inclusion within the general habitat of Butternut as described above (i.e., tree plus 50m radius), include *areas with impervious surfaces such* as paved roads and sidewalks, and areas occupied by parts of permanent water bodies such as lakes and medium to large rivers. In addition, within the seedling establishment area between 25m to 50m from the trunk of a Butternut tree, unsuitable areas include forest areas with no canopy openings.

Special consideration for riparian areas

While Butternut can survive in a variety of habitat types, there is evidence to suggest that populations occurring within riparian areas (i.e., areas within the floodplain) are more stable and disease tolerant. Riparian areas have more frequent (1-2 years) natural disturbance regimes (i.e., flooding) than areas outside the floodplain boundaries (Hoban, 2010). This results in higher light levels and reduced competition in these areas, which supports higher vigour and higher tolerance to Butternut canker by Butternut individuals (Schlarbaum et al. 2004, Brosi 2010). Further, riparian areas appear to support higher and more regular seedling establishment than upland areas, which may contribute to more stable Butternut populations, with local, frequent recruitment

(Hoban, 2010).

In the interim the approach described above (based on the 25 and 50m radius areas), should be used for Butternut found in both upland and riparian settings. Notwithstanding this, given the importance of riparian areas to the maintenance of healthy and self-sustaining Butternut populations, careful consideration should be given to the potential effects of activities that occur *within or near* Butternut habitat located within riparian areas. Particular attention should be given to how activities may affect the natural hydrology, disturbance regimes, condition and functions within the habitat area.

Generally incompatible activities

Examples of incompatible activities include (but are not limited to) those that occur *within or near* Butternut habitat that:

- result in soil compaction within the habitat,
- are likely to negatively affect the moisture regime within the habitat (e.g., drawing down the water table within or near the habitat, altering natural flooding/disturbance regimes in riparian areas), etc.

From: Nyssa Hardie [mailto:nhardie@nrsi.on.ca]
Sent: May-18-17 3:35 PM
To: Diemer, Kristen (MNRF)
Cc: Jeremy Bannon
Subject: Re: FW: Background Information Request - Port Stanley (proj1823)

Hi Kristen,

NRSI conducted a survey for American Badger dens this week at the George Street site in Port Stanley. The survey consisted of area searches along the edges of the farm field and within the woodlands on site. We found 1 potential den that appears not to be active at the moment. I have attached several photos that we took of the site. Any advice on whether this is in fact a Badger den, or additional surveys that may be needed would be helpful. We have set up 2 wildlife cameras aimed at the den to record and observe activity. During our survey we measured the dimensions of the opening, which were 40cm wide and 18-23cm high. The den was >1.5m deep, dug under a tree. No tracks or scat were observed surrounding the site and the debris pile in front of the den was becoming vegetated. We used a flashlight to observe the sides of the entrance but could not confidently identify the charcteristic claw marks.

Our intention is to use the wildlife cameras to monitor activity around the den to determine if it is being used by any mammals, or will become active over the next several months. Monitoring of the site can continue as needed or as recommended by the MNRF. Please advise.

In addition, NRSI located 8 Butternut trees within the woodland on the west side of the property. One of these trees, see attached Google Earth image with locations, is within approximately 42m from the edge of the farm field. Based on the currently proposed setbacks and buffers, we believe the individual will be protected from the development; however the final setbacks and buffers have not been determined. We are planning to conduct a BHA on this particular tree, and have recommended to the client that all 8 trees are assessed at the same time. The client is pursuing the development of a small lot at the top of the slope, that will require access, which could potentially impact the individuals at the top of the

slope. Please provide any guidance or recommendations for the Butternuts as well.

Thank you,
Nyssa

Nyssa Hardie M.Sc.
Stream Corridor and Environmental Analyst
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Waterloo, ON N2K 4M8
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On 12/2/2016 5:07 PM, Diemer, Kristen (MNRF) wrote:

> Hi Nyssa,
>
> Thanks for your follow up regarding American Badger. Here are some notes regarding how the ESA 2007 applies for American Badger:
>
> - Under section 10 of the ESA 2007, American Badger receives regulated habitat protection (prescribed under O. Reg. 242/08 s. 24) as follows:
> - § A 5 metre radius from the den entrance is protected from all disturbances
> - § Groundhog burrows within 850 m of an American Badger den are protected from all disturbances
> - § If all of your project components and construction disturbance areas are away from these features, the proponent is not likely to contravene section 10 of the Act
>
> - Under section 9 of the ESA 2007, American Badger receives species protection
> - § Aspects of the project's construction activities proposed to occur in the area should be considered/assessed with respect to potential harm and harassment of the species (e.g. noise, vibration, traffic) since any disturbance that may result in den abandonment would likely be a contravention of the Act
> - § Avoidance measures would need to be applied as appropriate to avoid contravening the ESA, e.g., setbacks, movement corridors, or for any sand/fill stockpiling that may occur near identified dens and burrows since those are features that could attract the species
>
> In terms of surveys I have provided some advice below:
> - Someone with relevant knowledge/experience should survey the site and adjacent lands for signs of the species, ideally in the spring when signs may be more visible with less vegetation, and in the summer when activity may be elevated; note though that due to the wide ranging and transient nature of the species, surveys may have to be repeated closer to project commencement to ensure absence depending on what is proposed and the potential for the species on site
> - Due to variability, all burrows 6" in diameter or greater should be identified and assessed. Provide measured dimensions of burrow entrance and associated mounds. Due to rotational use of burrows by groundhogs and badgers, detailed photographs (with scale reference) of the entrance, walls and mounds should be provided. Oftentimes evidence of lateral claw marks at entrances and tracks in mounds help determine badger activity. Note any hairs found around entrance or mounds. Photograph (with scale reference) any scat observed around

burrows.
- Recommend open field transects should be no further than 20 m apart to ensure any burrows are recorded, and more thorough coverage should occur in more vegetated areas, such as woodlands, woodland edges, hedgerows, roadsides and old fields that may occur in the study area.
- If a potential den is found, surveys for groundhog burrows within 850 m should also be conducted, and Aylmer MNRF should be contacted for further advice about any additional survey needs and ESA compliance

In general:
- Burrows that American Badgers actively or regularly occupy as a residence or use in rearing young are referred to as “dens.” Burrows that badgers create for foraging and capture of prey are not considered to be dens unless they are also used as a residence. Between periods of foraging activity, badgers use and reuse dens as temporary residences on a rotational basis.
- Burrows often have an elongated football shape/ diamond shaped corners and horizontal scrapes may be visible, can appear long and about one inch apart; also check for them further inside with a flashlight; you may note step-like markings in the corners where badgers brace with one side to push dirt out with the other
- Note that canids cannot make these scrapes because of the angle, as they are dug out with breast stroke; horizontal claw marks at entry more likely to be canids but burrows can be used by both at some point
- Check for a musk smell; dens are likely to have very strong smell but may dissipate quickly after use; badgers will often mark their territory by scratching and musk nearby trees/ woody debris
- Size and freshness of mound may not correlate to recent use if badgers took over an established groundhog burrow and thus may be less obvious

The following link provides great info on signs to look for and should be consulted, e.g. burrow and track identification, and other info:
http://www.ontariobadgers.org/burrows.html

The species has a recovery strategy:
http://files.ontario.ca/environment-and-energy/species-at-risk/286963.pdf

The following link, though it was written for *T. t. jeffersonii*, may have relevant or useful information also:
https://www.for.gov.bc.ca/hts/risc/pubs/tebiodiv/medcarn/badger.pdf

If there is any further assistance I can provide please just let me know.

Best,

Kristen Diemer
519.773.4751

From: ESA Screening Request Aylmer District (MNRF)
Sent: November-30-16 3:02 PM
To: 'nhardie@nrsi.on.ca'
Subject: FW: Background Information Request - Port Stanley (proj1823)

Hi Nyssa,

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- Lowland Brittle Fern – S2
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MNRF does not have information for watercourses within and/or adjacent to the project area, however, Aquatic Resource Area data for the nearest downstream reach of Kettle Creek is as follows:

- Thermal regime: warm based on species present
- Fish species summary: black bullhead,black crappie,blackside darter,bluegill,bluntnose minnow,brown bullhead,channel catfish,common carp,common shiner,creek chub,eastern blacknose dace,emerald shiner,fathead minnow,freshwater drum,gizzard shad,golden shiner,johnny darter/tesselated darter,largemouth bass,longnose gar,mimic shiner,northern hog sucker,northern pike,pumpkinseed,quillback,rock bass,rosyface shiner,smallmouth bass,spotfin shiner,stonecat,white sucker,yellow perch

We recommend you contact the appropriate conservation authority and DFO for up-to-date fisheries, mussel, and drain information if needed.

Conservation Authorities and Official Plans may provide additional natural heritage information for this study.

Please be advised that it is your responsibility to be aware of and comply with all relevant federal or provincial legislation, municipal by-laws or other agency approvals.

Please note for future reference that to assist us in providing a more timely response we ask that clients provide the background information they have already available for us to add to or comment on.

If you have any questions or require additional information, please feel free to contact me.

Sincerely,

Kristen Diemer | Management Biologist
Ministry of Natural Resources & Forestry
P-519.773.4751 F-519.773.9014
615 John St N Aylmer ON N5H 2S8
kristen.diemer@ontario.ca

From: Nyssa Hardie [mailto:nhardie@nrsi.on.ca]
Sent: October-11-16 11:22 AM
To: Fleischhauer, Andrea (MNRF)
Subject: Background Information Request - Port Stanley (proj1823)

Good morning Ms. Fleischhauer
Natural Resource Solutions Inc. has been retained by Wastell Homes to prepare an Issues Scoping Report and a scoped Environmental Impact Study for a property on George Street in Port Stanley. As part of our background information review I have prepared a background request letter to request any relevant information that may be available from the MNRF Aylmer District. Please see attached for the letter and a map illustrating the project area boundary.

Please forward this letter along should you not be the appropriate person to speak with in regards to this property.

Please contact me with any questions you may have.
Regards,
Nyssa
--

imap://nhar

Nyssa Hardie M.Sc.
Stream Corridor and Environmental Analyst
Natural Resource Solutions Inc.
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Waterloo, ON N2K 4M8
(p) 519-725-2227 (f) 519-725-2575
(w)www.nrsi.on.ca (e) nhardie@nrsi.on.ca
Please note the change of email address

Attachments:

NRSI_1823_GeorgeStreet_Potential Am.Badger Den Photos_2017_05_18_NGH (1)....pdf	1.2 MB
NRSI_1823_GeorgeStreet_Butternut and Badger_GoogleEarthMap_2017_05_18_NG....pdf	325 kB

APPENDIX III

Vascular Flora Observed from the Subject Property

Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Elgin County[5]	NHIC Data[1]		MNRF Background Request[6]	NRSI Observed
							17MH8123	17MH8124		
Pteridophytes	**Ferns & Allies**									
Dryopteridaceae	**Wood Fern Family**									
Athyrium filix-femina var. angustum	Northern Lady Fern	S5				C				X
Cystopteris protrusa	Creeping Fragile Fern	S2				R2			X	
Dryopteris carthusiana	Spinulose Wood Fern	S5				C				X
Matteuccia struthiopteris var. pensylvanica	Ostrich Fern	S5				C				X
Onoclea sensibilis	Sensitive Fern	S5				C				X
Polystichum acrostichoides	Christmas Fern	S5				C				X
Equisetaceae	**Horsetail Family**									
Equisetum arvense	Field Horsetail	S5				C				X
Equisetum hyemale ssp. affine	Scouring-rush	S5				C				X
Thelypteridaceae	**Beech Fern Family**									
Phegopteris hexagonoptera	Broadbeech Fern	S3	SC	SC	Schedule 3	U		X	X	
Gymnosperms	**Conifers**									
Pinaceae	**Pine Family**									
Picea abies	Norway Spruce	SE3								X
Dicotyledons	**Dicots**									
Aceraceae	**Maple Family**									
Acer negundo	Manitoba Maple	S5				C				X
Acer saccharum ssp. saccharum	Sugar Maple	S5				C				X
Amaranthaceae	**Amaranth Family**									
Amaranthus retroflexus	Green Amaranth	SE5				IC				X
Anacardiaceae	**Sumac or Cashew Family**									
Rhus hirta	Staghorn Sumac	S5				C				X
Toxicodendron rydbergii	Poison-ivy	S5				X				X
Apiaceae	**Carrot or Parsley Family**									
Daucus carota	Wild Carrot	SE5				IC				X
Pastinaca sativa	Wild Parsnip	SE5				I				X

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Elgin County[5]	NHIC Data[1]		MNRF Background Request[6]	NRSI Observed
							17MH8123	17MH8124		
Apocynaceae	**Dogbane Family**									
Apocynum androsaemifolium ssp. androsaemifoliu	Spreading Dogbane	S5				C				X
Asclepiadaceae	**Milkweed Family**									
Asclepias syriaca	Common Milkweed	S5				C				X
Asteraceae	**Composite or Aster Family**									
Achillea millefolium ssp. borealis	Yarrow	SU								X
Ambrosia artemisiifolia	Common Ragweed	S5				C				X
Arctium minus ssp. minus	Common Burdock	SE5				IC				X
Bidens aristosa	Western Tickseed-sunflower	SE1								X
Bidens vulgata	Tall Beggar-ticks	S5				X				X
Cichorium intybus	Chicory	SE5				IC				X
Cirsium arvense	Canada Thistle	SE5				IC				X
Cirsium vulgare	Bull Thistle	SE5				IC				X
Erigeron philadelphicus ssp. philadelphicus	Philadelphia Fleabane	S5				C				X
Eupatorium perfoliatum	Perfoliate Thoroughwort	S5				C				X
Eupatorium maculatum ssp. maculatum	Spotted Joe-pye-weed	S5				C				X
Prenanthes alba	White Rattlesnake-root	S5				X				X
Solidago altissima var. altissima	Tall Goldenrod	S5				X				X
Solidago canadensis	Canada Goldenrod	S5				X				X
Solidago rigida ssp. rigida	Stiff-leaved Goldenrod	S3				VU	X	X	X	
Symphyotrichum ericoides var. ericoides	White Heath Aster	S5				X				X
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	S5				X				X
Taraxacum officinale	Common Dandelion	SE5				IC				X
Tussilago farfara	Coltsfoot	SE5				IC				X
Xanthium strumarium	Tumor-curing Cocklebur	S5				C				X
Balsaminaceae	**Touch-me-not Family**									
Impatiens capensis	Spotted Touch-me-not	S5				C				X
Impatiens pallida	Pale Touch-me-not	S5				X				X
Berberidaceae	**Barberry Family**									
Podophyllum peltatum	May-apple	S5				C				X
Betulaceae	**Birch Family**									
Betula alleghaniensis	Yellow Birch	S5				C				X
Ostrya virginiana	Hop Hornbeam	S5				C				X
Boraginaceae	**Borage Family**									
Echium plantagineum	Purple Viper's Bugloss	SE1								X

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Elgin County[5]	NHIC Data[1]		MNRF Background Request[6]	NRSI Observed
							17MH8123	17MH8124		
Brassicaceae	**Mustard Family**									
Alliaria petiolata	Garlic Mustard	SE5				IC				X
Barbarea vulgaris	Yellow Rocket	SE5				IC				X
Brassica napus	Rape	SE1								X
Hesperis matronalis	Dame's Rocket	SE5				IC				X
Thlaspi arvense	Field Penny-cress	SE5				IC				X
Cactaceae	**Cactus Family**									
Opuntia humifusa	Eastern Prickly Pear Cactus	S1	END	E	Schedule 1	?		X	X	
Campanulaceae	**Bellflower Family**									
Lobelia siphilitica	Great Lobelia	S5				X				X
Caprifoliaceae	**Honeysuckle Family**									
Lonicera dioica	Glaucous Honeysuckle	S5				X				X
Lonicera tatarica	Tartarian Honeysuckle	SE5								X
Viburnum acerifolium	Maple-leaved Viburnum	S5				C				X
Chenopodiaceae	**Goosefoot Family**									
Chenopodium album var. album	Lamb's-quarters	SE5				IC				X
Cornaceae	**Dogwood Family**									
Cornus alternifolia	Alternate-leaved Dogwood	S5				X				X
Cornus foemina ssp. racemosa	Red Panicled Dogwood	S5				X				X
Cornus stolonifera	Red-osier Dogwood	S5				C				X
Cucurbitaceae	**Gourd Family**									
Echinocystis lobata	Prickly Cucumber	S5				X				X
Dipsacaceae	**Teasel Family**									
Dipsacus fullonum ssp. sylvestris	Wild Teasel	SE5				IC				X
Fabaceae	**Pea Family**									
Coronilla varia	Variable Crown-vetch	SE5				I				X
Lotus corniculatus	Bird's-foot Trefoil	SE5				I				X
Lathyrus latifolius	Everlasting Pea	SE4				I				X
Medicago lupulina	Black Medick	SE5				IC				X
Robinia pseudo-acacia	Black Locust	SE5				IC				X
Trifolium pratense	Red Clover	SE5				I				X
Vicia caroliniana	Carolina Vetch	S2				R1	X	X	X	

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Elgin County[5]	NHIC Data[1]		MNRF Background Request[6]	NRSI Observed
							17MH8123	17MH8124		
Fagaceae	**Beech Family**									
Castanea dentata	American Chestnut	S2	END	E	Schedule 1	C			X	
Fagus grandifolia	American Beech	S5				C				X
Quercus rubra	Red Oak	S5				C				X
Gentianaceae	**Gentian Family**									
Gentianella quinquefolia ssp. quinquefolia	Stiff Gentian	S2				VU	X	X	X	
Hydrophyllaceae	**Water-leaf Family**									
Hydrophyllum appendiculatum	Appendaged Water-leaf	S2				R3			X	
Hydrophyllum virginianum	Virginia Water-leaf	S5				C				X
Juglandaceae	**Walnut Family**									
Carya cordiformis	Bitternut hickory	S5				C				X
Carya ovata var. ovata	Shagbark Hickory	S5				C				X
Juglans cinerea	Butternut	S3?	END	E	Schedule 1	U			X	
Juglans nigra	Black Walnut	S4				C				X
Lamiaceae	**Mint Family**									
Monarda didyma	Oswego-tea	S3				VU	X			
Lythraceae	**Loosestrife Family**									
Lythrum salicaria	Purple Loosestrife	SE5				IC				X
Malvaceae	**Mallow Family**									
Abutilon theophrasti	Velvet-leaf	SE5				IC				X
Oleaceae	**Olive Family**									
Fraxinus americana	White Ash	S5				C				X
Fraxinus pennsylvanica	Green Ash	S5				C				X
Onagraceae	**Evening-primrose Family**									
Oenothera biennis	Common Evening-primrose	S5				X				X
Orobanchaceae	**Broom-rape Family**									
Epifagus virginiana	Beech-drops	S5				C				X
Oxalidaceae	**Wood Sorrel Family**									
Oxalis stricta	Upright Yellow Wood-sorrel	S5				X				X
Plantaginaceae	**Plantain Family**									
Plantago major	Common Plantain	SE5				IC				X

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Elgin County[5]	NHIC Data[1]		MNRF Background Request[6]	NRSI Observed
							17MH8123	17MH8124		
Polygonaceae	**Smartweed Family**									
Polygonum erectum	Erect Knotweed	SH				RH	X	X	X	
Polygonum persicaria	Lady's-thumb	SE5				IC				X
Rumex crispus	Curly-leaf Dock	SE5				IC				X
Primulaceae	**Primrose Family**									
Lysimachia nummularia	Moneywort	SE5				I				X
Ranunculaceae	**Buttercup Family**									
Enemion biternatum	False Rue-anemone	S2	THR	T	Schedule 1	VU	X	X	X	
Rhamnaceae	**Buckthorn Family**									
Rhamnus cathartica	Common Buckthorn	SE5				IC				X
Rosaceae	**Rose Family**									
Agrimonia gryposepala	Tall Hairy Agrimony	S5				C				X
Crataegus species	Hawthorn species									X
Crataegus suborbiculata	Caughuawaga Thorn	S2				R4	X			
Fragaria virginiana	Wild Strawberry	S5								X
Geum canadense	White Avens	S5				X				X
Malus domestica	Apple									X
Malus pumila	Common Crabapple	SE5				I				X
Prunus serotina	Black Cherry	S5				C				X
Prunus virginiana ssp. virginiana	Choke Cherry	S5				C				X
Rosa acicularis ssp. sayi	Prickly Rose	S5				R2				X
Rosa multiflora	Multiflora Rose	SE4				I				X
Rubus allegheniensis	Alleghany Blackberry	S5				C				X
Rubus idaeus ssp. idaeus	Red Raspberry	SE1								X
Rubus occidentalis	Thimble-berry	S5				X				X
Rubus odoratus	Purple Flowering Raspberry	S5				X				X
Salicaceae	**Willow Family**									
Populus deltoides ssp. deltoides	Eastern Cottonwood	S5				C				X
Populus grandidentata	Large-tooth Aspen	S5				C				X
Populus tremuloides	Trembling Aspen	S5				C				X
Salix discolor	Pussy Willow	S5				X				X
Salix fragilis	Crack Willow	SE5				I				X
Salix nigra	Black Willow	S4?				X				X
Scrophulariaceae	**Figwort Family**									
Verbascum thapsus	Common Mullein	SE5				IC				X

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Elgin County[5]	NHIC Data[1]		MNRF Background Request[6]	NRSI Observed
							17MH8123	17MH8124		
Solanaceae	**Nightshade Family**									
Datura stramonium	Jimsonweed	SE5				I				X
Solanum dulcamara	Bitter Nightshade	SE5				IC				X
Solanum nigrum	Black Nightshade	SE1								X
Tiliaceae	**Linden Family**									
Tilia americana	American Basswood	S5				C				X
Ulmaceae	**Elm Family**									
Ulmus americana	White Elm	S5				C				X
Urticaceae	**Nettle Family**									
Laportea canadensis	Wood Nettle	S5				X				X
Urtica dioica ssp. gracilis	American Stinging Nettle	S5				C				X
Violaceae	**Violet Family**									
Viola striata	Cream Violet	S3				R3	X	X		
Vitaceae	**Grape Family**									
Parthenocissus quinquefolia	Virginia-creeper	S4?				X				X
Vitis riparia	Riverbank Grape	S5				C				X
Monocotyledons	**Monocots**									
Araceae	**Arum Family**									
Arisaema dracontium	Green Dragon	S3	SC	SC	Schedule 3	U	X	X		
Arisaema triphyllum	Jack-in-the-pulpit	S5				C				X
Symplocarpus foetidus	Skunk-cabbage	S5				C				X
Cyperaceae	**Sedge Family**									
Scirpus atrovirens	Dark-green Bulrush	S5				C				X
Juncaceae	**Rush Family**									
Juncus acuminatus	Sharp-fruited Rush	S3				VU	X	X	X	
Liliaceae	**Lily Family**									
Hemerocallis fulva	Orange Day-lily	SE5				IU				X
Maianthemum racemosum ssp. racemosum	False Solomon's Seal	S5				C				X

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Elgin County[5]	NHIC Data[1]		MNRF Background Request[6]	NRSI Observed
							17MH8123	17MH8124		
Poaceae	**Grass Family**									
Bromus inermis ssp. inermis	Awnless Brome	SE5				IC				X
Dactylis glomerata	Orchard Grass	SE5				IC				X
Danthonia spicata	Poverty Oat Grass	S5				C				X
Elymus repens	Quack Grass	SE5				IC				X
Leersia oryzoides	Rice Cut Grass	S5				C				X
Phalaris arundinacea	Reed Canary Grass	S5				C				X
Phleum pratense	Timothy	SE5				IC				X
Phragmites australis	Common Reed	S5				C				X
Vulpia octoflora	Eight-flowered Fescue	S2				RH	X	X	X	
Typhaceae	**Cattail Family**									
Typha latifolia	Broad-leaved Cattail	S5				C				X
						Total	**11**	**11**	**13**	**125**

[1]MNRF 2017a; [2]MNRF 2017b; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Oldman 1993; [6]Diemer 2016

LEGEND		
SRANK	**COSEWIC**	**Elgin County (ELGI)**
S1 Critically Imperiled	E Endangered	R1 Rare
S2 Imperiled	T Threatened	R3 Rare
S3 Vulnerable	SC Special Concern	Rh Rare
S4 Apparently Secure	**SARA Schedule**	VU Very Common
S5 Secure	Schedule 1 Officially Protected	U Uncommon
SH Possibly Extirpated (Historical)	under SARA	C Common
S#? Rank Uncertain	Schedule 3 Special concern; may	X Present
COSSARO	be reassessed for consideration	I Introduced
END Endangered	for inclusion to Schedule 1	Ic Introduced and Common
THR Threatened		? Questionable Record
SC Special Concern		

APPENDIX IV

Bird Species Reported from the Study Area

Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA	NHIC Data[1]		MNRF Background Request[5]	NRSI Observed						
						17MH82	17MH8123	17MH8124		Ag	CUM	FOD7	CUT1-1	CUT1	FOD5-2	FOD7-2
Anatidae	**Ducks, Geese & Swans**															
Branta canadensis	Canada Goose	S5				X				O						
Aix sponsa	Wood Duck	S5				X										
Anas rubripes	American Black Duck	S4				X										
Anas platyrhynchos	Mallard	S5				X										
Anas discors	Blue-winged Teal	S4				X										
Lophodytes cucullatus	Hooded Merganser	S5B, S5N				X										
Oxyura jamaicensis	Ruddy Duck	S4B, S4N				X										
Phasianidae	**Partridges, Grouse & Turkeys**															
Bonasa umbellus	Ruffed Grouse	S4				X										
Meleagris gallopavo	Wild Turkey	S5				X										
Odontophoridae	**New World Quails**															
Colinus virginianus	Northern Bobwhite	S1	END	E	Schedule 1	X	X									
Ardeidae	**Herons & Bitterns**															
Ardea herodias	Great Blue Heron	S4B				X										
Butorides virescens	Green Heron	S4B				X										
Cathartidae	**Vultures**															
Cathartes aura	Turkey Vulture	S5B				X				O		O				
Accipitridae	**Hawks, Kites, Eagles & Allies**															
Circus cyaneus	Northern Harrier	S4B	NAR	NAR		X										
Accipiter striatus	Sharp-shinned Hawk	S5	NAR			X				O						
Accipiter cooperii	Cooper's Hawk	S4	NAR	NAR		X						PO				
Buteo jamaicensis	Red-tailed Hawk	S5	NAR	NAR		X				PO						
Rallidae	**Rails, Gallinules & Coots**															
Rallus limicola	Virginia Rail	S5B				X										
Porzana carolina	Sora	S4B				X										
Charadriidae	**Plovers**															
Charadrius vociferus	Killdeer	S5B, S5N				X				PO						
Scolopacidae	**Sandpipers, Phalaropes & Allies**															
Actitis macularia	Spotted Sandpiper	S5				X										
Scolopax minor	American Woodcock	S4B				X										
Laridae	**Gulls, Terns & Skimmers**															
Larus argentatus	Herring Gull	S5B, S5N								O						
Columbidae	**Pigeons & Doves**															
Columba livia	Rock Pigeon	SNA				X										
Zenaida macroura	Mourning Dove	S5				X				PO		PR			PO	PO
Cuculiformes	**Cuckoos & Anis**															
Coccyzus americanus	Yellow-billed Cuckoo	S4B				X						PO				
Coccyzus erythropthalmus	Black-billed Cuckoo	S5B				X										
Strigidae	**Typical Owls**															
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR		X										
Bubo virgianus	Great Horned Owl	S4				X										
Apodidae	**Swifts**															
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	X			X	O						
Trochilidae	**Hummingbirds**															
Archilochus colubris	Ruby-throated Hummingbird	S5B				X						PO		PO		
Alcedinidae	**Kingfishers**															
Megaceryle alcyon	Belted Kingfisher	S4B				X										
Picidae	**Woodpeckers**															
Melanerpes erythrocephalus	Red-headed Woodpecker	S4B	SC	T	Schedule 1	X			X							
Melanerpes carolinus	Red-bellied Woodpecker	S4				X						PO			PO	
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B				X										
Picoides pubescens	Downy Woodpecker	S5				X						PR			PR	
Picoides villosus	Hairy Woodpecker	S5				X										
Colaptes auratus	Northern Flicker	S4B				X						PO				PO
Dryocopus pileatus	Pileated Woodpecker	S5				X						PO			PO	

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA	NHIC Data[1]		MNRF Background Request[5]	NRSI Observed						
						17MH82	17MH8123	17MH8124		Ag	CUM	FOD7	CUT1-1	CUT1	FOD5-2	FOD7-2
Falconidae	**Caracaras & Falcons**															
Falco sparverius	American Kestrel	S4				X										
Tyrannidae	**Tyrant Flycathers**															
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC		X			X			PO				
Empidonax virescens	Acadian Flycatcher	S2S3B	END	E	Schedule 1	X			X							
Empidonax traillii	Willow Flycatcher	S5B				X								PO		
Empidonax minimus	Least Flycatcher	S4B				X										
Sayornis phoebe	Eastern Phoebe	S5B				X						PR			PO	
Myiarchus crinitus	Great Crested Flycatcher	S4B				X						PR	PO		PO	PO
Tyrannus tyrannus	Eastern Kingbird	S4B				X					PR					
Vireonidae	**Vireos**															
Vireo flavifrons	Yellow-throated Vireo	S4B				X										
Vireo gilvis	Warbling Vireo	S5B				X						PO				PO
Vireo olivaceus	Red-eyed Vireo	S5B				X						PO			PO	PO
Corvidae	**Crows & Jays**															
Cyanocitta cristata	Blue Jay	S5				X						PR				
Corvus brachyrhynchos	American Crow	S5B				X				PR		PO	PO	PO	PO	PO
Hirundinidae	**Swallows**															
Progne subis	Purple Martin	S4B				X				PR		PO	PO			
Tachycineta bicolor	Tree Swallow	S4B				X				PO						
Stelgidopteryx serripennis	Northern Rough-winged Swallow	S4B				X				O						
Riparia riparia	Bank Swallow	S4B	THR	T		X			X							
Petrochelidon pyrrhonota	Cliff Swallow	S4B				X										
Hirundo rustica	Barn Swallow	S4B	THR	T		X			X	CO		O				CO
Paridae	**Chickadees & Titmice**															
Poecile atricapillus	Black-capped Chickadee	S5				X						CO				PO
Baeolophus bicolor	Tufted Titmouse	S4				X										
Sittidae	**Nuthatches**															
Sitta canadensis	Red-breasted Nuthatch	S5				X										
Sitta carolinensis	White-breasted Nuthatch	S5				X									PO	
Certhiidae	**Creepers**															
Certhia americana	Brown Creeper	S5B				X										
Troglodytidae	**Wrens**															
Thryothorus ludovicianus	Carolina Wren	S4				X										
Troglodytes aedon	House Wren	S5B				X						PO	CP	PO	PO	PO
Troglodytes hiemalis	Winter Wren	S5B				X										
Polioptilidae	**Gnatcatchers**															
Polioptila caerulea	Blue-gray Gnatcatcher	S4B				X										
Turdidae	**Thrushes**															
Sialia sialis	Eastern Bluebird	S5B	NAR	NAR		X										
Catharus fuscescens	Veery	S4B				X										
Hylocichla mustelina	Wood Thrush	S4B	SC	T		X			X			PO			PR	
Turdus migratorius	American Robin	S5B				X					PO	PR	PO		PO	PR
Mimidae	**Mockingbirds, Thrashers & Allies**															
Dumetella carolinensis	Gray Catbird	S4B				X						PR	PO			PO
Toxostoma rufum	Brown Thrasher	S4B				X						PO				
Mimus polyglottos	Northern Mockingbird	S4				X										
Sturnidae	**Starlings**															
Sturnus vulgaris	European Starling	SNA				X				PR	PO	PR	CO			
Bombycillidae	**Waxwings**															
Bombycilla cedrorum	Cedar Waxwing	S5B				X				PO	PO	PR			PO	
Parulidae	**Wood Warblers**															
Seiurus aurocapillus	Ovenbird	S4B				X										
Parkesia motacilla	Louisiana Waterthrush	S3B	SC	SC	Schedule 1	X			X							
Vermivora cyanoptera	Blue-winged Warbler	S4B				X										
Geothylpis philadelphia	Mourning Warbler	S4B				X										
Geothylpis trichas	Common Yellowthroat	S5B				X						PO	PO			
Setophaga ruticilla	American Redstart	S5B				X						PO				
Setophaga petechia	Yellow Warbler	S5B				X					CO	CO	PO	PO	PR	PR
Setophaga pensylvanica	Chestnut-sided Warbler	S5B				X										
Setophaga pinus	Pine Warbler	S5B				X										

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA	NHIC Data[1]		MNRF Background Request[5]	NRSI Observed						
						17MH82	17MH8123	17MH8124		Ag	CUM	FOD7	CUT1-1	CUT1	FOD5-2	FOD7-2
Emberizidae	**New World Sparrows & Allies**															
Pipilo erythrophthalmus	Eastern Towhee	S4B				X										
Spizella passerina	Chipping Sparrow	S5B				X					PO	PO	PO			
Spizella pusilla	Field Sparrow	S4B				X				PO						
Pooecetes gramineus	Vesper Sparrow	S4B				X										
Passerculus sandwichensis	Savannah Sparrow	S4B				X										
Melospiza melodia	Song Sparrow	S5B				X				PO	PO	PO			PO	PO
Melospiza georgiana	Swamp Sparrow	S5B				X										
Zonotrichia albicollis	White-throated Sparrow	S5B				X										
Cardinalidae	**Cardinals, Grosbeaks & Allies**															
Piranga olivacea	Scarlet Tanager	S4B				X										
Cardinalis cardinalis	Northern Cardinal	S5				X						PO	PO	PO	PO	PR
Pheucticus ludovicianus	Rose-breasted Grosbeak	S4B				X						PR				
Passerina cyanea	Indigo Bunting	S4B				X						PO				
Icteridae	**Blackbirds**															
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	No Schedule	X			X							
Agelaius phoeniceus	Red-winged Blackbird	S4				X				PR	PR	PR	PO	PO		PO
Quiscalus quiscula	Common Grackle	S5B				X				PO		PR	PO			PR
Molothrus ater	Brown-headed Cowbird	S4B				X				PO		PR				
Icterus spurius	Orchard Oriole	S4B				X						PO				
Icterus galbula	Baltimore Oriole	S4B				X						PR			PO	
Fringillidae	**Finches & Allies**															
Carpodacus mexicanus	House Finch	SNA				X										
Spinus tristis	American Goldfinch	S5B				X				PO		PR		PO		PO
Passeridae	**Old World Sparrows**															
Passer domesticus	House Sparrow	SNA				X				PO						
					Total	106	1	0	13	22	8	41	13	8	17	17

[1]MNRF 2017a; [2]MNRF 2017b; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]BSC 2006; [6]Diemer 2016

LEGEND	
SRANK	**COSEWIC**
S1 Critically Imperiled	E Endangered
S4 Apparently Secure	T Threatened
S5 Secure	SC Special Concern
SNA Unranked	NAR Not at Risk
COSSARO	**SARA Schedule**
END Endangered	Schedule 1 Officially Protected under SARA
THR Threatened	**Breeding Evidence Codes**
SC Special Concern	O Observed
NAR Not at Risk	PO Possible
	PR Probable
	CO Confirmed

APPENDIX V

Herpetofauna Reported from the Study Area

Herpetofauna 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]	NHIC Data[1]		NRSI
						17MH82	17MH8123	17MH8124	Observed
Turtles									
Apalone spinifera spinifera	Spiny Softshell	S3	THR	T	Schedule 1		X		
Chelydra serpentina serpentina	Snapping Turtle	S3	SC	SC	Schedule 1	X			
Chrysemys picta marginata	Midland Painted Turtle	S5				X			
Snakes									
Lampropeltis taylori triangulum	Eastern Milksnake	S3	NAR	SC		X			
Nerodia sipedon sipedon	Common Watersnake	S5	NAR	NAR		X (1988)			
Sistrurus catenatus catenatus pop. 1	Eastern Massasauga Rattlesnake (*Great Lakes/St. Lawrence population*)	S3	THR	T	Schedule 1	X (1930)			
Storeria dekayi dekayi	Northern Brownsnake	S5	NAR	NAR		X			
Thamnophis sauritus septentrionalis	Eastern Ribbonsnake	S3	SC	SC	Schedule 1	X			
Thamnophis sirtalis sirtalis	Eastern Gartersnake	S5				X			
Salamanders									
Ambystoma maculatum	Spotted Salamander	S4				X			
Notophthalmus viridescens viridescens	Red-spotted Newt	S5				X (1986)			
Plethodon cinereus	Eastern Red-backed Salamander	S5				X (1989)			
Toads and Frogs									
Anaxyrus americanus	American Toad	S5				X			
Hyla versicolor	Tetraploid Gray Treefrog	S5				X			X
Pseudacris triseriata pop. 1	Western Chorus Frog *(Carolinian Population)*	S4	NAR	NAR		X			
Pseudacris crucifer	Spring Peeper	S5				X			
Lithobates catesbeiana	American Bullfrog	S4				X			
Lithobates clamitans melanota	Northern Green Frog	S5				X			
Lithobates pipiens	Northern Leopard Frog	S5	NAR	NAR		X			
Lithobates sylvatica	Wood Frog	S5				X (1986)			
					Total	**19**	**1**	**0**	**1**

[1]MNRF 2017a; [2]MNRF 2017b; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Ontario Nature 2015

Legend	
SRANK	**COSEWIC**
S3 Vulnerable	T Threatened
S4 Apparently Secure	SC Special Concern
S5 Secure	NAR Not at Risk
COSSARO	**SARA Schedule**
THR Threatened	Schedule 1 Officially Protected under SARA
SC Special Concern	
NAR Not at Risk	

APPENDIX VI

Mammals Reported from the Study Area

Mammal Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Ontario Mammal Atlas[5]	NHIC Data[1]		MNRF Background Request[6]	NRSI Observed
							17MH8123	17MH8124		
Didelphimorphia	**Opossums**									
Didelphis virginiana	Virginia Opossum	S4				X				
Chiroptera	**Bats**									
Eptesicus fuscus	Big Brown Bat	S5				X				
Myotis leibii	Eastern Small-footed Bat	S2S3	END			X				
Myotis lucifugus	Little Brown Myotis	S4	END	E	Schedule 1	X				
Lagomorpha	**Rabbits and Hares**									
Lepus europaeus	European Hare	SNA				X				
Sylvilagus floridanus	Eastern Cottontail	S5				X				X
Rodentia	**Rodents**									
Castor canadensis	Beaver	S5				X				
Marmota monax	Woodchuck	S5				X				
Microtus pennsylvanicus	Meadow Vole	S5				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				X
Tamias striatus	Eastern Chipmunk	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				X
Taxidea taxus jacksoni	American Badger	S2	END	E	Schedule 1				X	
Vulpes vulpes	Red Fox	S5				X				
Artiodactyla	**Deer and Bison**									
Odocoileus virginianus	White-tailed Deer	S5				X				X
					Total	**22**	**0**	**0**	**1**	**6**

[1]MNRF 2017a; [2]MNRF 2017b; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Dobbyn 1994; [6]Diemer 2016

Legend	
SRANK	**COSSARO**
S2 Imperiled	END Endangered
S3 Vulnerable	**COSEWIC**
S4 Apparently Secure	E Endangered
S5 Secure	**SARA Schedule**
SNA Unranked	Schedule 1 Officially Protected under SARA

APPENDIX VII

Lepidoptera Reported from the Study Area

Butterfly Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TEA Atlas[5]	NHIC Data[1]		NRSI
						17MH82	17MH8123	17MH8124	Observed
Hesperiidae	**Skippers**								
Epargyreus clarus	Silver-spotted Skipper	S4				X			X
Euphyes conspicua	Black Dash	S3				X (1981)			
Euphyes vestris	Dun Skipper	S5				X (1979)			
Pholisora catullus	Common Sootywing	S3				X			
Polites origenes	Crossline Skipper	S4				X (1980)			
Polites peckius	Peck's Skipper	S5				X (1979)			
Polites themistocles	Tawny-edged Skipper	S5				X (1977)			
Thorybes pylades	Northern Cloudywing	S5				X (1979)			
Thymelicus lineola	European Skipper	SNA							X
Wallengrenia egeremet	Northern Broken Dash	S5				X (1980)			
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			X
Colias philodice	Clouded Sulphur	S5				X			X
Pieris rapae	Cabbage White	SNA				X			X
Pontia protodice	Checkered White	SNA				X (1931)			
Pyrisitia lisa	Little Yellow	SNA				X (1980)			
Lycaenidae	**Harvesters, Coppers, Hairstreaks, Blues**								
Celastrina neglecta	Summer Azure	S5				X			
Cupido comyntas	Eastern Tailed Blue	S5				X			
Satyrium acadica	Acadian Hairstreak	S4				X (1979)			
Satyrium calanus	Banded Hairstreak	S4				X (1979)			
Satyrium favonius	Southern Hairstreak					X (1868)			
Satyrium titus	Coral Hairstreak	S5				X (1979)			
Strymon melinus	Grey Hairstreak	S4				X (1978)			
Nymphalidae	**Brush-footed Butterflies**								
Cercyonis pegala	Common Wood-Nymph	S5				X			
Coenonympha tullia	Common Ringlet	S5				X			
Coenonympha tullia inornata	Common (Inornate) Ringlet	S5							X
Danaus plexippus	Monarch	S2N, S4B	SC	SC	Schedule 1	X			X
Euptoieta claudia	Variegated Fritillary	SNA				X			
Junonia coenia	Common Buckeye	SNA				X (1979)			
Lethe appalachia	Appalachian Brown	S4				X (1986)			
Libytheana carinenta	American Snout	SNA				X (1978)			
Limenitis archippus	Viceroy	S5				X			X
Limentis arthemis astyanax	Red-spotted Purple	S5				X			X

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TEA Atlas[5]	NHIC Data[1]		NRSI
						17MH82	17MH8123	17MH8124	Observed
Nymphalis antiopa	Mourning Cloak	S5				X			
Phyciodes cocyta	Northern Crescent	S5				X			
Phyciodes tharos	Pearl Crescent	S4							X
Polygonia comma	Eastern Comma	S5				X			
Speyeria cybele	Great Spangled Fritillary	S5				X (1931)			
Vanessa atalanta	Red Admiral	S5				X			X
Vanessa cardui	Painted Lady	S5				X			
Vanessa virginiensis	American Lady	S5				X			
					Total	**39**	**0**	**0**	**11**

[1]MNRF 2015; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Jones et al. 2013

LEGEND	
SRANK	**COSEWIC**
S2 Imperiled	SC Special Concern
S3 Vulnerable	SC Special Concern
S4 Apparently Secure	**SARA Schedule**
S5 Secure	Schedule 1 Officially Protected under SARA
SNA Unranked	
COSSARO	
SC Special Concern	

APPENDIX VIII

Odonata Reported from the Study Area

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] 17MH82	NRSI Observed
Calopterygidae	**Broadwinged Damselflies**						
Calopteryx maculata	Ebony Jewelwing	S5				X	X
Hetaerina americana	American Rubyspot	S4				X	
Lestidae	**Spreadwings**						
Lestes dryas	Emerald Spreadwing	S5				X	
Lestes rectangularis	Slender Spreadwing	S5				X	
Coenagrionidae	**Narrow-winged Damselflies**						
Amphiagrion saucium	Eastern Red Damsel	S4				X	
Argia apicalis	Blue-fronted Dancer	S4				X	
Argia fumipennis violacea	Violet Dancer	S5				X	
Chromagrion conditum	Aurora Damsel	S5				X	
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	
Enallagma signatum	Orange Bluet	S4				X	
Ischnura posita	Fragile Forktail	S4				X	
Ischnura verticalis	Eastern Forktail	S5				X	X
Nehalennia irene	Sedge Sprite	S5				X	
Aeshnidae	**Darners**						
Aeshna constricta	Lance-tipped Darner	S5				X	
Aeshna umbrosa	Shadow Darner	S5				X	
Anax junius	Common Green Darner	S5				X	
Epiaeschna heros	Swamp Darner	S2S3				X	
Corduliidae	**Emeralds**						
Epitheca pinceps	Prince Baskettail	S5				X	

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Odonate Atlas[5] 17MH82	NRSI Observed
Libellulidae	**Skimmers**						
Leucorrhinia intacta	Dot-tailed Whiteface	S5				X	
Libellula pulchella	Twelve-spotted Skimmer	S5				X	
Libellula quadrimaculata	Four-spotted Skimmer	S5				X	
Pachydiplax longipennis	Blue Dasher	S5				X	
Perithemis tenera	Eastern Amberwing	S4				X	
Plathemis lydia	Common Whitetail	S5				X	
Sympetrum corruptum	Variegated Meadowhawk	S3				X	
Sympetrum semicinctum	Band-winged Meadowhawk	S4				X	
Tramea lacerata	Black Saddlebags	S4				X	
					Total	**31**	**2**

[1]MNRF 2015; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]OMNR 2005

LEGEND	
SRANK	
S2	Imperiled
S3	Vulnerable
S4	Apparently Secure
S5	Secure

APPENDIX IX

Tree Inventory Data

Seaglass in Port Stanley
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	Comments
1	White Ash	*Fraxinus americana*	Native	1	55	0.0	Probable	Dead	Large overextended branches, dead at power line.
2	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	29	4.5	Improbable	Good	Minor dieback.
3	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	23	2.5	Improbable	Excellent	No apparent problems.
4	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	16	2.5	Improbable	Excellent	No apparent problems.
5	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	26	2.5	Improbable	Excellent	No apparent problems.
6	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	15	2.5	Improbable	Excellent	No apparent problems.
7	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	22	2.5	Improbable	Excellent	No apparent problems.
635	White Spruce	*Picea glauca*	Native	1	59	6.0	Improbable	Fair	Codominant stems with minor dieback, dead lower branches.
636	Staghorn Sumac	*Rhus typhina*	Native	1	11	0.0	Probable	Dead	Leaning.
637	Staghorn Sumac	*Rhus typhina*	Native	2	10	0.0	Probable	Very Poor	Leaning, minor fruit, extreme dieback, dead branches.
640	American Basswood	*Tilia americana*	Native	1	36	4.0	Improbable	Fair	Minor dieback.
641	American Basswood	*Tilia americana*	Native	1	33	4.0	Improbable	Fair	Minor dieback, minor wound.
642	American Basswood	*Tilia americana*	Native	1	34	4.0	Improbable	Fair	Minor dieback, minor wounds.
643	American Basswood	*Tilia americana*	Native	1	24	4.0	Improbable	Fair	Minor dieback, dead and broken branches, leaning toward field.
644	American Basswood	*Tilia americana*	Native	1	60	5.5	Improbable	Fair	Minor dieback, dead and broken branches, leaning toward field.
645	White Ash	*Fraxinus americana*	Native	1	17	3.0	Possible	Fair	Minor dieback, dead and broken branches, vines, wounds, leaning toward field.
646	White Ash	*Fraxinus americana*	Native	1	39	4.0	Possible	Fair	Dead branches epicormic growth, exfoliating bark codominant stems with included bark.
647	White Ash	*Fraxinus americana*	Native	1	13	2.5	Possible	Fair	Dead branches, epicormic growth, exfoliating bark.
648	White Ash	*Fraxinus americana*	Native	2	33	5.0	Possible	Fair	Codominant stems with included bark, dieback, exfoliating bark, epicormic growth, vines.
649	Black Cherry	*Prunus serotina*	Native	1	27	4.5	Improbable	Fair	Vines, minor dieback.
650	White Ash	*Fraxinus americana*	Native	1	12	2.0	Possible	Poor	Dieback, epicormic growth, exfoliating bark.
651	White Ash	*Fraxinus americana*	Native	1	17	2.0	Possible	Poor	Dieback, epicormic growth, exfoliating bark.
652	Hawthorn species	*Crataegus sp.*	Native	3	16	3.0	Possible	Fair	Dieback, codominant stems, dead branches.
653	Common Apple	*Malus domestica*	Non-Native	2	16	2.0	Possible	Fair	Dieback, dead branches, suppressed, vines.
654	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	39	5.5	Improbable	Good	Damage to trunk, otherwise healthy.
655	Black Walnut	*Juglans nigra*	Native	1	39	5.0	Improbable	Good	Vines, healthy.
656	Black Walnut	*Juglans nigra*	Native	1	16	4.5	Improbable	Good	Small wound, minor vines.
657	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	127	6.5	Probable	Fair	Large dead branches, minor vines, cavity, codominant stems with included bark, minor rot at base.
659	Staghorn Sumac	*Rhus typhina*	Native	1	12	1.0	Probable	Poor	Major stem damage, fair compartmentalization, vines, minor dieback.
660	Manitoba Maple	*Acer negundo*	Native	2	52	8.0	Probable	Very Poor	Dead branches, dieback, overextended branches, codominant stems, broken branches, vines.
661	Black Walnut	*Juglans nigra*	Native	1	17	3.5	Improbable	Good	Minor dieback.
662	Large-tooth Aspen	*Populus grandidentata*	Native	1	68	5.5	Improbable	Fair	Asymmetrical crown, minor dieback.
663	Large-tooth Aspen	*Populus grandidentata*	Native	1	39	5.5	Improbable	Fair	Asymmetrical crown, minor dieback, minor vines.
664	Large-tooth Aspen	*Populus grandidentata*	Native	1	80	6.5	Improbable	Fair	Asymmetrical crown, minor dieback, minor vines.
665	Staghorn Sumac	*Rhus typhina*	Native	1	22	3.0	Possible	Poor	Extensive vines, dieback, damage at base, leaning away from spruce.
666	Staghorn Sumac	*Rhus typhina*	Native	1	16	3.0	Possible	Poor	Extensive vines, dieback, damage at base, leaning away from spruce.
667	Staghorn Sumac	*Rhus typhina*	Native	1	16	3.0	Possible	Poor	Extensive vines, dieback, damage at base, leaning away from spruce.
668	Staghorn Sumac	*Rhus typhina*	Native	1	11	0.0	Probable	Dead	Leaning.
1380	Eastern Cottonwood	*Populus deltoides*	Native	1	87	7.0	Possible	Fair	Prune dead branches, minor dieback, minor included bark.
1382	Eastern Cottonwood	*Populus deltoides*	Native	1	71	6.0	Possible	Fair	Damage at base with moderate compartmentalization, minor exfoliating bark, minor exit holes, prune dead branches.
1383	Crack Willow	*Salix fragilis*	Non-Native	1	64	7.0	Possible	Fair	Leaning to west, dieback, epicormic growth, cavity with bird activity.
1384	Crack Willow	*Salix fragilis*	Non-Native	1	60	5.0	Improbable	Fair	Minor damage at base, dieback.
1385	Crack Willow	*Salix fragilis*	Non-Native	1	66	5.0	Possible	Poor	Exfoliating bark, open cavities, insect galleries, codominant stems, minor lean south.
1386	Crack Willow	*Salix fragilis*	Non-Native	1	65	5.0	Probable	Poor	Leaning south with good reaction wood, epicormic growth, dead branches, minor rot, open cavity at base, galls.
1387	Crack Willow	*Salix fragilis*	Non-Native	1	69	7.0	Possible	Fair	Galls with epicormic growth, minor damage at base, leaning over field, broken codominant branch.
1388	Eastern Cottonwood	*Populus deltoides*	Native	1	45	1.0	Possible	Very Poor	Leaning snag, broken top, woodpecker holes.
1389	Crack Willow	*Salix fragilis*	Non-Native	1	60	4.0	Possible	Fair	Leaning west, dead branches, rot.
1390	Crack Willow	*Salix fragilis*	Non-Native	1	85	6.0	Possible	Fair	Wildlife cavity, minor dead branches, epicormic growth.
1391	Crack Willow	*Salix fragilis*	Non-Native	1	44	4.0	Improbable	Fair	Dead and broken branches, minor epicormic growth.
1392	Crack Willow	*Salix fragilis*	Non-Native	1	60	6.0	Possible	Fair	Dead branches, epicormic growth, next to stream.
1393	Crack Willow	*Salix fragilis*	Non-Native	1	58	7.0	Possible	Poor	Leaning north, codominant stems with incuded bark, epicormic growth.
1394	Crack Willow	*Salix fragilis*	Non-Native	1	58	4.5	Improbable	Fair	Leaning over stream, minor dead branches.
1395	Crack Willow	*Salix fragilis*	Non-Native	1	64	5.0	Possible	Poor	Large open cavity at base, dead branches, dieback.
1396	Black Walnut	*Juglans nigra*	Native	1	40	4.5	Possible	Fair	Minor dead branches, vines, dieback.
1397	Eastern Cottonwood	*Populus deltoides*	Native	3	47	4.0	Improbable	Fair	Codominant leaders, minor dead branches.
1398	Eastern Cottonwood	*Populus deltoides*	Native	2	35	4.0	Improbable	Fair	Minor dead branches.
1399	Eastern Cottonwood	*Populus deltoides*	Native	1	38	4.0	Probable	Poor	Broken top, dieback, galleries, leaning toward field.
1400	Black Walnut	*Juglans nigra*	Native	2	29	4.5	Improbable	Fair	Cankers, asymmetrical crown over field.
1401	Black Walnut	*Juglans nigra*	Native	1	21	2.5	Possible	Fair	Minor dieback.
1402	Manitoba Maple	*Acer negundo*	Native	1	25	1.0	Probable	Very Poor	Only epicormic growth remains, stem dead.
1403	Black Willow	*Salix nigra*	Native	1	37	5.0	Improbable	Fair	Minor dieback, minor cankers, minor vines.
1404	Crack Willow	*Salix fragilis*	Non-Native	1	41	1.0	Improbable	Very Poor	Broken top, only epicormic shoots remain, bat habitat.
1405	Black Walnut	*Juglans nigra*	Native	1	21	3.0	Improbable	Fair	Minor cankers, minor dieback.
1406	Black Walnut	*Juglans nigra*	Native	1	41	4.5	Improbable	Good	Asymmetrical crown toward field, vines in crown.

Seaglass in Port Stanley
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	Comments
1407	Black Walnut	*Juglans nigra*	Native	1	28	3.5	Improbable	Fair	Vines in crown, crown toward stream, damage at base.
1408	Black Walnut	*Juglans nigra*	Native	1	24	5.0	Possible	Fair	Minor cankers, unbalanced crown, overextended branches, S-bend.
1409	Black Walnut	*Juglans nigra*	Native	1	34	3.5	Possible	Fair	Damage at base, minor dieback.
1410	Black Walnut	*Juglans nigra*	Native	1	40	6.0	Improbable	Fair	Crown over field, unbalanced, dieback.
1411	Manitoba Maple	*Acer negundo*	Native	1	44	6.0	Probable	Poor	Leaning east, epicormic growth, dieback.
1412	White Ash	*Fraxinus americana*	Native	7	27	6.0	Probable	Very Poor	Codominant stems, galleries, major dieback.
1413	White Ash	*Fraxinus americana*	Native	1	27	3.5	Probable	Very Poor	Codominant stems, galleries, major dieback.
1414	Black Walnut	*Juglans nigra*	Native	1	41	4.0	Improbable	Fair	Minor dieback.
1415	Manitoba Maple	*Acer negundo*	Native	1	32	2.0	Possible	Very Poor	Dead top, epicormic growth, broken top.
1416	Black Walnut	*Juglans nigra*	Native	1	53	5.0	Probable	Poor	Broken branches to prune, minor dieback, vines.
1417	White Ash	*Fraxinus americana*	Native	1	17	3.5	Possible	Poor	Exit holes, dieback, vines.
1418	Black Walnut	*Juglans nigra*	Native	1	50	5.5	Improbable	Fair	Minor dead branches, vines, dieback, excess fruiting.
1419	Black Walnut	*Juglans nigra*	Native	1	41	6.0	Improbable	Fair	Dieback, vines, minor epicormic growth.
1420	Black Walnut	*Juglans nigra*	Native	4	21	4.5	Possible	Fair	Minor broken branches, codominant stems with included bark.
1421	Black Walnut	*Juglans nigra*	Native	1	44	5.0	Improbable	Fair	Minor dieback.
1422	Black Walnut	*Juglans nigra*	Native	1	31	4.5	Improbable	Fair	Epicormic growth, minor dieback.
1423	Eastern Cottonwood	*Populus deltoides*	Native	1	74	6.5	Improbable	Good	Damage at base, minor dieback with good reaction wood, healthy crown.
1424	Eastern Cottonwood	*Populus deltoides*	Native	1	71	6.5	Improbable	Poor	Large healthy crown, good structure, minor dieback.
1425	Eastern Cottonwood	*Populus deltoides*	Native	1	59	5.0	Improbable	Fair	Dead lower branches, leaning over stream.
1426	Eastern Cottonwood	*Populus deltoides*	Native	1	55	5.0	Improbable	Fair	Minor dead branches, minor damage to stem.
1427	Eastern Cottonwood	*Populus deltoides*	Native	1	76	6.0	Improbable	Good	Epicormic growth.
1428	Eastern Cottonwood	*Populus deltoides*	Native	1	67	6.5	Improbable	Good	Overextended branches, dieback.
1429	Eastern Cottonwood	*Populus deltoides*	Native	1	62	4.0	Improbable	Fair	Minor lean over stream, damage to stem with good compartmentalization, minor dieback above wound.
1430	Eastern Cottonwood	*Populus deltoides*	Native	1	80	5.5	Improbable	Fair	Minor dieback.
1431	Eastern Cottonwood	*Populus deltoides*	Native	1	79	5.0	Improbable	Fair	Minor dieback, codominant branches.
1432	Crack Willow	*Salix fragilis*	Non-Native	1	58	5.0	Possible	Fair	Small dead branches, broken codominant stem.
1433	Eastern Cottonwood	*Populus deltoides*	Native	1	69	6.0	Possible	Fair	Epicormic growth, broken branch, dieback.
1434	Black Walnut	*Juglans nigra*	Native	1	35	3.0	Possible	Fair	Cankers, dead branches.
1435	Black Walnut	*Juglans nigra*	Native	1	30	3.0	Improbable	Fair	Codominant stems with included bark, epicormic growth.
1436	Eastern Cottonwood	*Populus deltoides*	Native	1	105	6.0	Improbable	Fair	Dead branches, broken branches, codominant stems with included bark.
1437	White Ash	*Fraxinus americana*	Native	3	83	4.5	Possible	Poor	Codominant branches with included bark, dead broken limbs, minor rot.
1438	Eastern Cottonwood	*Populus deltoides*	Native	1	79	5.5	Improbable	Good	Minor dieback, good form.
1439	Crack Willow	*Salix fragilis*	Non-Native	4	122	7.0	Probable	Poor	Dead broken branches, vines, dieback, leaning codominant limbs.
1440	White Ash	*Fraxinus americana*	Native	1	34	3.0	Possible	Poor	Dieback, vines, woodpecker holes, potential EAB.
1441	White Ash	*Fraxinus americana*	Native	1	13	2.0	Improbable	Fair	Dieback, vines.
1442	White Ash	*Fraxinus americana*	Native	1	13	2.0	Improbable	Fair	Small crown, minor vines.
1443	Crack Willow	*Salix fragilis*	Non-Native	3	22	2.5	Probable	Very Poor	Fallen over, epicormic growth, dead limbs.
1444	White Ash	*Fraxinus americana*	Native	1	13	2.0	Improbable	Fair	Small crown, minor vines.
1445	White Ash	*Fraxinus americana*	Native	1	29	3.5	Possible	Fair	Minor dieback.
1446	White Ash	*Fraxinus americana*	Native	1	31	4.5	Improbable	Fair	Vines, dieback, epicormic growth.
1447	Black Walnut	*Juglans nigra*	Native	1	29	5.0	Improbable	Fair	Asymmetrical, leaning into field.
1448	Black Walnut	*Juglans nigra*	Native	1	13	3.0	Improbable	Fair	Small crown toward field.
1449	Black Walnut	*Juglans nigra*	Native	1	21	3.0	Improbable	Fair	Minor dieback, minor vines.
1450	Black Walnut	*Juglans nigra*	Native	1	37	6.0	Improbable	Good	Minor cankers.
1451	Staghorn Sumac	*Rhus typhina*	Native	1	13	2.5	Improbable	Fair	Minor dieback.
1452	White Ash	*Fraxinus americana*	Native	1	26	2.5	Possible	Fair	Minor dieback.
1453	Sugar Maple	*Acer saccharum ssp. sacch*	Native	1	27	0.0	Possible	Dead	Large dead branches.
1454	Hop Hornbeam	*Ostrya virginiana*	Native	1	44	5.0	Improbable	Fair	Minor vines, asymmetrical crown to field.
1455	Sweet Cherry	*Prunus avium*	Non-Native	1	12	2.5	Improbable	Fair	Minor wounds.
1456	White Ash	*Fraxinus americana*	Native	1	11	1.5	Probable	Poor	Dieback, epicormic, exfoliating bark.
1457	Staghorn Sumac	*Rhus typhina*	Native	1	13	2.0	Improbable	Fair	Minor dead branches.
1458	Eastern Cottonwood	*Populus deltoides*	Native	1	35	4.5	Improbable	Fair	Minor dieback, asymmetrical crown into field.
1459	Eastern Cottonwood	*Populus deltoides*	Native	1	57	4.5	Improbable	Fair	Minor dead branches.
1460	White Ash	*Fraxinus americana*	Native	1	42	5.0	Probable	Very Poor	Missing bark, vines, major dieback, major dead branches.
1461	Eastern Cottonwood	*Populus deltoides*	Native	1	78	5.0	Improbable	Good	Minor dieback.
1462	Eastern Cottonwood	*Populus deltoides*	Native	1	77	5.5	Improbable	Good	Minor dieback.
1463	White Ash	*Fraxinus americana*	Native	1	99	5.0	Probable	Very Poor	Large dead overextended branches, exit holes, large and small cavities.
1464	White Ash	*Fraxinus americana*	Native	11	39	3.5	Probable	Poor	Exit holes, dead branches, exfoliating bark.
1465	White Ash	*Fraxinus americana*	Native	1	37	4.5	Probable	Poor	Exit holes, dead branches, exfoliating bark.
1466	Crack Willow	*Salix fragilis*	Non-Native	2	82	6.5	Probable	Poor	Large dead and dying branches with vines, epicormic growth, wounds.
1467	Manitoba Maple	*Acer negundo*	Native	2	26	3.0	Probable	Poor	Unbalanced, leaning, dieback, vines.
1468	Manitoba Maple	*Acer negundo*	Native	1	20	3.0	Probable	Poor	Unbalanced, leaning, dieback, vines.
1469	Common Apple	*Malus domestica*	Non-Native	2	21	3.0	Possible	Poor	Dieback, extensive vines, poor structure.
1470	Manitoba Maple	*Acer negundo*	Native	1	26	3.5	Possible	Poor	Dead branches, dieback, vines.

Seaglass in Port Stanley
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	Comments
1471	Manitoba Maple	*Acer negundo*	Native	1	10	2.0	Probable	Very Poor	Single limb remaining on toppled base.
1472	Green Ash	*Fraxinus pennsylvanica*	Native	1	28	3.5	Possible	Poor	Dead branches, damage to bark, codominant stems.
1473	Manitoba Maple	*Acer negundo*	Native	1	19	3.0	Possible	Poor	Dieback, dead branches with exfoliating bark.
1474	Green Ash	*Fraxinus pennsylvanica*	Native	1	12	2.0	Probable	Poor	Dieback, dead and broken branches, epicormic growth.
1475	Manitoba Maple	*Acer negundo*	Native	2	21	3.5	Probable	Poor	Dead branches, dieback.
1476	Manitoba Maple	*Acer negundo*	Native	1	26	4.0	Probable	Very Poor	Leaning into forest, extensive dieback, dead branches, epicormic growth.

APPENDIX X
Conditions of Assessment

Conditions of Tree Assessment

Limitations

This tree inventory and assessment is based on the circumstances and observations as they existed at the time of the site inspection of the Client's 391 George Street property in Port Stanley, Ontario (the "Property") and the trees situated thereon by NRSI and upon information provided by the Client to NRSI. The opinions in this assessment are given based on observations made and using generally accepted professional judgment, however, because trees are living organisms and subject to change, damage and disease, the results, observations, recommendations, and analysis as set out in this assessment are valid only at the date any such observations and analysis took place. No guarantee, warranty, representation or opinion is offered or made by NRSI as to the length of the validity of the results, observations, recommendations and analysis contained within this assessment. As a result, the Client shall not rely upon this assessment, save and except for representing the circumstances and observations, analysis and recommendations that were made as at the date of such inspections. It is recommended that the trees discussed in this assessment should be re-assessed periodically, where required (i.e. within 1 year).

Further Services

Neither NRSI, nor any assessor employed or retained by NRSI (the "Assessor") for the purpose of preparing or assisting in the preparation of this assessment shall be required to provide any further consultation or services to the Client, save and except as already carried out in the preparation of this assessment and including, without limitation, to act as an expert witness or witness in any court in any jurisdiction unless the Client has first made specific arrangements with respect to such further services, including, without limitation, providing the payment of the Assessor's regular hourly billing fees.

NRSI accepts no responsibility for the implementation of all or any part of the assessment, unless specifically requested to examine the implementation of such activities recommended herein. In the event that inspection or supervision of all or part of the implementation is requested, that request shall be in writing and the details agreed to in writing by both parties.

Assumptions

The Client is hereby notified and does hereby acknowledge and agree that where any of the facts and information set out and referenced in this assessment are based on assumptions, facts or information provided to NRSI, the Client and/or third parties and unless otherwise set out within this assessment, NRSI will in no way be responsible for the veracity or accuracy of any such information and further, the Client acknowledges and agrees that NRSI has, for the purposes of preparing their assessment, assumed that the Property, which is the subject of this assessment is in full compliance with all applicable federal, provincial, municipal and local statutes, regulations, by-laws, guidelines and other related laws. NRSI explicitly denies any legal liability for any and all issues with respect to non-compliance with any of the above-referenced statutes, regulations, by-laws, guidelines and laws as it may pertain to or affect the Property to which this assessment applies.

Restriction of Assessment

The assessment carried out was restricted to the Property as identified within this report, including any trees off-property that have the potential to be impacted by the proposed works. No assessment of any other trees has been undertaken by NRSI. NRSI is not legally liable for any other trees on the Property except those expressly discussed herein. The conclusions of this assessment do not apply to any areas, trees, or any other property not covered or referenced in this assessment.

Professional Responsibility

In carrying out this assessment, NRSI and any Assessor appointed for and on behalf of NRSI to perform and carry out the assessment has exercised a reasonable standard of care, skill and diligence as would be customarily and normally provided in carrying out this assessment. The assessment has been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, discolored foliage (during the leaf-on period), the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. Except where specifically noted in the assessment, none of the trees examined on the

property were dissected, cored, probed, or climbed and detailed root crown examinations involving excavation were not undertaken.

While reasonable efforts have been made to ensure that the trees recommended for retention are healthy, no guarantees are offered, or implied, that these trees, or all parts of them will remain standing. It is professionally impossible to predict with absolute certainty the behaviour of any single tree or group of trees, or all their component parts, in all given circumstances. Inevitably, a standing tree will always pose some risk. Most trees have the potential to fall, lean, or otherwise pose a danger to property and persons in the event of adverse weather conditions, and this risk can only be eliminated if the tree is removed.

Without limiting the foregoing, no liability is assumed by NRSI or its directors, officers, employers, contractors, agents or Assessors for:

a) any legal description provided with respect to the Property;
b) issues of title and or ownership respect to the Property;
c) the accuracy of the Property line locations or boundaries with respect to the Property; and
d) the accuracy of any other information provided to NRSI by the Client or third parties;
e) any consequential loss, injury or damages suffered by the Client or any third parties, including but not limited to replacement costs, loss of use, earnings and business interruption; and
f) the unauthorized distribution of the assessment.

Third Party Liability

This assessment was prepared by NRSI exclusively for the Client. The contents reflect NRSI's best assessment of the trees situated on the Property in light of the information available to it at the time of preparation of this assessment. Any use which a third party makes of this assessment, or any reliance on or decisions made based upon this assessment, are made at the sole risk of any such third parties. NRSI accepts no responsibility for any damages or loss suffered by any third party or by the Client as a

result of decisions made or actions based upon the use or reliance of this assessment by any such party.

General

Any plans and/or illustrations in this assessment are included only to help the Client visualize the issues in this assessment and shall not be relied upon for any other purpose.

This report shall be considered as a whole, no sections are severable, and the assessment shall be considered incomplete if any pages are missing.