



**Natural Heritage Evaluation
Part of Lot 16, Concession 11
Hewitt's Secondary Plan Area
City of Barrie**

Addendum Report

Prepared for:
2303757 Ontario Inc.
c/o PGC Group

Prepared by:
Azimuth Environmental
Consulting, Inc.

August 2017

AEC 11-076p



Environmental Assessments & Approvals

August 29, 2017

AEC 11-076p

2303757 Ontario Inc.
c/o PGC Group
8800 Dufferin Street, Suite 200
Vaughan ON
L4K 0C5

Attention: Peter Campbell, P.Eng

Re: **ADDENDUM - Natural Heritage Evaluation for Part of Lot 16 Con
11 Hewitt's Secondary Plan Area, City of Barrie**

Dear Mr. Campbell:

Azimuth Environmental Consulting, Inc. was retained to complete a Natural Heritage Evaluation (NHE) on the property identified above. The property contains lands within the City of Barrie's Natural Heritage System which has triggered the need for a NHE. This NHE forms a portion of the submission to acquire draft plan approval to permit a proposed development. This addendum report contains supplemental field data and associated evaluation, as recommended in Azimuth's original report issued February 2017. This addendum was necessary to provide a more comprehensive assessment of potential impacts arising from the proposed development.

This NHE summarizes investigations undertaken in 2016, additional field studies conducted in 2017, and draws upon information from investigations of adjacent lands undertaken in 2014, 2015, and 2016. The NHE provides an assessment of the potential for the presence of habitats of Endangered or Threatened species, Significant Wildlife Habitat and other significant natural heritage features for the property and adjacent lands.

Mitigation measures have been recommended to avoid any potential impacts to key natural heritage features and functions. Assuming appropriate mitigation measures and recommendations are implemented, the proposed development is not expected to



negatively impact any identified features. Thus, the proposed work is consistent with the policies set out within the 2014 Provincial Policy Statement, City of Barrie Official Plan and the regulations set out within Ontario's *Endangered Species Act*, 2007.

If you have any questions or concerns regarding this matter, please do not hesitate to contact me.

Yours truly,

AZIMUTH ENVIRONMENTAL CONSULTING INC.

Mike Francis, H. B.Sc.
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Table of Contents

	page
Letter of transmittal	i
1.0 INTRODUCTION	1
2.0 PLANNING CONTEXT	2
2.1 Hewitt's Secondary Plan	2
3.0 STUDY APPROACH	2
3.1 Methodology and Surveys	2
3.1.1 Amphibians	2
3.1.2 Birds	2
3.1.3 Vegetation Community Mapping and Surveys	3
3.1.4 Species at Risk	3
4.0 EXISTING CONDITIONS	3
4.1 Land Use	3
4.1.1 On-site Land Use	3
4.2 Vegetation	3
4.3 Wildlife Habitat	4
4.3.1 Mammals	4
4.3.2 Amphibians	5
4.3.3 Birds	5
5.0 ADDITIONAL AND/OR CONFIRMED NATURAL HERITAGE FEATURES AND FUNCTIONS	5
5.1 Candidate Significant Wildlife Habitat	5
5.1.1 Seeps and Springs	5
5.1.2 Amphibian Breeding Habitat (Woodland)	5
5.1.3 Woodland Area-sensitive Breeding Bird Habitat	5
5.1.4 Special Concern & Rare Wildlife Species	6
5.2 Habitat for Endangered & Threatened Species	6
5.2.1 END Bat species (Little Brown Myotis, Northern Myotis, Tri-colored Bat) ..	6
5.2.2 Barn Swallow	6
5.2.3 Butternut	6
5.2.4 Blanding's Turtle	6
5.3 Significant Natural Heritage Features Summary	7
6.0 IMPACT ASSESSMENT	7
6.1 Candidate Significant Wildlife Habitat	7



6.1.1	Seeps and Springs	7
6.1.2	Amphibian Breeding Habitat (Woodland)	7
6.1.3	Area-sensitive Breeding Bird Habitat.....	7
6.2	Habitat of Endangered and Threatened Species.....	8
6.2.1	END Bats	8
6.2.2	Blanding’s Turtle	8
7.0	RECOMMENDATIONS	8
7.1	General.....	8
7.2	Species at Risk.....	8
7.3	Buffer Restoration	8
8.0	CONCLUSIONS	9
9.0	REFERENCES	10

List of Figures

- Figure 1: Property Location
- Figure 2: Environmental Features (updated)
- Figure 3: Proposed Site Plan

List of Tables

- Table 1: Species at Risk Habitat Assessment
- Table 2: Significant Wildlife Habitat Assessment
- Table 3: Bird List
- Table 4: Vegetation List

List of Appendices

- Appendix A: Lake Simcoe Region Conservation Authority Comments



1.0 INTRODUCTION

The following information is provided as an Addendum to our February 2, 2017 Preliminary NHE submitted as part of the planning application for residential development on the subject lands. This addendum report supplements the original report and should be read in conjunction with the February 2017 Preliminary NHE report.

This additional information is provided to address the recommendations made by Azimuth in its Preliminary NHE report that additional field studies occur on and adjacent to the property to gain a better understanding of the ecological function of this property and the adjacent lands. Recommended 2017 field studies include:

- Three evening amphibian call surveys (April – June) [if appropriate habitat is present].
- Two dawn breeding bird surveys (June);
- Vascular plant surveys (May – Aug); and
- Based on the collected 2017 data, the SAR analysis should be refined, findings documented, preliminary impact assessment updated to reflect our findings and subsequent assessment of the features and function of the property should be completed to assess the potential impacts of the proposed development.

This addendum report also addresses comments provided by the Lake Simcoe Region Conservation Authority (LSRCA) dated June 16, 2017 (Appendix A). LSRCA comments include:

1. Significant wildlife habitat has been confirmed on the property in the form of seeps and springs. Development on lands adjacent to this type of habitat has the potential to impact seeps and springs by changing the hydrologic inputs that maintain these features. Please include further assessment of any potential direct and indirect impacts to seeps and springs and demonstrate that the proposed development will not negatively impact the function of this significant wildlife habitat.
2. In reference to Section 2.4 of the NHE, please note that a buffer of 30 m from the edge of watercourses, wetlands and woodlands and 5 m from meadows and thickets has been approved in the Hewitt's Secondary Plan (9.3.2.1.b). Please revise this section in the NHE as it currently suggests that a 5 m buffer from cultural woodlands has been approved.
3. It is noted that additional field work and data collection is scheduled for 2017. Any key natural heritage or hydrologic features identified based on this field work should be assessed and the NHE should be updated and revised according to these findings to provide one stand-alone document.



4. It is recommended that healthy, mature native trees present in the existing hedgerows be maintained and preserved wherever possible as they provide additional habitat and cover for wildlife movement in the area.
5. During detailed design please include the following on drawings:
 - a. A double silt fence with bales of straw between to be installed adjacent to natural heritage features to further minimize the risk of sediment spilling into these sensitive areas. (Please refer to LSRCA Technical Guidelines)
 - b. A planting plan demonstrating that the prescribed buffer to features be planted with a variety of native plants so that it is composed of natural self-sustaining vegetation and is better able to mitigate impacts from the proposed development.

2.0 PLANNING CONTEXT

2.1 Hewitt's Secondary Plan

As a part of the Hewitt's Secondary Plan process, a buffer of 30 m from the edge of watercourses, wetlands and woodlands and 5 m from meadows and thickets has been approved in the Hewitt's Secondary Plan (9.3.2.1.b).

3.0 STUDY APPROACH

3.1 Methodology and Surveys

3.1.1 Amphibians

Azimuth completed a single evening calling amphibian survey, according to the Marsh Monitoring Program (Bird Studies Canada, 2008) protocol at the sampling location shown on Figure 2. The survey was conducted on April 18, 2017 (Surveyor: M. Francis, Time: 19:40-19:50, Temperature: 7°C, Cloud Cover: 50%, Precipitation: Nil, Beaufort Wind Scale: 2). There were no amphibians documented on the property during this survey. There is no suitable amphibian breeding habitat present on the property. A full chorus of Spring Peepers were heard calling from within the core wetland areas associated with the Hewitt's Creek corridor/Natural Heritage System. Due to the lack of suitable amphibian breeding habitat on the property, there were no additional amphibian surveys conducted on the property.

3.1.2 Birds

Surveys were comprised of a combination of the point count protocol based on the Ontario Breeding Bird Atlas Guide for Participants (OBBA, 2001) and a roving (non-systematic) survey methodology. Three point count stations were established to cover the entire property (Figure 2) and all birds identified through visual or auditory confirmation were recorded at each station during a 5- minute period. Any species



observed while on-route to the next station were also recorded and included within our results. Breeding evidence was assessed based on the criteria of the OBBA (2001). The dates and conditions of Azimuth's 2017 dawn breeding bird surveys can be found in Table 3.

3.1.3 Vegetation Community Mapping and Surveys

The Ecological Land Classification (ELC) for Southern Ontario (Lee *et al.*, 1998) was used to classify vegetation community types. Azimuth reviewed the ELC data presented by NRSI (NRSI 2012) and utilized them as a 'base' for our mapping. The ELC classification and vegetation list of the Preliminary NHE were updated during site visits on June 1, 2017, June 26, 2017 and August 8, 2017. The vegetation communities identified on site are described below. Figure 2 depicts the locations of each community classified on the property.

3.1.4 Species at Risk

The SAR screening included an analysis of the habitat requirements of SAR reported to occur in the Midhurst District Ministry of Natural Resources & Forestry (MNRF) planning area to identify those having potential to occur on or adjacent to the property based on habitats present. Background information was obtained from the Preliminary Natural Heritage Characterization Report (NRIS 2012) whereby the MNRF provided a list of species that have the potential to occur within the Barrie Annex Lands which includes Hewitt's SPA. These species have been incorporated into our assessment. Dawn breeding bird surveys helped determine if any SAR birds are utilizing the property and/or adjacent lands. A survey for Butternut [Endangered (END)] was completed in conjunction with Azimuth's field investigations. Habitat requirements and appropriate designations (END, Threatened [THR] or Special Concern [SC]) for all species included in the screening are outlined in Table 1.

4.0 EXISTING CONDITIONS

4.1 Land Use

4.1.1 On-site Land Use

The current land use on the property is a combination of agricultural lands and forested upland areas associated with Hewitt's Creek and St. Paul's Swamp.

4.2 Vegetation

Plant species documented on site are listed in Table 4. Due to the nature of the vegetation communities on site, it is not expected that any significant flora would be identified beyond those documented between May – August and, therefore, a third fall



vegetation survey will not be completed. Figure 2 depicts the locations of each community. There were no provincially or regionally rare trees or vascular plants documented on the property. Vegetation communities identified on the property include:

Agricultural:

A large proportion of the property is farmed.

FOC4 – Fresh-moist White Cedar Coniferous Forest Ecosite:

The small section of forest on the eastern property boundary provides a buffer between the agricultural lands to the west and the Hewitt's Creek riparian area to the east. The canopy and subcanopy are predominantly Eastern White Cedar, with some mature White Pine (25-50cm DBH) are scattered throughout. Other minor canopy components include Paper Birch, Yellow Birch, American Basswood, and Green Ash. Ground cover is sparse but areas of wetter soils contain an abundance of non-native Colt's-foot and some small patches of Dwarf Scouring Rush. The forest floor contains some small root mound tip ups and some large exposed boulders along the valley slope adjacent to the property boundary. Some small seepage zones were noted within the community.

Hedgerows:

Hedgerows on the property were variable in species composition, resulting from differences in soil moisture throughout the property. The southeastern corner of the property (and beyond into the adjacent parcel) is wet and dominated by a mix of Eastern White Cedar, American Elm and Trembling Aspen. The lower stratum is primarily Red-osier Dogwood and Horsetail sp., Sensitive Fern, and Colt's-foot.

Further west along the southern hedgerow, the species are primarily hardwoods, with Sugar Maple, Eastern Hop-hornbeam, Black Cherry, White Ash, Alternate-leaved Dogwood being the dominant species. The western property boundary abuts an active railroad easement. There are a few mature hardwoods in this section, but the cover is primarily early-successional species, including: Canada Goldenrod, Wild Red Raspberry, and a mix of non-native grasses. The northern hedgerow is primarily a mix of cedar and elm, with Red-osier Dogwood and Canada Goldenrod around the edges and open areas.

4.3 Wildlife Habitat

4.3.1 Mammals

Additional mammal species confirmed to be utilizing the property included: Red Squirrel (*Tamiasciurus hudsonicus*) and White-tailed Deer (*Odocoileus virginianus*). Neither species is of federal or provincial conservation concern.



4.3.2 Amphibians

There were no amphibians documented on the property during the April 2017 evening amphibian survey. There is no suitable habitat for breeding amphibians on the property. Amphibian activity was documented within the adjacent Natural Heritage Core lands within the St. Paul's wetland.

4.3.3 Birds

A total of 26 birds were documented during Azimuth's 2017 breeding bird surveys (Table 3). Of these species, five area-sensitive forest breeding species were detected on adjacent lands to the east within the Natural Heritage Core and within the St. Paul's wetland: Black-and-white Warbler, American Redstart, Ovenbird, Winter Wren and Red-breasted Nuthatch. The majority of the property is agricultural land planted in cash crop, which has limited function for birds.

One species of conservation concern was observed on adjacent lands, Barn Swallow (THR). Habitat on the property for this species is limited to potential foraging habitat.

5.0 ADDITIONAL AND/OR CONFIRMED NATURAL HERITAGE FEATURES AND FUNCTIONS

5.1 Candidate Significant Wildlife Habitat

5.1.1 Seeps and Springs

Limited groundwater seepage was documented along the eastern property boundary. This occurred along a short slope adjacent to Hewitt's Creek, within the FOC community. This feature, originally noted in late fall of 2016, was not observed flowing consistently throughout the 2017 season. As such, it is likely ephemeral and occurring only during periods of heavy precipitation. It was noted that the seepage area is very limited in extent and is not hosting any significant vegetation.

5.1.2 Amphibian Breeding Habitat (Woodland)

There is no amphibian breeding function on the property. Breeding activity was documented on adjacent lands to the east within the Natural Heritage Core areas.

5.1.3 Woodland Area-sensitive Breeding Bird Habitat

The following forest-breeding area-sensitive species were documented during Azimuth's 2017 breeding bird survey: Black-and-white Warbler, American Redstart, Ovenbird, Winter Wren and Red-breasted Nuthatch. Documented occurrences of Woodland Area-sensitive Breeding Birds were limited to forested areas of the property and adjacent lands, and not in locations where development is proposed.



5.1.4 Special Concern & Rare Wildlife Species

There were no species designated as SC or 'provincially rare' documented during the 2017 field investigations.

5.2 Habitat for Endangered & Threatened Species

Potential habitat for species listed as THR or END was identified on and adjacent to the property.

5.2.1 END Bat species (Little Brown Myotis, Northern Myotis, Tri-colored Bat)

Forested habitat on and adjacent to the property has the potential to provide habitat for END bat species.

5.2.2 Barn Swallow

Barn Swallows were documented on adjacent lands during 2017 field studies. Various structures (*i.e.* sheds, houses) are located to the west of the property, which may provide opportunities for nesting. However, there is no significant habitat for Barn Swallow located on the property.

5.2.3 Butternut

There were no Butternuts observed on the property during Azimuth's 2017 vegetation surveys.

5.2.4 Blanding's Turtle

Blanding's Turtle is an aquatic turtle that occurs in a variety of wetland habitats. Largely a habitat generalist, the species is described as inhabiting 'lakes, permanent ponds, temporary ponds, slow flowing brooks, creeks, marshes, river sloughs, marshy meadows, man-made channels, farm fields, coastal areas, and the bays of Lake Erie' (COSEWIC, 2005). Key habitat also includes areas of fen, marsh, swamp, open areas of sand or fine gravel, and rock barren. Potential general habitat areas for Blanding's Turtle including Staging and Nesting were identified on the easternmost limits of the property. A Blanding's Turtle was confirmed in 2017 within 2km of the property.

The General Habitat Description Guidance document produced by the MNRF for the Blanding's Turtle describes habitat as follows:

- Category 1 habitat is considered to be a confirmed nesting or overwintering location and an area within 30 m of that site.



- Category 2 habitat as the wetland complex that extends up to 2km from an occurrence, and the area within 30 m around those suitable wetlands or water bodies.
- Category 3 habitat is considered to be an area between 30m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2km of an occurrence.

Based on the above, wetland communities within Natural Heritage Core Areas adjacent to the property would be considered Category 2 Blanding's Turtle habitat.

5.3 Significant Natural Heritage Features Summary

Of the candidate SNHF listed above, the following are carried through to the Impact Assessment, based on potential for impacts:

- Significant Wildlife Habitat: Seeps and Springs, Amphibian Breeding Habitat (Woodland), and Area-sensitive Breeding Bird Habitat.
- Habitat of Endangered and Threatened Species: END Bats and Blanding's Turtle.

6.0 IMPACT ASSESSMENT

6.1 Candidate Significant Wildlife Habitat

6.1.1 Seeps and Springs

There is no development proposed within the Natural Heritage Core, where a small seepage feature was noted adjacent to the property. As such, there will be no direct impact to areas where limited seepage activity was observed. A feature based water balance will be prepared during detailed design to assess potential for indirect impacts and provide recommendations for mitigation if required.

6.1.2 Amphibian Breeding Habitat (Woodland)

Woodland cover with potential to provide amphibian breeding habitat function on adjacent lands will remain intact post-development. This habitat function was not documented on the property, and thus, any potential impacts arising from development would be indirect only. To minimize the potential for such indirect impacts, the installation of fencing along lots backing onto the Natural Heritage Core area is recommended.

6.1.3 Area-sensitive Breeding Bird Habitat

Woodland cover with potential to provide area-sensitive breeding bird habitat function on adjacent lands will remain intact post-development. This habitat function was not documented on areas of the property where development is proposed, and thus, any



potential impacts arising from development would be indirect only. To minimize the potential for such indirect impacts, the installation of fencing along lots backing onto the Natural Heritage Core area is recommended.

6.2 Habitat of Endangered and Threatened Species

6.2.1 END Bats

It is our understanding that the proposed development would not require the removal of any trees with potential to provide habitat function for END bat species. As such, it is not expected that potential habitat for END bat species would be impacted by proposed development of the property.

6.2.2 Blanding's Turtle

Due to a confirmed observation of Blanding's Turtle (2017) within 2 km of wetlands within the Natural Heritage Core area, such wetlands are now designated Blanding's Turtle habitat by the MNRF. A 30m buffer will remain adjacent to this designated habitat and it has been recommended that appropriate fencing be installed along the lots backing onto the Natural Heritage Core to ensure that the residential development will not directly or indirectly impact the internal wetlands or the functions maintained within that feature. No direct removals of areas with potential to be utilized by Blanding's Turtle are proposed associated with the current Draft Plan. It is expected that this habitat function would not be impacted by the proposed development. Blanding's Turtle habitat within the Natural Heritage Core Area is protected by the existing 30m wetland buffer.

7.0 RECOMMENDATIONS

7.1 General

It is recommended that healthy, mature native trees present in the existing hedgerows be maintained and preserved wherever possible as they provide additional habitat and cover for wildlife movement in the area.

7.2 Species at Risk

Azimuth is currently consulting with the MNRF regarding SAR within the overall Hewitt's SPA. The MNRF will be able to provide further direction to avoid contravention of Ontario's ESA.

7.3 Buffer Restoration

As per recommendations from the LSRCA, the 30m buffer from the Natural Heritage Core Area should be composed of "natural self-sustaining vegetation". The buffer zone amounts to approximately 0.3ha and currently is considered to be largely maintained for



the purpose of cultivation. Details related to the natural self-sustaining vegetation within the buffer zone will be provided at detail design.

8.0 CONCLUSIONS

Based on the results of this NHE, it is not expected that the proposed development will negatively impact significant natural heritage features or ecological functions present on or adjacent to the subject property – including habitat of END and THR species.

Provided that recommended mitigation measures are followed, the draft plan design as proposed will result in a development which is consistent with the policies set out within the PPS, the regulations set out within Ontario's ESA, and the City of Barrie.



9.0 REFERENCES

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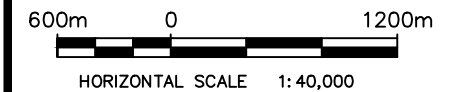
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Kempenfelt Bay



LEGEND:

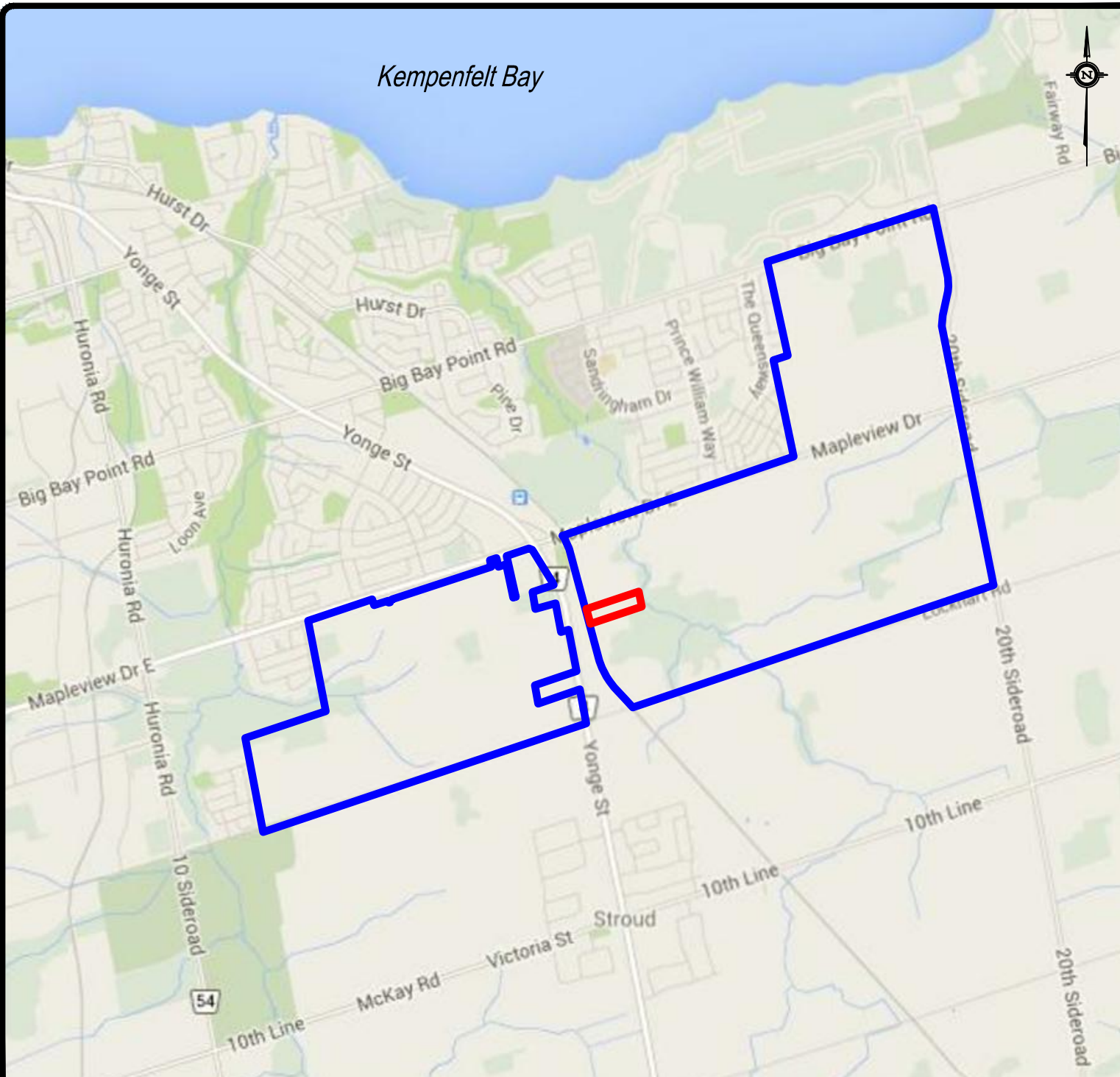
- Approx. Property Boundary
- Hewitt's Secondary Plan Area

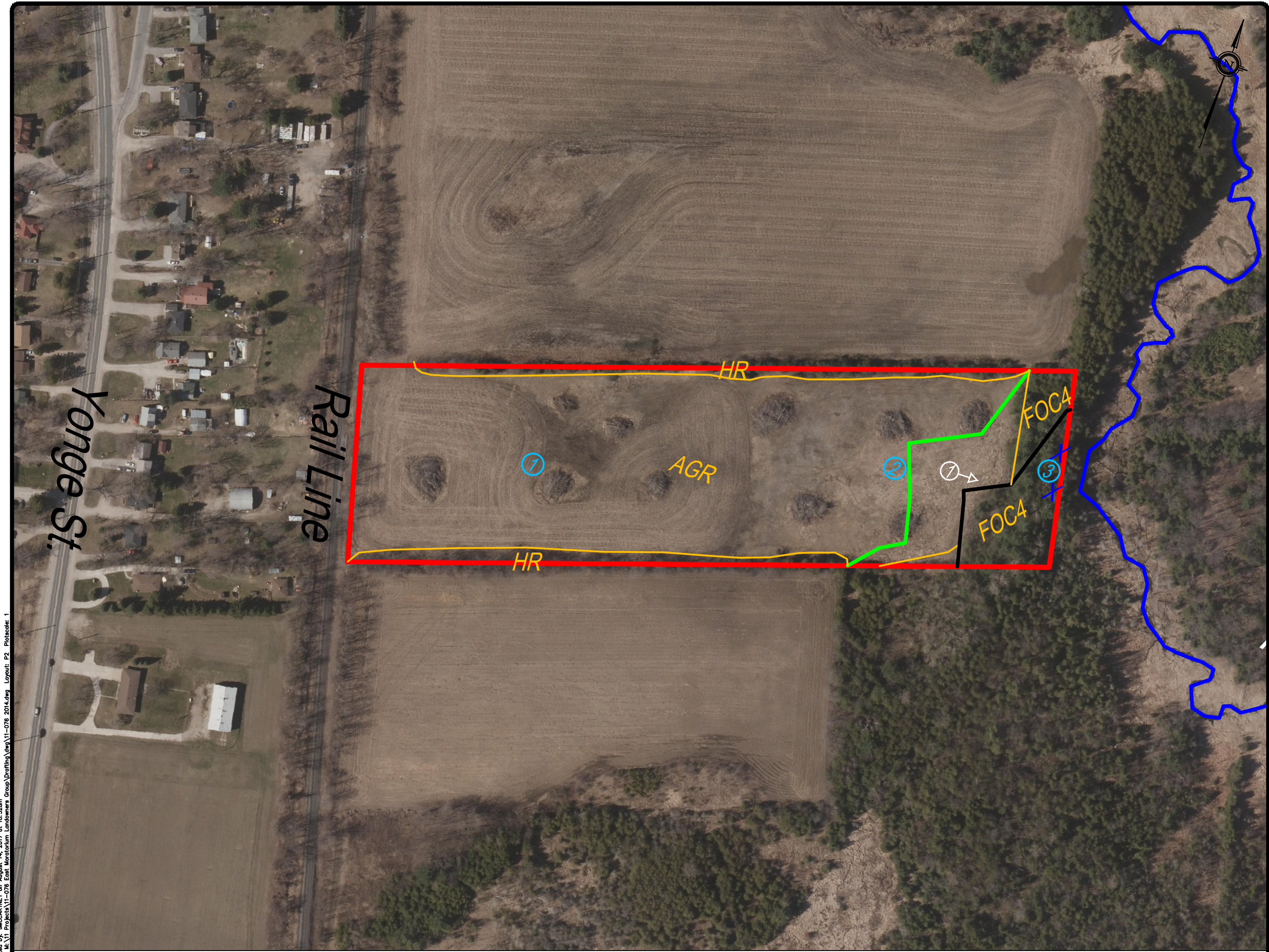


Study Area Location
2303757 Ontario Inc.

Hewitt's Secondary Plan
Barrie, ON

DATE ISSUED: December 2016	Figure No. 1
CREATED BY: JLM	
PROJECT NO.: 11-076p	
REFERENCE: Google Maps	

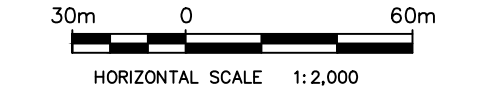




LEGEND:

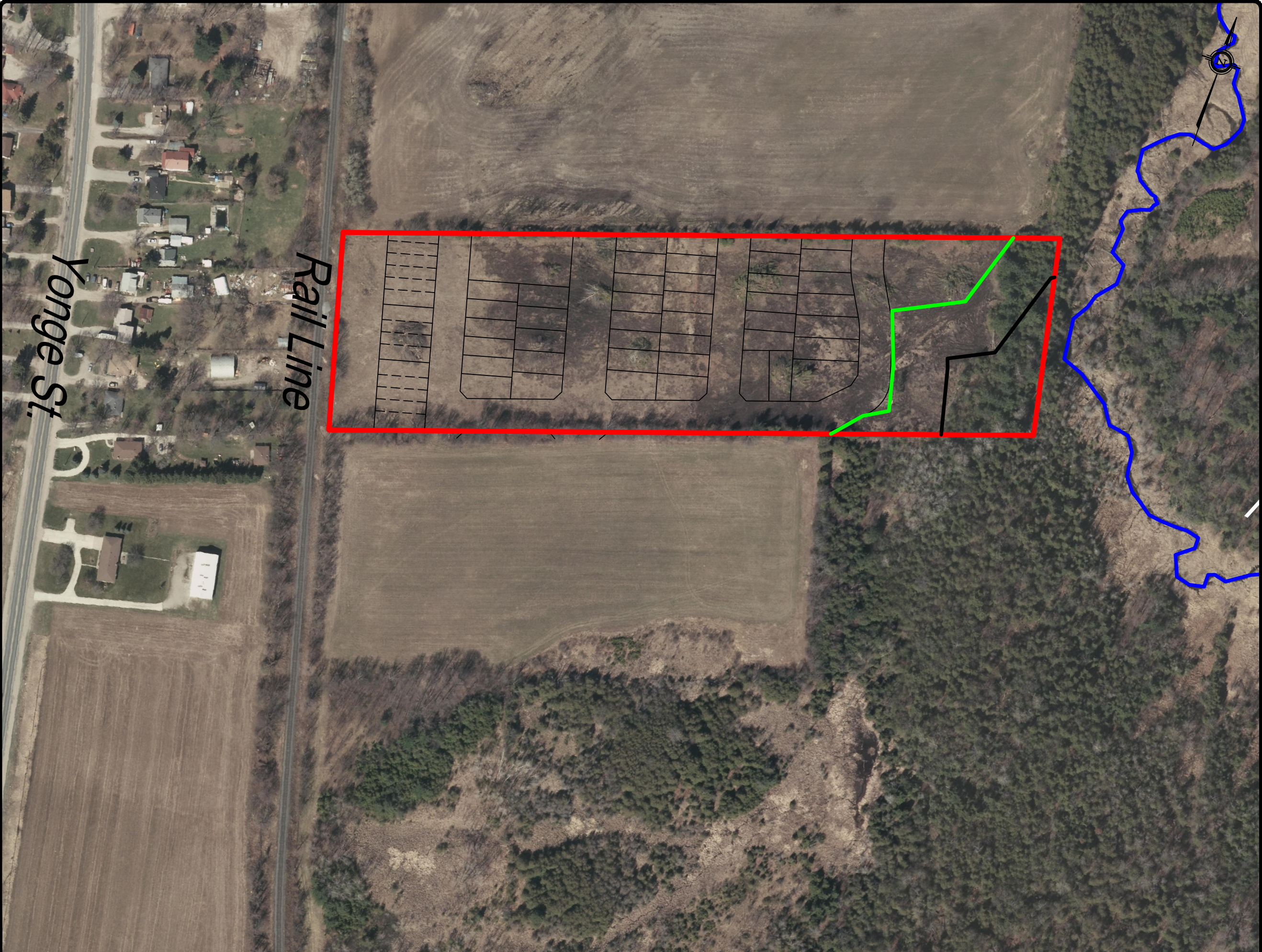
- Property Boundary/Study Area
- Hewitts Creek
- Ground Water Seeps
- Amphibian Survey Stations (white)
- Bird Survey Stations
- Natural Heritage Core
- 30m Buffer to Natural Heritage Core Areas
- Vegetation Communities

AGR Agricultural Field
CUM1 Mineral Cultural Meadow Ecosite
FOC4 Fresh - Moist White Cedar Coniferous Forest Type
HR Hedgerow



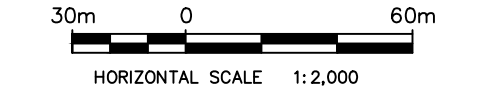
Environmental Features		
2303757 Ontario Inc. Hewitt's Secondary Plan, Barrie, ON		
DATE ISSUED:	August 2017	Figure No. 2
CREATED BY:	JLM	
PROJECT NO.:	11-076p	
REFERENCE:	First Base Solutions	

Plotted by: JMCARTNEY on January 26, 2017 at 2:52pm
File: M:\11 Projects\11-076 East Moratorium Landowners Group\Drafting\dwg\11-076 2014.dwg Layout: P3 PlotScale: 2



LEGEND:

- Property Boundary/Study Area
- Hewitts Creek
- Natural Heritage Core
- 30m Buffer to Natural Heritage Core Areas



Proposed Development		
Bulut Lands 1091369 Ontario Inc. Hewitt's Secondary Plan, Barrie, ON		
DATE ISSUED:	December 2016	Figure No. 3
CREATED BY:	JLM	
PROJECT NO.:	11-076p	
REFERENCE:	First Base Solutions	

Table 1: Species at Risk Habitat Summary

Common Name	Species Name	MNRF	Key Habitats Used By Species ¹	Initial Assessment
American Ginseng	<i>Panax quinquefolius</i>	END	It typically grows in rich, moist, but well-drained, and relatively mature, deciduous woods dominated by Sugar Maple (<i>Acer saccharum</i>), White Ash (<i>Fraxinus americana</i>) and American Basswood (<i>Tilia americana</i>). ESA Protection: Species and general habitat protection	Habitat within property is not representative of key habitat.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	SC	They nest in a variety of habitats and forest types, almost always near a major lake or river. They usually nest in large trees such as pine and poplar. ESA Protection: none	No critical habitat, no evidence of nesting present on or adjacent to the property.
Bank Swallow	<i>Riparia riparia</i>	THR	Nests in burrows excavated in natural and human-made settings with vertical sand and silt faces. Colonies commonly found in sand or gravel pits, lakeshores, and along river banks. ESA Protection: Species and general habitat protection	No critical habitat, no evidence of nesting present on or adjacent to the property. No Bank Swallow documented during breeding bird surveys.
Barn Swallow	<i>Hirundo rustica</i>	THR	Ledges and walls of man-made structures such as buildings, barns, boathouses Cliffs or caves ESA Protection: Species and general habitat protection	Barn Swallow were observed on adjacent lands and suitable nesting habitat (building) are located on adjacent properties.
Black Tern	<i>Chlidonias niger</i>	SC	Colonial nesters typically within cattail marshes and other shallow marsh types. Floating nests. ESA Protection: N/A	Habitat within property is not representative of key habitat.
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	Blanding's Turtles are a primarily aquatic species that prefer wetland habitats, lakes, ponds, slow-moving streams, etc., however they may utilize upland areas to search for suitable basking and nesting sites. In general, preferred wetland sites are eutrophic and characterized by shallow water, organic substrates, and a high density of aquatic vegetation (COSEWIC, 2005). ESA Protection: Species and regulated habitat protection	Designated Blanding's Turtle habitat located adjacent to property, within wetlands associated with Hewitt's Creek in the Natural Heritage Core Area.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >4ha (MNRF, 2000) ESA Protection: Species and general habitat protection	Habitat within property is not representative of key habitat.
Butternut	<i>Juglans cinerea</i>	END	Occurs on a variety of sites, including dry rocker soils (particularly those of limestone origin); grows best on well-drained fertile soils in shallow valleys and on gradual slopes; singly or in small groups mixed with other species. Intolerant of shade (Farrar 1995) ESA Protection: Species and general habitat protection	No Butternut documented during vascular plant surveys.
Canada Warbler	<i>Wilsonia canadensis</i>	SC	Wet, mixed deciduous-coniferous forests with a well developed shrub layer. Shrub marshes, red-maple stands, cedar stands, black spruce swamps, larch and riparian woodlands along rivers and lakes. (COSEWIC, 2008) ESA Protection: N/A	No Canada Warbler documented during breeding bird surveys.

Table 1: Species at Risk Habitat Summary

Common Name	Species Name	MNRF	Key Habitats Used By Species ¹	Initial Assessment
Chimney Swift	<i>Chaetura pelagica</i>	THR	Nests primarily in chimneys though some populations (i.e. in rural areas) may nest in cavity trees (Cadman 2007). Recent changes in chimney design and covering of openings to prevent wildlife access may be a significant factor in recent declines in numbers (Adams and Lindsey 2010). ESA Protection: Species and general habitat protection	No potentially suitable habitat within study area (i.e. Chimneys). No Chimney Swift documented during breeding bird surveys.
Common Nighthawk	<i>Chordeiles minor</i>	SC	Open habitats including sand dunes, beaches recently logged/burned over areas, forest clearings, short grass prairies, pastures, open forests, bogs, marshes, lakeshores, gravel roads, mine tailings, quarries, and other open relatively clear areas. (COSEWIC, 2007) ESA Protection: N/A	Habitat within study area is not representative of key habitat.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	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 >4 ha in size (MNRF, 2000) ESA Protection: Species and general habitat protection	Habitat within property is not representative of key habitat. No Eastern Meadowlark documented during breeding bird surveys.
Eastern Musk Turtle	<i>Sternotherus oderatus</i>	SC	Marsh, swamp, fen (bog). Eastern Musk Turtles are found in ponds, lakes, marshes and rivers that are generally slow-moving have abundant emergent vegetation and muddy bottoms that they burrow into for winter hibernation (MNRF 2015). ESA Protection: N/A	Habitat within property boundaries is not suitable for this species. Adjacent wetlands within Natural Heritage Core Area may be suitable.
Eastern Prairie White-fringed Orchid	<i>Platanthera leucophaea</i>	END	Wetlands, fens, swamps, and tallgrass prairie. Ditches, railroad rights of way. ESA Protection: Species and general habitat protection	Wetland habitats on and adjacent to the property are not suitable for this species. Populations of this species are rare and highly isolated; generally restricted to fen habitat in Ontario.
Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	Marsh, swamp, fen (bog). Eastern Ribbonsnake prefer to live in close proximity to water, particularly marshes and areas with shallow water where opportunities to hunt frogs and fish are possible (MNRF, 2015). ESA Protection: N/A	Habitat within property is not representative of key habitat. Potentially suitable within adjacent riparian wetlands.
Eastern Small-footed Bat	<i>Myotis Lleibii</i>	END	Generally occurs in mountainous or rocky regions where it has been noted to roost in large boulders and beneath slabs of rock and stones. Hibernation is typically confined to caves and abandoned mine adits. (Best and Jennings, 1997 and MNRF, 2014) ESA Protection: Species and general habitat protection	Species not expected to be present on or adjacent to study area. Habitat is not representative of key habitat.
Eastern Wood-pewee	<i>Contopus virens</i>	SC	Typically associated with deciduous and mixed forests with little understory vegetation; Often found in clearings or on edges of deciduous and mixed forests (MNRF, 2015). ESA Protection: N/A	Habitat within property is not representative of key habitat. Potentially suitable habitat within adjacent forests.
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	SC	Areas of early successional scrub surrounded by Mature Forests including dry uplands, swamp forests, and marshes (COSEWIC, 2006). ESA Protection: N/A	Habitat within property is not representative of key habitat. No Golden-winged Warbler documented during breeding bird surveys.

Table 1: Species at Risk Habitat Summary

Common Name	Species Name	MNRF	Key Habitats Used By Species ¹	Initial Assessment
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	It lives in open grassland areas with well-drained, sandy soil. It will also nest in hayfields and pasture, as well as alvars, prairies and occasionally grain crops such as barley. ESA Protection: N/A	Habitat within property is not representative of key habitat. No Grasshopper Sparrow documented during breeding bird surveys.
Henslow's Sparrow	<i>Ammodramus henslowii</i>	END	Nests in large, open, usually moist to wet, often flat fields with a high graminoid to forb/shrub ratio. Vegetation must be dense and over 30cm in height ESA Protection: Species and general habitat protection	Habitat within property is not representative of key habitat. No Henslow's Sparrow documented during breeding bird surveys.
Least Bittern	<i>Ixobrychus exilis</i>	THR	Least Bittern prefer large, freshwater marshes with dense aquatic vegetation (e.g. Cattails) with interspersed clumps of woody vegetation and open water (COSEWIC, 2001). ESA Protection: Species and general habitat protection	Habitat on site is not representative of ideal habitat for the species.
Little Brown Bat	<i>Myotis lucifugus</i>	END	Forests and regularly aging human structures as maternity roost sites. Regularly associated with attics of older buildings and barns for summer maternity roost colonies. Overwintering sites are characteristically mines or caves, but can often include buildings (MNRF 2014, COSEWIC 2013a). ESA Protection: Species and general habitat protection	Potentially suitable habitat within forest community.
Massasauga	<i>Sistrurus catenatus</i>	THR (Great Lakes - St Lawrence Population)	Tall grass prairie, bogs, marshes, shorelines, forests and alvars. Within all of these habitats, Massasaugas hibernate in the crevasses in bedrock, sphagnum swamps, tree root cavities and animal burrows. ESA Protection: Species and general habitat protection	Species not expected to be present on or adjacent to the property. Populations of this species are well-documented in Ontario, and the Study Area is well-outside of present range.
Monarch Butterfly	<i>Danaus plexippus</i>	SC	Caterpillars - Milkweed in meadows and open areas Adults - Meadows and diverse habitats with a variety of wildflowers (MNRF, 2015) ESA Protection: N/A	No significant areas of Milkweed. No potentially suitable habitat on the property.
Northern Long-eared Bat	<i>Myotis septentrionalis</i>	END	Maternity roost sites are generally located within deciduous and mixed forests and focused within leaf . Overwintering sites are characteristically mines or caves, but can include buildings. ESA Protection: Species and general habitat protection	Potentially suitable habitat within forest community.
Northern Map Turtle	<i>Graptemys geographica</i>	SC	Northern Map Turtles prefer rivers and lakeshores with available emergent rocks and fallen trees for basking. Deep, slow-moving sections of rivers are utilized for hibernation (COSEWIC, 2002a). ESA Protection: N/A	Species not expected to be present on or adjacent to the property. Habitat is not representative of key habitat.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	Natural forest openings, forest edges near natural openings (such as wetlands) or open to semi-open forest stands. Occasionally human made openings (such as clear cuts). Presence of tall snags and residual live trees is essential. (COSEWIC, 2007 and MNRF, 2015)) ESA Protection: N/A	Habitat is not representative of key habitat. No Olive-sided Flycatcher documented during breeding bird surveys.

Table 1: Species at Risk Habitat Summary

Common Name	Species Name	MNRF	Key Habitats Used By Species ¹	Initial Assessment
Peregrine Falcon	<i>Falco peregrinus</i>	THR	Peregrine Falcons nest on tall, steep cliff ledges close to large bodies of water. Urban falcons raise their young on ledges of tall buildings. ESA Protection: Species and regulated habitat protection	Species not expected to be present on or adjacent to the study area. Habitat is not representative of key habitat.
Purple Twayblade	<i>Liparis liliifolia</i>	THR	Open oak woodland and savannah, mixed deciduous forest, shrub thicket, shrub alvar, deciduous swamp, and even conifer plantations. ESA Protection: Species and general habitat protection	Habitat on or adjacent to this property is not suitable for this species. Populations of this species are rare and isolated in Ontario.
Red-Headed Woodpecker	<i>Melanerpes erythrocephalus</i>	SC	Oak and Beech Forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, beaver ponds and burns (COSEWIC, 2007#). ESA Protection: N/A	Potentially suitable habitat within forest community and along hedgerows.
Short Eared Owl	<i>Asio flammeus</i>	SC	Short-eared Owl prefer large, dense, well-drained grasslands (such as tallgrass prairie) for breeding and nesting, preferably in proximity to large, coastal wetland units (COSEWIC, 2008b). Often Nest on the ground. ESA Protection: N/A	Species not expected to be present within study area. Habitat is not representative of key habitat.
Snapping Turtle	<i>Chelydra serpentina</i>	SC	Snapping Turtle utilize a wide variety of aquatic habitat, but prefer shallow waters with abundant leaf litter. Femals travel overland during the nesting season in search of suitable nesting sites such as gravel shoulders of roadways, dams, and aggregate pits (MNRF, 2015). ESA Protection: N/A	Potentially suitable habitat within adjacent wetlands. Wetlands that meet this criteria are located within the Natural Heritage Core Area. Snapping Turtle noted in NHIC query for the area surrounding the property.
Tri-colored Bat	<i>Perimyotis subflavus</i>	END	During the summer, the Tri-colored Bat is found in a variety of forested habitats. It forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. ESA Protection: Species and General Habitat Protection	Potentially suitable habitat within forest community.
Whip-Poor-Will	<i>Caprimulgus vociferus</i>	THR	Whip-poor-will prefer areas with a mix of open and forested habitat, open woodlands, or openings in mature forests (MNRF, 2015). ESA Protection: Species and general habitat protection	Not expected to occur on the property. Habitat is not representative of key habitat.
Wood Thrush	<i>Hylocichla mustelina</i>	SC	Typically associated with moist mature deciduous and mixed forests with a well developed understory. ESA Protection: N/A	Habitat within property is not representative of key habitat. Potentially suitable habitat on adjacent lands. No Wood Thrush documented during breeding bird surveys.

1. Habitat as outlined within MNRF's Species at Risk Website (<https://www.ontario.ca/environment-and-energy/species-risk-ontario-list>) or Species Specific COSEWIC Reports referenced in this document.

Table 2.1 - Seasonal Concentrations of Areas of Animals

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Waterfowl Stopover and Staging Areas (Terrestrial) Rationale: Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	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. <u>Information Sources</u> - 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 - 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” - Any mixed species aggregations of 100 or more individuals required. - The flooded field ecosite habitat plus a 100-300m radius area, dependant on local site conditions and adjacent land use is the significant wildlife habitat. - 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 Index #7 provides development effects and mitigation measures.	No suitable 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 American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback Ruddy Duck	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). <u>Information Sources</u> - 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 Areas	Studies carried out and verified presence of: - Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days. - Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH. - The combined area of the ELC ecosites and a 100m radius area is the SWH. - Wetland area and shorelines associated with sites identified within the SWHTG Appendix K are significant wildlife habitat. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - 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 Index #7 provides development effects and mitigation measures.	No suitable habitat.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
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. <u>Information Sources</u> - 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 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 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. - Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #8 provides development effects and mitigation measures.	No suitable habitat.
Raptor Wintering Area Rationale: Sites used by multiple species 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	<u>Hawks/Owls:</u> 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. <u>Bald Eagle:</u> 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 sites (hawk/owl) need to be > 20 ha with a combination of forest and upland. - Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands. - Field area of the habitat is to be windswept with limited snow depth or accumulation. - Eagle sites have open water, large trees and snags available for roosting. <u>Information Sources:</u> - OMNRF Ecologist or Biologist Field Naturalist Clubs - Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area - Data from Bird Studies Canada - Results of Christmas Bird Counts Reports and other information available from Conservation Authorities.	Studies confirm the use of these habitats by: - One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two of the listed hawk/owl species. - To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. - 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”. - SWHMiST Index #10 and #11 provides development effects and mitigation measures.	No suitable habitat.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Bat Hibernacula Rationale: Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured 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 as SWH - The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> - OMNRF for possible locations and contact for local experts - Natural Heritage Information Center (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. - The habitat area includes a 200m radius around the entrance of the hibernaculum, for most development types and 1000m for wind farms - Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects. - SWHMiST Index #1 provides development effects and mitigation measures.	No suitable 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 buildings (buildings are not considered to be SWH). - Maternity roosts are not found in caves and mines in Ontario. - Maternity colonies located in Mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees. - Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. - 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. <u>Information Sources</u> - 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 >5 Adult Female Silver-haired Bats - The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. - Evaluation methods for maternity colonies should be conducted following methods outlined in the “Bats and Bat Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #12 provides development effects and mitigation measures.	Potentially suitable habitat within forest communities within Natural Core Area.
Turtle Wintering Areas 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. - Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. <u>Information Sources</u> - EIS studies carried out by Conservation Authorities. - Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. - OMNRF Ecologist or Biologist - Field Naturalist clubs - Natural Heritage Information Center (NHIC)	- Presence of 5 over-wintering Midland Painted Turtles is significant. - One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. - 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. – May) - Congregation of turtles is more common where wintering areas are limited and therefore significant - SWHMiST Index #28 provides development effects and mitigation measures for turtle wintering habitat.	No suitable habitat on subject property. Potentially suitable habitat within forest communities within Natural Core Area.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Reptile Hibernaculum Rationale; Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	<u>Snakes:</u> Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake <u>Special Concern:</u> Milksnake Eastern Ribbonsnake <u>Lizard:</u> <u>Special Concern</u> (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	- For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. - Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. - 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. - Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures. <u>Information Sources</u> - In spring, local residents or landowners may have observed the emergence of snakes on their property (eg. old dug wells). - Reports and other information available from Conservation Authorities. - Field Naturalists clubs - University herpetologists - Natural Heritage Information Center (NHIC) - OMNRF ecologist or biologist may be aware of locations of wintering skinks	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 (e.g. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct) <u>Note:</u> If there are Special Concern Species present, then site is SWH <u>Note:</u> 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 30 m radius area is the SWH. - SWHMiST Index #13 provides development effects and mitigation measures for snake hibernacula. - Presence of any active hibernaculum for skink is significant. - SWHMiST Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	No suitable habitat on subject property. Potentially suitable turtle wintering habitat on adjacent lands within Natural Core Area.
Colonially -Nesting Bird Breeding Habitat (Bank and Cliff) <u>Rationale:</u> 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. <u>Information Sources</u> - Reports and other information available from Conservation Authorities. - Ontario Breeding Bird Atlas - Bird Studies Canada; <i>NatureCounts</i> http://www.birdscanada.org/birdmon/ - Field Naturalist Clubs.	Studies confirming: - Presence of 1 or more nesting sites with 8or 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. - 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”. - SWHMiST Index #4 provides development effects and mitigation measures.	No suitable habitat.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
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. <u>Information Sources</u> - Ontario Breeding Bird Atlas, colonial nest records. - Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). - Natural Heritage Information Center (NHIC) Mixed Wader Nesting Colony - Aerial photographs can help identify large heronries. - Reports and other information available from CAs. - MNRF District Offices - Local naturalist clubs	Studies confirming: - Presence of 5 or more active nests of Great Blue Heron or other listed species. - The habitat extends from 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. - Confirmation of active heronries are to 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 Index #5 provides development effects and mitigation measures.	No suitable habitat. No Heron nests or heronries observed on site.
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 low bushes in close proximity to streams and irrigation ditches within farmlands. <u>Information Sources</u> - Ontario Breeding Bird Atlas , rare/colonial species records. - Canadian Wildlife Service - Reports and other information available from CAs. - Natural Heritage Information Center (NHIC) Colonial Waterbird Nesting Area - MNRF District Offices - Field Naturalist clubs	Studies confirming: - Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. - Presence of 5 or more pairs for Brewer’s Blackbird. - Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. - The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH. - Studies would be done during May/June when actively nesting. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. - SWHMiST Index #6 provides development effects and mitigation measures.	No suitable habitat.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Migratory Butterfly Stopover Areas <u>Rationale:</u> Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter.	Painted Lady Red Admiral <u>Special Concern</u> Monarch	Combination of ELC Community Series; need to have present one Community Series from each land class: <u>Field:</u> CUM CUT CUS <u>Forest:</u> FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario. • 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. • 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. • 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. <u>Information Sources</u> • OMNRF (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). 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, significant variation can occur between years and multiple years of sampling should occur. • 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 Red Admiral’s is to be considered significant. • SWHMiST Index #16 provides development effects and mitigation measures.	No suitable habitat. Not within 5km of Lake Ontario.
Landbird Migratory Stopover Areas <u>Rationale:</u> Sites with a high diversity of species as well as high numbers are most significant.	All migratory songbirds. Canadian Wildlife Service Ontario website. All migratory songbirds. Canadian Wildlife Service Ontario website:	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha in size and within 5 km of Lake Ontario. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Ontario are more significant. • Sites have a variety of habitats; forest, grassland and wetland complexes. • The largest sites are more significant. • Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore and located within 5km of Lake Ontario are Candidate SWH . <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and naturalist club • 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. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr./May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”. • SWHMiST Index #9 provides development effects.	No suitable habitat. Not located within 5km of Lake Ontario.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Deer Yarding Areas Rationale: Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in “yards” to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	- Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. - The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%. - OMNRF determines deer yards following methods outlined in “Selected Wildlife and Habitat Features: Inventory Manual”. - Woodlots with high densities of deer due to artificial feeding are not significant.	No Studies Required: - Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. - Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). - Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. - If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST Index #2 provides development effects and mitigation measures.	Currently not mapped by MNRF as deer yard. No obvious deer yard function.
Deer Winter Congregation Areas Rationale: Deer movement during winter in the southern areas of Ecoregion 6E 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.	White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	- Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. - Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands . - If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. - 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. - Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> - MNRF District Offices - LIO/NRVIS	Studies confirm: - Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF. - 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. - Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques, ground or road surveys. or a pellet count deer density survey. - If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. - SWHMiST Index #2 provides development effects and mitigation measures.	Currently not mapped by MNRF as deer yard. No obvious deer yard function.

Table 2.2 - Rare Vegetation Communities

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
Cliffs and Talus Slopes Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO TAS TAT CLO CLS 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. <u>Information Sources</u> - The Niagara Escarpment Commission has detailed information on location of these habitats. - OMNRF District - Natural Heritage Information Center (NHIC) has location information available on their website - Field Naturalist clubs - Conservation Authorities	- Confirm any ELC Vegetation Type for Cliffs or Talus Slopes - SWHMiST Index #21 provides development effects and mitigation measures.	Not present on subject lands.
Sand Barren 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. 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. <u>Information Sources</u> - MNRF Districts - Natural Heritage Information Center (NHIC) has location information available on their website. - Field Naturalist clubs - Conservation Authorities	- Confirm any ELC Vegetation Type for Sand Barrens - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.) - SWHMiST Index #20 provides development effects and mitigation measures.	Not present on subject lands.
Alvar Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Species: 1) <i>Carex crawei</i> 2) <i>Panicum philadelphicum</i> 3) <i>Eleocharis compressa</i> 4) <i>Scutellaria parvula</i> 5) <i>Trichostema brachiatum</i> These indicator species are very specific to Alvars within Ecoregion 6E.	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 plants. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. Vegetation cover varies from patchy to barren with a less than 60% tree cover.	An Alvar site > 0.5 ha in size. <u>Information Sources</u> - Alvars of Ontario (2000), Federation of Ontario Naturalists. - Ontario Nature – Conserving Great Lakes Alvars. - Natural Heritage Information Center (NHIC) has location information available on their website - OMNRF Districts - Field Naturalist clubs - Conservation Authorities	- Field studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). - The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses. - SWHMiST Index #17 provides development effects and mitigation measures.	Not present on subject lands.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Rare Vegetation Community	Candidate SWH			Confirmed SWH	Assessment
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
Old Growth Forest Rationale: Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey 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 areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest. <u>Information Sources</u> - 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 are >140 years old, then the area containing these trees is Significant Wildlife Habitat. - The forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present). - The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. - Determine ELC vegetation types for the forest area containing the old growth characteristics. - SWHMiST Index #23 provides development effects and mitigation measures.	Not present on subject lands.
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%.	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> - Natural Heritage Information Center (NHIC) has location information available on their website - OMNRF Districts - Field Naturalist clubs - Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in Appendix N should be present. Note: Savannah plant spp. list from Ecoregion 6E should be used. - Area of the ELC Ecosite is the SWH. - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). - SWHMiST Index #18 provides development effects and mitigation measures.	Not present on subject lands.
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.	No minimum size to site. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. <u>Information Sources</u> - Natural Heritage Information Center (NHIC) has location information available on their website - OMNRF Districts - Field Naturalist clubs - Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 6E should be used. - Area of the ELC Ecosite is the SWH. - Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). - SWHMiST Index #19 provides development effects and mitigation measures.	Not present on subject lands.
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. 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 The OMNRF/NHIC will have up to date listing for rare vegetation communities. <u>Information Sources</u> - Natural Heritage Information Center (NHIC) has location information available on their website - OMNRF Districts - Field Naturalist 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. - Area of the ELC Vegetation Type polygon is the SWH. - SWHMiST Index #37 provides development effects and mitigation measures.	Not present on subject lands.

Table 2.3 - Specialized Habitat for Wildlife

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
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	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. - Upland areas should be at least 120 m 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. <u>Information Sources</u> - 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 Conservation Authorities.	Studies confirmed: - Presence of 3 or more nesting pairs for listed species excluding Mallards, or; - Presence of 10 or more nesting pairs for listed species including Mallards. - 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”. - 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 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. - SWHMiST Index #25 provides development effects and mitigation measures.	No suitable habitat.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat Rationale: Nest sites are fairly uncommon in Eco-region 6E 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 (<i>e.g.</i> telephone poles and constructed nesting platforms). <u>Information Sources</u> - 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 and does not represent all the habitat. - Nature Counts, Ontario Nest Records Scheme data. - OMNRF Districts - Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented - Reports and other information available from Conservation Authorities. - Field Naturalists clubs	Studies confirm the use of these nests by: - One or more active Osprey or Bald Eagle nests in an area. - 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 300 m radius around the nest or the contiguous woodland stand is the SWH, maintaining undisturbed shorelines with large trees within this area is important. - For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat. - 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. - 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”. - SWHMiST Index #26 provides development effects and mitigation measures.	No suitable habitat.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Woodland Raptor Nesting Habitat Rationale: Nests sites for these species are rarely identified; these area sensitive habitats and 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 >30ha with >10ha of interior habitat. Interior habitat determined with a 200m buffer - 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. <u>Information Sources</u> - OMNRF Districts. - Check the Ontario Breeding Bird Atlas or Rare Breeding Birds in Ontario for species documented. - Check data from Bird Studies Canada. - Reports and other information available from Conservation Authorities.	Studies confirm: - Presence of 1 or more active nests from species list is considered significant. - Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH . (The 28 ha 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. - Broad-winged Hawk and Coopers Hawk– A 100m radius around the nest is the SWH. - Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. - Conduct field investigations from mid-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 Index #27 provides development effects and mitigation measures.	No Woodland Raptors or nests were observed on the property. No known raptor nests within the general area.
Turtle Nesting Areas Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle <u>Special Concern Species</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) 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. <u>Information Sources</u> - 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. - One or more Northern Map Turtle or Snapping Turtle nesting is a SWH. - 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. - Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. - Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. - SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	No potentially suitable habitat identified on site.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
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. - Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species. <u>Information Sources</u> - Topographical Map - Thermography - Hydrological surveys conducted by Conservation Authorities and MOE. - Field Naturalists clubs 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 seeps/springs should be considered SWH. - The area of a ELC forest ecosite or an ecoelement within 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 the habitat. - SWHMiST Index #30 provides development effects and mitigation measures.	Groundwater seeps identified within FOC community.
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) >500m² (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). 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. <u>Information Sources</u> - 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 District - OMNRF 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 species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3. - A combination of observational study and call count surveys 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. 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 Index #14 provides development effects and mitigation measures.	Confirmed SWH in proximity to subject property. Greater than 20 Spring Peepers were observed in Natural Core Area (NRSI). Spring Peepers documented in 2017 during Azimuth breeding amphibian survey – on adjacent lands, not on property.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Amphibian Breeding Habitat (Wetlands) 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 (<i>e.g.</i> Bull Frog) may be adjacent to woodlands.	- Wetlands>500m² (about 25m diameter), supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. - 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. <u>Information Sources</u> - 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 Conservation Authorities	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. or; Wetland with confirmed breeding Bullfrogs are significant. - The ELC ecosite wetland area and the shoreline are the SWH. - A combination of observational study and call count surveys will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the 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 Index #15 provides development effects and mitigation measures.	Spring Peepers documented in 2017 during Azimuth breeding amphibian survey – on adjacent lands, not on property.
Woodland Area-Sensitive Bird Breeding Habitat Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren 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 >30 ha. - Interior forest habitat is at least 200 m from forest edge habitat. <u>Information Sources</u> - Local bird 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 Conservation Authorities.	Studies confirm: - Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. - Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. - Conduct field investigations 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”. - SWHMiST Index #34 provides development effects and mitigation measures.	Confirmed Woodland Area-sensitive Bird Breeding Habitat in the vicinity of property. The following species documented during Azimuth’s 2017 breeding bird survey: Black-and-white Warbler, American Redstart, Ovenbird, Winter Wren and Red-breasted Nuthatch.

Table 2.4 - Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
Marsh Breeding Bird Habitat Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane 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. - 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. <u>Information Sources</u> - OMNRF District and wetland evaluations. - Field Naturalist clubs - Natural Heritage Information Center (NHIC) Records. - Reports and other information available from Conservation Authorities. - Ontario Breeding Bird Atlas	Studies confirm: - Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species. - Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. - 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”. - SWHMiST Index #35 provides development effects and mitigation measures.	No suitable habitat.
Open Country Bird Breeding Habitat Sources Defining Criteria 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) >30 ha. - 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). - 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. <u>Information Sources</u> - Agricultural land classification maps, Ministry of Agriculture. - Local bird clubs. - Ontario Breeding Bird Atlas - Reports and other information available from Conservation Authorities.	Field Studies confirm: - Presence of nesting or breeding of 2 or more of the listed species. - 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”. - SWHMiST Index #32 provides development effects and mitigation measures.	No suitable habitat.

Table 2: Significant Wildlife Habitat Ecoregion 6E Criteria

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
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 for some bird species	Large field areas succeeding to shrub and thicket habitats>10haclxiv in size. - Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (<i>i.e.</i> no row-cropping, haying or live-stock pasturing in the last 5 years). - Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. - Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. <u>Information Sources</u> - Agricultural land classification maps, Ministry of Agriculture. - Local bird clubs - Ontario Breeding Bird Atlas - Reports and other information available from Conservation Authorities.	Field Studies confirm: - Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species. - A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. - 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”. - SWHMiST Index #33 provides development effects and mitigation measures.	No suitable habitat.
Terrestrial Crayfish Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.	Chimney or Digger Crayfish; (<i>Fallicambarus fodiens</i>) Devil Crayfish or Meadow Crayfish; (<i>Cambarus Diogenes</i>)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh or swamp ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) 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. <u>Information Sources</u> - 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 meadow marsh, swamp or moist terrestrial sites. - Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger 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. - SWHMiST Index #36 provides development effects and mitigation measures.	No chimneys documented on the property.
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.	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 <u>Information Sources</u> - Natural Heritage Information Centre (NHIC) will have Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. - NHIC Website “Get Information” : http://nhic.mnr.gov.on.ca - Ontario Breeding Bird Atlas - 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 needs be easily mapped and cover an important life stage component for a species <i>e.g.</i> specific nesting habitat or foraging habitat. - SWHMiST Index #37 provides development effects and mitigation measures.	Eastern Wood-pewee (SC) and Western Chorus Frog (S3) was observed within Natural Core Area within the general area, although not on the property itself.

Table 2.5 - Animal Movement Corridors

Wildlife Habitat	Wildlife Species	Candidate SHW		Confirmed SWH	Assessment
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
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 Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	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. - Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat –Wetland) of this Schedule. <u>Information Sources</u> - MNRF District Office - Natural Heritage Information Center (NHIC) - Reports and other information available from Conservation Authorities. - 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. - Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. - Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat. - SWHMiST Index #40 provides development effects and mitigation measures.	The Natural Core Area has the potential to provide a movement corridor for amphibians.
Deer Movement Corridors Rationale: Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. - A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion. - Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>Information Sources</u> - MNRF District Office - Natural Heritage Information Center (NHIC). - Reports and other information available from Conservation Authorities. - Field Naturalist Clubs	- Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas. - Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. - Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway. - Shorter corridors are more significant than longer corridors. - SWHMiST Index #39 provides development effects and mitigation measures.	No suitable habitat.

Table 3: Breeding Bird Survey Data

Family	Scientific Name	Common Name ⁴	June 6, 2017 ¹			June 28, 2017 ²			Breeding? ⁷	Conservation Rank ³			
			1 ⁵	2	3	1	2	3		G-rank	S-rank	COSEWIC Status	SARO Status
Laridae	<i>Larus delawarensis</i>	Ring-billed Gull	FO ⁶						N				
Corvidae	<i>Corvus brachyrhynchos</i>	American Crow	H		H	H			N	G5	S5B		
Turdidae	<i>Turdus migratorius</i>	American Robin	H			H		S (Adj - E)	Po	G5	S5B		
Emberizidae	<i>Spizella passerina</i>	Chipping Sparrow	S	S	S				Po	G5	S5B		
Emberizidae	<i>Melospiza melodia</i>	Song Sparrow	S		S	T	S	T	Pr	G5	S5B		
Alaudidae	<i>Eremophila alpestris</i>	Horned Lark	S						Po	G5	S5B		
Cardinalidae	<i>Passerina cyanea</i>	Indigo Bunting	S			T		S (Adj - E)	Pr	G5	S4B		
Fringillidae	<i>Carduelis tristis</i>	American Goldfinch		S	S		FO	T	Pr	G5	S5B		
Corvidae	<i>Cyanocitta cristata</i>	Blue Jay		S		S	S		Po	G5	S5		
Ardeidae	<i>Ardea herodias</i>	Great Blue Heron			FO				N	G5	S4		
Paridae	<i>Poecile atricapillus</i>	Black-capped Chickadee			S	S			Po	G5	S5		
Cardinalidae	<i>Cardinalis cardinalis</i>	Northern Cardinal			S		S		Po	G5	S5		
Parulidae	<i>Mniotilta varia</i>	Black-and-white Warbler ⁸			S				Po	G5	S5B		
Tyrannidae	<i>Myiarchus crinitus</i>	Great Crested Flycatcher			S				Po	G5	S4B		
Vireonidae	<i>Vireo olivaceus</i>	Red-eyed Vireo			S				Po	G5	S5B		
Parulidae	<i>Setophaga ruticilla</i>	American Redstart ⁸			S				Po	G5	S5B		
Parulidae	<i>Seiurus aurocapilla</i>	Ovenbird ⁸			S (adj - E)			S (Adj - E)	Pr	G5	S4B		
Troglodytidae	<i>Troglodytes troglodytes</i>	Winter Wren ⁸			S (adj - E)				Po	G5	S5B		
Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow				Forage (Adj - W)			N	G5	S4B		THR
Icteridae	<i>Quiscalus quiscula</i>	Common Grackle				H			N	G5	S5B		
Mimidae	<i>Dumetella carolinensis</i>	Gray Catbird				S			Ps	G5	S4B		
Tyrannidae	<i>Empidonax alnorum</i>	Alder Flycatcher				S			Po	G5	S5B		
Emberizidae	<i>Pooecetes gramineus</i>	Vesper Sparrow				S (adj - N)			Po	G5	S4B		
Troglodytidae	<i>Troglodytes aedon</i>	House Wren					S		Po	G5	S5B		
Parulidae	<i>Geothlypis trichas</i>	Common Yellowthroat						S	Po	G5	S5B		
Sittidae	<i>Sitta canadensis</i>	Red-breasted Nuthatch ⁸						S (Adj - E)	Po	G5	S5		

¹ Breeding Bird Survey Sample Conditions: June 6, 2017 Observer L.Moran; Temperature 13°C; Cloud cover 100%, Wind: B=2, Precipitation: Nil, Search Time 8:40 to 9:38.

² Breeding Bird Survey Sample Conditions: June 28, 2017 Observer: L.Moran, Temperature 12oC; Cloud cover 10%, Wind: B=1, Precipitation: Nil, Search Time 5:57 to 6:20

³ Conservation Rankings: From Ontario Ministry of Natural Resources, Natural Heritage Information Centre (http://nhic.mnr.gov.on.ca/nhic_.cfm)

⁴ Nomenclature based on Ontario Ministry of Natural Resources (OMNR), Natural Heritage Information Centre (NHIC) database - <http://nhic.mnr.gov.on.ca/MNR/nhic/species.cfm>

⁵ Point Count Station (Refer to Figure 2)

⁶ Breeding Bird Evidence Codes: OB - Species observed; H - Species observed in its breeding season in suitable nesting habitat (Possible Breeding); S - Singing male (Possible Breeding); T - Territory (Probable Breeding - singing males from same area on two sampling dates more than 1 week apart), A - Agitated behaviour or anxiety calls of adult (Probable Breeding), FY - Fledged Young (Confirmed Breeding); FO - Flyover (no evidence of use of property).

⁷Breeding Assessment: Y - Breeding confirmed on or adjacent to property; Pr - Probably breeding on or adjacent to property; Po Possibly breeding on or adjacent to property, N - Species observed but no evidence of breeding on or adjacent to property

⁸Considered area-sensitive species by MNR (2000) - Significant Wildlife Habitat Technical Guide Appendix C

Table 4: Vascular Plant List

Family	Scientific Name	Common Name	Hedgerow	FOC4	G-Rank	S-Rank	COSEWIC	MNRF	(Riley 1989)
ASTERACEAE	<i>Symphyotrichum lanceolatum</i>	Panicked Aster	x	x	G5T5	S5			N
ACERACEAE	<i>Acer negundo</i>	Manitoba Maple	x		G5	S5			N
ACERACEAE	<i>Acer saccharum</i>	Sugar Maple	x		G5	S5			N
ANACARDIACEAE	<i>Rhus typhina</i>	Staghorn Sumac	x		G5	S5			N
APIACEAE	<i>Daucus carota</i>	Wild Carrot	x		GNR	SE5			N
ASCLEPIADACEAE	<i>Asclepias syriaca</i>	Common Milkweed			G5	S5			N
ASTERACEAE	<i>Ambrosia artemisiifolia</i>	Annual Ragweed	x		G5	S5			N
ASTERACEAE	<i>Arctium minus</i>	Common Burdock	x		GNR	SE5			N
ASTERACEAE	<i>Cichorium intybus</i>	Chicory	x		GNR	SE5			N
ASTERACEAE	<i>Cirsium arvense</i>	Canada Thistle	x		GNR	SE5			N
ASTERACEAE	<i>Cirsium vulgare</i>	Bull Thistle	x		GNR	SE5			N
ASTERACEAE	<i>Erigeron philadelphicus</i>	Philadelphia Fleabane	x		G5	S5			N
ASTERACEAE	<i>Eupatorium perfoliatum</i>	Common Boneset	x		G5	S5			N
ASTERACEAE	<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	x		G5	S5			N
ASTERACEAE	<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed	x		G5T5	S5			N
ASTERACEAE	<i>Inula helenium</i>	Elecampane	x		GNR	SE5			N
ASTERACEAE	<i>Lactuca biennis</i>	Tall Blue Lettuce	x		G5	S5			N
ASTERACEAE	<i>Leucanthemum vulgare</i>	Oxeye Daisy	x		GNR	SE5			N
ASTERACEAE	<i>Pilosella caespitosa</i>	Meadow Hawkweed	x		GNR	SE5			N
ASTERACEAE	<i>Solidago canadensis</i>	Canada Goldenrod	x		G5T5	S5			N
ASTERACEAE	<i>Symphyotrichum novae-angliae</i>	New England Aster	x		G5	S5			N
ASTERACEAE	<i>Taraxacum officinale</i>	Common Dandelion	x		G5	SE5			N
ASTERACEAE	<i>Tragopogon pratensis</i>	Meadow Goat's-beard	x		GNR	SE5			N
ASTERACEAE	<i>Tussilago farfara</i>	Colt's-foot	x	x	GNR	SE5			N
BETULACEAE	<i>Betula alleghaniensis</i>	Yellow Birch		x	G5	S5			N
BETULACEAE	<i>Betula papyrifera</i>	Paper Birch		x	G5	S5			N
BETULACEAE	<i>Ostrya virginiana</i>	Eastern Hop-hornbeam	x		G5	S5			N
BRASSICACEAE	<i>Alliaria petiolata</i>	Garlic Mustard	x		GNR	SE5			N
BRASSICACEAE	<i>Barbarea vulgaris</i>	Bitter Wintercress	x		GNR	SE5			N
CAPRIFOLIACEAE	<i>Lonicera tatarica</i>	Tartarian Honeysuckle	x		GNR	SE5			N
CAPRIFOLIACEAE	<i>Viburnum lantana</i>	Wayfaring-tree	x		GNR	SE2			N
CAPRIFOLIACEAE	<i>Viburnum lentago</i>	Nannyberry	x		G5	S5			N
CAPRIFOLIACEAE	<i>Viburnum opulus ssp. trilobum</i>	Highbush Cranberry	x		GNR	S5			N
CARYOPHYLLACEAE	<i>Saponaria officinalis</i>	Bouncing-bet	x		GNR	SE5			N
CARYOPHYLLACEAE	<i>Silene vulgaris</i>	Maiden's Tears	x		GNR	SE5			N
CHENOPODIACEAE	<i>Chenopodium album</i>	White Goosefoot	x		G5	SE5			N
CLUSIACEAE	<i>Hypericum perforatum</i>	Common St. John's-wort	x		GNR	SE5			N
CORNACEAE	<i>Cornus alternifolia</i>	Alternate-leaved Dogwood	x		G5	S5			N
CORNACEAE	<i>Cornus racemosa</i>	Gray Dogwood	x		G5?	S5			N
CORNACEAE	<i>Cornus stolonifera</i>	Red-osier Dogwood	x		G5	S5			N
CUCURBITACEAE	<i>Echinocystis lobata</i>	Wild Mock-cucumber		x	G5	S5			N

Table 4: Vascular Plant List

Family	Scientific Name	Common Name	Hedgerow	FOC4	G-Rank	S-Rank	COSEWIC	MNRF	(Riley 1989)
CUPRESSACEAE	<i>Thuja occidentalis</i>	Eastern White Cedar	x	x	G5	S5			N
CYPERACEAE	<i>Carex arctata</i>	Black Sedge	x		G5	S5			N
CYPERACEAE	<i>Carex gracillima</i>	Graceful Sedge	x		G5	S5			N
CYPERACEAE	<i>Carex granularis</i>	Meadow Sedge	x		G5	S5			N
CYPERACEAE	<i>Scirpus atrovirens</i>	Dark-green Bulrush	x		G5?	S5			N
DENNSTAEDTIACEAE	<i>Pteridium aquilinum</i>	Bracken Fern	x		G5	S5			N
DRYOPTERIDACEAE	<i>Cystopteris bulbifera</i>	Bulblet Fern		x	G5	S5			N
FABACEAE	<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	x		GNR	SE5			N
FABACEAE	<i>Melilotus albus</i>	White Sweet-clover	x		G5	SE5			N
FABACEAE	<i>Trifolium pratense</i>	Red Clover	x		GNR	SE5			N
FABACEAE	<i>Vicia cracca</i>	Tufted Vetch	x		GNR	SE5			N
GERANIACEAE	<i>Geranium robertianum</i>	Herb-Robert	x		G5	S5			N
GROSSULARIACEAE	<i>Ribes cynosbati</i>	Prickly Gooseberry	x		G5	S5			N
JUGLANDACEAE	<i>Juglans nigra</i>	Black Walnut	x		G5	S4			N
LAMIACEAE	<i>Clinopodium vulgare</i>	Field Basil	x		G5	S5			N
LAMIACEAE	<i>Leonurus cardiaca</i>	Common Motherwort	x		GNR	SE5			N
LILIACEAE	<i>Maianthemum canadense</i>	Wild Lily-of-the-valley		x	G5	S5			N
LYTHRACEAE	<i>Lythrum salicaria</i>	Purple Loosestrife	x		G5	SE5			N
OLEACEAE	<i>Fraxinus pennsylvanica</i>	Green Ash	x	x	G5	S4			N
OLEACEAE	<i>Syringa vulgaris</i>	Common Lilac	x		GNR	SE5			N
ONAGRACEAE	<i>Oenothera biennis</i>	Common Evening Primrose	x		G5	S5			N
ORCHIDACEAE	<i>Epipactis helleborine</i>	Eastern Helleborine		x	GNR	SE5			N
OXALIDACEAE	<i>Oxalis stricta</i>	European Wood-sorrel	x		G5	S5			N
PINACEAE	<i>Abies balsamea</i>	Balsam Fir		x	G5	S5			N
PINACEAE	<i>Pinus strobus</i>	Eastern White Pine	x	x	G5	S5			N
PLANTAGINACEAE	<i>Plantago lanceolata</i>	English Plantain	x		G5	SE5			N
PLANTAGINACEAE	<i>Plantago major</i>	Common Plantain	x		G5	S5			N
POACEAE	<i>Bromus inermis</i>	Awnless Brome	x		G5TNR	SE5			N
POACEAE	<i>Dactylis glomerata</i>	Orchard Grass	x		GNR	SE5			N
POACEAE	<i>Elymus repens</i>	Creeping Wildrye	x		GNR	SE5			N
POACEAE	<i>Phalaris arundinacea</i>	Reed Canary Grass	x		G5	S5			N
POACEAE	<i>Phleum pratense</i>	Common Timothy	x		GNR	SE5			N
POACEAE	<i>Poa compressa</i>	Canada Bluegrass	x		GNR	SE5			N
POLYGONACEAE	<i>Fallopia convolvulus</i>	Black Bindweed	x		GNR	SE5			N
RANUNCULACEAE	<i>Anemone virginiana</i> var. <i>virginiana</i>	Virginia Anemone	x		G5T5	S5			N
RANUNCULACEAE	<i>Ranunculus acris</i>	Tall Buttercup	x		G5	SE5			N
RANUNCULACEAE	<i>Ranunculus recurvatus</i>	Hooked Buttercup	x		G5	S5			N
RHAMNACEAE	<i>Rhamnus cathartica</i>	Common Buckthorn		x	GNR	SE5			N
ROSACEAE	<i>Fragaria vesca</i>	Woodland Strawberry	x		G5	S5			N
ROSACEAE	<i>Fragaria virginiana</i>	Wild Strawberry	x		G5	S5			N
ROSACEAE	<i>Geum aleppicum</i>	Yellow Avens	x		G5	S5			N

Table 4: Vascular Plant List

Family	Scientific Name	Common Name	Hedgerow	FOC4	G-Rank	S-Rank	COSEWIC	MNRF	(Riley 1989)
ROSACEAE	<i>Malus pumila</i>	Common Apple	x		G5	SE4			N
ROSACEAE	<i>Potentilla argentea</i>	Silvery Cinquefoil	x		GNR	SE5			N
ROSACEAE	<i>Potentilla recta</i>	Sulphur Cinquefoil	x		GNR	SE5			N
ROSACEAE	<i>Prunus serotina</i>	Wild Black Cherry	x		G5	S5			N
ROSACEAE	<i>Prunus virginiana</i>	Choke Cherry	x	x	G5	S5			N
ROSACEAE	<i>Rubus allegheniensis</i>	Alleghany Blackberry	x		G5	S5			N
ROSACEAE	<i>Rubus idaeus ssp. strigosus</i>	Wild Red Raspberry	x		G5T5	S5			N
ROSACEAE	<i>Sorbus aucuparia</i>	European Mountain-ash	x		G5	SE4			N
SALICACEAE	<i>Populus tremuloides</i>	Trembling Aspen	x	x	G5	S5			N
SALICACEAE	<i>Salix discolor</i>	Pussy Willow	x		G5	S5			N
SALICACEAE	<i>Salix eriocephala</i>	Heart-leaved Willow	x		G5	S5			N
SALICACEAE	<i>Salix petiolaris</i>	Meadow Willow	x		G5	S5			N
SCROPHULARIACEAE	<i>Verbascum thapsus</i>	Common Mullein	x		GNR	SE5			N
SOLANACEAE	<i>Solanum dulcamara</i>	Climbing Nightshade	x		GNR	SE5			N
TILIACEAE	<i>Tilia americana</i>	American Basswood		x	G5	S5			N
ULMACEAE	<i>Ulmus americana</i>	American Elm	x	x	G5?	S5			N
URTICACEAE	<i>Urtica dioica ssp. gracilis</i>	Slender Stinging Nettle	x		G5T5	S5			N
VIOLACEAE	<i>Viola arvensis</i>	European Field Pansy	x		GNR	SE4			N
VITACEAE	<i>Parthenocissus inserta</i>	Thicket Creeper	x		G5	S5			N
VITACEAE	<i>Vitis riparia</i>	Riverbank Grape	x		G5	S5			N



APPENDICES

Appendix A: Lake Simcoe Region Conservation Authority Comments



APPENDIX A

Lake Simcoe Region Conservation Authority Comments



Sent via e-mail: bailey.chabot@barrie.ca

June 16, 2017

File: D12-427 / D14-1624
IMS:PSDC647 / PZOA775

Bailey Chabot

Planner

The City of Barrie

70 Collier Street, Box 400

Barrie, ON L4M 4T5

Dear Ms. Chabot:

**RE: Application for Draft Plan of Subdivision and Zoning By-law Amendment
2303757 Ontario Limited
Part of Lot 16, Concession 11 (Part of Lot 6, Registered Plan 98), Geographic Township of
Innisfil, City of Barrie**

Thank you for circulating the captioned applications to the LSRCA for review and comment. It is our understanding the Applicant is seeking approval of a Zoning By-law Amendment and Draft Plan of Subdivision which will facilitate the development of 57 residential units (43 detached lots and 14 street townhouses).

We have reviewed the applications in the context of:

- The Provincial Policy Statement (PPS)
- The Growth Plan for the Greater Golden Horseshoe
- The Lake Simcoe Protection Plan (LSPP)
- Ontario Regulation 179/06 under the *Conservation Authorities Act*

Current environmental mapping illustrates the eastern part of the site is within an area governed by Ontario Regulation 179/06. This is representative of the identified flood and erosion hazard areas associated with the watercourse (Hewitt's Creek) on the lands adjacent to the site (east) as well as the presence of a regulated wetland on the subject property. It is also noted that there is a woodland feature present on the easternmost part of the site.

Planning

The provided Draft Zoning By-law schedule delineates the proposed Residential, Open Space and Environmental Protection Zones. The LSRCA is satisfied that the proposed zoning is appropriate to identify and protect the natural heritage features.

Natural Heritage

The following comments are based upon a review of the Preliminary Natural Heritage Evaluation prepared by Azimuth Environmental Consulting Inc. (February 2017).

1. Significant wildlife habitat has been confirmed on the property in the form of seeps and springs. Development on lands adjacent to this type of habitat has the potential to impact seeps and springs by changing the hydrologic inputs that maintain these features. Please include further assessment of any potential direct and indirect impacts to seeps and springs and demonstrate that the proposed development will not negatively impact the function of this significant wildlife habitat.
2. In reference to Section 2.4 of the NHE, please note that a buffer of 30 m from the edge of watercourses, wetlands and woodlands and 5 m from meadows and thickets has been approved in the Hewitt's Secondary Plan (9.3.2.1.b). Please revise this section in the NHE as it currently suggests that a 5 m buffer from cultural woodlands has been approved.
3. It is noted that additional field work and data collection is scheduled for 2017. Any key natural heritage or hydrologic features identified based on this field work should be assessed and the NHE should be updated and revised according to these findings to provide one stand-alone document.
4. It is recommended that healthy, mature native trees present in the existing hedgerows be maintained and preserved wherever possible as they provide additional habitat and cover for wildlife movement in the area.
5. During detailed design please include the following on drawings:
 - a. A double silt fence with bales of straw between to be installed adjacent to natural heritage features to further minimize the risk of sediment spilling into these sensitive areas. (Please refer to LSRCA Technical Guidelines)
 - b. A planting plan demonstrating that the prescribed buffer to features be planted with a variety of native plants so that it is composed of natural self-sustaining vegetation and is better able to mitigate impacts from the proposed development.

Stormwater Management and Hydrogeology

Please note; the applications are presently undergoing technical review for Stormwater Management and Hydrogeology. Comments to this regard will be provided under separate cover.

Should you have any questions concerning the above, please do not hesitate to contact the undersigned or Kate Lillie, Natural Heritage Ecologist (k.lillie@LSRCA.on.ca).

Sincerely,

A handwritten signature in blue ink, appearing to read 'M.B.', followed by a horizontal line and a vertical line extending downwards.

Melinda Bessey, MSc, MCIP, RPP
Development Planner

c. Ray Duhamel, Jones Consulting Group

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Inc\Planning\6-16-2017-PSDC647 (D12-427) Comments 1(Revised).docx