

# UPDATED ENVIRONMENTAL IMPACT STUDY QUEEN'S COURT PROPERTY

**PENETANGUISHENE**

**Prepared for:**

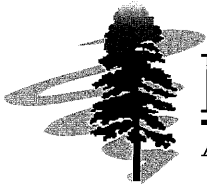
**Queen's Court Developments Ltd.**

**August, 2022**



**Michalski Nielsen**  
ASSOCIATES LIMITED

ENVIRONMENTAL PLANNING    BIOPHYSICAL ANALYSIS  
LAKE CAPACITY ASSESSMENT    RESOURCE MANAGEMENT



**Michalski Nielsen**  
ASSOCIATES LIMITED

August 4, 2022

Veronica Green  
Queen's Court Developments Ltd.  
121 King St. W., Suite 200  
Toronto, ON  
M5H 3T9

**Re: Harbourview Heights; Our File 1709**

Dear Ms. Green:

Michalski Nielsen Associates Limited is pleased to provide you with our report entitled  
**UPDATED ENVIRONMENTAL IMPACT STUDY, QUEEN'S COURT  
PROPERTY, PENETANGUISHENE** August, 2022.

Should you have any questions or comments, please do not hesitate to call.

Yours truly,

MICHALSKI NIELSEN ASSOCIATES LIMITED  
Per:

Gord Nielsen, M.Sc.  
Ecologist  
President

GN/be

Enc.

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## **1 INTRODUCTION**

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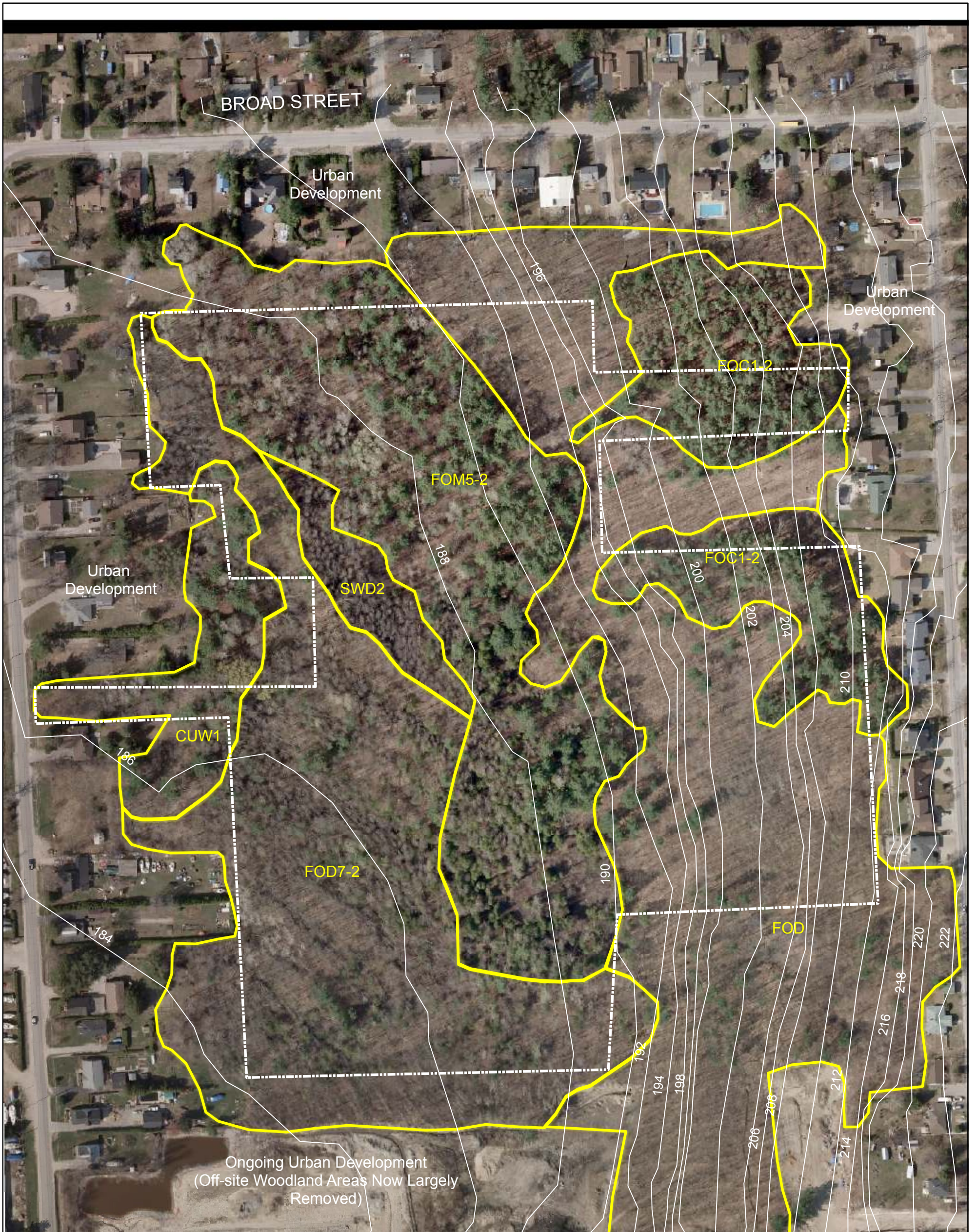
## 1.1 Background and Project History

In March, 2009, Michalski Nielsen Associates Limited was retained by Queen's Court Developments Ltd. (Queen's Court), through their consultant, WMI & Associates Limited, to complete an Environmental Impact Study (EIS) to guide development within a 12 ha property, located at 221 Fox Street in the Town of Penetanguishene. This property is shown in **Figure 1**. At the time of our earlier work, we had referenced this as the Harbourview Heights property. This entire property is woodland, and forms the majority of a 16.1 ha woodland, identified as Site 21, in the **Penetanguishene Urban Woodland Assessment**, a study completed by the Severn Sound Environmental Association (2008). At the time of our initial work, lands adjacent to this woodland had been largely developed, with ongoing development then occurring along its south end; it would appear that the majority of the surrounding area was wooded in the past, with the subject property being the remnant of a once substantially larger forested block.

At the time of our initial retainer in 2009, Queen's Court planned to develop the subject property into a residential subdivision, consistent in character with the surrounding neighbourhood, which would have eliminated much of the woodland on the property. The EIS then prepared recognized that there would be environmental consequences to a development that would have eliminated much of the woodland, and provided information relating to its values in order to inform good environmental planning decisions. This included the identification of those portions of the woodland with the greatest environmental values, which included an area of treed swamp wetland within it.

Our Environmental Impact Study for this property was first prepared in October 2010, and was peer reviewed on behalf of the Town of Penetanguishene by Beacon Environmental. A meeting was subsequently held with the Town of Penetanguishene and its consultant team. The development concept plan was modified in response to meeting discussions, with the primary change being to eliminate development in areas of steeper forested slope within the eastern portion of the property.

An updated version of our EIS was prepared in January, 2013, to address changes in the orientation of a then proposed collector road through the property, changes in the subdivision layout and the peer review comments. While the changes in the plan had allowed for more woodland retention, the effect of this plan would still have been to substantially reduce the size of, and fragment, the woodland. A Functional Servicing and Stormwater Management Report was also prepared (WMI January 2013). Prior to



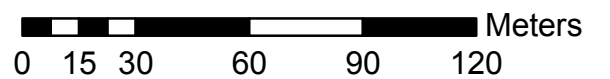
## Harbourview Heights

**Figure 1: Existing Natural Features**

 Vegetation Community

FOC1-2: White Pine Coniferous Forest  
 FOD: Deciduous Forest  
 FOM5-2: Dry-Fresh Poplar Mixed Forest  
 SWD2: Ash Mineral Deciduous Swamp  
 FOD7-2: Fresh - Moist Ash Lowland Deciduous Forest  
 CUW1: Mineral Cultural Woodland



 Meters

Produced By: GN	Project Name: Harbourview Heights
Date: July, 2009	Project Number: 1709

 **Michalski Nielsen**  
ASSOCIATES LIMITED

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preparing those reports, a meeting was held with the applicant, its agents, the Town of Penetanguishene and Beacon Environmental on December 21, 2011, with general agreement reached on how each of Beacon Environmental's comments would be addressed. However, the project then became dormant for a period of time, which is why the reports were not submitted until January, 2013.

There were then further delays in the process, with the peer review comments on the updated report not provided until December 1, 2015.

When the 2015 peer review from Beacon Environmental was received, Queen's Court contacted the Town regarding a disconnect between comments in the original peer review and the subsequent one; a meeting was held with Town officials to discuss the peer review comments, and how these should be responded to, on April 5, 2016. An addendum to our EIS was subsequently prepared in June, 2016. In brief, this addendum addressed the following matters:

- the physical protection of a wetland within the property, recognizing that at that time there were still plans to extend Beck Boulevard still through the property, which would, despite best efforts to alter that road alignment to the benefit of the wetland, result in some wetland loss;
- the protection of wetland hydrology, as development plans at that time would have substantially impacted natural drainage to this wetland;
- the maintenance of natural area functions of the wetland, recognizing that the plan to extend Beck Boulevard, together with components of the then proposed adjacent development, would have resulted in quite small buffers around portions of the wetland;
- tree protection and lot grading to protect those woodland areas which were to be preserved;
- the identification of the need to undertake bat investigations to inform final development plans, given the then recent listing of a bat species that had the potential to be found on the property as Endangered. Unlike most species which are listed as Endangered or Threatened in Ontario, this listing was not due to habitat loss, but rather because of a very rapid and substantial declines in their populations as a consequence of a fungal disease, White Nose Syndrome (Note that three



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additional bat species were subsequently listed as Endangered in Ontario, all due to rapid population declines from the same disease); and

- the identification of the need to undertake surveys for Butternut prior to development, with this tree species also identified as Endangered (like bats, because of declines attributable to a fungal disease, not because of habitat loss).

This 2016 EIS Addendum was subsequently signed off on by the peer reviewer, although they recommended that the bat survey work be completed prior to final project approvals.

The preparation of our 2016 EIS was followed by an October 26, 2016 study completed by Azimuth Environmental Consulting (Azimuth), to provide the results of bat roosting habitat surveys it completed on these lands. These investigations identified a number of snag/cavity trees providing good habitat qualities for bats both within and adjacent to the property. Many of those trees were either outside of the property or outside of lands which were then planned for development. This report was submitted to the Ministry of Natural Resources and Forestry (MNRF), who were then the governing agency responsible for the administration of the *Endangered Species Act (ESA)*.

After its receipt of the report from Azimuth, MNRF requested the completion of an acoustic survey to determine whether snag/cavity trees within the subject property were being used by bats and, if so, whether this included any protected species. This additional survey work was undertaken by the firm SLR Consulting (Canada) Ltd. (SLR), with results presented in a letter of October 18, 2017. That letter, which was also submitted to MNRF, identified four different bat species using the woodland as habitat, including two species that were listed as Endangered and which received species and habitat protection, Little Brown Myotis and Northern Myotis. Northern Myotis were positively identified in exit surveys, completed at dusk as bats leave their roosting locations, confirming that they were using trees on or adjacent to the site for roosting. Little Brown Myotis was only heard later in the evening, outside of the time when bats are moving away from their roosting habitat, indicating that this species was likely roosting some distance from the site, but that it utilizes the woodland as feeding habitat. The SLR report recommended a mitigation strategy to address the potential impacts of woodland loss on local populations of protected bat species by:

- removing trees outside of the period when bats are roosting in trees;

- 
- reducing ambient lighting around remnant woodland areas as part of the project design; and
  - installing bat boxes to offset the loss of roost habitat, with such bat boxes providing alternate locations for bats to roost and use as maternity habitat.

The SLR report was submitted to MNRF, and was accompanied by both an “Information Gathering Form” and “Avoidance Alternatives Form”, recommending that impacts on bats could be appropriately addressed through mitigation, and that a permit for the destruction of bats and bat habitat was therefore unnecessary. However, it is our understanding MNRF did not proceed with its detailed review of that information as it felt that it would be premature to do so in the absence of a municipally approved site plan. It should be pointed out that there is now considerably more experience in dealing with the implications of woodland loss on bat habitat in Ontario, which in most instances can be addressed through mitigation; while the decision on whether or not a Permit is required for such work is ultimately in the hands of the Province, the use of a woodland area by protected bat species does not preclude properly planned development within portions of it.

Further delays to this project have subsequently been experienced as the municipality has considered whether or not the extension of Beck Boulevard through the subject property is necessary (it has now determined that it is unlikely to be required as a through street), and as a consequence of considerable public interest in the project. With respect to the latter, a group of concerned residents, Preserve Protect Penetanguishene, was formed and had expressed concerns about earlier plans for this project that would have eliminated large portions of the woodland, including well established trails within the subject property which are used by local residents. Queen’s Court and its consultant team, in concert with staff from the Town of Penetanguishene, has had numerous discussions, meetings, design charettes and public open houses as part of a substantive effort to address the concerns of Preserve Protect Penetanguishene and other local residents, and to find a balanced solution to the development of the subject lands in a manner that addresses local concerns. This has resulted in a very different development plan from the one earlier anticipated for these lands, as further described in **Section 1.3** of this report.

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## 1.2 Description of Subject Woodlot in Penetanguishene Urban Woodland Assessment

As previously noted, the subject property forms the majority of Site 21, an urban woodland evaluated in the **Penetanguishene Urban Woodland Assessment** (Severn Sound Environmental Association 2008). Our original EIS included a description of that woodland assessment process and this particular woodland, which is included herein.

A total of 25 vacant or “under-developed” woodland areas were examined by Severn Sound Environmental Association in order to “rank the sites with reference to their natural heritage values and ecological constraints to development, so as to integrate woodland values into the development lands”. This study included the examination of each of the woodlands, in some cases through site-specific surveys and in other cases (where lands were in private ownership, and landowner permission was not provided), through examination of aerial photographs and roadside surveys.

Site 21 was identified as a gold level site, being the highest rank within the **Penetanguishene Urban Woodland Assessment**. Seven of the 25 urban woodland areas assessed received this ranking. Gold level sites were described by the Severn Sound Environmental Association as being woodlands which “generally are large in area, contain mature trees, have water occurring as seeps, and have moderate to steep slopes.” In specific relation to Site 21, the woodland is described as having a diverse character, with mature oak and maple, a pure black ash stand, and a mixed black ash stand. It was said to contain 5.18 ha of forest interior, of providing hydrological functions (seeps, streams and catchment areas) and as containing a special feature (black ash in standing water). It was further described as having a total of 2.82 ha of steep to moderately steep (>15%) slopes.

Severn Sound Environmental Association recommended retention and protection of gold level sites. This recommendation was made to the Town by a respected organization which was concerned, amongst other matters, with the maintenance of tree cover and woodlands as part of a healthy community. While this goal is important, and the Penetanguishene Urban Woodland Study had attempted to analyze each urban woodland within the municipality in an objective fashion, the Town still needs to consider such information together with other planning considerations. As noted in our earlier EIS, existing growth patterns, already approved development, future growth objectives, and future road connections must all be considered by the

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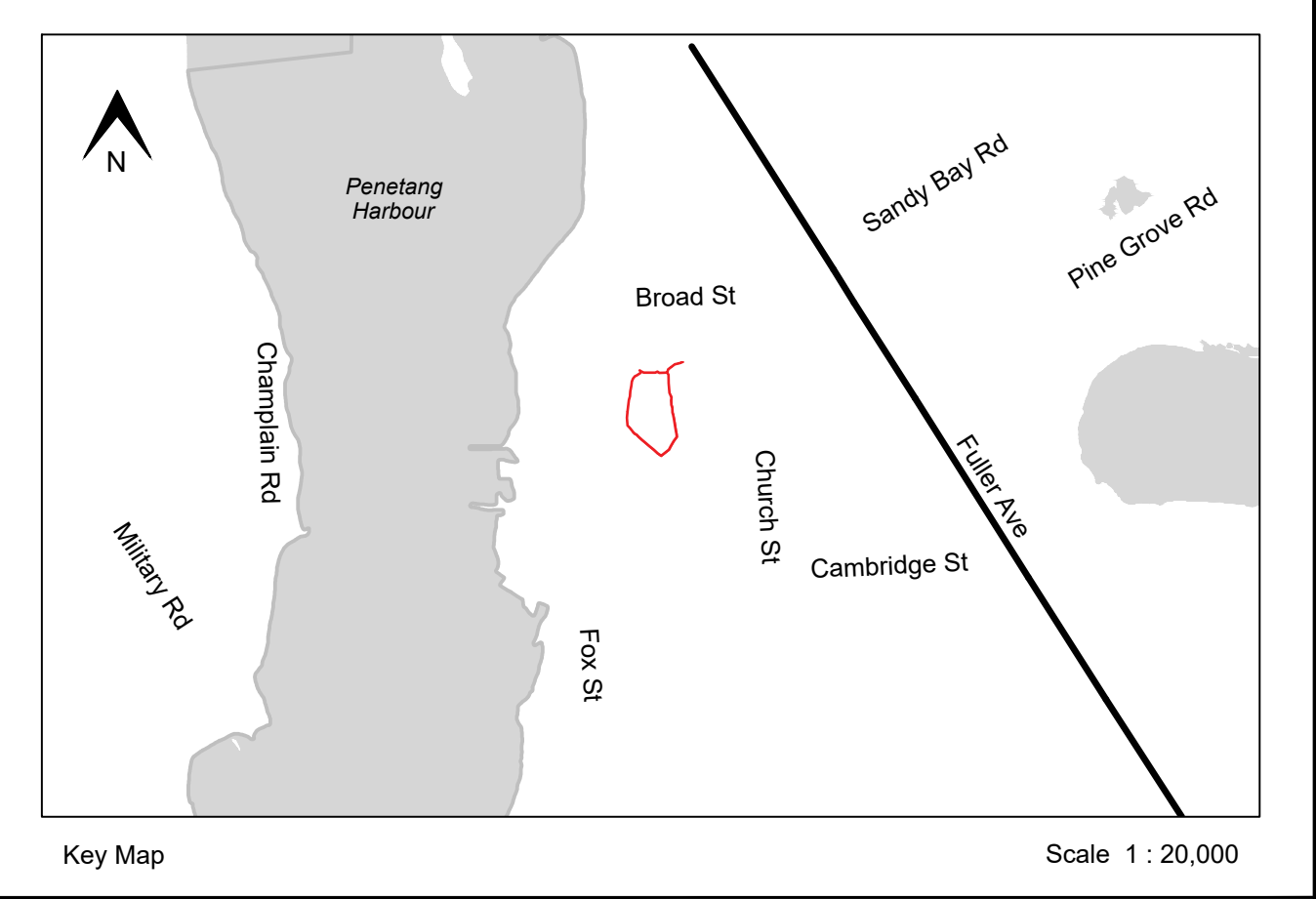
Town in determining how and where urban woodland areas can be protected as part of an overall growth strategy.

Since the time of the earlier EIS on this property, and with particular consideration of the ecological and neighborhood values of the woodland that is largely contained within it, the Town of Penetanguishene encouraged Queen's Court to engage the public and consider means of developing the property in a different manner than had been originally contemplated; this has occurred. The resultant development plans for the property are described in **Section 1.3**.

### **1.3 A New Vision for the Development of the Queen's Court Property**

As has been previously noted, the Town of Penetanguishene has encouraged Queen's Court to engage with its neighbors, including Preserve Protect Penetanguishene, in search of a development concept plan which struck a balance between developing some portion of the property and preserving the remainder for both its ecological and social benefits. Over the course of many meetings, Queen's Court took the time to listen to neighbor concerns, and the neighbors engaged in a sincere process towards finding a solution that worked for all parties, and in the interest of the environment. While I have no doubt that some local residents will still be concerned with any adjacent development that impacts on their neighborhood, it has been clear that most who engaged in this process were seeking common ground, to identify a form of development on the subject property that preserved a large portion of the woodland and generally resulted in a much "lighter touch" on it. The resultant development plan is attached (Draft Plan). It consists of 88 residential townhomes, all to be located within the south and southeast portions of the subject property, accessed off an extension of Beck Boulevard from the south which will exit at the north end of the development onto Fox Street. A stormwater management pond will be located between the more northerly portion of Beck Boulevard and the rear yard of adjacent homes that front Fox Street to the west. This development offers major advantages over previous plans for this property, including by:

- preserving over 50% of the existing forested lands within the property, constituting the northern more than half of the site, as one large, contiguous block;
- maintaining substantial open space within the southern portion of the site which is to be developed, much of which will remain treed, and which includes:



## DRAFT PLAN OF COMMON ELEMENTS CONDOMINIUM QUEEN'S COURT

PART OF LOTS 104 TO 113 WEST OF CHURCH STREET, REGISTERED PLAN 70,  
MILITARY AND NAVAL RESERVE  
TOWN OF PENETANGUISHENE, COUNTY OF SIMCOE

**LAND USE SCHEDULE**

USE	PARTS	UNITS	ha	AREA ac	%
RESIDENTIAL TOWNHOMES	1 - 88	88	2.220	5.49	44.0
COMMON ELEMENT LANE	89 - 92		0.517	1.28	10.3
COMMON ELEMENT OPEN SPACE	93 - 100		2.308	5.70	45.7
<b>TOTAL</b>		<b>88</b>	<b>5.046</b>	<b>12.47</b>	<b>100</b>

**COUNTY OF SIMCOE APPROVAL**  
APPROVED IN ACCORDANCE WITH SECTION 51(31) OF THE *PLANNING ACT*, RSO, 1990, CHAPTER P.13, AS AMENDED.

THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 20\_\_\_\_\_

**OWNER'S CERTIFICATE**  
I, \_\_\_\_\_, BEING THE REGISTERED OWNER OF THE SUBJECT LANDS, HEREBY AUTHORIZE CELESTE PHILLIPS PLANNING INC. TO PREPARE AND SUBMIT A DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

DATE: \_\_\_\_\_

**SURVEYOR'S CERTIFICATE**  
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN ON THIS PLAN.

DATE: \_\_\_\_\_  
LAURENCE J. KUELLING, O.L.S.  
J.D. BARNES LIMITED

- ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT**
- |             |                    |                            |
|-------------|--------------------|----------------------------|
| a) AS SHOWN | f) AS SHOWN        | i) TIOGA LOAMY SAND        |
| b) AS SHOWN | g) NONE            | j) AS SHOWN                |
| c) AS SHOWN | h) AS SHOWN        | k) FULL MUNICIPAL SERVICES |
| d) AS SHOWN | i) MUNICIPAL WATER | l) AS SHOWN                |
| e) AS SHOWN |                    |                            |

No.	DATE	REVISION	BY

**Stamp**

Date: July 13, 2022  
 Drawn By: AM  
 Checked By: CP

Scale 1 : 1,000

85 Bayfield Street, Suite 300  
 Barrie, ON L4M 3A7  
 T: 705 797 8977  
 C: 705 730 8850  
 celeste@cpplan.ca

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- protecting a minimum 10 m treed aesthetic buffer around the perimeter of all development, expanding to 20 m adjacent to existing residential areas to the south;
  - protecting steeper portions of the woodland within the sloped lands in southeast portion of the development block, with protect areas being over 40 m in width in areas; and
  - having the stormwater management block, which will need to be cleared but can then be naturalized through plantings, contribute to the open space area;
- by protecting both a large block of woodland, treed edges and other open space areas, preserving much of the aesthetic qualities of this property from adjacent lands;
  - maintaining the pedestrian trail system which is enjoyed by the neighborhood;
  - preserving the entirety of the treed swamp within the subject property, which is shown on the Draft Plan as “wetlands”, together with adjacent woodland areas that will provide **a minimum buffer of a minimum 35 m around all portions of the wetland** (where this can be achieved within the property boundaries), including within the area adjacent to the planned Beck Boulevard extension. In this regard, the attached Draft Plan shows the minimum 30 m buffer our office had requested be maintained around the wetland, however **over at least 70% of the wetland, the retained forested buffer will be of at least 60 m width**;
  - maintaining virtually all of the existing drainageshed to the treed swamp, thereby ensuring that the hydrology of the wetland is not altered and that its wildlife functions, including its use as amphibian breeding habitat, are not impacted;
  - by preserving approximately 70% of the existing tree cover on this property, the majority of which will be preserved as one block, and through consideration of where development is to occur, maintaining a majority of the potential bat roosting and maternity habitat that presently occurs within and adjacent to the property; and

- 
- similarly, by maintaining a very large amount of intact woodland, preserving other wildlife values of the woodland, including opportunities for amphibians which breed in the woodland to disperse to these areas, and habitat for forest-dwelling birds.

#### **1.4 Purpose of this Report**

This updated EIS has a number of purposes, including:

- providing an updated description of the natural heritage values of this property, including a discussion of Significant Wildlife Habitat and Species at Risk potential;
- updating our environmental policy discussion to reflect updated environmental policy and legislative direction of relevance to these lands;
- providing commentary on the updated development concept and its natural heritage implications;
- providing commentary on the updated surveying strategy for these lands, particularly in consideration of the relationship of those works to the natural environment and water quality; and
- providing an updated mitigation strategy which addresses such matters as woodland protection, construction management and protection of water quality.

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## **2 METHODOLOGY**

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## **2.1 Collection and Review of Background Information**

Background information was collected and reviewed prior to the initiation of our original site investigations during the 2009 and 2010 period. This included the following published literature pertaining to the natural features of the subject property and agency databases: Life Science Areas of Natural and Scientific Interest (ANSI) in Site District 5E8; Penetanguishene Urban Woodland Assessment (Severn Sound Environmental Association 2008); the Natural Heritage Information Centre (NHIC) database for information applicable to the study area (NHIC 2010); County of Simcoe Interactive Mapping Interfaces (County of Simcoe 2010); and the Town of Penetanguishene Official Plan Official Consolidation (2005).

The Ontario Breeding Bird Atlas (OBBA) web-site was additionally reviewed for data on the typical breeding birds in the area (Bird Studies Canada 2005) and Environment Canada's wild space data base was reviewed (Environment Canada Wild Space 2005).

Contact was also made early in the project with Fiona Hessen, Ministry of Natural Resources and Forestry (MNRF), Midhurst District (June 15, 2009) regarding natural features information and Species at Risk.

There has been a subsequent review in 2022 of any updated information for the subject lands including review of MNRF's Natural Heritage Information Centre (NHIC) for information on Natural Areas and Species at Risk, as well as the present day environmental policy and legislative framework for decisions in this area.

## **2.2 Review of Existing Mapping and Aerial Photography**

Digital mapping data sets (Simcoe County internet interface – Ortho Photography 2002), and coloured aerial photography (date unknown but recent); were used to assist in the delineation of vegetation community boundaries and in the preparation of mapping as part of the original EIS. Updated mapping and aerial photography for the subject property was reviewed in 2022; apart from changes in the extent of development to the south, there has been no changes within or adjacent to these lands since that time.

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## 2.3 Site Investigations and Methodologies

As outlined above, review of the reports and background information sources listed above provided a context from which to assess the natural features within the study area.

Field surveys were conducted by Michalski Nielsen Associates Limited on June 2 and 11 of 2009, and on June 17, July 24 and August 9 of 2010. The inventories were based on qualitative survey techniques, with two focal areas, vegetation and wildlife, being targeted. The approach taken for each of the focal areas is summarized below and expanded upon, as appropriate, in **Section 3** of this report.

### *Terrestrial Vegetation*

Field investigations involved:

- identifying the boundaries of plant communities on the subject property and classifying vegetation communities using the Ecological Land Classification (ELC) System for Southern Ontario (Lee et. al. 1998);
- evaluating the sensitivity and significance of vegetation communities, using the "Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario" (Bakowsky 1996; Natural Heritage Information Centre [NHIC] website 2010);
- evaluating significance and sensitivity of flora recorded during field surveys, using Newmaster et. al. (1998), NHIC website (2010), Varga et. al. (2001), Riley, et al. (1989) and evaluating specific preferences for potential species at risk;
- preparing a vascular plant species list (Appendix A);
- clarifying existing disturbances patterns and their impact, to date, on the existing natural features within the study area; and
- taking representative site photographs.

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Various site walks have occurred with ecologists and members of both the project team and public over the last two years to help inform new development plans, and confirmed that conditions within the site had not changed from the time of our earlier work.

A detailed site inspection was conducted on April 20, 2022 to determine if the Ecological Land Classification vegetation communities for the property were consistent with the 2010 EIS and to further confirm that site conditions had not changed from the time of our earlier work.

### ***Wildlife***

The original field investigations involved:

- observations for wildlife, which were made during the course of all field visits (Appendix B). Species presence, signs (tracks, scats, cavities, etc.), and vocalizations that were observed or heard during the field surveys were recorded. Wildlife habitat potential was also evaluated during field surveys;
- Two dedicated Breeding Bird surveys were conducted within the Breeding Bird window (May 1st to July 31st) to assess both resident and migrant bird presence, as well as the quality of various habitats for breeding species and Species at Risk. Supplementary information was also provided through the OBBA;
- one dedicated amphibian survey was conducted on June 11, 2009. Based on a review of available background information, amphibians present on site are restricted to the swamp feature and adjacent lowland forest areas. The survey was intended to confirm vernal pool presence and species usage;
- assessing wildlife habitat characteristics and overall habitat quality, based on qualitative observations. This included the potential of the property to support Species at Risk known to this locale; and
- taking representative site photographs.

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The following additional surveys were completed to target Species at Risk bats on the subject property in 2016 and 2017:

- Azimuth Environmental Consulting Inc. completed three site visits on April 22, April 27 and May 3, 2016 to identify candidate maternity roosts for SAR bats;
- SLR Consulting completed surveys for presence/absence and activity patterns of bats using both passive acoustic detectors and active surveys in June and July 2017:
  - passive surveys (acoustic monitoring): acoustic deployment on June 16 14:00 to July 6 23:00 using three stationary acoustic detectors to capture the most representative and suitable roost areas of the woodland;
  - active surveys (emergence): completed on June 16 and July 6 with heterodyne detectors (Batbox Duet, Peersonic RPA2, Echometer Touch and Sonabat Live with Pettersson recorder).

The additional survey completed on April 20, 2022 provided an opportunity to inform our updated Species at Risk review and Significant wildlife Habitat review.

## **2.4 Resource Evaluation**

The national, provincial or regional rarity of the vegetation communities and plant species was originally determined from standard status lists and published literature. Sources included Bakowsky (1997), Argus and Pryer (1990), Committee on the Status of Endangered Wildlife in Canada (COSEWIC) (2010), NHIC (2010) and Oldham (2009).

In addition to the identification of any nationally, provincially or regionally rare vegetation communities, features of more local natural interest were identified, on the basis of field investigations.

The significance or rarity of wildlife species and habitats was originally determined from standard status lists and published literature. Sources included: Province of Ontario (1990); NHIC (2010); Cadman et al.

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(1987); COSEWIC (2010); Committee on the Status of Species at Risk in Ontario (COSSARO) (2005); Austen et al. (1994); and Bowles et al. (1995). It is noted that bird habitat and nesting information from MNR's Significant Wildlife Technical Guide and Breeding Bird Atlas of Ontario (2005) was also reviewed in determining the potential for significant wildlife species.

An updated review of resource significance was completed in 2022, focusing on Species at Risk and Significant Wildlife Habitat.

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### **3 SITE CHARACTERISTICS**

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### 3.1 Physical Setting

The subject property, together with the majority of Penetanguishene, is located within the Physiographic Region known as the Simcoe Uplands (Chapman and Putnam 1984), an area in which physical conditions have been strongly influenced by glacial Lake Algonquin. On the Penetang Peninsula, the uplands were submerged in this glacial lake, with the resultant presence of a boulder pavement, sand and silt at surface; this peninsula is more broadly defined as a sand plain. A rolling topography characterizes this area.

Soils within the subject property are identified as a sandy loam of the Alliston series (Hoffman 1962). These gray, calcareous, outwash sands are stone-free to moderately stony, with imperfect drainage. Although not identified as part of published soil mapping, organic soils occur within the more poorly drained portions of the site.

Site topography ranges from a high of 212 metres above sea level (masl) to a low of 185 masl (**Figure 1**). Slopes are from east to west, with a steep to moderately steep ridge line which turns north to south through the easterly third of the property accounting for most of this topographic variation. The westerly third of the property, in areas generally below a topography of 188 masl, is imperfectly drained and includes lowland deciduous forest and swamp communities.

The property does not include any watercourses, although runoff from the developed lands to the east have created some erosional gullies; that drainage disperses across the property and into the shallow groundwater system as it enters the more localizing westerly portion of these lands. The Functional Servicing and Stormwater Management Report prepared for the subject property (WMI July 2022) indicates that approximately 13.9 ha of external drainage enters these lands, a large portion of which comes from a series of catchbasins and a 300 mm diameter culvert from Church Street to the east. The site drains from east to west, with the more lowlying westerly portion of the property resulting in imperfect drainage from these lands, much of which is intercepted by a treed swamp wetland feature within that portion of the property. Some drainage off of these lands would occur as both sheet flow and through shallow groundwater to Penetang Bay. The Functional Servicing and Stormwater Management Report notes that there is also an existing storm sewer to the southwest of the property which collects and conveys drainage from the site, Fox Street and other external lands before outletting to Penetang Bay.

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The treed swamp (ash mineral deciduous swamp) within the west-central portion of the property is an elongated feature which is oriented in a north-south direction. Its orientation allows it to intercept a substantial portion of the internal and external drainage from the property. Although it is difficult to measure exactly how much of the 23.2 ha of internal and external drainage through the property is intercepted by this feature, as the wetland is not that topographically depressed in relation to adjacent woodland areas, drainage patterns suggest that it captures drainage from approximately 60% of this area, or from roughly 13.9 ha.

As described in the Functional Servicing and Stormwater Management Report, a hydrogeological study has been completed for the property by Ian D. Wilson & Associates, and was updated in 2022. That study confirms a westerly flow of shallow groundwater towards Penetang Bay. The water table ranges from 1.9 m to 4.4 m below existing ground, and is within approximately 2.0 m of ground surface in the low-lying westerly portion of the property. A combination of surface runoff and shallow groundwater maintain the wetland feature within the west-central portion of the property.

### **3.2 Vegetation Communities**

Six vegetation units were delineated within the study area, representing six distinct ELC vegetation types, including Cultural Woodland, Coniferous Forest, Deciduous Forest, Mixed Forest and Ash Swamp. These communities are described below.

**White Pine Coniferous Forest (FOC 1-2):** there are two smaller patches of mature white pine forest located along the top of slope in the northeastern portion of the property (**Photograph 1**). These stands also contain Scots Pine (*Pinus sylvestris*), Red Pine (*Pinus resinosa*), Balsam Fir (*Abies balsamea*), Red Maple (*Acer rubrum*) and Sugar Maple (*Acer saccharum*). Shrubs are relatively sparse and include Fly Honeysuckle (*Lonicera canadensis*) and Red-berried Elder (*Sambucus pubens*). The ground layer contains Canada Mayflower (*Maianthemum canadense*), False Solomon's Seal (*Maianthemum racemosum*) and Large-leafed Aster (*Aster macrophyllus*).

**Dry-fresh Poplar-white Birch Deciduous Forest (FOD):** the patches of coniferous forest are bordered by deciduous forest which continues into the southeastern portion of the site. This forest is predominated by dense American Beech (*Fagus americanus*), White Birch (*Betula papyrifera*), and Large-toothed Aspen





**Photograph 1. White pine coniferous forest (FOC1-2) with Scot's pine, red pine, and sugar maple (June 3, 2009).**



**Photograph 2. Poplar-white birch deciduous forest (FOD3) with dense regeneration (June 3, 2009).**

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(*Populus grandidentat*), and is mainly early successional forest (**Photograph 2**). In the eastern-most portion of the site there is an area where Norway Maple (*Acer platanoides*) is prominent, and other areas have Sugar Maple and Red Oak as prominent canopy constituents. The occasional mature tree is present, particularly along the boundaries with the mixed forest (**Photograph 3**).

**Dry-fresh Poplar Mixed Forest (FOM 5-2):** as the property slopes to the west, the deciduous forest is replaced by poplar mixed forest (**Photograph 4**). This area is predominantly trembling aspen (*Populus tremuloides*), with White Pine and Red Ash (*Fraxinus pensylvanicus*) as the next most abundant canopy trees. Several other understorey tree species are present including Ironwood (*Ostrya virginiana*), Red Oak, White Cedar (*Thuja occidentalis*), Basswood (*Tilia americana*) and White Elm (*Ulmus americana*). Shrubs include Alternate-leaved Dogwood (*Cornus alternifolia*), Wild Red Raspberry (*Rubus idaeus*), and tree regeneration. Herbaceous layer species include Sensitive Fern (*Onoclea sensibilis*), Herb Robert (*Geranium robertianum*), True Forget-me-not (*Myosotis scorpioides*), Common Wood Sorrel (*Oxalis stricta*) and Enchanter's Nightshade (*Circaea lutiana*). This forest, while still mainly composed of early succession species, is more mature and diverse than the deciduous forest to the east.

While the tree diversity and structure in this portion of forest reflect relatively healthy conditions, the presence of non-native and invasive herbaceous species are indications of the high degree of disturbance to the area through trail use.

**Fresh-moist Ash Lowland Deciduous Forest (FOD 7-2):** in the southwestern portion of the property the slope tapers off into lowland deciduous forest. This forest is predominantly Red Ash, with abundant White Elm regeneration in the understorey (**Photograph 5**). In the south, bordering the deciduous forest community, White Cedar is also a prominent species. Many ferns can be found in this area such as Sensitive Fern and Ostrich Fern (*Matteuccia struthiopteris*), along with other species typical of moist conditions such as Scouring-rush (*Equisetum hyemale*), Spotted Jewelweed (*Impatiens capensis*) and Virginia Creeper (*Parthenocissus inserta*). There is vernal pooling in this area, but it does not constitute >20% of the ground coverage (which is what differentiates it from an ash swamp community).

**Ash Mineral Deciduous Swamp (SWD 2):** in the west-central portion of the property there is extensive vernal pooling in a strip between the ash lowland and the mixed forest; this area is classified as ash mineral deciduous swamp (**Photograph 6**). The swamp is dominated by red ash, but also contains Black Ash



**Photograph 3. Mature tree amongst early successional forest (June 3, 2009).**



**Photograph 4. Poplar mixed forest (FOM5-2) along steeper slopes (June 3, 2009).**



**Photograph 5. Ash lowland deciduous forest (FOD7-2) (June 3, 2009).**



**Photograph 6. Ash mineral deciduous swamp (SWD2) (June 3, 2009).**

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(*Fraxinus nigra*), White Cedar, White Elm and Balsam Poplar (*Populus balsamifera*). Little groundcover species are present due to the extent of seasonal flooding. On the few hummocks present, Sensitive Fern, Fringed Sedge (*Carex crinita*) and other sedges occur.

**Mineral Cultural Woodland (CUW 1):** west of the treed swamp, the land begins to grade upwards again into an area of cultural woodland (**Photograph 7**). This area is largely outside of the property boundaries, but includes a thin strip of the property running between two residential lots. It is evident that this area is heavily impacted by the neighboring yards. The herbaceous layer is over-run with non-native invasive species including dense patches of True Forget-me-nots, Periwinkle (*Vicia cracca*) and English Ivy (*Hedera helix*). The tree cover has been thinned, in some areas more than others. Some of the species present include Red Cedar (*Juniperus virginiana*), White Spruce (*Picea glauca*), White Pine, Norway Maple, Sugar Maple, Black Walnut (*Juglans nigra*), Red Ash, and several others, with no one species discernable as the most abundant. Shrubs include Choke Cherry (*Prunus virginiana*), Smooth Blackberry (*Rubus canadensis*) and Showy Mountain Ash (*Sorbus decora*).

In total, 81 vascular plant species were recorded during the field surveys. This does not include three species identified only to genus. Points on these species are provided below. A vascular plant list is provided in **Appendix A**.

Of the 81 plant species recorded, 19 are non-native introduced species, typical of urban fringe areas where residential encroachment and disturbance occurs. These species are generally widespread and abundant in the area of the property where disturbance has been noted.

No plant Species at Risk, globally, nationally or provincially significant species were recorded during the field surveys. This includes COSEWIC or COSSARO designated and ESA or SARA-listed species as well as G1-G3 and S1-S3-ranked species. All species recorded are ranked provincially by the NHIC as considered to be 'secure, common and widespread' in Ontario (ranked S5 or SE5) or 'apparently secure, uncommon but not provincially rare' in Ontario (S4, SE4).

However based on review of Riley et al. (1989) four species (Prickly Rose, *Rosa acicularis ssp sayi*; Old-field Cinquefoil, *Potentilla simplex*; Wood Sorrel, *Oxalis stricta*; and Mountain Holly *Nemopanthus mucronatus*) are considered to be regionally to locally rare for South Central Ontario and Simcoe County.



**Photograph 7. Cultural woodland (CUW1) (June 3, 2009).**



**Photograph 8. Erosional gully, from uncontrolled stormwater from east (August 9, 2010).**

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Additionally, these species, as well as four others (Virginia Creeper, *Parthenocissus quinquefolia*; Sweet Coltsfoot, *Petasites frigidus* Black Walnut, *Juglans nigra*; and Squaw-root, *Conopholis americana*), totaling seven species, are considered rare and uncommon for Site District 6E-6.

A field visit was completed on April 20, 2022 to determine if the present-day vegetation communities remain consistent with the those inventoried in 2010 and 2011. This more recent survey concluded that the vegetation communities and species composition have not changed over the past decade.

### **3.3 Wildlife Resources**

Wildlife observations are provided in a series of tables included in **Appendix B**. The wildlife observed are as expected for the habitat characteristics on site. A summary and assessment of wildlife resources is provided in the paragraphs following.

#### ***Mammals***

Both incidental (2009) and targeted wildlife surveys (2010) were conducted. Detailed results are provided in **Appendix B**. The general landscape setting is dominated by mixed coniferous and deciduous forests, an ash swamp and cultural woodlands which are surrounded by urban development. Some cultural meadow is found on adjacent urban lots. Penetang Bay and adjacent (although smaller and fragmented) similar forest types complete the landscape mosaic. These habitat areas provide conditions suitable for typical open country and forest edge/forest mammals including Grey Squirrel (*Sciurus carolinensis*), Eastern Cottontail (*Sylvilagus floridanus*), Striped Skunk (*Mephitis mephitis*), Raccoon (*Procyon lotor*), Woodchuck (*Marmota monax*), White-tailed Deer; as well as small mammals such as Meadow Vole (*Microtus pennsylvanicus*), White-footed Mouse (*Peromyscus leucopus*), and Deer Mouse (*Peromyscus maniculatus*). White-tailed Deer scat and Raccoon tracks were observed in a few locations within cultural woodland and forest understorey. Several potential den locations for species such as skunk and fox were also seen in these areas.

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## ***Birds***

The site was surveyed on two days for breeding birds (June 17 and 23, 2010), for a total of ten field hours. Searches concentrated on potential Species at Risk, with all other species recorded concurrently. Detailed results are provided in **Appendix B**. The property supports a variety of bird species that utilize open fields, successional habitat, mixed forests and small wetland features. Typical bird species observed include: American Robin (*Turdus migratorius*), Blue Jay (*Cyanocitta cristata*), Common Grackle (*Quiscalus quiscula*), Red-winged Blackbird (*Agelaius phoeniceus*), Song Sparrow (*Melospiza melodia*), American Goldfinch (*Carduelis tristis*), European Starling (*Sturnus vulgaris*) and Yellow Warbler. An old accipiter stick nest and cavity nesting evidence was also observed within the main forested unit FOM 5-2. Resident, migrant and breeding bird information was compiled and assessed using OBBA datasets and Conservation Priorities for Southern Ontario (Simcoe district). From these data, a number of summary statements can be made relating to the diversity of bird species recorded in the study area and surrounding landscape, as follows:

- a total of 25 species have been recorded within the general study area. Of these species, five have been confirmed to be breeding, three have exhibited ‘probable’ breeding evidence and 17 have exhibited ‘possible’ breeding evidence. There was also one species that was observed without any breeding evidence. This was a fresh Pileated Woodpecker hole, indicating that species is utilizing the area, despite not being seen during the survey;
- when our species list was cross referenced with the OBBA data for squares 17NK86 and 17NK85, Region 13, for the second and first atlas; the majority (~90%) of the species recorded were expected to be observed;
- several of the species listed by OBBA for squares 17NK86 and 17NK85 were shore birds, grassland/open meadow species or marsh birds where habitat is simply not present on site. Of the other species listed by the OBBA, accipiter/owl species have the most potential to exist on-site, although none were seen. Habitat on site would provide suitable opportunities for owls and accipiter’s, as mature trees, an old stick nest and tree cavities were observed;



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- one species of Special Concern, Eastern Wood-pewee, was identified on the subject property, in mixed and deciduous forest areas, and was recorded as a probable breeder. This species is further discussed in **Section 4.2.2**;
  - all of the other species recorded are either very common or demonstrably secure in Ontario (S5, S5B SZN), or common and apparently secure in Ontario (S4, S4B SZN).
  - six species observed as possible or confirmed breeding are considered "area sensitive" (Significant Habitat Technical Guide MNRF 2000), meaning they are species which require large areas of suitable habitat for long term population survival. Fragmentation of essential habitats can result in overall declines in populations of such species.
  - of the 25 species identified, 10 were ranked under the Conservation Priorities for Southern Ontario (CPSO) municipal priority list for Simcoe County. The rankings are included in **Appendix B**. This ranking system goes from Level 1 (Highest) through Level 4 (Lowest). CPSO is a tool for municipalities to assist them in assessing the importance of bird species in land use planning. Ranks have been developed using standard criteria relating to a species' habitat-area requirements, breeding range and biological characteristics. The ranks provide a tool that municipalities might use when identifying significant natural heritage features. Note: Caution should be used when interpreting this information since it is not a legal designation nor afforded any policy protection.

### ***Amphibians and Reptiles***

A single amphibian survey was conducted on June 11, 2009, between 10:00 p.m. and 10:35 p.m.; this survey was conducted to confirm the use of the subject property by amphibians. There was very little wind (Beaufort wind speed = 1) and no precipitation. The temperature remained a constant 14° C throughout the survey. The three survey stations were located in the western portion of the property, where swamp and lowland communities contain ephemeral ponds capable of supporting amphibian breeding (**Figure 1**). During the survey three species were observed: American Toad (*Bufo americanus*); Spring Peeper (*Hyla crucifera*), and Green Frog (*Rana clamitans*). The Ash swamp has the potential to support other common amphibian species, including Wood Frog (*Rana sylvatica*), and Grey Tree Frog (*Hyla versicolor*), as well as one species considered at risk, the Western Chorus Frog – Great Lakes/St. Lawrence – Canadian Shield

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Population (*Pseudacris triseriata* pop. 2); while these species were not recorded, each would be expected to occur within this swamp.

Calling evidence and abundance counts of individuals were limited, with few individuals heard throughout all the stations. Based on habitat conditions it is almost certain that that during early April and May, a full chorus would be heard of earlier breeders (i.e., Spring Peeper, Chorus Frogs and Wood Frogs). These are species which would rely on the swamp community as a breeding pond. The June survey would also have caught later breeders (i.e., Pickerel Frog, Mink Frog and Northern Leopard Frog), if they were utilizing these pools; however, none were observed during the survey.

The American Toad can breed as early as late March through to early June. In Penetanguishene, due to the higher latitude, breeding would likely be towards the end of this period. It requires a minimum of 50 days from the time the eggs are laid until the tadpoles are ready to transform into toads. Similarly, Spring Peepers begin calling in early spring and their offspring take 2 – 3 months to go from egg to tadpole to frog. Both of these species can be supported by the types of ephemeral ponds observed on site in the ash swamp and lowland communities (SWD 2, FOD 7-2).

Green Frogs on the other hand breed from early summer through to August. Their eggs hatch within three weeks, but the tadpoles overwinter in water and transform the next spring. This means that they require permanent or semi-permanent water bodies (i.e., water bodies that dry up only during dry years), for successful reproduction. On the basis of the field survey conducted on June 11, 2009, and subsequent follow-up visit on August 9, 2010, the pools of water on-site are ephemeral, retaining some spring recharge and partially drying up in the summer. It is expected these areas will retain some water after larger rain events, given the limited ground flora and evidence of saturated soils.

The three amphibian species observed on-site are amongst the most common to Ontario; however, amphibians and reptiles are known to be particularly sensitive to human disturbances such as habitat alteration and fragmentation. Considering the surrounding developed areas, a loss of breeding habitat for these species could result in a significant decrease in their abundance within the more immediate environs. The preservation of the Ash swamp together with portions of the surrounding woodlands can maintain sufficient amounts of amphibian breeding habitat to sustain the populations observed.

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Michalski Nielsen Associates Limited observed two species of snakes, Eastern Gartersnake (*Thamnophis sirtalis sirtalis*) and Dekay's Brownsnake (*Storeria dekayi*) within the CUWI and FOD3-1 communities during the August 9, 2010 survey. These are widely distributed species often found near human habitation in urban or suburban areas. The study area has potential to support other common reptiles, particularly snakes.

A discussion of Species at Risk and Significant Wildlife Habitat are included in **Sections 4.2.2** and **4.2.3**, respectively.

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## **4 RESOURCE EVALUATION AND IMPACT ASSESSMENT**

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## 4.1 Environmental Policy Framework

Decisions on land use planning for the subject lands, as it relates to the protection of the natural environment, are governed by Ontario's 2020 **Provincial Policy Statement (PPS)**, County of Simcoe Official Plan (approved 2016) and Town of Penetanguishene Official Plan (January, 2020; currently under appeal). A planning analysis of the proposed development was prepared under separate cover by Celeste Phillips Planning Inc. and it is not the intent to duplicate that information herein. However it is important that this **EIS** addresses the natural heritage policy guidance of the **PPS** and related municipal planning direction. Further, it is important that the requirements of the *Endangered Species Act* be addressed. Our discussion is therefore primarily focused on those policy documents.

### 4.1.1 Provincial Policy Statement

The **PPS** provides an over-arching policy direction for municipal planning decisions in Ontario. It came into effect on May 1, 2020 and applies to all land use planning applications either commenced or in process on that date. The natural heritage policies (Section 2.1) read as follows:

#### 2.1 Natural Heritage

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 The diversity and connectivity of natural features in an area, and the long-term *ecological function* and biodiversity of *natural heritage systems*, should be maintained, restored or, where possible, improved, recognizing linkages between and among *natural heritage features and areas, surface water features and ground water features*.

2.1.3 *Natural heritage systems* shall be identified in Ecoregions 6E & 7E, recognizing that *natural heritage systems* will vary in size and form in *settlement areas, rural areas, and prime agricultural areas*.

2.1.4 *Development and site alteration* shall not be permitted in:

- a) *significant wetlands* in Ecoregions 5E, 6E and 7E; and
- b) *significant coastal wetlands*.

2.1.5 *Development and site alteration* shall not be permitted in:

- a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E;

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- b) *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
  - c) *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
  - d) *significant wildlife habitat*;
  - e) *significant areas of natural and scientific interest*; and
  - f) *coastal wetlands* in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b)

unless it has been demonstrated that there will be no *negative impacts* on the natural features or their *ecological functions*.

- 2.1.6 *Development and site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements*.
- 2.1.7 *Development and site alteration* shall not be permitted in *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements*.
- 2.1.8 *Development and site alteration* shall not be permitted on *adjacent lands* to the *natural heritage features and areas* identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural features or on their *ecological functions*.
- 2.1.9 Nothing in policy 2.1 is intended to limit the ability of *agricultural uses* to continue.

The subject property contains a wetland which has not been evaluated, so has not been identified as either significant wetland or significant coastal wetland in accordance with this plan. This wetland is to be fully protected and afforded a large buffer on the development of these lands.

The determination of whether a woodland constitutes Significant Woodland cannot be done at a site-specific level, but on a municipal wide basis. The term significant is quite broadly defined within this Policy Statement, being “an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to its site quality, species composition or past management history”. The Policy Statement further notes that criteria for determining significance are recommended by the Province, but municipal approaches that achieve or exceed the same objective may also be used. In other words, this determination falls to a municipality, who must consider local context, including percent woodland

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coverage over their jurisdiction. The Province has published a Natural Heritage Reference Manual (2005) which affords guidance to municipalities on criteria which they may choose to employ in determining woodland significance. **Table 1**, which was prepared as part of our original EIS, provides a brief summary of the criteria in that document, and their application to this particular woodland.

In summary, this woodland does have attributes which **could** lead to its determination as significant in accordance with the Provincial Policy Statement, but which equally may not qualify it. The Town of Penetanguishene can only make a determination of its significance in consideration of this woodland's size and character in relation to other woodland areas within the entire municipality. The study completed by the Severn Sound Environmental Association provides a useful assessment and ranking of the subject woodland in relation to other urban woodlands within the more built-up portion of Penetanguishene; while of assistance in understanding its significance, this does not take into consideration the natural heritage features of the broader planning area. In that regard, the Town's earlier Official Plan did not identify the subject woodland under either Schedule A1, to be protected in accordance with its Environmental Protection 1 designation, or under Schedule A2, to be protected in accordance with the Environmental Protection 2 Overlay designation. This implies that, through a broader scale and public planning process, the subject woodland was not then determined to have the same significance as those woodlands where such designations were applied. In its updated Official Plan (January 2020), which remains under appeal. The Town has identified the subject property as Neighborhood Area, designating it for residential development, but has identified the woodland within and adjacent to the subject property as Environmental Protection Overlay (EPO), which is distinguished from Environmental Protection (EP). In this regard, Policy 4.10 of the Official Plan notes that EP lands are those where development and site alteration are prohibited. However, that policy states that the "EPO designation includes lands where development and site alteration may be permitted, subject to the preparation of an EIS, including Significant Woodlands, for example." While the Town's new Official Plan indicates that it considers woodlands designated as EPO to be significant, there is no rationale provided on why. Further, its policy direction in relation to woodlands designated EPO is clearly permissive. As has been previously noted, Town staff have encouraged and participated in Queen's Court's efforts to engage the public on a balanced solution for development within a portion of the woodland in question.

Significant Wildlife Habitat is one aspect of the **PPS** which is less straightforward to define. In this regard, the Province has provided technical guidance on what might constitute SWH, but has left decisions

**Table 1.** Province’s recommended significant woodland evaluation criteria and standards.

Criteria	Standard	Comments
1. <b>Woodland size</b>	<ul style="list-style-type: none"> <li>· where 5% to 15% of land base is woodland, woodlands of 4 ha in size or larger should be considered significant</li> <li>· where 15% to 30% of land base is woodland, woodlands of 20 ha in size or larger should be considered significant</li> </ul>	<ul style="list-style-type: none"> <li>· woodland is 16.1 ha in size</li> </ul>
2. <b>Ecological functions</b> a) woodland interior	<ul style="list-style-type: none"> <li>· area &gt;100 m from an edge should be considered significant if any interior habitat is present where &lt;15% woodland cover</li> <li>· where woodland cover is 15% to 30%, 2 ha interior habitat is suggested as standard</li> </ul>	<ul style="list-style-type: none"> <li>· Urban Woodland Assessment suggests 5.2 ha of interior habitat</li> <li>· our calculation suggests approximately 1.5 ha of interior habitat</li> <li>· extension of Beck Boulevard through property would essentially eliminate any interior habitat</li> <li>· although area of interior habitat is not large, six area-sensitive birds have been identified</li> </ul>
2. <b>Ecological functions</b> b) proximity to other woodlands or other habitats	<ul style="list-style-type: none"> <li>· if woodland is within a specified distance (e.g., 30 m) of a significant natural feature or fish habitat likely receiving ecological benefit from woodland, significance is increased</li> </ul>	<ul style="list-style-type: none"> <li>· Penetang Bay approximately 250 m away</li> <li>· woodland impacted by urban development</li> <li>· two other woodlands occur within approximately 120 m</li> <li>· no other significant features known to occur in close proximity</li> </ul>
2. <b>Ecological functions</b> c) linkages	<ul style="list-style-type: none"> <li>· significance increased if woodlands are part of an identified natural heritage system or provide a connecting link</li> </ul>	<ul style="list-style-type: none"> <li>· no County of Simcoe Greenlands designation</li> <li>· property identified neighbourhood residential in Schedule A1, but as urban woodland in Schedule A2</li> <li>· two other urban woodland areas within approximately 120 m of site</li> <li>· urban development separates this woodland from other woodland areas</li> </ul>
2. <b>Ecological functions</b>		<ul style="list-style-type: none"> <li>· Penetang Bay approximately 250 m away</li> </ul>



Criteria	Standard	Comments
d) water protection	<ul style="list-style-type: none"> <li>· significance increased by proximity to areas of sensitive groundwater discharge, sensitive recharge, sensitive headwater area, watercourse or fish habitat</li> </ul>	<ul style="list-style-type: none"> <li>· lowland forest and swamp communities appear to be fed primarily by surface flow</li> <li>· no evidence of watercourses, sensitive groundwater discharge or recharge, or sensitive headwater areas</li> </ul>
2. <b>Ecological functions</b> e) woodland diversity	<ul style="list-style-type: none"> <li>· significance increased if forest contains native forest species which have declined significantly, or have a high natural diversity (plant species composition plus terrain conditions)</li> </ul>	<ul style="list-style-type: none"> <li>· woodland does have physically diverse conditions, and supports a relatively diverse plant community, albeit one which is effected by surrounding urbanization</li> </ul>
3. <b>Uncommon characteristics</b>	<ul style="list-style-type: none"> <li>· significance increased by unique species composition, S1, S2 or S3 ranked plant communities, rare vegetation, or characteristics of older woodlands</li> </ul>	<ul style="list-style-type: none"> <li>· no S1, S2 or S3 plant communities</li> <li>· no federally or provincially designated vegetation</li> <li>· regional rare species for Simcoe Region and Site District 6E-6 observed</li> <li>· portions of the woodland do contain some very mature trees, but no mature stands</li> </ul>
4. <b>Economic and social values</b>	<ul style="list-style-type: none"> <li>· significance increased by high productivity of economically valuable products</li> <li>· significance increased by important identified recreational, native appreciation, cultural or historic values</li> </ul>	<ul style="list-style-type: none"> <li>· none of these standards appear to apply</li> <li>· ad-hoc trail development does not satisfy recreational standards</li> </ul>

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on the designation of such habitat to the discretion of individual municipalities, as decisions on what constitutes such habitat must give consideration to local/regional conditions. The Town of Penetanguishene's new Official Plan does not include any categories of Significant Wildlife Habitat on its schedules, and does not speak to such areas in the body of the document. Significant Wildlife Habitat is spoken to in Section 4.2.3 of this report.

No Areas of Natural and Scientific Interest (ANSIs) have been identified on or adjacent to the subject lands.

The property does not contain any watercourses and the treed swamp within it does not provide fish habitat, accordingly Policy 2.1.6 of the **Provincial Policy Statement** is not applicable.

It is noted that the Town of Penetanguishene's new Official Plan (January 2020), which is under appeal, identifies watercourses within the subject property in its EP designation. While a portion of that designation relates to an area of erosional ditch created by stormwater entering the property from the east, as illustrated in **Photograph 8** this is simply an erosional scar that has been created by presently uncontrolled flows during large rain events; that ditch does not ordinarily convey flows, even during wetter periods of the year, and does not constitute a watercourse. The EP designation also includes an area within the west portion of the property, oriented in a north-south direction and partially overlapping with the wetland on the property. In this instance, we believe this to simply be an artifact of the provincial mapping base that would have been used to inform this schedule, with such mapping derived from aerial or satellite imagery and often interpolating where watercourses are likely to be within a wooded setting (in this case, with the program used to create the mapping seeking an outlet for the known external drainage into the site). However, as discussed in **Section 3.1** of this report, that external drainage broadly disperses within the western portion of the site, much of it entering the wetland as either sheet flow or shallow groundwater discharge, and with the remainder flowing diffusely to the catchbasin just southwest of the site, or directly towards Penetang Bay. This drainage does not form a watercourse. Detailed work has been completed over many years on the subject property to inform this EIS and development plans, and that information should prevail over interpolated map information which the Town of Penetanguishene has not ground-truthed.

Endangered and Threatened species are addressed in **Section 4.2.2** of this report.

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#### 4.1.2 *Endangered Species Act*

The *ESA* came into effect in Ontario in 2007, and provided for immediate protection of all species on the Species at Risk in Ontario (SARO) list. This protection is afforded under Section 9(1) of the *Act*, which reads:

**Prohibition on killing, etc.**

- 9(1) No person shall,
- a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
  - b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,
    - (i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;
    - (ii) any part of a living or dead member of a species as referred to in subclause (i),
    - (iii) anything derived from a living or dead member of a species referred to in subclause (i); or
  - c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b)(i), (ii) or (iii). 2007, c.6, s.9(1).

The 2007 *ESA* additionally affords habitat protection to species on the SARO list. The relevant portions of the *Act* are found under Sections 10(1) through 10(3) and are repeated as follows:

**Prohibition on damage to habitat, etc.**

- 10(1) No person shall damage or destroy the habitat of,
- (a) a species that is listed on the Species at Risk in Ontario List as an endangered or threatened species; or
  - (b) a species that is listed on the Species at Risk in Ontario List as an extirpated species, if the species is prescribed by the regulations for the purpose of this clause. 2007, c.6, s. 10(1).

**Specified geographic area**

- 10(2) If the Species at Risk in Ontario List specifies a geographic area that a classification of a species applies to, subsection (1) only applies to that species in that area. 007, c. 6, s. 10 (2).

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### Exception, suspension of protections

- 10(3) If a species is listed on the Species at Risk in Ontario List as an endangered or threatened species for the first time, the application of the prohibition in clause (1) (a) with respect to the habitat of the species is subject to any order made under section 8.1. 2019, c. 9, Sched. 5, s. 9.

Also important to this discussion is the definition of habitat under the *ESA*, which is described under Section 2(1) as follows:

“Habitat” means,

- (a) With respect to a species of animal, plant or other organism for which a regulation made under clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species, or
  - (b) With respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding, and includes places in the area described in clause (a) or (b), whichever is applicable, that are used by members of the species as dens, nests, hibernacula or other residence; (habitat)
- (2) For greater certainty, clause (b) of the definition of “habitat” in subsection (1) does not include an area where the species formerly occurred or has the potential to be reintroduced unless existing members of the species depend on that area to carry on their life processes. 2007, c. 6, s. 2 (2).

The MNRF had prepared a document entitled **Categorizing and Protecting Habitat under the *ESA*** that outlines the overall approach and considerations that the MNRF used in determining whether a proposed activity is likely to damage or destroy habitat protected under subsection 10(1) of the *ESA*. Although the responsibility for administering the *ESA* has since been transferred by the Province from MNRF to the Ministry of Environment, Conservation and Parks (MECP), the guidance provided in that document remains useful. For clarity, the following is provided directly from that document:

*Not every activity that occurs within or near habitat will damage or destroy that habitat. Determining whether a proposed activity is likely to damage or destroy the habitat of an endangered or threatened species requires the consideration of the activity details, which parts of habitat are likely to be altered by the activity, and how the alteration may affect the species' ability to carry out its life processes.*

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### *3.1.1 Damaging Habitat*

*An activity that damages the habitat of a species is one that alters the habitat in ways that impair the function (usefulness) of the habitat for supporting one or more of the species' life processes.*

### *3.1.2 Destroying Habitat*

*An activity that destroys the habitat of a species is one that alters the habitat in ways that eliminate the function (usefulness) of the habitat for supporting one or more of the species' life processes.*

*In some cases, the anticipated alteration that a proposed activity will have on habitat may be so minor that the function of the habitat for supporting the species' life processes will not become impaired or eliminated. In such cases the activity would not contravene subsection 10(1) of the ESA and would not require authorization under the Act with respect to this provision. In other cases, the alteration may be more significant such that the function of the habitat for supporting one or more of the species' life processes may become impaired or eliminated. Such activities would contravene subsection 10(1) of the ESA and would require authorization under the Act prior to proceeding.*

Ensuring compliance with the *ESA* is a proponent's responsibility. On a development of this scale, it requires an understanding of what species are known to the broader area, then an assessment of their potential to use the lands to be developed, based on habitat attributes. For some species, this analysis may benefit from targeted field surveys to determine whether a species is using habitat that may be suitable for it; however, as Endangered and Threatened species are generally difficult to find, and as the mobility of wildlife means that their absence on any given occasion does not discount their potential use, the assessment of habitat potential is always key.

The Province has a permitting process which allows activities which would otherwise be prohibited under Sections 9 or 10 of the 2007 *ESA*, which is described under Section 17 of the *Act*.

An assessment of Species at Risk has been completed for the subject property, as described in **Section 4.2.2**.

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## 4.2 Biological Significance

### 4.2.1 Vegetation Communities and Floristics

The analysis for vascular plant species rarity consisted of a straightforward comparison of the subject property's plant species with those listed in the previously-mentioned status lists. None of the flora found within the study area has been designated as rare on a federal or provincial level. Nor did the search of the NHIC records identify any record of such vegetation for this immediate locale. Species of local or regional rarity have been identified. Further; liaison with MNRF Midhurst did recognize that butternut may be a potential species for this site. This species was not recorded during our vegetation surveys or community delineations.

The study area spans a variety of natural and anthropogenic habitats, including mixed forest (**FOM**), deciduous forest (**FOD**), coniferous forest (**FOC**), cultural woodland (**CUW**), swamp (**SWD**) and urban residential (**UR**). Despite a variety of disturbance factors, some relatively undisturbed and mature forest is present. Apart from the swamp feature, there are no other wetland features within the subject property. Based on available background resources, all of the vegetation communities potentially affected by the proposed development are common and abundant in the Penetanguishene area and Site District 6E-6. The study area does not contain any life or earth science Areas of Natural or Scientific Interest (ANSIs), or evaluated wetlands forming part of a Provincially Significant Wetland (PSW). As previously described, the site has been evaluated through an urban woodland study, and given a high ranking.

### 4.2.2 Species at Risk

The *Endangered Species Act (ESA)* provides protection for species listed as Endangered or Threatened in Ontario, including their habitat. The Species at Risk in Ontario (SARO) List also identifies species of Special Concern, some of which could become Threatened or Endangered in the future. Species of Special Concern and their habitats are not protected under the *ESA*.

A Species at Risk assessment has been completed for the subject property, with the results of that assessment provided in **Table 2**. This work has been informed by the original EIS work, subsequent

Table 2. Species at Risk Survey.

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
<b>AVIFAUNA</b>										
Bobolink ( <i>Dolichonyx oryzivorus</i> )	THR	THR	THR	1	S4B	The Bobolink is found in grasslands and hayfields, and feeds and nests on the ground. This species is widely distributed across most of Ontario; however, are designated at risk because of rapid population decline over the last 50 years (Ministry of Natural Resources and Forestry, 2014). The historical habitat of the bobolink was tallgrass prairie and other natural open meadow communities; however, as a result of the clearing of native prairies and the post-colonial increase in agriculture, bobolinks are now widely found in hayfields. Due to their reproductive cycle, nesting habits, and use of agricultural areas, bobolink nests and young are particularly vulnerable to loss as a result of common agricultural practices (i.e. first cut hay).	NHIC	N	No available habitat.	None
Cerulean Warbler ( <i>Dendroica cerulea</i> )	THR	THR	THR	1		Cerulean Warbler utilize mature, deciduous forests with large, tall trees and an open understorey. It requires relatively large tracts of forest.	NHIC	Limited	Although the subject property provides potential habitat, in earlier communications with MNR on this file they indicated it was not known to be found in vicinity of these lands. Nor was it observed during the breeding bird surveys. It is more likely to occur in connection with larger areas of undisturbed lands, such as Awenda Provincial Park.	Low impacts given the very limited likelihood of occurrence. <b>Mitigation:</b> Minimize amounts of forest removals. Vegetation clearing shall occur between late August and late April, which is outside of the breeding and nesting season (Note: more restrictive windows exist for other species).
Eastern Wood-Pewee ( <i>Contopus virens</i> )	SC	SC	SC	1	S4B	The Eastern Wood-pewee is classified as a species of special concern by COSSARO. Their population has been gradually declining since the mid-1960's (The Cornell Lab of Ornithology, 2015). The Eastern Wood-pewee is a "flycatcher", a bird that eats flying insects, that lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It prefers intermediate-age forest stands with little understory vegetation. Threats to the population are largely unknown; however, causes may include loss of habitat due to urban development and decreases in the availability of flying insect prey (Ministry of Natural Resources and Forestry, 2014).	NHIC, Observations	Y - confirmed	Forest communities on and adjacent to the property can support this species. It was documented during earlier breeding bird surveys on the property.	Low impacts expected due to widespread abundance of habitat locally. <b>Mitigation:</b> Minimize amounts of forest removals. Vegetation clearing shall occur between late August and late April, which is outside of the breeding and nesting season (Note: more restrictive windows exist for other species).
Red-headed Woodpecker ( <i>Melanerpes erythrocephalus</i> )	THR	SC	THR	1	S4B	The Red-headed Woodpecker is a medium-sized bird, with black and white colouring and a bright red head, neck, and breast. Adults often return to the same nesting site year after year. Between May and June, adults often return to the same nesting site and females lay from three to seven eggs. Habitat for the birds includes open woodland and woodland edges, often near man-made landscapes such as parks, golf courses and cemeteries. The red-headed woodpecker is widespread across Southern Ontario but rare (Ministry of Natural Resource and Forestry, 2014).	NHIC	N	No available habitat.	None

Table 2. Species at Risk Survey.

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Wood Thrush ( <i>Hylocichla mustelina</i> )	THR	SC	THR	1	S4B	The Wood Thrush is a species of Special Concern because of habitat degradation or destruction by anthropogenic development. The Wood Thrush is a medium-sized songbird, generally rusty-brown on the upper parts with white under parts and large blackish spots on the breast and sides, and about 20 cm long. The Wood Thrush forages for food in leaf litter or on semi-bare ground, including larval and adult insects as well as plant material. They seek moist stands of trees with well-developed undergrowth in large mature deciduous and mixed (conifer-deciduous) forests. The Wood Thrush flies south to Mexico and Central America for the winter (Ministry of Natural Resources and Forestry, 2014).	NHIC	Potential	Forest communities on and adjacent to the subject lands could support this species. Not observed during breeding bird surveys.	Low impacts expected due to widespread abundance of habitat locally. Mitigation: Minimize amounts of forest removals. Vegetation clearing shall occur between late August and late April, which is outside of the breeding and nesting season (Note: more restrictive windows exist for other species).
<b>HERPTILES</b>										
Blanding's Turtle ( <i>Emydoidea blandingii</i> )	THR	THR	END	1	S3	Blanding's turtles are threatened in Ontario primarily as a result of habitat loss and fragmentation. Blanding's turtles spend the majority of their life cycle in the aquatic environment, using terrestrial sites for travel between habitat patches and to lay clutches of eggs. These turtles prefer shallow nutrient rich water with organic sediment and dense vegetation. Blanding's turtles nest in dry coniferous and mixed forest habitats, as well as fields and roadsides (Government of Canada, 2015).	NHIC	N	No suitable wetlands occur within the property.	None
Eastern Massasauga (Great Lakes- St. Lawrence population) ( <i>Sistrurus catenatus</i> )	THR	THR	THR	1	S3	Massasaugas live in different types of habitats throughout Ontario, including tall grass prairie, bogs, marshes, shorelines, forests and alvars. Within all of these habitats, Massasaugas require open areas to warm themselves in the sun. Pregnant females are most often found in open, dry habitats such as rock barrens or forest clearings where they can more easily maintain the body temperature required for the development of their offspring. Non-pregnant females and males forage and mate in lowland habitats such as grasslands, wetlands, bogs and the shorelines of lakes and rivers. Massasaugas hibernate underground in crevices in bedrock, sphagnum swamps, tree root cavities and animal burrows where they can get below the frost line but stay above the water table.	NHIC	N	No open areas for thermoregulation within the property, including no rock barrens, fens or marshes.	None
Northern Map Turtle ( <i>Graptemys geographica</i> )	SC	SC	SC	1	S3	The northern map turtle is a medium sized turtle with a carapace marked by concentric rings that resemble contour lines on a map. The range of this turtle includes larger lakes and rivers that contain an abundance of their primary prey species; molluscs. Shoreline development, water pollution and the spread of the zebra mussel are notable reasons for the decline in populations of this species (Ministry of Natural Resources and Forestry, 2014).	NHIC	N	No suitable wetlands occur within the property.	None



Table 2. Species at Risk Survey.

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Snapping Turtle ( <i>Chelydra serpentina</i> )	SC	SC	SC	1	S3	The snapping turtle is a species of special concern in Ontario due to the potential for the species to become threatened or endangered as a result of biological factors or other identified threats. While not presently protected by law, the snapping turtle has been recognized as a species of special concern by COSSARO. Snapping turtles spend the majority of their lives in water and travel slightly upland to gravel or sandy embankments or beaches to lay their eggs (Ontario Ministry of Natural Resources and Forestry, 2014).	NHIC	N	No suitable wetlands occur within the property.	None
<b>VASCULAR PLANTS</b>										
Forked Three-awned Grass ( <i>Aristida basiramea</i> )	End	End	End	1		Forked Three-awned grass is an annual plant that grows to a height of 30 cm to 50 cm. It grows on open, bare ground or in sparsely-covered areas.	NHIC	N	There are no open areas within the property.	None
AVIFAUNA	END	END	END	1	S2?	The butternut is designated as endangered by COSSARO and is tracked by the NHIC as a species at risk. The tree is federally regulated by the Species at Risk Act (2002). Butternut belongs to the walnut family and produces edible nuts which are a preferred food source for wildlife. The range of butternut trees is south of the Canadian Shield on soils derived from calcium rich limestone bedrock. Butternut trees, which at one time were much more common to the south extending to the northern aspect of zone 6E, have been declining due to factors including forest loss and disease. Butternut trees suffer from a highly transmissible fungal disease called butternut canker. Butternut canker is causing very rapid decline in this tree species across its native range. The fungal disease is easily transmitted by wind and is very difficult to prevent. Trees often die within a few years of infection by butternut canker (Ministry of Natural Resource and Forestry, 2014).	NHIC	Limited potential	The property has been inspected on numerous occasions, over several years, by ecologists and no Butternut have been identified. This species is more typically found in woodland edges or hedgerows, not in closed canopy forests.	A final survey to confirm there are no Butternut trees or saplings will be conducted prior to the site clearing.
<b>MAMMALS</b>										
Tri-colored Bat (Eastern Pipistrelle) ( <i>Perimyotis subflavus</i> )	END	END	END	1	S3?	The eastern pipistrelle is a small bat that is widely distributed in eastern North America and whose range extends north to southern Ontario. The eastern pipistrelle is rare in this region of Ontario which is at the northernmost limit of the natural range for the species. These bats prefer to nest in foliage, tree cavities and woodpecker holes, and are occasionally found in buildings; though this is not their preferred habitat. Winter hibernation takes place in caves, mines and deep crevices. Eastern pipistrelles feed primarily on small insects and prefer an open forest habitat type in proximity to water (University of Michigan Museum of Zoology, 2004).	Professional experience	Y	Suitable habitat may be provided within forested communities, although this species was not recorded during acoustic survey.	Low impacts expected. <b>Mitigation:</b> Minimize extent of forest removals. As SAR bats are typically active between early April and late September, and hibernate in caves outside of that period, tree removal should be carried out between October 15 and April 15. This will avoid harm or impacts to individuals. Minimize impacts of lighting on retained forested areas. Although a large portion of the woodland will be retained, loss of individual trees providing potential roosting habitat should be offset through the installation of bat boxes.
Eastern Small-footed Myotis ( <i>Myotis leibii</i> )	No Status	END	No Status	Schedule	S2S3	The eastern small-footed myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Eastern small-footed bat's fur has black roots and shiny light brown tips, giving it a yellowish-brown appearance. Its face mask, ears and wings are black, and its underside is grayish-brown, about 8 cm long in size and weighs 4-5 grams. In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. They change their roosting locations daily and hunt at night for insects to eat, including beetles, mosquitos, moths, and flies. They hibernate in winter, often in caves and abandoned mines. They can be found from south of Georgian Bay to Lake Erie and east to the Pembroke area, and choose colder and drier sites (Ministry of Natural Resources and Forestry, 2014).	Professional experience	Y	Suitable habitat may be provided within forested communities, although this species was not recorded during acoustic survey.	Low impacts expected. <b>Mitigation:</b> Minimize extent of forest removals. As SAR bats are typically active between early April and late September, and hibernate in caves outside of that period, tree removal should be carried out between October 15 and April 15. This will avoid harm or impacts to individuals. Minimize impacts of lighting on retained forested areas. Although a large portion of the woodland will be retained, loss of individual trees providing potential roosting habitat should be offset through the installation of bat boxes.

Table 2. Species at Risk Survey.

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Little Brown Myotis ( <i>Myotis lucifugus</i> )	END	END	END	1	S4	Little brown myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Little brown bats have glossy brown fur and usually weigh between four and 11 grams. Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young. Little brown bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing – an ideal environment for the fungus to grow and flourish. The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources (Ministry of Natural Resources and Forestry, 2014).	Professional experience	Y	Suitable habitat occurs within forested communities, with this species not recorded during the period when bats are exiting roosting habitat, but recorded foraging within the property.	Some impacts expected. <b>Mitigation:</b> Minimize extent of forest removals. As SAR bats are typically active between early April and late September, and hibernate in caves outside of that period, tree removal should be carried out between October 15 and April 15. This will avoid harm or impacts to individuals. that period, tree removal should be carried out between September 15 and April 15. This will avoid harm or impacts to individuals. Minimize impacts of lighting on retained forested areas. Although a large portion of the woodland will be retained, loss of individual trees providing potential roosting habitat should be offset through the installation of bat boxes.
Northern Myotis ( <i>Myotis septentrionalis</i> )	END	END	END	1	S3	The northern long-eared myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Northern long-eared bats have dull yellow-brown fur with pale grey bellies. They are approximately eight cm long, with a wingspan of about 25 cm, and usually weigh six to nine grams. Northern long-eared bats can be found in boreal forests, roosting under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April, most often in caves or abandoned mines (Ministry of Natural Resources and Forestry, 2014).	Professional experience	Y	Suitable habitat occurs within forested communities, with this species having been recorded during the period when bats were exiting roosting habitat, confirming that it is using trees within or adjacent to these lands for that purpose.	Some impacts expected. <b>Mitigation:</b> Minimize extent of forest removals. As SAR bats are typically active between early April and late September, and hibernate in caves outside of that period, tree removal should be carried out between October 15 and April 15. This will avoid harm or impacts to individuals. Minimize impacts of lighting on retained forested areas. Although a large portion of the woodland will be retained, loss of individual trees providing potential roosting habitat should be offset through the installation of bat boxes.

Notes:

- SC - Special Concern
- THR - Threatened
- END - Endangered
- S1 - Extremely rare in Ontario
- S2 - Very rare in Ontario
- S3 - Rare to uncommon in Ontario
- S4 - Considered to be common in Ontario
- S5 - Species is widespread in Ontario
- SH - Possibly extirpated
- S#S# - Indicates insufficient information exists to assign a single rank.
- S#? - Indicates some uncertainty with the classification due to insufficient data.
- S#N - Nonbreeding
- S#B - Breeding

studies to determine the quality of this woodland for protected bat species and its use by such bats, and by an updated review of Species at Risk information for the broader area, coupled with recent site inspections.

On the matter of bats, subsequent to the completion of the original EIS on this property, and as a consequence of several species of bats having been listed as Endangered in Ontario, Azimuth Environmental Inc. was retained by Queen’s Court to collect and analyze bat roosting habitat data for the subject property in 2016. Azimuth Environmental Inc. prepared a report entitled *Harbourview Heights, Queens Court Development Application (221 Fox Street), Town of Penetanguishene, Bat Roosting Habitat Surveys* on October 26, 2016, with a copy of that report provided in **Appendix C**. The bat roosting habitat survey results are outlined below and the values indicate the average number of trees per hectare with snags at respective heights:

**Snag Tree Density (All Decay Classes) (Azimuth Environmental Inc., 2016)**

ELC Unit	Composite	< 3m	< 10m	> 10m
<b>FOD</b>	53	11	42	9
<b>FOC1-2 (North)</b>	30	10	20	0
<b>FOC1-2 (South)</b>	67	27	40	20
<b>FOM5-2</b>	25	30	22	6
<b>FOD7-2</b>	75	56	45	20
<b>SWD2</b>	40	40	60	0

**Snag Tree Density (Decay Class 1-3) (Azimuth Environmental Inc., 2016)**

ELC Unit	Composite	< 3m	< 10m	> 10m
<b>FOD</b>	36	9	29	4
<b>FOC1-2 (North)</b>	20	10	10	0
<b>FOC1-2 (South)</b>	7	0	7	0
<b>FOM5-2</b>	16	4	12	4
<b>FOD7-2</b>	22	18	9	5
<b>SWD2</b>	0	0	0	0

The results indicated that the composite snag density for decay class 1-3 was highest in the Deciduous Forest (FOD), and that the composite snag density for all decay classes was highest in the Fresh-Moist Ash Lowland Deciduous Forest (FOD7-2). MNR criteria were used to categorize ELC units into ‘High’ (>25 snag trees per hectare), ‘Moderate’ (10-25 snag trees per hectare), and ‘Low’ (0-10 snag trees per hectare) areas. Using that approach: Deciduous Forest (FOD) was categorized as ‘High’; Fresh-Moist Ash

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Lowland Deciduous Forest (FOD7-2) and Dry-Fresh Poplar Mixed Forest (FOM5-2) were categorized as 'Medium'; and Ash Mineral Deciduous Swamp (SWD2) and White Pine Coniferous Forest (FOC1-2) were categorized as 'Low'. These results were used to determine stations for the acoustic monitoring, work that was subsequently completed by SLR Consulting.

SLR Consulting prepared a *Species at Risk Bat Assessment* document summarizing the results of acoustic monitoring and emergence surveys on October 18, 2017. SLR Consulting completed passive (acoustic monitoring) and active (emergence) surveys to determine the presence/absence of SAR bats. The results indicated that the calls of four species were detected using the woodland as habitat: Hoary Bat; Big Brown Bat; Little Brown Myotis; and Northern Myotis. The passive (acoustic monitoring) analysis of the call data indicated that there is confirmed Little Brown Myotis and Northern Myotis detected at all three stations. Northern Myotis pulses registered at the emergence time (approximately 21:20) and Little Brown Myotis pulses registered later after the typical emergence time. Tri-colored Bats and Small Footed Bats were not recorded during the surveys.

The active (emergence) surveys results indicate that Northern Myotis was confirmed to be using the woodland during emergence surveys. The survey demonstrated that emergence is occurring within the woodland and roosts are also located within the woodland. Little Brown Myotis was recorded during the survey after emergence (at dusk). Since this species was recorded well after typical emergence times for this species, this indicates that Little Brown Myotis are roosting off the property and using the woodland as general habitat and to feed. Tri-colored Bats and Small Footed Bats were not recorded during the surveys.

SLR concluded that the woodland provides general habitat for Northern Myotis and Little Brown Myotis. The survey results strongly indicate that the woodland on the subject property provides maternity roosting habitat for Northern Myotis. SLR Consulting submitted an Information Gathering Form for activities that may affect species or habitat protected under the *Endangered Species Act* and an Avoidance Alternatives Form for activities that may require an overall benefit permit under clause 17(2) (c) of the *Endangered Species Act* to the MNRF on January 24, 2018 for Northern Myotis, Little Myotis and Tricolored Bat, recommending that impacts on bats could be appropriately addressed through mitigation, and that a permit for the destruction of bats and bat habitat was therefore unnecessary. However, it is our understanding

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MNRF did not proceed with its detailed review of that information as it felt it would be premature to do so in the absence of a municipally approved site plan.

Habitat for other Species at Risk receiving protection under the *Endangered species Act* known to the broader locale does not generally occur on the subject property or in its immediate vicinity. The Cerulean Warbler could utilize the property, but is not known to be found in this specific area, and with site conditions not being ideal for it. In this regard, this is an area sensitive species, generally known to prefer forests with interior habitat, meaning habitat greater than 100 m from the forests edge. While the subject woodland does contain some interior forest (approximately 1.5 ha), these areas are limited to the central portion of the forest and are dissected by a trail system that is well used. The site is also surrounded on all sides by residential development and urban roads. Cerulean Warbler are more likely to occur in connection with broader areas of undisturbed lands, such as Awenda Provincial Park and Georgian Bay Islands, where this species' preferred interior forest habitats are more abundant.

While there are several reptile Species at Risk known to this locale, these are typically associated with shoreline areas, open rocky areas where they can thermoregulate, and more open wetland environments such as marshes, bogs and fens. The wetland on the property is heavily treed, contains shallow water on only a seasonal basis, and has no other attributes that provide habitat opportunities for such species. There are no rock barrens or other open areas within the subject property for thermoregulation, with the closed canopy forest not providing the necessary range of habitat attributes for any of the reptile Species at Risk known to the broader area.

Butternut, a tree which is listed as Endangered, has not been identified on the subject lands over the course of many site investigations. This tree is more typically found in woodland edges or hedgerows, not in closed canopy forests. Nevertheless, a final survey to confirm that there are no Butternut trees or saplings will be conducted prior to site clearing; in the unexpected event that a specimen or two were found, there are opportunities under the *ESA* to proceed with works subject to the completion of a health assessment of those specimens and registration of the activity.

There was one Special Concern bird species, Eastern Wood-pewee, that was identified within the woodland on the property and another Special Concern species, Wood Thrush, which, while not identified on the property, is considered to have potential to occur. In both cases these species will be able to continue to

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use remnant forest areas on or adjacent to this property following development. Further, habitat opportunities for these species are very abundant locally, with no concern that these species would not be able to continue to find habitat within the local area.

Mitigation of impacts on Species at Risk within the subject property can be appropriately addressed through a combination of the following:

- retaining large portions of the woodland, with a particular focus on preserving contiguous blocks of woodland, as is contemplated with the current development plan;
- removing trees outside of the period when birds are nesting and bats are using trees as maternity/roosting habitat;
- adding bat boxes to retained open space areas to offset the loss of snag habitat for bats;
- keeping lighting levels around the edges and within preserved treed areas to a minimum, and using downcast lighting to minimize lighting impacts on bats.

All such matters are addressed in the subsequent recommendations of this report.

On approval of the Draft Plan, it will be necessary to have MECP, the agency now responsible for the administration of the *ESA*, review project details and determine whether it is satisfied that impacts on bats can be appropriately addressed through a mitigation strategy, or whether it believes a Permit will be required for these works. It is also necessary to undertake further inspection for Butternut trees and saplings prior to tree clearing. These matters are also addressed in the subsequent recommendations of this report.

#### **4.2.3 Significant Wildlife Habitat**

Significant Wildlife Habitat (SWH) can be difficult to appropriately determine at the site-specific level, as the assessment must incorporate information from a wide geographic area and consider other factors such as regional resource patterns and landscape effects. To help with site level assessments, the MNRF has

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developed the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (Ontario Ministry of Natural Resources, 2015).

The *Significant Wildlife Habitat Technical Guide* (MNRF, 2000) identifies four principal components of SWH, including:

- a) Seasonal Concentration Areas of Animals;
- b) Rare Vegetation Communities or Specialized Habitat for Wildlife;
- c) Animal Movement Corridors; and
- d) Habitats for Species of Conservation Concern.

Criteria for the identification of these features are provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF, 2015), and were used to screen wildlife habitat within the study area for potential SWH (**Appendix C**). The subject property and adjacent lands have been identified as having the potential to support the following SWH:

- Seasonal Concentration Areas of Animals:
  - Bat Maternity Colonies (Confirmed)
- Specialized Habitat for Wildlife:
  - Woodland Raptor Nesting Habitat
  - Amphibian Breeding Habitat (Woodlands)
  - Woodland Area Sensitive Breeding Bird Habitat

Similar to measures to mitigate impacts on Species at Risk, impacts on confirmed or potential Significant Wildlife Habitat can be mitigated by:

- retaining the wetland on the property, with a large area of contiguous woodland to also be retained around it for the purposes of providing a buffer between it and adjacent land uses, providing

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opportunities for woodland amphibians to disperse after breeding, and maintaining its current water balance, all as is contemplated with the current development plan;

- retaining large portions of the woodland, with a particular focus on preserving contiguous blocks of woodland, as is contemplated with the current development plan; and
- removing trees outside of the period when birds are nesting and bats are using trees as maternity/roosting habitat.

All such matters are addressed in the subsequent recommendations of this report.

#### **4.3 Comments on Future of Woodlot**

Our original EIS had noted a variety of disturbance factors in relation to the woodland on the property, including:

- The earlier described erosional gully created by uncontrolled stormwater from the east (**Photograph 8**);
- runoff that was then occurring from construction activities to the south;
- a large number of trails, utilized by ATV's, bicycles and pedestrian;
- the associated creation of bicycle jumps, tree forts, etc., through the use of this area by neighborhood children; and
- the presence, and abundance in some areas, of aggressive exotic plant species, which can outcompete native vegetation.

We had noted that some of these impacts could be reduced by better management of surrounding land uses and the woodland itself, although most are the inevitable consequence of surrounding urbanization. Regardless, the woodland still affords ecological and social benefits, and with a very large portion of it to



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be preserved, these values can be preserved and even enhanced with good management. In this regard, there has been no efforts to control against potentially more harmful activities within the past, with an opportunity, for example, to improve upon pedestrian trail access and discourage use by vehicles.

The neighborhood has expressed a strong interest in seeing a large portion of the woodland being preserved and properly managed. A preferred option for this is through the dedication of these lands to a land trust, which Queen's Court is pursuing. Another option would be to dedicate it to a public authority, which in the present instance would likely be the Town of Penetanguishene. Regardless, given the local interest in seeing these lands protected for the long-term, it would be beneficial for there to be a local stewardship committee, composed of interested neighbors; Queen's Court will encourage this as the project progresses through the approvals process.

#### **4.4 Comments on Development Proposal**

##### **4.4.1 Development Layout**

The subject property is identified as Neighborhood Area in the Town of Penetanguishene's new Official Plan, which designates it for residential development, while also having an EPO that recognizes an urban woodland which is centered on these lands. While this Official Plan remains under appeal, the EPO designation permits development and site alteration, subject to the preparation of an EIS.

Development within a woodlot clearly has environmental, as well as social, implications. However, Queen's Court has worked with the Town and its consultant team over many years, and with the local neighborhood over the last few years, resulting in several iterations to the plan to one which best embraces the environmental and social qualities of the woodland. That process has benefitted from the involvement of engaged neighbors who worked with Queen's Court to identify a form of development, and a development layout, which preserves a large portion of the woodland and generally results in a much "lighter touch" on it. The attached Draft Plan shows how development is to be entirely located within the south and southeast portions of the property, preserving approximately 70% of the existing tree cover on the property, including by preserving over 50% of the woodland within the property as one contiguous block, which is to be donated to a land trust or otherwise dedicated to a public authority. In so doing, the plan not only preserves all of the treed swamp wetland within the property but ensures that wetland has a

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minimum 35 m buffer around the entire perimeter of it (where such lands are within the subject property), and a buffer of at least 60 m width around over 70% of its perimeter. Nearly all of the forested lands which naturally grade to this wetland will be preserved in their natural state, maintaining its existing hydrological conditions and associated natural functions, such as amphibian breeding habitat. A majority of bat roosting and maternity habitat, as well as habitat for forest-dwelling birds, will also be maintained with this development strategy. Also importantly, the social values of the woodland will be largely maintained, including by preserving a well-enjoyed public trail network and by maintaining treed aesthetic buffers around the entire perimeter of the property. In the opinion of Michalski Nielsen Associates Limited, this development plan has appropriately considered the natural environment, as well as social interests, and therefore represents a good, balanced solution for these lands.

#### **4.4.2 Stormwater Management Plans**

An updated Functional Servicing and Stormwater Management Plan (July 2022) has been prepared by WMI & Associates Limited. That report notes that the proposed residential portion of this 12.01 ha site is only 2.22 ha in size, representing just 18.5% of the site. It proposes an integrated treatment train approach to treat stormwater, which includes lot level, conveyance and end-of-pipe controls. This system will be designed to ensure post-development peak flows do not exceed pre-development peak flows for storm events up to and including the 100-year design storm, with safe release of any storm events exceeding that size. Proposed quality control measures recognize the importance of downgradient Penetang Bay, and will be to an Enhanced level, the highest standard of the province. Attenuated and treated stormwater will outlet to an existing storm sewer on Fox Street before discharging to Penetang Bay via an existing stormwater outfall.

As has been previously note, development has been located such that natural drainage patterns towards the wetland on the property are maintained. As earlier noted in this report, that wetland currently has a contributing drainageshed of approximately 13.9 ha, calculated as being about 60% of the presently combined internal and external drainage to the site. Under a developed condition, the retained woodland area of the property will have an internal drainage area of 6.58 ha and external drainageshed of 11.53 ha (18.11 ha total), at least 75% of which will grade to the wetland (post-development contributing drainageshed of approximately 13.6 ha). This very closely matches the existing condition.

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The Functional Servicing and Stormwater Management Plan notes that a detailed sediment and erosion control plan must be in place prior to construction. It describes the basic elements of that plan, which is to include:

- a requirement for properly installed and maintained sediment fence downgradient of all areas of earthworks;
- the retention of vegetated buffers around the site perimeter;
- care to be taken in topsoil stripping;
- the use of mud mats to stop vehicles from tracking earth off site; and
- an inspection and maintenance program, which is to include regular inspections by the project engineer.

In reviewing these plans, while recognizing that more detailed plans will need to be in place prior to construction, Michalski Nielsen Associates Limited is satisfied that they contain all of the appropriate measures to protect the retained woodland and wetlands, as well as the quality of site runoff outletting to natural areas and Penetang Bay.

#### **4.4.3 Additional Aspects of Site Servicing**

As described in the Functional Servicing and Stormwater Management Report prepared by WMI & Associates Limited, the site will be accessed through an extension of Beck Boulevard to Fox Street. Water and sanitary services, and other utilities, will connect into the site along the road allowance for this extension of Beck Boulevard. No service connections will be required across any of the retained natural areas of the site. There are no concerns with this servicing strategy from a natural environment perspective.

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#### 4.4.4 Recommended Environmental Mitigation Strategy

It is very important that this project be implemented properly, in order to preserve the natural heritage qualities and social values of all woodland areas and trees to be preserved, and to protect the water quality of Penetang Bay. This includes the wetland that is to be protected. With these considerations in mind, Michalski Nielsen Associates Limited recommends that:

- **prior to any construction on this site, consultation is to occur with MECP, the provincial authority now responsible for the administration of the *ESA*. Information is to be provided on the extent of woodland removals relative to the earlier findings that this woodland is utilized by *ESA*-protected bat species. Advice is to be sought from MECP as to whether the mitigation strategy, as proposed or with some modifications to it, are sufficient to protect bats on the property, or whether a Permit under the *ESA* is required. No work is to occur on the site until this process is completed;**
- **as part of that process, the specific number, design, size and location of bat boxes to be installed as a habitat offset are to be determined;**
- **also prior to any construction on this site, a Butternut Health Assessor is to complete a final search for Butternut and provide verification that there are none, or, if specimens are identified, that these will either be protected or removed only in accordance with a registration of that removal with the province;**
- **the specific limits of construction are to be established prior to any earthworks, with woodland areas and treed aesthetic buffers that are to be maintained to be properly delineated through a combination of such measures as sediment fencing, hoarding and other visible barriers such as snow fencing;**
- **wherever there are opportunities to retain trees within areas identified for development, this should be achieved, with those treed areas similarly delineated;**
- **within 10 m of these limits, tree clearing is to occur with care, and generally by hand, in order to retain treed edges which are not impacted by the adjacent felling of trees, which have a staggered edge, which retain some of the adjacent understory, and which are otherwise resistant to wind throw and sun scald. That work should be undertaken with the advice of an ecologist, landscape architect or arborist;**
- **a landscape architect or arborist should be consulted to determine if there are newly created edges that could benefit from additional edge management activities, such as the thinning of the crown, deep root fertilization and additional edge plantings;**
- **all tree cutting is to be undertaken between October 15 and April 15, so as to avoid impacts on any breeding birds and roosting/maternity bats;**

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- **at the onset of grubbing, and prior to any other earthworks, a heavy-duty silt fence is to be properly installed around the downgradient perimeter of all such works. The sediment fence is to be properly trenched into the ground (a minimum 0.2 m). A qualified individual is to provide certification that the silt fencing has been properly installed;**
  - **additional sediment and erosion controls are to be installed, where deemed necessary by the project engineer, including such measures as temporary or permanent check dams at appropriate locations on any ditching;**
  - **sediment and erosion controls are to be inspected daily by the contractor, and at least monthly by qualified members of the project team. Any deficiencies in these controls are to be remedied immediately;**
  - **once an area has been grubbed, works are to progress as quickly as possible, with all disturbed areas to be stabilized by grading, then by seeding or sodding, as soon as can be practically achieved;**
  - **sediment and erosion controls are to be left in place, and regularly monitored and repaired, until such time as the lands which have been disturbed are certified by a qualified individual as being stable;**
  - **prior to May 1 of the spring following tree clearing, bat boxes, of the number, size and design agreed upon with MECP, are to be properly installed around retained woodland edges and within open space portions of the site, generally located to take advantage of a southerly exposure;**
  - **a lighting plan for the development is to be implemented, in consultation with the project ecologist, which is dark sky friendly and which capitalizes on lower level lighting/downcast lighting around retained woodland areas;**
  - **Queen's Court is to continue to pursue the donation of the retained forested block to a land trust, or in the alternative its dedication to a public authority; and**
  - **as part of the process of donating or dedicating the retained forested block, Queen's Court is to encourage the establishment of a stewardship committee which will help oversee the long-term protection, and where feasible enhancements, of the woodland.**

With the incorporation of these measures, Michalski Nielsen Associates Limited is confident that this project will be implemented in a manner that maintains the natural heritage qualities and social values of retained woodland, wetland and treed areas, as well as the water quality of Penetang Bay.

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**APPENDIX A – VASCULAR PLANT LIST**

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## Plant Species List

Family / Species	Common Name	ST	Location					
			1	2	3	4	5	6
<b>PTERIDOPHYTA</b>	<b>FERNS AND ALLIES</b>							
<u>ASPLENIACEAE</u>	<u>SPLEENWORT FAMILY</u>							
<i>Matteuccia struthiopteris</i> (L.) Todaro	American Ostrich Fern						X	
<i>Onoclea sensibilis</i> L.	Sensitive Fern			X	X	X	X	X
<u>EQUISETACEAE</u>	<u>HORSETAIL FAMILY</u>							
<i>Equisetum arvense</i> L.	Field Horsetail						X	
<i>Equisetum hyemale</i> L.	Scouring-rush						X	
<b>GYMNOSPERMAE</b>	<b>CONIFERS</b>							
<u>CUPRESSACEAE</u>	<u>CYPRESS FAMILY</u>							
<i>Juniperus virginiana</i> L.	Red Cedar							X
<i>Thuja occidentalis</i> L.	White Cedar		X	X	X	X		
<u>PINACEAE</u>	<u>PINE FAMILY</u>							
<i>Abies balsamea</i> (L.) Mill.	Balsam Fir	X					X	
<i>Picea glauca</i> (Moench) Voss	White Spruce							X
<i>Pinus resinosa</i> Ait.	Red Pine	X						
<i>Pinus strobus</i> L.	White Pine		X	X			X	X
<i>Pinus sylvestris</i> L.	Scots Pine	+ X						
<b>LILIOPSIDA</b>	<b>MONOCOTS</b>							
<u>ARACEAE</u>	<u>ARUM FAMILY</u>							
<i>Arisaema triphyllum</i> (L.) Schott	Jack-in-the-pulpit		X				X	
<u>CYPERACEAE</u>	<u>SEDGE FAMILY</u>							
<i>Carex</i> sp.	Sedge					X		
<i>Carex crinita</i> Lam.	Fringed Sedge					X	X	
<i>Carex gracillima</i> Schw.	Graceful Sedge		X	X			X	X
<i>Carex rosea</i> Schk. ex Willd.	Rose-like Sedge		X					X
<u>LILIACEAE</u>	<u>LILY FAMILY</u>							
<i>Convallaria majalis</i> L.	Garden Lily-of-the-valley	+ X		X			X	X
<i>Maianthemum canadense</i> Desf.	Canada Mayflower		X	X				
<i>Maianthemum racemosum</i> (L.) Link	False Solomon's-seal		X	X				
<u>POACEAE</u>	<u>GRASS FAMILY</u>							
<i>Dactylis glomerata</i> L.	Orchard Grass	+ X						X
<i>Poa pratensis</i> L.	Kentucky Blue Grass	+ X						X
<b>MAGNOLIOPSIDA</b>	<b>DICOTS</b>							
<u>ACERACEAE</u>	<u>MAPLE FAMILY</u>							
<i>Acer platanoides</i> L.	Norway Maple	+ X	X					X
<i>Acer rubrum</i> L.	Red Maple	X						
<i>Acer saccharum</i> Marsh.	Sugar Maple	X	X				X	X
<u>ANACARDIACEAE</u>	<u>CASHEW FAMILY</u>							
<i>Rhus radicans</i> L.	Poison-ivy		X	X			X	X
<i>Rhus typhina</i> L.	Staghorn Sumac							X
<u>APIACEAE</u>	<u>CARROT FAMILY</u>							
<i>Daucus carota</i> L.	Wild Carrot, Queen Anne's Lace	+ X						X
<u>APOCYNACEAE</u>	<u>DOGBANE FAMILY</u>							
<i>Vinca minor</i>	Periwinkle	+ X						X
<u>AQUIFOLIACEAE</u>	<u>HOLLY FAMILY</u>							
<i>Nemopanthus mucronata</i> (L.) Loes.	Mountain Holly	RR				X	X	X
<u>ARALIACEAE</u>	<u>GINSENG FAMILY</u>							
<i>Hedera helix</i> L.	English Ivy	+ X						X

Family / Species	Common Name	ST	Location						
			1	2	3	4	5	6	
<b><u>ASTERACEAE</u></b>	<b><u>ASTER FAMILY</u></b>								
<i>Arctium minus</i> (Hill) Bernh.	Common Burdock	+		X					
<i>Aster macrophyllus</i> L.	Large-leaved Aster		X	X					X
<i>Petasites palmatus</i> (Ait.) Gray	Sweet Coltsfoot	RR		X					
<i>Prenanthes altissima</i> L.	Tall White Lettuce			X					
<i>Tanacetum vulgare</i> L.	Tansy	+							X
<i>Taraxacum officinale</i> Weber	Dandelion	+	X						
<b><u>BALSAMINACEAE</u></b>	<b><u>TOUCH-ME-NOT-FAMILY</u></b>								
<i>Impatiens capensis</i> Meerb.	Spotted Jewelweed							X	
<b><u>BETULACEAE</u></b>	<b><u>BIRCH FAMILY</u></b>								
<i>Betula papyrifera</i> Marsh.	Paper Birch			X	X	X			
<i>Ostrya virginiana</i> (Mill.) K. Koch	Hop Hornbeam			X	X				
<b><u>BORAGINACEAE</u></b>	<b><u>BORAGE FAMILY</u></b>								
<i>Lithospermum officinale</i> L.	Pearl Gromwell	+							X
<i>Myosotis scorpioides</i> L.	True Forget-me-not	+			X		X	X	
<b><u>CAPRIFOLIACEAE</u></b>	<b><u>HONEYSUCKLE FAMILY</u></b>								
<i>Lonicera canadensis</i> Marsh.	Fly Honeysuckle		X	X					X
<i>Sambucus pubens</i> Michx.	Red-berried Elder		X	X					
<b><u>CARYOPHYLLACEAE</u></b>	<b><u>PINK FAMILY</u></b>								
<i>Cerastium fontanum</i> Baumg.	Mouse-eared Chickweed	+							X
<i>Silene vulgaris</i> (Moench) Garcke	Bladder Champion	+							X
<b><u>CORNACEAE</u></b>	<b><u>DOGWOOD FAMILY</u></b>								
<i>Cornus alternifolia</i> L.f.	Alternate-leaved Dogwood			X	X		X		
<i>Cornus stolonifera</i> Michx.	Red-osier Dogwood								X
<b><u>FAGACEAE</u></b>	<b><u>BEECH FAMILY</u></b>								
<i>Fagus grandifolia</i> Ehrh.	American Beech			X	X				X
<i>Quercus rubra</i> L.	Red Oak			X	X				X
<b><u>FABACEAE</u></b>	<b><u>PEA FAMILY</u></b>								
<i>Trifolium pratense</i> L.	Red Clover	+							X
<i>Vicia cracca</i> L.	Bird Vetch	+							X
<b><u>GERANIACEAE</u></b>	<b><u>GERANIUM FAMILY</u></b>								
<i>Geranium robertianum</i> L.	Herb Robert	+			X		X		
<b><u>GROSSULARIACEAE</u></b>	<b><u>GOOSEBERRY FAMILY</u></b>								
<i>Ribes cynosbati</i> L.	Prickly Gooseberry			X			X		
<b><u>JUGLANDACEAE</u></b>	<b><u>WALNUT FAMILY</u></b>								
<i>Juglans nigra</i> L.	Black Walnut	RR							X
<b><u>OLEACEAE</u></b>	<b><u>OLIVE FAMILY</u></b>								
<i>Fraxinus nigra</i> Marsh.	Black Ash.					X	X		
<i>Fraxinus pennsylvanica</i> Marsh.	Red Ash		X	X	X	X	X	X	
<b><u>ONAGRACEAE</u></b>	<b><u>EVENING-PRIMROSE FAMILY</u></b>								
<i>Circaea lutetiana</i> L.	Enchanter's Nightshade				X		X	X	
<b><u>OROBANCHACEAE</u></b>	<b><u>BROOM-RAPE FAMILY</u></b>								
<i>Conopholis americana</i> (L.) Wallr.	Squawroot	RR			X				
<b><u>OXALIDACEAE</u></b>	<b><u>WOOD-SORREL FAMILY</u></b>								
<i>Oxalis stricta</i> L.	Common Yellow Wood-sorrel	RR			X				X
<b><u>ROSACEAE</u></b>	<b><u>ROSE FAMILY</u></b>								
<i>Agrimonia gryposepala</i> Wallr.	Agrimony						X	X	
<i>Crataegus</i> sp.	Hawthorn sp.								X
<i>Fragaria virginiana</i> Dcne.	Common Strawberry								X
<i>Malus domestica</i> Borkh.	Apple								X
<i>Potentilla simplex</i> Michx.	Common Cinquefoil	RR							X
<i>Prunus serotina</i> Ehrh.	Black Cherry			X					X
<i>Prunus virginiana</i> L.	Choke Cherry			X					X

Family / Species	Common Name	ST	Location					
			1	2	3	4	5	6
<i>Rosa acicularis</i> Lindl.	Prickly Rose						X	
<i>Rubus canadensis</i> L.	Smooth Blackberry							X
<i>Rubus idaeus</i> L.	Wild Red Raspberry				X			
<i>Rubus pubescens</i> Raf.	Dwarf Raspberry			X				
<i>Sorbus decora</i> (Sarg.) Schneid.	Showy Mountain-ash		X	X			X	
<b><u>RUBIACEAE</u></b>	<b><u>MADDER FAMILY</u></b>							
<i>Galium asprellum</i> Michx.	Rough Bedstraw			X				
<i>Galium palustre</i> L.	Marsh Bedstraw						X	X
<i>Galium triflorum</i> Michx.	Sweet-scented Bedstraw			X				
<b><u>SALICACEAE</u></b>	<b><u>WILLOW FAMILY</u></b>							
<i>Populus balsamifera</i> L.	Balsam Poplar					X	X	
<i>Populus grandidentata</i> Michx.	Large-toothed Aspen			X				
<i>Populus tremuloides</i> Michx.	Trembling Aspen			X	X			X
<i>Salix</i> sp.	Willow							X
<b><u>SCROPHULARIACEAE</u></b>	<b><u>FIGWORT FAMILY</u></b>							
<i>Veronica officinalis</i> L.	Common Speedwell	+						X
<i>Veronica peregrina</i> L.	Purslane Speedwell			X				
<b><u>TILIACEAE</u></b>	<b><u>LINDEN FAMILY</u></b>							
<i>Tilia americana</i> L.	Basswood			X	X			X
<b><u>ULMACEAE</u></b>	<b><u>ELM FAMILY</u></b>							
<i>Ulmus americana</i> L.	American Elm				X	X	X	X
<b><u>VITACEAE</u></b>	<b><u>GRAPE FAMILY</u></b>							
<i>Parthenocissus inserta</i> (A. Kerner) Fritsch	Virginia Creeper	RR		X	X		X	X
<i>Vitis riparia</i> Michx.	Riverbank Grape			X				X

**ST - Status**

- + - Non-native species
- PR - Provincially Rare species
- RR - Regionally Rare species

**Vegetation Communities**

- 1 - FOC 1-2
- 2 - FOD
- 3 - FOM 5-2
- 4 - SWD 2
- 5 - FOD 7-2
- 6 - CUW 1

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**APPENDIX B – WILDLIFE SPECIES LISTS**

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**Appendix B:** Bird Observations: species observed by Michalski Nielsen Associates Limited within the subject property on June 17, July 23 and Aug 09, 2010.

Scientific Name	Common Name	Evidence Codes <sup>1</sup>		Community Location and Additional Comments <sup>2</sup>	Number of Individuals	S Ranks <sup>3</sup>	Conservation Ranks <sup>4</sup>
<i>Corvus brachyrhynchos</i>	American Crow	H	POSS	residential edge/open field	5	S5B,SZN	
<i>Carduelis tristis</i>	<b>American Goldfinch</b>	AE	CONF	CUW/ residential/open field	3	S5B,SZN	L3
<i>Setophaga ruticilla</i>	<b>American Redstart</b>	CF	CONF	FOD- <b>Area Sensitive Species</b>	1	S4S5	L2
<i>Turdus migratorius</i>	American Robin	FY	CONF	CUW/FOD residential/open field	4	S5B,SZN	
<i>Poecile atricapillus</i>	<b>Black-capped Chickadee</b>	H	POSS	FOC/FOD /SWD residential/open field	6	S5B,SZN	L4
<i>Dendroica virens</i>	<b>Black-throated Green Warbler</b>	S	POSS	FOM/FOC - <b>Area Sensitive Species</b>	1	S5B,SZN	L2
<i>Cyanocitta cristata</i>	Blue Jay	H	POSS	FOM5-2/residential edge/open field	5	S5B,SZN	
<i>Spizella passerina</i>	Chipping Sparrow	AE	CONF	residential edge/open field	7	S5	
<i>Quiscalus quiscula</i>	Common Grackle	H	POSS	FOD	1	S5B,SZN	
<i>Geothlypis trichas</i>	Common Yellowthroat	H	POSS	FOM	1	S5	
<i>Sayornis phoebe</i>	<b>Eastern Phoebe</b>	H	POSS	FOM	1	S5B,SZN	L4
<i>Contopus virens</i>	Eastern Wood-Pewee	P	PROB	FOD/FOM	2	S5B,SZN	
<i>Sturnus vulgaris</i>	European Starling	H	POSS	residential edge/open field	11	SE	
<i>Spizella pusilla</i>	Field Sparrow	H	POSS	residential edge/open field	1	S5B,SZN	
<i>Dumetella carolinensis</i>	<b>Gray Catbird</b>	S	POSS	CUW	1	S5B,SZN	L4
<i>Zenaida macroura</i>	Mourning Dove	H	POSS	residential edge/open field	4	S5B,SZN	
<i>Cardinalis cardinalis</i>	Northern Flicker	H	POSS	FOM/FOD	3	S5B,SZN	
<i>Colaptes auratus</i>	Northern Cardinal	S	POSS	MW /residential edge		S5B,SZN	
<i>Seiurus aurocapillus</i>	<b>Ovenbird</b>	H	POSS	DW/MW	4	S5B,SZN	L4
<i>Dryocopus pileatus</i>	<b>Pileated Woodpecker</b>	X	OBS	FOD/FC - Cavities observed <b>Area Sensitive Species</b>	X	S5B,SZN	L2
<i>Dendroica pinus</i>	<b>Pine Warbler</b>	S	POSS	FOC - <b>Area Sensitive Species</b>	1	S5B,SZN	L3
<i>Vireo olivaceus</i>	Red-eyed Vireo	CF	CONF	FOD/ SWD - <b>Area Sensitive Species</b>	2	S5B,SZN	
<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak	S	POSS	FOD	1	S5	
<i>Melospiza melodia</i>	Song Sparrow	A	PROB	CUW	5	S5B,SZN	
<i>Dendroica petechia</i>	Yellow Warbler	S	POSS	FOD/MW	2	S5B,SZN	

<sup>1</sup>OBBA Breeding Evidence Codes

**POSSIBLE**  
H-species observed in breeding season in suitable nesting habitat  
S-singing male present or breeding calls heard in breeding season in suitable habitat

**PROBABLE**  
P-pair observed in their breeding season in suitable habitat  
T-permanent territory presumed through registration of territorial song or presence of bird in breeding habitat on at least 2 days, one week or more apart at the same  
D-courtship or display between a male and female, or two males including courtship feeding and copulation.  
V-visiting probable nest site.  
A-agitated behavior or anxiety calls of adults  
B-brood patch on adult female or cloacal protuberance on adult male  
N-nest building or excavation of nest hole

**CONFIRMED**

DD-distraction display or injury feigning  
NU-used nest or eggshell found [occupied/laid during atlas period]  
FY-recently fledged young or downy young.  
AE-adults leaving or entering nest site in circumstances indicating occupied nest  
FS-adult carrying faecal sac  
CF-adult carrying food for young  
NE-nest containing eggs  
NY-nest with young seen or heard

<sup>2</sup>MNAL Community designations

FOD- Deciduous Forest (FOD 7-2-2/ FOD 3-1)  
FOM – Mixed Woodlands (FOM 5-2)  
FOC- Coniferous Forest (FOC 1-2)  
CUW- Cultural Woodland (CUW 1)  
SWD- Deciduous Swamp (SWD 2)

**MNR Significant Wildlife Habitat Technical Guide Area Sensitive Species**

Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers  
From: Ministry of Natural Resources. 2000. *Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Science Section. Science Development and Transfer Branch, Southcentral Science Section. 151pp. + appendices.*

<sup>3</sup>S-Ranks (provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

S1 Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.  
S2 Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.  
S3 Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.  
S4 Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.  
S5 Secure - Common, widespread, and abundant in the nation or state/province.  
S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).  
SAN Non-breeding accidental.  
SE Exotic - not believed to be a native component of Ontario's fauna.  
SZN Non-breeding migrants/vagrants.  
SZB Breeding migrants/vagrants.

<sup>4</sup>Conservation Priorities for Southern Ontario

L1- Highest to Level 4 Lowest. The list is to complement and not replace the official list of SAR in the province or other lists developed by Other groups municipalities. It is a planning tool to assist municipalities.

**Appendix B: Wildlife Observations:** species observed by Michalski Nielsen Associates Limited within the subject property on June 11 2009 and June 17, July 23, and Aug 09, 2010.

<b>Amphibians and reptiles confirmed within the subject property or immediate vicinity</b>		
<b>Scientific Name</b>	<b>Common Name</b>	<b>S-rank<sup>1</sup></b>
<b>AMPHIBIANS</b>		
<i>Hyla versicolor</i>	Gray Treefrog	S5
<i>Pseudacris crucifer</i>	Spring Peeper	S5
<i>Rana clamitans</i>	Green Frog	S5
<i>Bufo americanus</i>	American Toad	S5
<b>REPTILES</b>		
<i>Chelydra serpentina</i>	Dekey's Brown Snake	S5
<i>Thamnophis sirtalis sirtalis</i>	Eastern Gartersnake	S5

<b>Mammals confirmed within the study property or immediate vicinity</b>		
<b>Scientific Name</b>	<b>Common Name</b>	<b>S-rank</b>
<i>Odocoileus virginianus</i>	White-tailed Deer	S5
<i>Procyon lotor</i>	Raccoon	S5
<i>Sciurus carolinensis</i>	Gray Squirrel	S5
<i>Sylvilagus floridanus</i>	Eastern Cottontail	S5
<i>Tamias striatus</i>	Eastern Chipmunk	S5
<i>Storeria dekayi</i>	Dekay's Brownsnake	S5
<b>Additional wildlife observations</b>		
<ul style="list-style-type: none"> <li>• <i>Cavity holes and potential nest sites within mature trees</i></li> <li>• <i>Pileated woodpecker evidence (distinctive) hole markings (fresh)</i></li> <li>• <i>Several den locations i.e. Fox/ skunk and possible groundhog holes</i></li> <li>• <i>American Gold finch nest</i></li> <li>• <i>Old Accipiter Stick nest (possible Red-tailed hawk)</i></li> </ul>		

<sup>1</sup>S-Ranks (provincial)

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

S1 Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.

S2 Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3 Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure - Common, widespread, and abundant in the nation or state/province.

S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

SAN Non-breeding accidental.

SE Exotic - not believed to be a native component of Ontario's fauna.

SZN Non-breeding migrants/vagrants.

SZB Breeding migrants/vagrants.



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**APPENDIX C – BAT ROOSTING HABITAT SURVEY  
COMPLETED BY AZIMUTH  
ENVIRONMENTAL (2016)**

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Environmental Assessments & Approvals

October 26, 2016

AEC 16-130

Midhurst District MNRF  
2284 Nursery Rd  
Midhurst, Ontario  
L0L 1X0

Attention: Graham Findlay, Management Biologist

Re: **Harbourview Heights, Queens Court Development Application (221 Fox Street), Town of Penetanguishene, Bat Roosting Habitat Surveys**

Dear Mr. Findlay:

Azimuth Environmental Consulting (Azimuth) was retained by Queen's Court Homes to collect and analyze bat roosting habitat data as it relates to the proposed residential development. The requirement for additional surveys was identified through review comments put forward by Beacon Environmental recommending that assessment for bats be carried out prior to approval, rather than prior to construction. This letter is intended to document the process of the Bat Roosting Habitat Surveys to date and provide recommendations for moving forward for consideration with the Midhurst District Ministry of Natural Resources (MNRF). Where possible, confirmation is requested from MNRF that they are in agreement with the assessment resulting from the surveys carried out to date. Alternatively, if there are further concerns we request that representatives from MNRF attend the property with Azimuth ecologists to discuss the matter further.

## **BACKGROUND**

Michalski Nielsen Associates Limited (MNAL) submitted an Environmental Impact Study (EIS) in support of the Queens Court development application at 221 Fox Street in the Town of Penetanguishene (Figure 1) in October 2010 and updated in January 2013. As noted above, the requirement for additional surveys was identified through review comments put forward by Beacon Environmental noting that bat species had been added to Ontario's Species at Risk (SAR) list since the submission of the MNAL EIS. Beacon



Environmental further recommended that the assessment for bats be carried out prior to approval, rather than prior to construction.

Northern Myotis, Little Brown Myotis, and Tri-coloured Bat are species listed as Endangered, under Ontario's *Endangered Species Act, 2007* (ESA) and as such, have both species and habitat protection. As noted in the meeting which took place between Azimuth and the MNRF Midhurst District on Friday July 15, 2016, field data was collected by Azimuth staff for Step 2 of the methods set out in the Technical Note on Bat Species at Risk (MNRF, 2015) (the process) for identifying candidate maternity roosts during three site visits on April 22, 27 2016, and May 3, 2016. Data was subsequently analyzed and considered using quality indicators for ideal snag trees outlined in the Technical Note on Bat SAR. Figures were created to display areas of snag tree density for each Ecological Land Classification (ELC) unit and this information was presented to MNRF staff. At that time, additional information was requested to provide clarity around the quality, quantity and distribution of habitat within the proposed development area. Snag Density surveys focus on point locations to gather a representative sample of the wooded areas giving a general idea as to the quality and quantity of habitat. Mapping of candidate roost trees was included as outlined in Step 3 of the process and has been added to provide a better overview as to the locations (distribution of habitat) as requested by the MNRF.

## **PROPOSED DEVELOPMENT**

It is our understanding that the proponent wishes to develop a residential subdivision accessed from Beck Boulevard, an as of yet unbuilt north-south road owned by the Town of Penetanguishene (the Town) which would connect Broad Street to the north with Hunter Road to the south. We understand that the construction of Beck Boulevard is supported by the Town as a connecting link. The proposed draft plan of subdivision is illustrated on Figure 2, attached. The Town Official Plan designates the property as residential. Currently, the zoning is for single family residential, and the proponent is also seeking rezoning in some locations to allow for multi-residential.

Further, the areas outlined as 'retained' are to remain as forested vegetation blocks. It is our understanding that the areas hatched on the draft plan of subdivision (Figure 2) will be left in their forested condition with no tree removals. These include the rear portion of lots 12 to 25 which will be zoned Environmental Protection (EP), lands that will not be developed but will remain a part of each lot. Fencing has been proposed for the rear of each lot to prevent encroachment on the forest.



## ASSESSMENT

The MNR Technical Note on Bat SAR sets out the methods used by Azimuth staff for identifying candidate significant maternity roosts.

### **Step 1 - Identify Potential Maternity Roost Habitat:**

#### Step 1 Protocol

Step 1 requires that the surveyor use ELC to determine the presence of the following vegetation units which may provide maternity roost habitat:

- Deciduous Forests (FOD)
- Mixedwood Forests (FOM)
- Coniferous Forests (FOC)
- Deciduous Swamp (SWD)
- Mixedwood Swamps(SWM)
- Coniferous Swamps (SWC)

#### Step 1 Assessment

The MNAL EIS Report identified FOD, FOM, FOC and SWD vegetation units on the Queen's Court Homes property as illustrated in Figure 3. Thus any of those vegetation communities could constitute potential maternity roost habitat and have been assessed as such.

### **Step 2 - Snag Density Calculations**

#### Step 2 Protocol

Within identified FOD, FOM, FOC and SWD vegetation units, the density of snag trees  $\geq 25$ cm diameter breast height (DBH) is calculated within the forest site. This requires that the surveyor:

- Select random plots across the represented area of the ELC unit;
- Survey fixed area 12.6m radius plots (equates to 0.05ha)
- Measure the number of snags trees  $\geq 25$  cm DBH in each plot;
- Use the formula  $\pi r^2$  to determine the number of snag trees per hectare;
- Survey a minimum of 10 plots for sites  $\leq 10$ ha and add another plot for each extra hectare up to a maximum of 35 plots;
- Surveys should be conducted during the leaf-off period so view of snags are not obscured by foliage

If the snag tree density is subsequently calculated at  $\geq 10$  snag trees per hectare, then the site is a candidate for maternity roost colonies.



## Step 2 Assessment

Data collected for Step 2 of the process is presented in Tables 1 and 2. Based on previous consultation with the MNR, a snag tree is a standing dead or dying tree while a cavity tree is any tree which has a crack, hole, crevice, or cavity. Composite values indicate the calculated snag trees per hectare which includes any tree classified as a cavity tree. These values are provided as a composite due to the fact that one tree may display more than one type of snag feature at various heights. These numbers are further broken down to demonstrate where the defining characteristic which makes the tree a cavity tree is located <3m, >3m but <10m, or >10m. Again, the values indicate the average trees per hectare with snags at the respective heights.

**Table 1. Snag Tree Density - Trees/ha (All Decay Classes)**

ELC Unit	Composite	< 3m	3 < 10m	> 10m
<b>FOD</b>	53	11	42	9
<b>FOC1-2 (North)</b>	30	10	20	0
<b>FOC1-2 (South)</b>	67	27	40	20
<b>FOM5-2</b>	25	30	22	6
<b>FOD7-2</b>	75	56	45	20
<b>SWD2</b>	40	40	60	0

**Table 2. Snag Tree Density - Trees/ha (Decay Classes 1-3)**

ELC Unit	Composite	< 3m	3 < 10m	> 10m
<b>FOD</b>	36	9	29	4
<b>FOC1-2 (North)</b>	20	10	10	0
<b>FOC1-2 (South)</b>	7	0	7	0
<b>FOM5-2</b>	16	4	12	4
<b>FOD7-2</b>	22	18	9	5
<b>SWD2</b>	0	0	0	0

The information is broken down to demonstrate areas where the calculated snag densities represent potential significant bat maternity colony roosting habitat. Cavity features which are present below 3m are much less ideal than those above 10m in an open canopy situation. Snags in trees of Decay Class 1-3 are more likely to provide longevity for any bats which may be using the trees. These criteria and the others listed in Step 3 of the process are used to categorized ELC units into 'High' (>25 snag trees per hectare), 'Moderate' (10-25 snag trees per hectare), and 'Low' (0-10 snag trees per hectare) areas. These are overlain on the proposed development plan in Figure 3a, illustrating that the



proposed development would be expected to retain areas of important snags on the eastern portion of the property.

If these important areas of potential habitat can be protected onsite, it follows that there would be no expectation that habitat would be damaged as a result of the proposed works with appropriate mitigation. In general, Azimuth is suggesting that while the snag density on the property is considered relatively high, the quality and quantity of habitat is not such that the removal of the forest cover from portions of the property should be considered damage or destruction of habitat, and thus would not be a contravention of the ESA. Large portions of the habitat with ideal snags can be protected on the site as they are outside of the proposed development area. To provide further context Step 3 is included in the assessment to illustrate the important areas on the property.

### **Step 3: Selection of Acoustic Monitoring Locations**

This information is generally used for the implementation of Step 3 (Acoustic Monitoring) if it is required for the property. It has been included at the request of MNRF to provide additional context to the distribution of habitat.

#### Step3 Protocol

Step 3 assumes that the snag density for the ELC community meets the criteria of a high quality potential maternity roost habitat feature and should thus be monitored to determine if SAR bats are currently using the habitat. Suitable candidate snag trees are selected according to the following criteria:

- A minimum of 10 snag trees for areas  $\leq 10$  hectares;
- One snag tree for each hectare for areas  $\leq 30$  hectares; and
- A maximum of 30 snag trees for areas  $\geq 30$  hectares.

Through Step 3 of the process, the best candidate snag trees are selected according to the following criteria (in order of importance):

- Tallest snag/cavity tree;
- Exhibits snags most often originating as cracks, scars, knot holes, or woodpecker cavities;
- Has the largest DBH ( $>25$ cm DBH);
- Is within the highest density of snag trees (*e.g.* cluster of snag trees)
- Has a large amount of loose, peeling bark;
- Cavity or Crevice is high ( $>10$ m) in snag/cavity tree;
- Tree species that provide good roosting habitat (*e.g.* white pine, maple, aspen, ash, oak);



- Canopy is more open; and
- Exhibits early stages of decay (decay class 1-3; refer to Watt and Caceres, 1999).

### Step 3 Assessment

The locations of eighteen snag/cavity trees identified during Step 2 of the process are illustrated on Figure 4. These snags/groupings were selected on the basis of habitat qualifiers recommended by the MNR. As illustrated, with the exception of one tree, all of the snag/cavity trees are within protected areas, or are located offsite. Typically, we would confirm choices in the field with MRNF staff prior to organizing the recording of bat acoustic data as outlined in Step 4 of the process. However, given the distribution of the habitat it is our opinion that with appropriate mitigation, the proposed development can avoid impacts to the habitat such that there would be no contraventions of the ESA. The majority of the high quality snag/cavity trees will be maintained on the property, or on properties directly adjacent to the proposed development.

If present locally, bat species would only utilize habitat of the property outside of the winter season (i.e., the cavity trees do not provide overwintering habitat and bats are inactive during winter). In addition, notwithstanding the fact that preferable roost sites are likely located in older buildings within the Town of Penetanguishene, suitable cavity trees are assumed to be well-represented in the general area as substantial tracts of forested land are present to the east and west of Penetanguishene Bay. The removal of a small amount of potentially-suitable forested habitat to encourage infill residential development will not have a negative impact upon SAR bat species or their ability to carry out life processes in the vicinity of the proposed development. Mitigation has been proposed which if incorporated will ensure that accidental killing of the species resulting from tree removal at the wrong times of the year can be avoided.

## **MITIGATION**

The absence of a protected species on a property does not indicate that they will never occur within the area. Given the dynamic character of the natural environment, there is a constant variation in habitat presence and use. Care should be taken in the interpretation of presence of species of concern including those listed under the ESA. Changes to policy, or the natural environment, could result in shifts, removal, or addition of new areas to the list of areas currently considered habitat. This report is intended as a point in time assessment of the potential to impact SAR bats; not to provide long term 'clearance' for SAR. While there is no expectation that the assessment should change significantly, it is the responsibility of the proponent to ensure that they are not in contravention of the ESA at the time that site works are undertaken. A review of the assessment provided in



this report by a qualified person should be sufficient to provide appropriate advice at the time of the onset of future site works.

Given that the forested lands on the property and surrounding land may provide ‘general’ habitat for SAR Bat Species, care should be taken when clearing vegetation that all works respect the window for Migratory Breeding Birds. Construction activities involving the removal of vegetation should be restricted from occurring between the beginning of April to approximately mid-August. This will ensure that no bats actively roosting in trees will be killed or harmed as a result of clearing activities.

Where possible, we recommend retaining those cavity trees on-site that don’t pose a falling hazard to future dwellings as a way of maintaining “wildlife cavity trees” in general as benefit to local wildlife. In addition, care should be taken to ensure that forests in proximity to identified clusters are managed such that changes to the forest structure will not result in snag trees falling prematurely.





## **CLOSURE**

We trust the information provided will be sufficient to address any questions raised by the MNRF and provide an appropriate level of detail related to the quality, quantity and distribution of habitat present on the property. The information provided demonstrates that the trees on the property providing high quality potential maternity roost habitat will not be impacted by the proposed development. Where possible, confirmation is requested from MNRF that they are in agreement with the assessment resulting from the surveys carried out to date. As we have previously discussed, Azimuth would be pleased to attend the site in cooperation with the MNRF to review the information included in this report and provide additional context where it may be required. If you have any questions regarding this project, or would like to arrange a site visit, please do not hesitate to contact the undersigned. Thank you for your assistance in this matter.

Yours truly,  
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Brad Baker, H.B.Sc.  
Terrestrial Ecologist

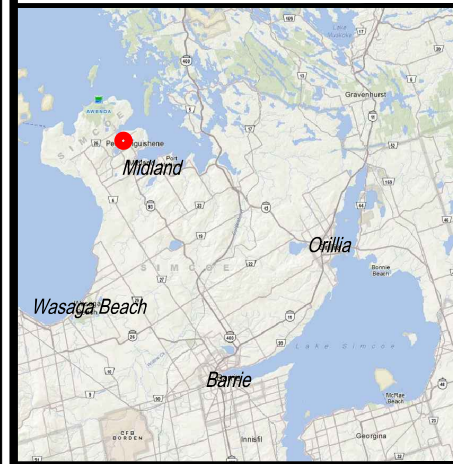
Attach:

cc: Celeste Phillips, MCIP RPP, Celeste Phillips Planning Inc.  
David Walter, C.E.T., WMI & Associates

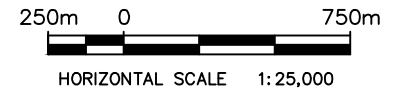


LEGEND:

— Approx. Property Boundary



REG MAP



Study Area Location

Harbourview Heights,  
Penetanguishene, ON

DATE ISSUED: May 2016	Figure No.
CREATED BY: JLM	
PROJECT NO.: 16-130	
REFERENCE: MNR	1

Printed by: MCCARTNEY on October 17, 2016 at 10:12am  
File: M:\16 Projects\16-130 Harbourview Heights Bat Surveys\04.0 - Drafting\16-130.dwg Layout: B52 Plotstyle: 1



**LEGEND:**  
— Approx. Property Boundary

30m 0 60m  
HORIZONTAL SCALE 1:2,000

**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

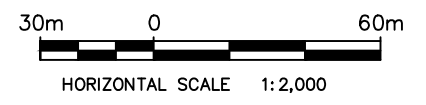
Proposed Development Plan

Harbourview Heights,  
Penetanguishene, ON

DATE ISSUED:	October 2016	Figure No.
CREATED BY:	JLM	2
PROJECT NO.:	16-130	
REFERENCE:	Simcoe County Maps	



- LEGEND:**
- Approx. Property Boundary
  - Bat Snag Locations
  - Vegetation Communities
  - FOC1-2 White Pine Coniferous Forest
  - FOD Deciduous Forest
  - FOD7-2 Fresh-Moist Ash Lowland Deciduous Forest
  - FOM5-2 Dry-Fresh Poplar Mixed Forest
  - SWD2 Ash Mineral Deciduous Swamp

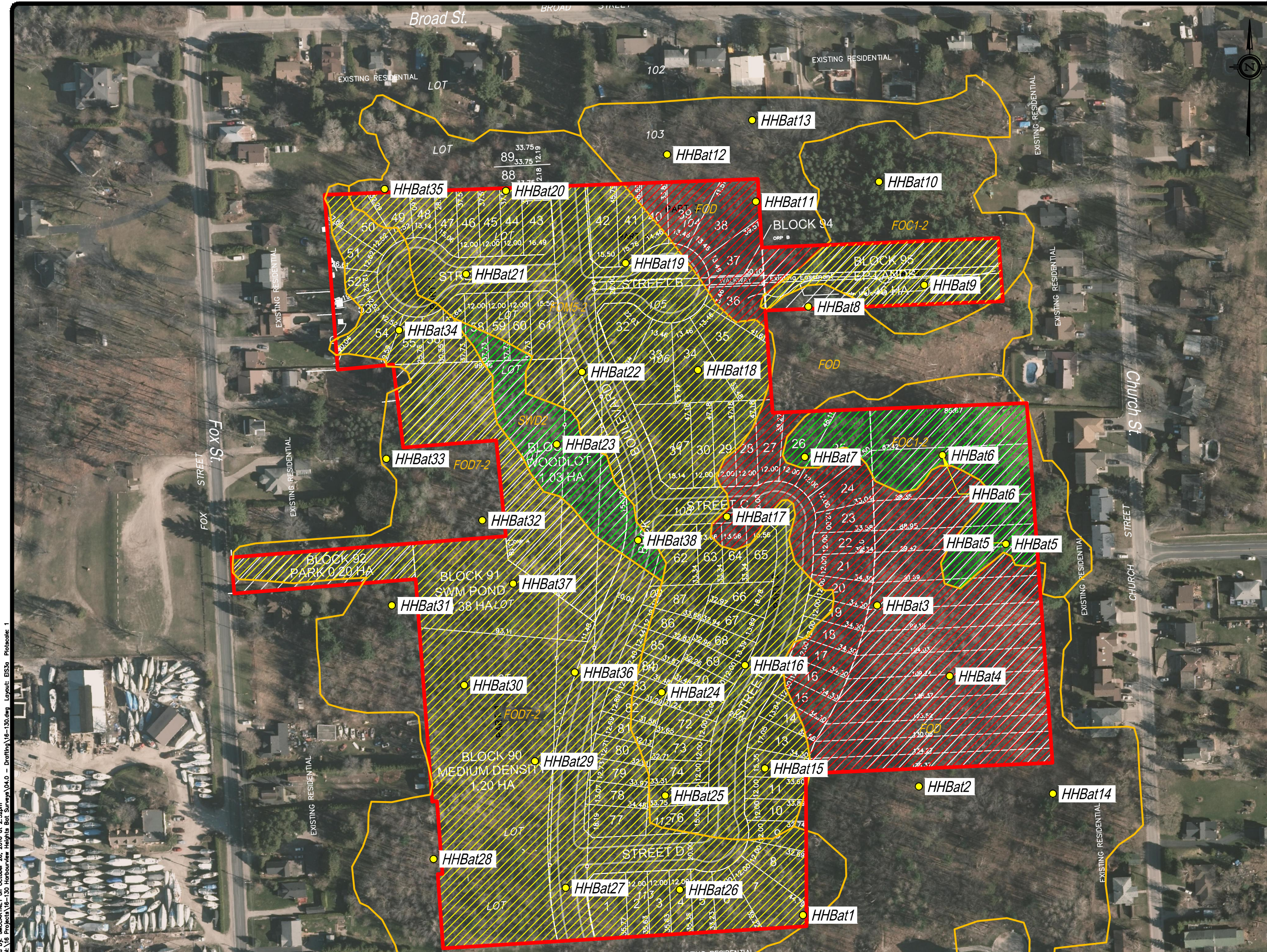


Environmental Features

Harbourview Heights,  
Penetanguishene, ON

DATE ISSUED:	October 2016	Figure No.
CREATED BY:	JLM	3
PROJECT NO.:	16-130	
REFERENCE:	Simcoe County Maps	

Plotted by: MCCARTNEY on October 17, 2016 at 10:13am  
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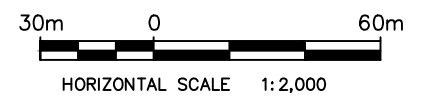
- LEGEND:**
- Approx. Property Boundary
  - Bat Snag Locations
  - High Bat Snag Density
  - Moderate Bat Snag Density
  - Low Bat Snag Density
  - Vegetation Communities
- FOC1-2 White Pine Coniferous Forest  
 FOD Deciduous Forest  
 FOD7-2 Fresh-Moist Ash Lowland Deciduous Forest  
 FOM5-2 Dry-Fresh Poplar Mixed Forest  
 SWD2 Ash Mineral Deciduous Swamp

**Snag Density Decay Class 1-3**

ELC Unit	Composite	Below 3m	Below 10m	Above 10m
FOD	36	9	29	4
FOC1-2(North)	20	10	10	0
FOC1-2(South)	7	0	7	0
FOM5-2	16	4	12	4
FOD7-2	22	18	9	5
SWD2	0	0	0	0

**Snag Density All Decay Classes**

ELC Unit	Composite	Below 3m	Below 10m	Above 10m
FOD	53	11	42	9
FOC1-2(North)	30	10	20	0
FOC1-2(South)	67	27	40	20
FOM5-2	25	30	22	6
FOD7-2	75	56	45	20
SWD2	40	40	60	0

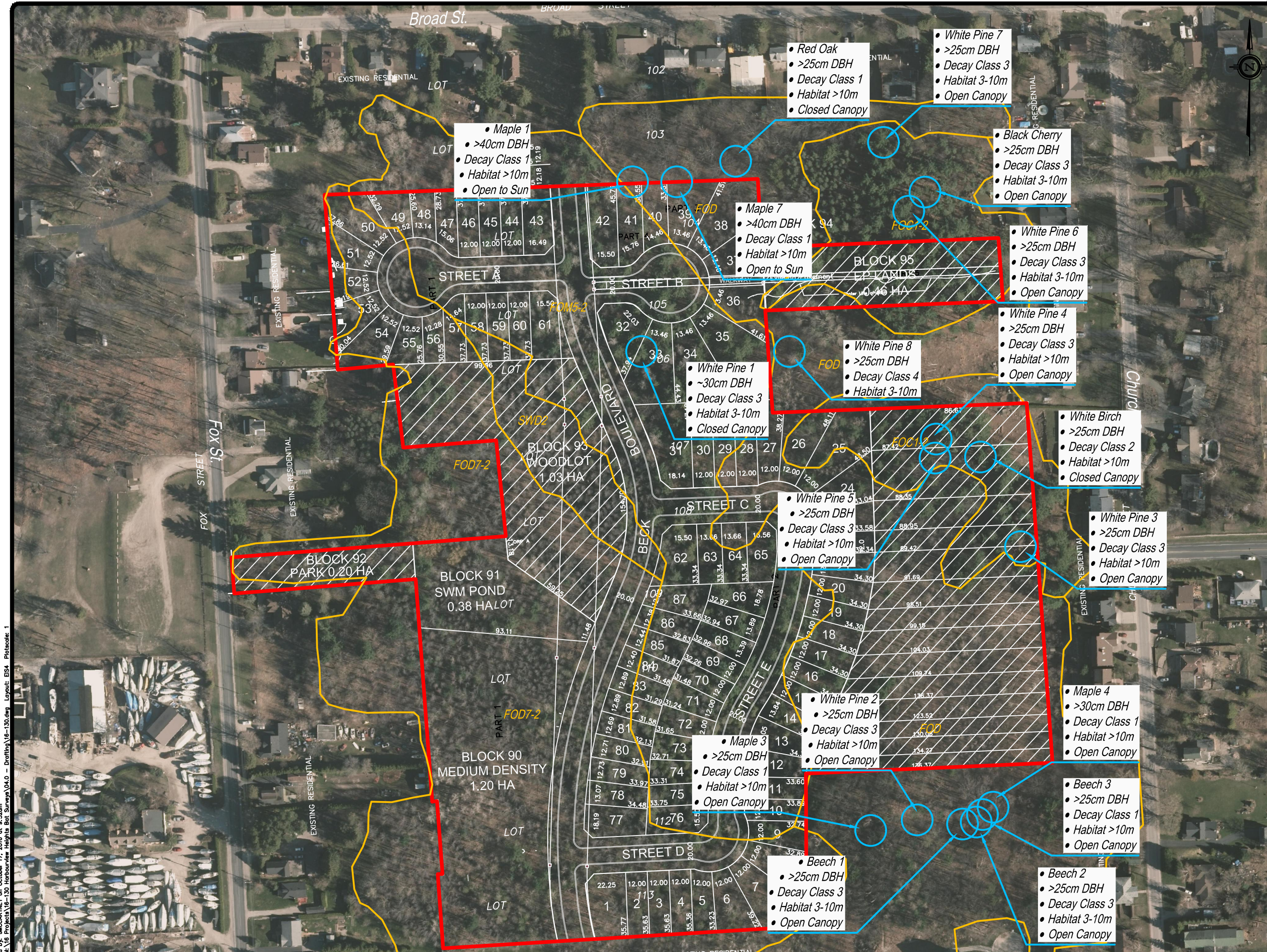


**Snag Density Decay Class 1-3  
(Composite)**

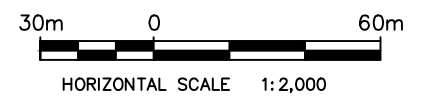
Harbourview Heights,  
Penetanguishene, ON

DATE ISSUED:	October 2016	Figure No.
CREATED BY:	JLM	3a
PROJECT NO.:	16-130	
REFERENCE:	Simcoe County Maps	

Printed by: MCCARTNEY on October 26, 2016 at 2:32pm  
 File: M:\16 Projects\16-130 Harbourview Heights Bat Surveys\04.0 - Drafting\16-130.dwg Layout: EIS3a PlotScale: 1  
 DAYSTAMP: M:\16 Projects\16-130 Harbourview Heights Bat Surveys\04.0 - Drafting\16-130.dwg



- LEGEND:**
- Approx. Property Boundary
  - Retained Snag Areas (white)
  - Bat Snag Trees
  - Vegetation Communities
- FOC1-2 White Pine Coniferous Forest  
(Removed = 0.67ha Retained = 0.31ha)
- FOD Deciduous Forest  
(Removed = 2.57ha Retained = )
- FOD7-2 Fresh-Moist Ash Lowland Deciduous Forest  
(Removed = 3.53ha Retained = 0.53ha)
- FOM5-2 Dry-Fresh Poplar Mixed Forest  
(Removed = 3.59ha Retained = 0.11ha)
- SWD2 Ash Mineral Deciduous Swamp  
(Removed = 0.15ha Retained = 0.28ha)



**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

High Quality Potential Roost Sites

Harbourview Heights,  
Penetanguishene, ON

DATE ISSUED: October 2016	Figure No.
CREATED BY: JLM	4
PROJECT NO.: 16-130	
REFERENCE: Simcoe County Maps	

Plotted by: MCCARTNEY on October 17, 2016 at 9:32am  
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**APPENDIX D – SPECIES AT RISK BAT ASSESSMENT  
(ACOUSTIC MONITORING AND  
EMERGENCE SURVEYS) COMPLETED  
BY SLR CONSULTING (2017)**

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October 18, 2017

Graham Findlay  
Management Biologist  
Midhurst District  
Ministry of Natural Resources & Forestry  
Government Complex  
2284 Nursery Rd  
Midhurst, ON L9X 1N8  
Via email: graham.findlay@ontario.ca

Dear Mr. Findlay,

**RE: SPECIES AT RISK BAT ASSESSMENT RESULTS – QUEENS COURT DEVELOPMENTS – TOWN OF PENETANGUISHENE**

## 1.0 INTRODUCTION

Queen's Court Homes retained SLR Consulting (Canada) Ltd. to follow up on studies undertaken at Harbourview Heights (221 Fox Street), Penetanguishene, with the objective of furthering the residential development application. Your comments of 8 February 2017 indicate that you are not satisfied that the use of the subject property by bats, and particularly those listed under the Endangered Species Act, 2007 (ESA), has been adequately characterized by the previous reports (Azimuth Environmental Consulting).

The following technical memorandum follows up on our meeting of September 6, 2017. The purpose of this report is to assist Midhurst District Ministry of Natural Resources and Forestry (MNRF) in making an informed decision as to whether or not the activity is likely to kill, harass, or harm a listed bat species or destroy its habitat. We have described our methodology which incorporates MNRF recommendations which we have built upon to provide what we believe is greater rigor, given that we are dealing with a species committed to avoiding discovery when roosting. For that reason, we provide an overview section to communicate our understanding of the issues of bat recovery in Ontario. The results of the 2017 bat surveys conducted at the above noted property are provided, as well as a discussion of how these findings inform the development process, and conformity to the ESA.

## 2.0 OVERVIEW

Bats found in Ontario can be divided into two groups based on migratory behaviour. One group migrates to avoid the winter and returns to Ontario in the summer. Since they do not congregate in cold places, they are not susceptible to the effects of White-nose syndrome (WNS) that has been introduced to North America from Eurasia. WNS is a fungal disease (*Pseudogymnoascus destructans*) that affects hibernating bats by causing them to emerge from winter torpor (a state of low physical activity) more frequently than they otherwise would. The repeated awakening causes them to burn fat reserves as they leave the hibernation site in search of food causing dehydration, starvation and ultimately death.

The other group spends the winter in Ontario hibernating in mines or caves. This is the group of four species of bats that are designated as Endangered under the *Endangered Species Act*, 2007 (ESA): Little Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), Tri-



colored Bat (*Perimyotis subflavus*) and Eastern small-footed Myotis (*Myotis leibii*). The population declines in these four species are primarily due to the presence of WNS. Little Brown Bats are especially susceptible to this fungus.

Under the ESA, and to assist in the protection and recovery of the four hibernating ESA bat species populations, the Ministry of Natural Resources and Forestry (MNRF) requires proposed developments to have regard for habitats and features that may affect maternity, roosting, and hibernating sites. Studies show that bats have high fidelity to these critical habitats for hibernation, roosting and maternity sites. They are typically located in both anthropogenic structures (attics, mines, old buildings, bridges) and natural features (cavity trees, loose bark of trees and under rocks). Usage of these various features depends on the species.

Within the Queens Court property, summer roost habitat affinities were identified through previous work by others as well as by SLR in 2017. The following report documents the findings of acoustic analysis and emergence surveys conducted. The evaluation is also based on attributes of the site proposed for development (woodland) which includes trees with suitable cavities, tree structure, species, size, and/or loose bark that may provide possible roost habitat.

### **3.0 METHODOLOGY**

General guidance for bat surveys related to development projects under the ESA lacks consistency. While draft guidance documents have been prepared by various MNRF Districts for internal use, none have been provided officially to individuals outside of the MNRF. The lack of knowledge of bats and bat behaviour has frequently been identified as a gap in our understanding (B.Fenton, 2017) making it difficult to assess, evaluate impacts and apply the mitigation hierarchy (avoid, redesign, mitigate and/or compensate).

Since bat species appeared on both Federal and Provincial SAR lists, SLR has been working internally with SLR's United Kingdom team of bat specialists. Attendance at meetings focused on bat ecology and management has made members of the scientific community in the US and Canada available for discussion. We have benefited from conversations with Dr. Brock Fenton, Professor Emeritus, University of Western Ontario and expert in bat behaviour and ecology; Mr. Toby J. Thorne, Bat Researcher, Toronto Zoo; Dr. Cori Lausen, Bat Researcher and Consultant, Birchdale Ecological and experts at Bat Conservation Trust (UK) and Dr. Winifred Frick, Senior Director, Conservation Science, Bat Conservation International, as well as former MNRF bat biologist, Lesley Hale. The study of bat ecology is a rapidly evolving science, and adaptation to methods and our understanding of impacts, continues to change as new science becomes available.

Methods used in this evaluation follow in part those outlined by MNRF to the extent that the approach provides useful data (e.g. *A Technical Note: Species at Risk Bats, MNRF Regional Operations Division (2015)*). Our approach has been modified to reflect existing conditions at the subject site and benefits from previous application of MNRF methods. Given the specific development proposal, guidance of recent science and approaches suggested to SLR by leading bat experts has been used to answer questions regarding bat activity on the subject lands. Methods were reviewed with Midhurst MNRF who provided conceptual approval, but reserved judgement pending outcomes.

Previous data collected for the site (tree snag density, Azimuth Environmental Consulting) and Ecological Land Classification (ELC) community classification data (Michalski Neilson and Associates) were also reviewed and assisted in the evaluation. Individual tree assessments

(detailed snag tree or density review) where every tree or sample plots are assessed according to a scale provided by the MNRF was not recommended or endorsed by experts for this property. The rationale is based on the existing woodland characteristics, biology and behaviour of relevant species of interest and inconsistencies of the snag attribute table suggested for use within MNRF internal documents. For example Silvis, Perry and Ford (2016) found that forest types and roost tree characteristics reported in the literature for species like Northern Myotis are often biased as the majority of studies have been conducted in certain landscapes (i.e. deciduous) not because of species preference or biology but rather surveyor bias (physical location, funding). Fundamentally, the majority of research conducted (W.Frick, *pers. comm.* 2017; Fenton 2015) notes that those bats likely do not select roosts based on a single roost tree characteristics, but rather on overall characteristics of woodlands, surrounding landscape and contributing factors (e.g. presence of wetlands, riparian areas, vernal pools) and is clearly tied to the local tree-species assemblage. Furthermore, snag tree evaluations themselves are also inherently biased from surveyor to surveyor, and often roost usage and or quality are misrepresented (Foster and Kurta 1999, in *Bats in Forests Conservation and Management*, 2007).

### **3.1 Survey Approach**

Surveys for presence/absence as well as activity patterns were undertaken using both passive acoustic detectors as well as emergence surveys (T.Thorne, *pers. comm.* 2017, Thorne, and Fenton 2016).

Passive and active surveys were completed in June. In Ontario this is when young are born and adults are most active (MNRF, 2015; B.Fenton, 2015). Active surveys occurred on June 16 and July 6 2017, while the acoustic monitors were deployed for nearly 4 weeks, from June 16 to July 5, 2017.

#### **3.1.1 Active Surveys (Emergence)**

The intent of the survey was not to identify individual roost trees or visual confirmation of emergence of a bat(s) from a single tree. To do so would require highly invasive capture and recapture techniques and/or radio-tagging of individuals. Visual confirmation of emergence is not reliable in these types of environments where light (visibility), extensive overhead and understory canopy compromise a surveyors ability see views and a high number of candidate trees are present (B. Fenton, *pers. comm.* 2017, L. Hale *pers. comm.* 2015). The objective of the active survey was to assist in determining whether SAR bats are “emerging” generally from the woodland and to assist in determining activity (where possible) in the woodland. For example, is the woodland is being used as day roost(s)/maternity roost habitat, foraging habitat or both? Two surveys were recommended (T.Thorne *pers. comm.* 2017; C.Lausen, *pers. comm.* 2017) to meet project objectives and account for seasonal timing. If no emergence or bat(s) were detected additional surveys or review would be required.

Two groups consisting of four individuals (one experienced bat specialist and one assistant) traversed the woodland starting 1 hour before sunset (approximately 21:00) and ending at approximately 23:00 hrs in good weather. Surveyors traversed along both existing internal trails or relatively open understory areas (for safety) where woodland composition is predominately mature (maple, pine and beech) and working outwards north to south, east to west where habitat (evaluated earlier in the day, supplemented with previous snag tree work) was deemed to have the highest opportunities for roost habitat. Please refer to the attached map of the subject property.

Surveyors were equipped with heterodyne multiuse detectors: BatBox Duet, Peersonic RPA2, Echometer Touch and Sonabat Live with Pettersson recorder. Except for the BatBox Duet all were capable of recording bat pulses (calls). They were set to the same settings and all could be set to review frequencies 35-40 kHz and above. Both the Sonabat Live and EcoMetre touch provided “real time” analysis of pulse signatures which were analysed in situ by the experienced specialist (T.Thorne). This assisted surveyors in determining exact times of emergence and identification of a specific species groups including activities such as “feeding buzzes” (foraging). For example *Myotis* species and Tri-coloured bats have a detection frequency equal to or greater than 40 kHz, where as other non SAR bats (e.g. Big Brown, Silver Haired, Hoary bat) call signatures are well below this threshold.

### **3.1.2 Passive Surveys (Acoustic Monitoring)**

Species determination by acoustic detection is only as reliable as the deployment, positioning and appropriateness of the monitor used for the project. Accurate results maximizing the number of low clutter pulses requires deployment to consider the following:

- Location within low clutter environments (sparse or no understory);
- Deployment reflects the biology of species being targeted (forest vs edge);
- Targets areas of high probability of use (e.g. near water, high insect areas), and;
- Avoids dense understory areas and vertical placement<sup>1</sup>.

The upland woodland on the subject property is generally homogeneous maple, pine and beech. Lowland ash swamp/forest with vernal pools is centrally located. Poplar occurs generally along the periphery. The 2017 habitat review included a review of previous work by others that confirmed that numerous suitable roost trees are dispersed throughout the woodland (not concentrated in only one area). The forest structure is an important consideration when establishing the locations and number of monitors required. While MNRF suggests methods for establishing number and locations of monitors required they do not take into account site variability, a targeted species biology, movement patterns, factors as addressed above or limitations of the detector itself. With recent advancements in technology, many acoustic monitors are now capable of detecting bats from over 30m (under typical conditions), to as far as 100m or greater (Tilley Scientific 2017, Wildlife Acoustic 2016). This can create cross over of pulses (multiple detections or pulses of a single individual on several monitors) if monitors are placed closed together. Importantly, if placed in high clutter environments (e.g. in a dense understory or targeting a specific tree(s)) the likelihood of the call signature being unreadable during the analysis is high, compromising accurate species identification (Tilley Scientific, *pers comm.* 2016; T.Thorne *pers comm.* 2017 and C.Lausen *pers comm.* 2015).

For the purposes of this survey, monitor locations targeted areas where the best call signatures would be achieved to accurately determine species while accounting for surveyor safety and potential for theft/tampering. Three monitoring stations (three stationary acoustic detectors) were chosen to capture the most representative and suitable roost areas of the woodland.

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<sup>1</sup> Derived from Bat Acoustics Training, Mattawa, 2015 led by Dr. Cori Lausen supplemented by communications with Dr. Fenton, other leading experts and literature research (e.g. Kunz and Parsons 2009),

- Station 1. SM3 (full spectrum, Wildlife Acoustics)
- Station 2. SM4 (full spectrum, Wildlife Acoustics)
- Station 3. SM4 (full spectrum, Wildlife Acoustics)

All units were set to the same settings (gain 12 db, / 16 kHz high filter off/ sample rate 256 kHz / min duration 1-5 ms / max – none / minimum trigger frequency 16 kHz / trigger level 12 db / window 3 sec/ max lens 20 sec) and have very similar omnidirectional microphones. The SM3 is a less compact unit than the SM4, but is more durable. It was deployed at Station 1, given the chance for tampering and theft.

**Table 1. Survey Conditions**

<i>Date</i>	<i>Weather</i>	<i>Survey Time</i>
June 16, 2017	Clear, no rain, Beaufort scale 01-1 temp 23 °C	20:00 – 23:00 (sunset 21:00)
July 6, 2017	Clear, no rain, Beaufort scale 01-1 temp 22 °C	20:00 – 23:00 (sunset 21:04)
Acoustic deployment June 16 14:00 to July 6 23:00. Minimum of 10 nights. Average weather during deployment was clear, with little rain.		

Survey methods and acoustic deployment (setting, frequency) were determined in consultation with Toby Thorne and SLR’s UK bat research team using current science and techniques.

### **3.2 Qualifications of Researcher**

SLR Ecologist Kim Laframboise (with expertise in conducting bat exit surveys, and use of acoustic equipment) and consulting bat specialist Toby J. Thorne (Toronto Zoo) facilitated the surveys and conducted the emergence review with two other SLR staff. Mr. Thorne conducted the call data analysis. Mr. Thorne specializes in bat acoustic call analysis and surveys and studied under Dr. Brock Fenton (University of Western Ontario), Bat Ecologist.

### **3.3 Echolocation Pulse Analytical Approach**

SLR’s analysis used a three-step verification process. This included the main analysis using Sonobat where all files were filtered to remove noise (Sonobat Batch Scrubber 5.4, set to highest quality and to discard calls <20 kHz). Files were then reviewed manually by Mr. Thorne using Sonobat Viewer (Sonobat 4.0.5 Base). Mr. Thorne has extensive experience in manual call analysis. A representative subset of calls were sent to SLR U.K. expert Dr. Ben Garnett who also has extensive experience analysing Ontario bat calls in addition to the U.K. Sequences were classified to species where possible, to species group or as unidentified bat. Based on Mr. Thorne’s and SLR expertise and communication with several bat experts, auto identification programs should not be used exclusively to identify bats due to the potential for error. Automated call analysis programs such as Kaleidoscope Pro (used by the EcoMetre Touch), have an accuracy rating between 75-80%. Manual call analysis and use of more than one software tool greatly improves the reliability of interpretation.

### 3.4 Adjacent Habitat Review

Northern Myotis and Little Brown bats have been documented using anthropogenic features as maternity and day roost sites. In Ontario, Northern Myotis are almost always found in natural environments and rarely recorded using structures. Little Myotis is almost exclusively in structures (B.Fenton, *pers. comm.* 2016, T.Thorne, *pers. comm.* 2017)<sup>2</sup>. The subject property (woodland) is near a large waterbody (Penetang Bay), in an older urban environment (older houses surround the subject property which increase potential structure use) and in a landscape that is somewhat fragmented. During the pre-field review a need to understand whether suitable structures (houses, sheds, churches or mature urban trees) adjacent to the woodland could also be used as roosting sites was identified. This was deemed important based on the species biology and roosting preferences, particularly if Little Myotis were identified through the acoustic analysis. Presence of this SAR species within the woodland may indicate foraging (general habitat use) rather than roosting especially if suitable anthropogenic features were identified (T.Thorne, *pers. comm.* 2017; B.Garnett, *pers. comm.* 2017).

All houses along the edge of the woodland were reviewed visually (10 x 42 resolution binoculars) from the road or sidewalk. One old church within 500m of the woodland was also reviewed. Structures were ranked as high, medium or low potential based on known attributes typically preferred by Little Myotis (and bats generally). The criterion for likelihood of use was adapted from *Bat Surveys: Good Practice Guidelines*, Bat Conservation Trust by Hundt, L. (2016).

**Table 2. Building or Built Structure Ranking**

Likelihood of use	Typical Attributes
High	<ul style="list-style-type: none"> <li>- Pre 20th century or early 20th century construction.</li> <li>- Shingled roof, poorly maintained fabric providing ready access points for bats into roofs. Roof warmed by the sun, in particular south facing roofs- louvres, structure on roofs, loose tiles, window gaps.</li> <li>- Noticeable entry points</li> <li>- Mature trees (greater than 40 cm) with noticeable loose bark, cavities or defects (indicating possible cavities)</li> </ul>
Medium	<ul style="list-style-type: none"> <li>- Older homes with shingled roofs, other structures in close proximity (e.g. sheds),</li> <li>- Possible attics, spaces or voids</li> <li>- Shingled roofs, somewhat maintained</li> </ul>
Low	<ul style="list-style-type: none"> <li>- Modern, well-maintained buildings or built structures that provide few opportunities for access by bats.</li> <li>- Buildings and built structures comprised primarily of prefabricated steel and sheet materials.</li> <li>- High level of regular disturbance.</li> <li>- Highly urbanized location with few or no mature trees, parkland, woodland or wetland.</li> <li>- High levels of external lighting.</li> </ul>

<sup>2</sup> Personal observations and knowledge of ongoing (unpublished) research being conducted throughout Ontario.

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SLR acknowledges this is a cursory review with limited access to structures and is not intended to be a definitive analysis of roost usage. Information collected contributed to the analysis of bat behaviour with respect to the woodland.

## 4.0 RESULTS AND DISCUSSION

Calls of four species were detected with certainty to be using the woodland as habitat: Big Brown Bat, Hoary Bat, **Little Brown Myotis** and **Northern Myotis species**. No Tri-coloured bats or Eastern Small-footed bats were recorded either during the emergence review or the month long acoustic deployment survey. Results of bat surveys are discussed below.

### 4.1 Emergence Review

These results are based on evidence provided by hand held detection equipment collected on transects through the woodland. This method enables the investigator to incorporate spatial observations of approaches relative to fine level habitat characteristics, in addition to the temporal patterns that indicate foraging vs roosting behaviour.

#### 4.1.1 *Northern Myotis*

Northern Myotis were confirmed with certainty to be using the woodland during emergence surveys. Emergence was interpreted as bat pulses occurring at dusk as the bats left their roosting locations. Timing was predictable and occurred generally at the same time during both surveys (21: 29 – 21:45 June 16 and 21:30 - 21:50 July 6) confirming Northern Myotis are using trees within the woodland for roosting<sup>3</sup>. The review of adjacent residences, parklands and urban trees around the woodland indicated potential for trees or features which may also be used, and it cannot be discounted that these features could also be used as roost sites and species may move from external roosts into the woodland (general habitat). However, the timing of pulses and activity noted on the heterodynes during the traveling transects indicated emergence is occurring within woodland as well as indicating that roosts are also located within the woodland.

Unless studies are undertaken to handle the bats (radio-tagging; capture/recapture) a maternity roost cannot be identified through snag studies or acoustic surveys. Based on our knowledge of Northern Myotis, and using a conservative approach, we interpret our results as evidence of roosting that includes maternity roosts. In general these are solitary females and small groups although the literature is not conclusive. Roosts habits can change frequently. Studies have shown for example preferences for roost trees and types changed with pregnant females whereby they would use staging roosts early in the spring prior to giving birth, and switch roost once young are able to fly (Foster and Kurta 1999 in *Bats in Forests Conservation and Management*, 2007), Furthermore Wilhere (2003) found that multiple roosts types may be used and varied both seasonally and yearly to increase thermoregulation benefits, additional food resources (when food is scarce) and or in response to emergency (unpredictable factors). Recurrent roost switching is also common for many species of bats whereby an array of different tree attributes could be used. Importantly, attributes which may not be considered “ as preferred” are used where “ one bat is using the tree one day, several bats the next , and zero bats a few days later” not exclusively for day or individual roots but in some cases maternity as

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<sup>3</sup> Proximity is relative as heterodynes can pick up call pulses 10 - 20 m away but this remains evidence of roosting.

well (Erickson and West. 2003). Foster and Kurta (1999) through their research have shown that the Northern Myotis is known to switch roosts frequently (about every two days) over the course of the summer, and suggests that trees in addition to those which may be known roost sites are very important (e.g. when pups are flightless). Therefore, requiring a large number of trees, and forest habitats containing a multi-species matrix (i.e. open areas and linear corridors) to carry out life processes.

It is important to remember that the number of pulses recorded is not representative of the number of bats present. The type of roost, either a day roost by a single male or maternity roost (female with young) is also inclusive. However, the timing (June), frequency of pulses and surveyor expertise allow inferences to be made. The results of the emergence review in SLR's opinion strongly indicate maternity use by Northern Myotis. Several "feeding buzzes" were also documented during the emergence review especially near the central areas of woodland. This is not surprising as the understory within these areas is more open, moist with lots of insects present making the woodland in the lower areas preferred areas for this species as well as for other bats recorded. The walking transects indicated that the areas dominated by poplar and successional peripheral areas (located to the north and east slopes), had the least activity recorded (as evidenced by pulse recording and observation). This is also not surprising as these areas are more densely covered with buckthorn, shrub trees, and smaller trees.

#### **4.1.2 Little Brown Myotis**

Little Brown Myotis was also recorded within the woodland with pulses recorded later in the survey after emergence (dusk). Typically recorded at 22:30 to 23:00 well after typical emergence times recorded for this species and similar to other bats (Kunz and Anthony 1996) indicating that Little Brown Bats are likely roosting off site and moving into the woodland to feed and use the woodland as general habitat. This is consistent with SLR's understanding of this species preferred use of structures instead of natural roosts. This species has the ability to travel up to 2 km or more to forage in a single night and have been tracked up to 11 km from their roost sites (Towanda and Falxa 2007).

In SLR's opinion which is based on the 2017 results review, the woodland is of low likelihood to be used as maternity roost site by Little Brown Bats. The woodland is used as general habitat. Several "feeding buzzes" were documented during the active survey review especially near the central areas of woodland over vernal pools where insects could be expected to occur. This is also consistent with Little Brown Myotis biology as this species characteristically forages in open areas or understory.

#### **4.2 Acoustic Analysis**

These results are based on the analysis of recordings obtained from stationary detectors deployed over almost four weeks within the woodland at suitable locations. The purpose of acoustic analysis is to assist in determining species presence and absence. The analysis can only provide an index of activity rather than absolute numbers of bats.

Differentiating the four ESA species of bats in Ontario (e.g. *Myotis*) from other non-regulated bats is relatively easy, due to distinct frequency characteristics, shape and often the presence of a downward 'tail' at the end of the calls present in the *Myotis* genus and frequencies over 40 kHz. Distinguishing between the *Myotis* species is considerably more difficult as their calls have convergently evolved to enable detection of similar small prey insects.

Data from the three acoustic detectors were downloaded and analysed to identify bat echolocation pulses to species level where possible (Table 4).

The use of automated ID software (Sonabat) coupled with manual call analysis capable of determining calls, feeding buzzes, clusters, and detection of overlapping data was employed to determine whether ESA regulated bats occurred on site or the general vicinity (Figures 1 and 2).

**Table 3. Acoustic Recording Summary**

Microphone / Location	Big Brown	Hoary	Northern Myotis	Little Brown	Unidentified bat
Stn 1.	Y	Y	37 Highest # of pulses	65 Highest # of pulses	<i>Calls were evaluated but excluded as the scope was to identify SAR . Unidentified are typically noise clutters.</i>
Stn 2.		Y	30 Highest # of pulses	107 Highest # of pulses	
Stn 3.	Y	Y	5	5	

*\* Note that species totals are estimates and confidence of pulses. They likely are over-estimate of actual calls because there is a high probability that individual bats were recorded by multiple microphones simultaneously and or a single reoccurring bat pass within the area (can be detected up to 30-100 m). Presented for activity comparison between station NOT as number of bats.*

The analysis of the call data confirmed **Little Brown Myotis**, and **Northern Myotis** were detected at all three stations with Northern Myotis pulses registering at the emergence time (approximately 21:20). Little Brown Myotis pulses registered later after typical emergence. Small Footed Bats or Tri-colored Bats were not detected. This is further confirmed by the emergence surveys which also did not detect bat pulses for either of these species. Activity that would suggest feeding swarms was also identified.



Figure 1. Example of the majority of pulse signatures – representing Little Brown Bat (MYLU) (peak energy extending above 40 kHz)

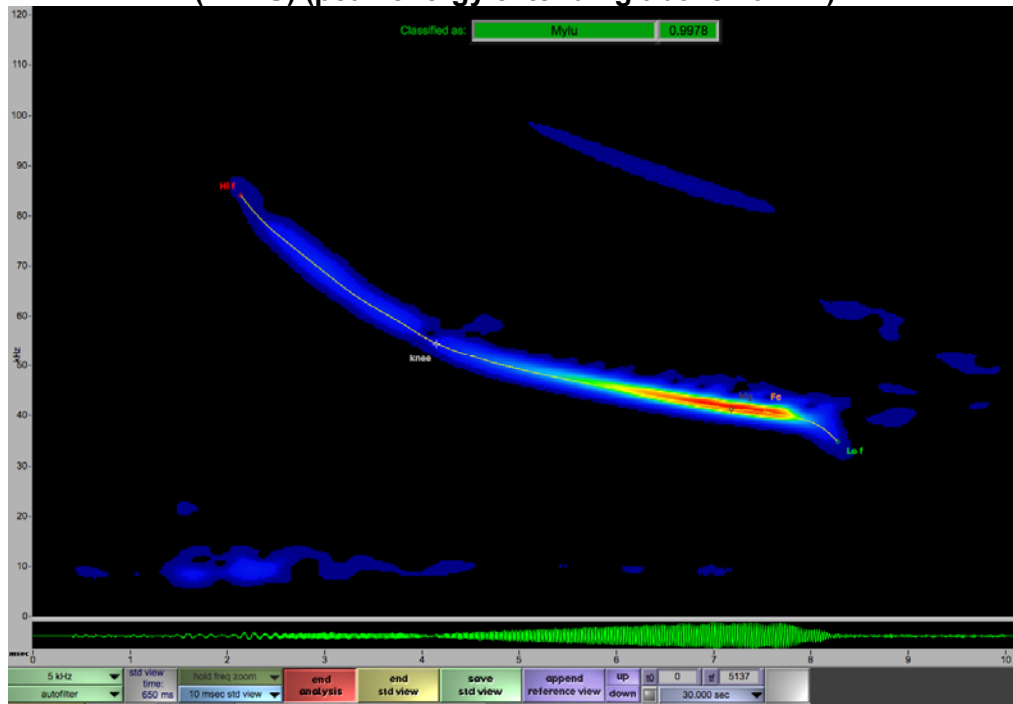
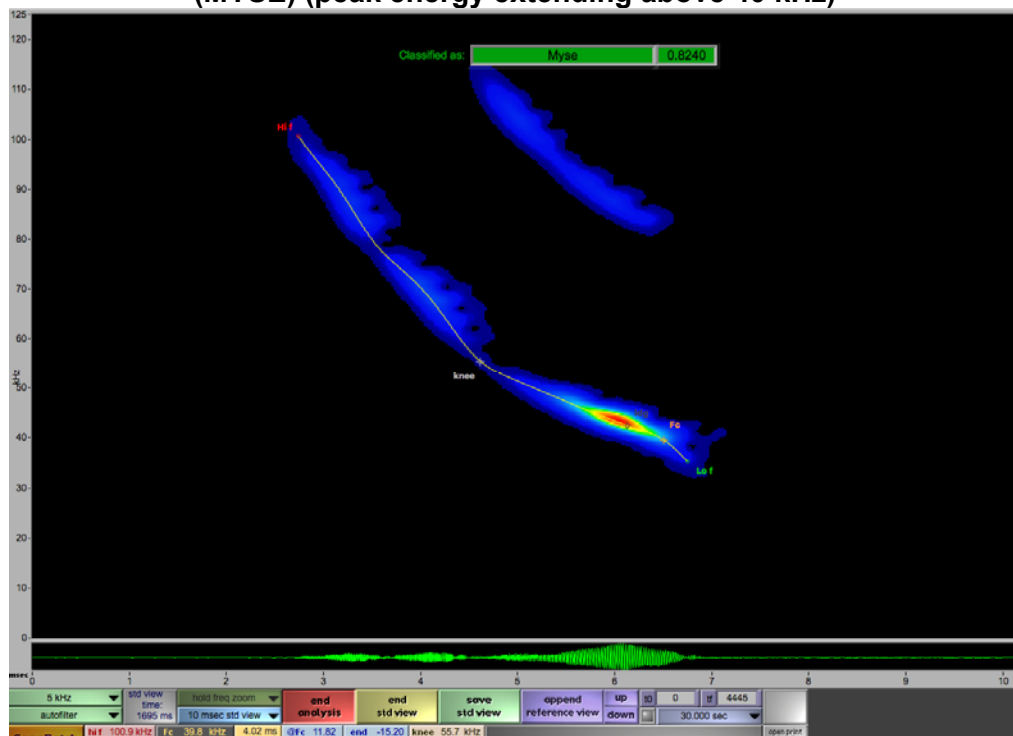


Figure 2 Example of the majority of pulse signatures – representing Northern Long Eared (MYSE) (peak energy extending above 40 kHz)



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### 4.3 Survey Limitations

- While this methodology is robust and defensible, in an effort to accurately detect species emergence and evidence of bat activity, the absence of bats from a survey is not assurance that it may not occur in the future. The bats' high mobility means it is virtually impossible to rule out bats using any type of structure for roosting or habitat for foraging or on a flight path.
- Observations (visually) can be difficult to confirm. This can be attributed to a bats' fundamental biological nature making them difficult to detect even under ideal circumstances and or by experienced surveyors.
- Species identifications should always be interpreted with an understanding of the difficulties of acoustic identification.
- Species at Risk Information is accurate and up to date as of this report (October 2017). Species designation's under Ontario Regulation 230/08 (Species at Risk in Ontario List) occurs periodically. It is the owner's responsibility to ensure that species and habitats regulated under Endangered Species Act (2007) or those protected under other policies (i.e. the Migratory Bird Convention Act, Fish and Wildlife Conservation Act) are protected.

### 5.0 REASONABLE CONSIDERATION OF ALTERNATIVES

The development proposal is in the final stages of draft plan approval. The next phase is to present the draft plan to the public for review and comment. The proposal seeks to develop the central portion of the woodland. The alignment of Beck Boulevard has been accepted by the municipality by the Town of Penetanguishene. Connecting infrastructure for the road is already in place.

Through the approach taken to determine bat activity in the woodlot, we conclude that the woodland provides general habitat for Little Brown Myotis and Northern Myotis. The results and surveyor expertise strongly suggest evidence that the woodland provides maternal roosting habitat for Northern Myotis.

Determining the location and function of snag tree clusters or "eco-elements" to distinguish higher quality habitat (i.e. maternity roost trees) as outlined in the Sections above will not provide answers under the ESA to mitigate risk. Tree preferences (use) over the course of a year changes, reproductive females often use different summer habitats from males and non-reproductive females and varies based on sex and reproductive status. Thus, would not provide any more information with respect to the potential for "higher" quality bat habitat given the woodland features applicable to the subject property (W.Frick, *pers.comm.* 2017, Thorne, *pers.comm* 2017, Lausen *pers.comm* 2015). As outlined in Section 2.0 there are numerous variables that cannot be anticipated when dealing with SAR bats. Several hundred potential roost trees are distributed throughout the woodland community. The work completed previously and the 2017 surveys confirmed that for this woodland, definition of a specific area (or eco-element) that would be of higher quality than any other feature preferred by Northern Myotis is not possible. This is because the entire woodland is contributing to habitat necessary for females, their young and males to carry out their important life cycle requirements.

The woodland as a whole in this case is acting as the “eco-element”. This is fundamentally based on both Little Brown and Northern Myotis species biology, behaviour and observations of the bat specialists completing the 2017 review and those consulted for this project. Relocation of a road, or reducing lot size, will not change the potential impacts that may occur. Opening the canopy under any development scenario, changing grades or altering the moisture regime will likely create compounding effects such as a reduction in the insect population, loss of characteristics of foraging habitat (Northern Myotis prefer to forage insects from lower canopy), increases in light (natural and artificial) affecting roosting habits or preference for specific trees which may be used by for Northern Myotis.

Knowledge gaps are considerable concerning impacts created by developments such as that proposed on the subject lands. The effects of the scale or intensity of the impacts created within habitat for species such as Northern Myotis is poorly understood and difficult to quantify (Silvis, Perry and Ford 2016). Especially when the reason for listing both the Little Brown Bat and Northern Myotis is due to WNS (in North America). Other significant negative impacts include collisions with wind turbines and removal of hibernation habitat which have been the leading causes of bat population declines (O’Shea, Cryan, et. Al. 2016).

## **6.0 CONCLUSIONS**

It appears that the development will remove general habitat for At-Risk Myotis, however the response by the population to partial removal of the woodland cannot be anticipated at this time given that there are surrounding features (street trees, open water) also likely used, and that the Little Browns at a minimum may be travelling some distance to forage in the woodland and other areas. Given our current knowledge, we cannot predict whether the remaining woodland will continue to provide habitat for these species. On the basis of our evidence, it appears that the highest areas of activity occur within the interior of the woodland that cannot be avoided by the residential development.

Given the results of the acoustic analysis and emergence survey ESA regulated bats Northern Myotis and Little Brown Bat are documented within the subject property (woodland). In SLR’s expert opinion the woodland is the eco-element. Redesign of the proposed subdivision (e.g. road relocation, reduction in lot size, maintenance of groups of roost trees at the expense of others (and possibly creating a hazard condition for the emerging community) will not reduce the contributing function the woodland provides for Northern Myotis and Little Brown Bat life cycle requirements. We trust previous meetings and extensive discussions between SLR and MNRF coupled with this report provides confidence for MNRF to make informed decisions as whether or not a 17 C permit under the ESA is required.

## **7.0 RECOMMENDATIONS**

Further consultation with MNRF will help refine mitigation measures which may help reduce (but not eliminate) impacts as part of the development proposal<sup>4</sup>. This may include but is not limited to the following:

- Vegetation and tree removals after September 1st, but before April 1st (MNRF consultation may refine this timing window) when bats are migrating and unlikely to occupy a site for a prolonged period of time and young have flight ability.

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<sup>4</sup> Recommendations are not intended to replace mitigation requirements or Overall Net Benefit options should a 17 C permit be required.

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- To assist in bridging knowledge gaps an experienced biologist (qualifications to the satisfaction of MNRF), could be present during tree removals to review cut trees for bats. For example once a tree is on the ground cavities, bark and areas surrounding the tree could be searched. This is not intended for every tree (tree selection at the discretion of the experienced biologist) but an opportunity to collection further information (evidence of occupation) and further our understanding of timing windows. Protocols should be developed in consultation with leading bat experts (i.e. Ontario Bat working group, Toronto Zoo, Bat Conservation International, Brock Fenton).
  - Incorporate into the development design lighting and features similar to bird friendly design guidelines that reduce ambient light around remnant woodland edges.
  - Incorporate into any environmental protection areas, parklands, SWM Ponds landscape natural areas (as identified through the development application process) bat rocket boxes (colony boxes) using the most current science and designs available. This will provide education tools to further educate the public and promote wildlife education and habitat creation. These should be monitored and data forwarded to organizations such as the Toronto Zoo, MNRF, and/or Bat Conservation International to inform existing knowledge gaps.

If there are questions or concerns with this assessment please do not hesitate to contact the undersigned

Yours sincerely,

**SLR Consulting (Canada) Ltd.**



**Kim Laframboise Dipl.F.T., E.M.T**  
Terrestrial Ecologist

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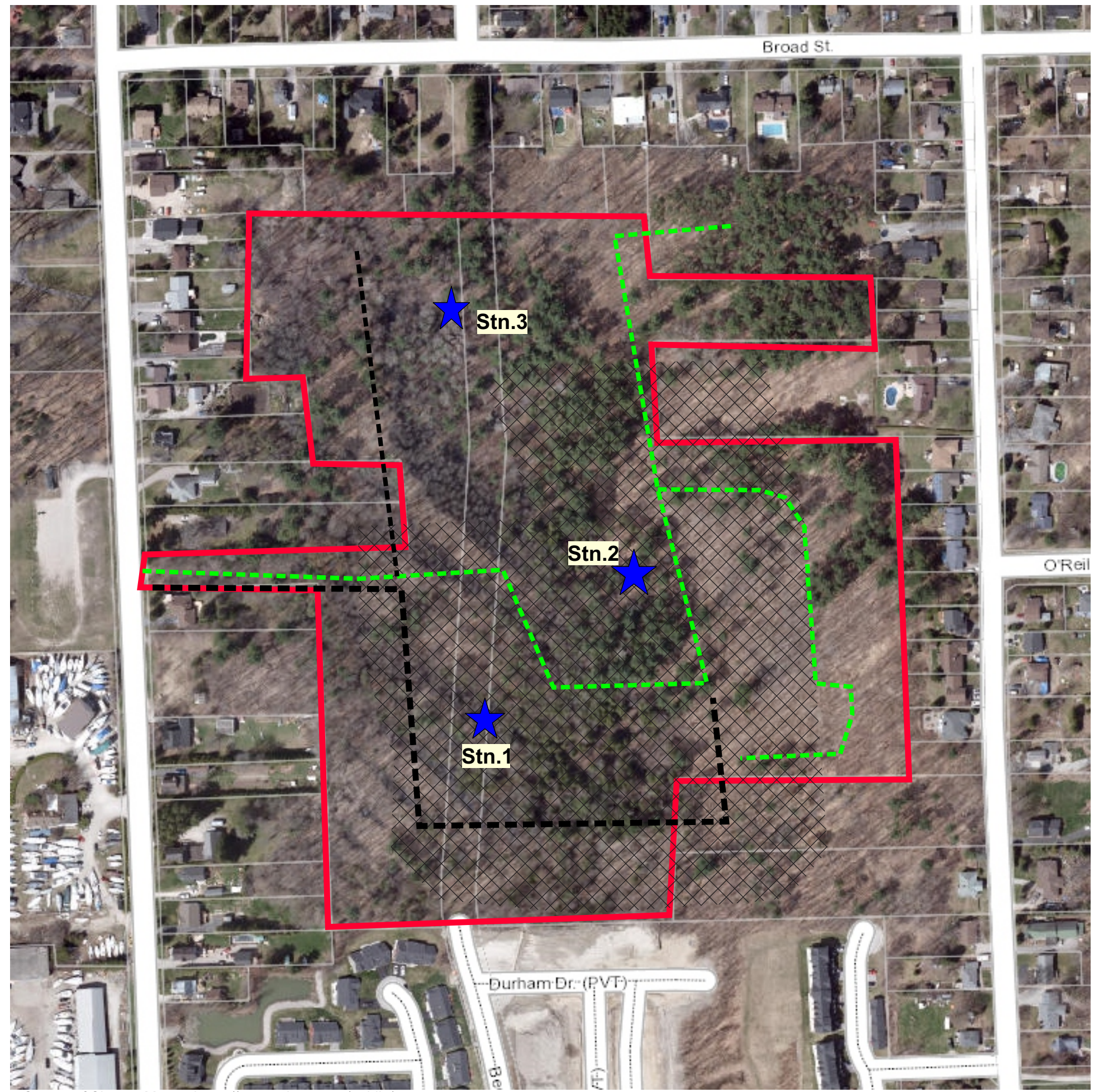
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# DRAFT



-  Property Boundary
-  Highest Activity - Bat pulses  
Northern Myotis , Little Brown Bat
-  Transect 1
-  Transect 2
-  Acoustic Monitoring Locations  
(approximate)

To be read in conjunction with SLR Technical Memorandum October 11, 2017

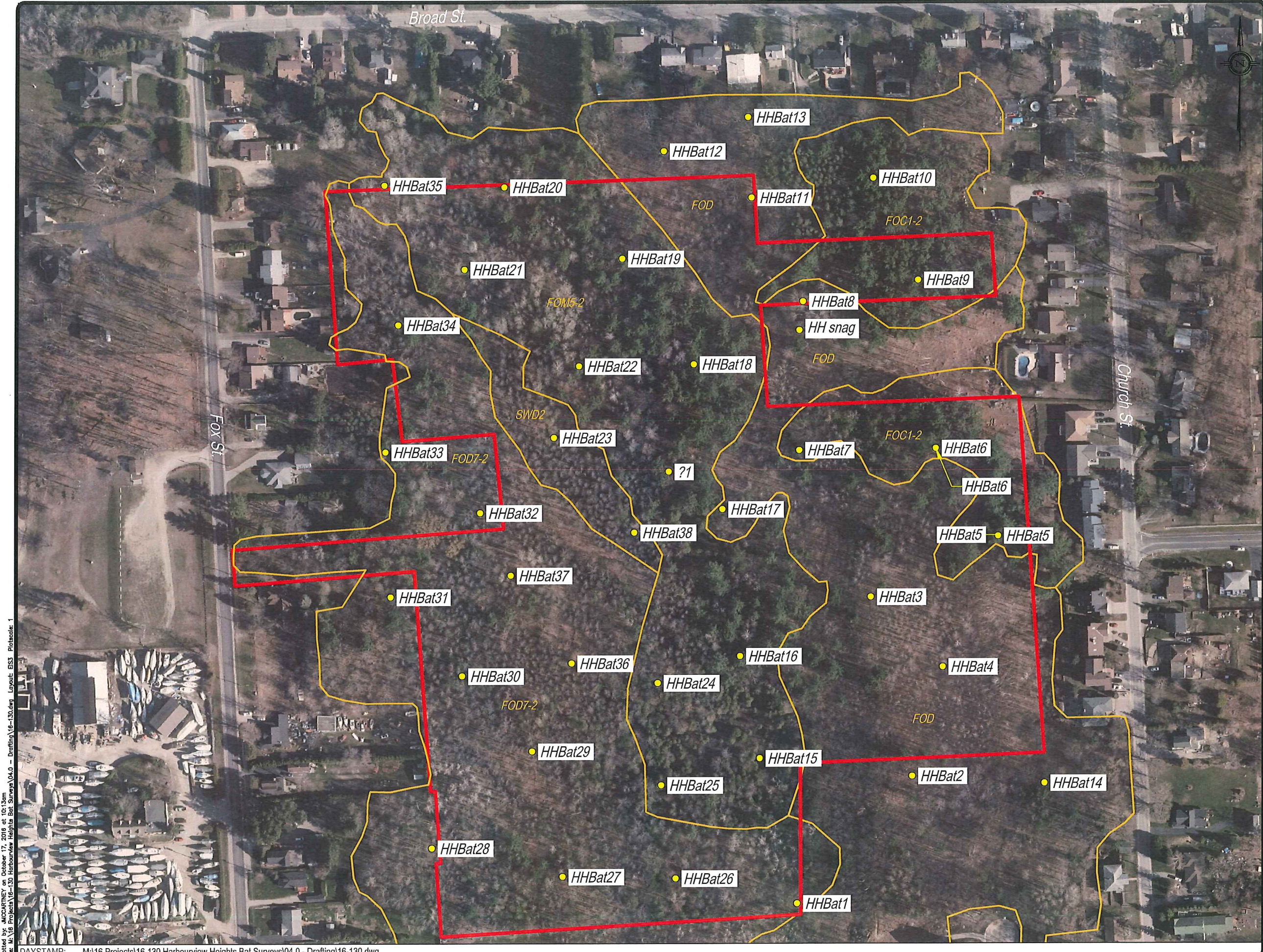
ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

Harbourview Heights  
Penetanguishene, Ontario

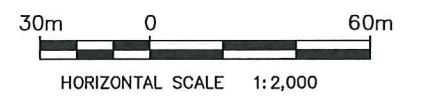
2017 Bat Survey Results

Date: October 11, 2017	Drawing No. <b>F1</b>
Project No. 209.40492.00000	





- LEGEND:**
- Approx. Property Boundary
  - Bat Snag Locations
  - Vegetation Communities
  - FOC1-2 White Pine Coniferous Forest
  - FOD Deciduous Forest
  - FOD7-2 Fresh-Moist Ash Lowland Deciduous Forest
  - FOM5-2 Dry-Fresh Poplar Mixed Forest
  - SWD2 Ash Mineral Deciduous Swamp



Environmental Features

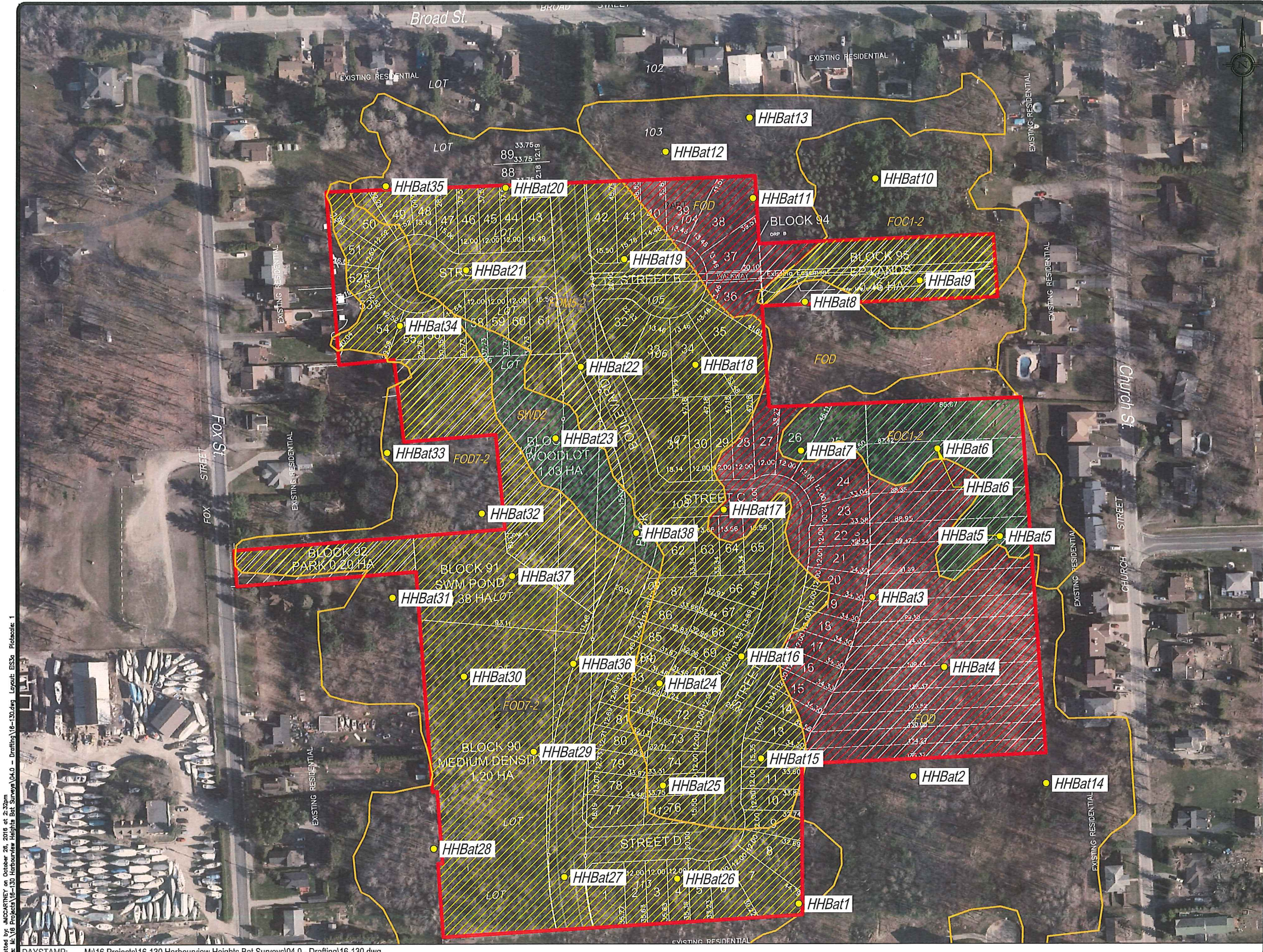
Harbourview Heights,  
Penetanguishene, ON

DATE ISSUED:	October 2016	Figure No.
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REFERENCE:	Simcoe County Maps	

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DAYSTAMP: M:\16 Projects\16-130 Harbourview Heights Bat Surveys\04.0 - Drafting\16-130.dwg



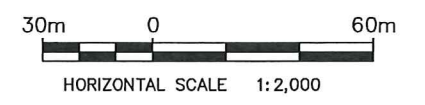


- LEGEND:**
- Approx. Property Boundary
  - Bat Snag Locations
  - High Bat Snag Density
  - Moderate Bat Snag Density
  - Low Bat Snag Density
  - Vegetation Communities
- FOC1-2 White Pine Coniferous Forest  
 FOD Deciduous Forest  
 FOD7-2 Fresh-Moist Ash Lowland Deciduous Forest  
 FOM5-2 Dry-Fresh Poplar Mixed Forest  
 SWD2 Ash Mineral Deciduous Swamp

Snag Density Decay Class 1-3				
ELC Unit	Composite	Below 3m	Below 10m	Above 10m
FOD	36	9	29	4
FOC1-2(North)	20	10	10	0
FOC1-2(South)	7	0	7	0
FOM5-2	16	4	12	4
FOD7-2	22	18	9	5
SWD2	0	0	0	0

Snag Density All Decay Classes				
ELC Unit	Composite	Below 3m	Below 10m	Above 10m
FOD	53	11	42	9
FOC1-2(North)	30	10	20	0
FOC1-2(South)	67	27	40	20
FOM5-2	25	30	22	6
FOD7-2	75	56	45	20
SWD2	40	40	60	0



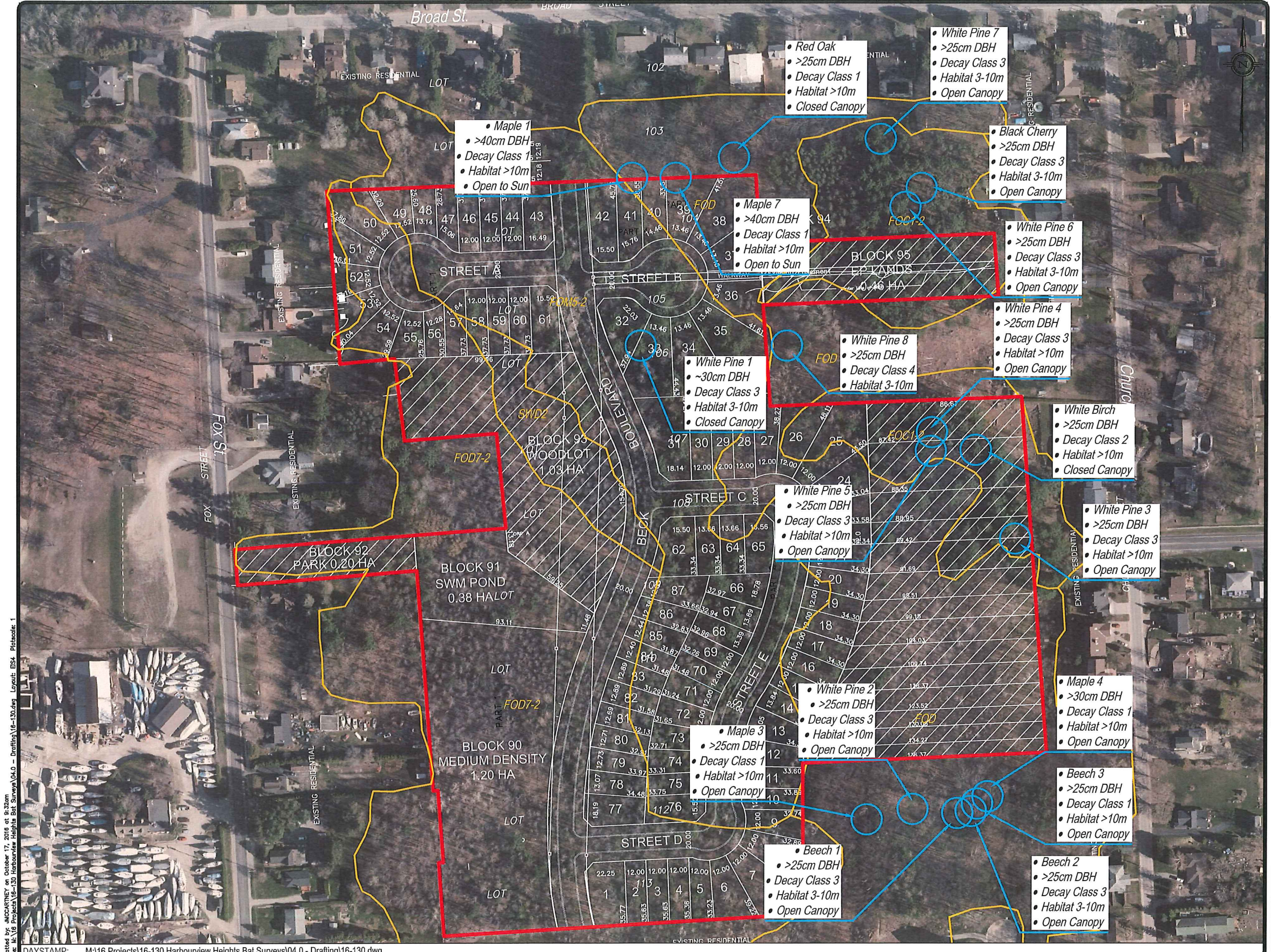
**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

**Snag Density Decay Class 1-3  
(Composite)**

**Harbourview Heights,  
Penetanguishene, ON**

DATE ISSUED: October 2016	Figure No.
CREATED BY: JLM	3a
PROJECT NO.: 16-130	
REFERENCE: Simcoe County Maps	

Plotted by: MICCAIRNEY on October 26, 2016 at 2:32pm  
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 DAYSTAMP: M:\16 Projects\16-130 Harbourview Heights Bat Surveys\04.0 - Drafting\16-130.dwg



- LEGEND:**
- Approx. Property Boundary
  - Retained Snag Areas (white)
  - Bat Snag Trees
  - Vegetation Communities
- FOC1-2 White Pine Coniferous Forest  
(Removed = 0.67ha Retained = 0.31ha)
- FOD Deciduous Forest  
(Removed = 2.57ha Retained = )
- FOD7-2 Fresh-Moist Ash Lowland Deciduous Forest  
(Removed = 3.53ha Retained = 0.53ha)
- FOM5-2 Dry-Fresh Poplar Mixed Forest  
(Removed = 3.59ha Retained = 0.11ha)
- SWD2 Ash Mineral Deciduous Swamp  
(Removed = 0.15ha Retained = 0.28ha)



**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

High Quality Potential Roost Sites

Harbourview Heights,  
Penetanguishene, ON

DATE ISSUED: October 2016	Figure No.
CREATED BY: JLM	4
PROJECT NO.: 16-130	
REFERENCE: Simcoe County Maps	

Printed by: JMCARTNEY on October 17, 2016 at 9:32am  
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**APPENDIX E – SIGNIFICANT WILDLIFE HABITAT  
SCREENING**

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SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
<b>Seasonal Concentration Areas of Animals</b>					
Waterfowl Stopover and Staging Areas (Terrestrial)	Ducks	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May	N	Suitable habitat is not present on the Subject Property.
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, Swamps, Shallow Water Ecosites	Sewage & SWM ponds <b>not</b> SWH. Reservoir managed as a large wetland or pond/lake qualifies.	N	Suitable habitat is not present on the Subject Property.
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Sewage treatment ponds and storm water ponds <b>not</b> SWH.	N	Suitable habitat is not present on the Subject Property.
Raptor Wintering Area	Eagles, Hawks, Owls	<b>Hawks/Owls:</b> Combination of both Forest and Cultural Ecosites <b>Bald Eagle:</b> Forest or swamp near open water (hunting ground)	<b>Raptors:</b> >20ha, with a combo of forest and upland. Meadow (>15ha) with adjacent woodlands. <b>Eagles:</b> open water, large trees & snags for roosting.	N	Suitable habitat is not present on the Subject Property.
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites <b>not</b> SWH.	N	Suitable habitat is not present on the Subject Property.
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Deciduous or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	Confirmed	Big Brown Bat was recorded during acoustic monitoring surveys using the woodlands on the subject property.
Turtle Wintering Area	<b>Turtles</b> (Midland, N. Map, Snapping)	SW, MA, OA, SA, FEO, BOO (requires open waters)	<b>Free water beneath ice.</b> Soft mud substrate. Permanent water bodies, large wetlands, bogs, fens with adequate DO.	N	Suitable habitat is not present on the Subject Property.
Reptile Hibernaculum	Snakes	<b>Snakes:</b> Any ecosite (esp. w/ rocky areas), other than very wet ones. <b>Five-lined Skink:</b> FOD and FOM, FOC1, FOC3 - with rock outcrops	<b>Access below frost line:</b> burrows; <b>rock</b> crevices, piles or slopes, <b>stone</b> fences or foundations. Conifer/shrubby swamps/swales, poor fens, depressions in bedrock w/ accumulations of sphagnum moss or sedge hummock ground cover.	N	Suitable habitat is not present on the Subject Property.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	Cliff Swallow, N. Rough-winged Swallow	Banks, sandy hills/piles, pits, slopes, cliff faces, bridge abutments, silos, barns.	Exposed soil banks, <b>not</b> a licensed/permitted aggregate area or new man-made features (2 yrs).	N	Suitable habitat is not present on the Subject Property.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	Great Blue Heron, Black-crowned NightHeron, Great Egret, Green Heron	SWM2, SWM3, SWM5, SWM6, SWD1 to SWD7, FET1	Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and emergents may be used. Nests in trees are 11 - 15 m from ground, near tree tops.	N	Suitable habitat is not present on the Subject Property.
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer's Blackbird	<b>Gulls/Terns:</b> Rocky island or peninsula in lake or river. <b>Brewer's Blackbird:</b> close to watercourses in open fields or pastures with scattered trees or shrubs.	<b>Gulls/Terns:</b> islands or peninsulas with open water or marshy areas. <b>Brewers Blackbird colonies:</b> on the ground in low bushes close to streams and irrigation ditches.	N	Suitable habitat is not present on the Subject Property.
Migratory Butterfly Stopover Area	Painted Lady, Red Admiral, <b>Special Concern:</b> Monarch	Combination of open (CU) and forested (FO) ecosites (need one from each).	≥10 ha, located within 5 km of Lake Ontario. Undisturbed sites, with preferred nectar species.	N	Suitable habitat is not present on the Subject Property.
Landbird Migratory Stopover Areas	All migratory songbirds. All migrant raptor species.	Forest (FO) and Swamp (SW) ecosites	Woodlots >10 ha within 5 km of Lake Ontario. If multiple woodlands are along the shoreline, those <2 km from L. Ontario are more significant.	N	Suitable habitat is not present on the Subject Property.
Deer Yarding Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	Suitable habitat is not present on the Subject Property.
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	Suitable habitat is not present on the Subject Property.
<b>Rare Vegetation Communities</b>					
Cliffs and Talus Slopes		TAO, TAS, CLO, CLS, TAT, CLT e.g., Niagara Escarpment (contact NEC)	<b>Cliff:</b> near vertical bedrock >3m <b>Talus Slope:</b> coarse rock rubble at the base of a cliff	N	Suitable habitat is not present on the Subject Property.
Sand Barren		SBO1, SBS1, SBT1	Sand Barrens >0.5 ha. Vegetation can vary from patchy and barren to tree covered, but <60%. <50% vegetation cover are exotic species.	N	Suitable habitat is not present on the Subject Property.
Alvar	<i>Carex crawei</i> , <i>Panicum philadelphicum</i> , <i>Eleocharis compressa</i> , <i>Scutellaria parvula</i> , <i>Trichostema brachiatum</i> , Loggerhead Shrike	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Alvar >0.5 ha. <b>Need 4 of the 5 Alvar Indicator Spp.</b> <50% vegetation cover are exotic species.	N	Suitable habitat is not present on the Subject Property.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Old Growth Forest	Trees >140 yrs; heavy mortality = gaps. Multi-layer canopy, lots of snags and downed logs	FOD, FOC, FOM, SWD, SWC, SWM	Woodland areas ≥30 ha with a ≥10 ha interior habitat, assuming a 100 m buffer at edge of forest.	N	Woodland does not meet this criteria.
Savannah	Prairie Grasses w/ trees	TPS1, TPS2, TPW1, TPW2, CUS2	A Savannah is a <u>tallgrass prairie</u> habitat that has tree cover of 25 – 60%. <50% cover of exotic species.	N	Suitable habitat is not present on the Subject Property.
Tallgrass Prairie	Prairies Grasses dominate	TPO1, TPO2	An <u>open Tallgrass Prairie</u> habitat has < 25% tree cover. Less than 50% cover of exotic species.	N	Suitable habitat is not present on the Subject Property.
Other Rare Vegetation Communities		Provincially Rare S1 - S3 veg. comm. are listed in Appendix M of SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	N	Suitable habitat is not present on the Subject Property.
<b>Specialized Habitat for Wildlife</b>					
Waterfowl Nesting Area	Ducks	Upland habitats adjacent to: MAS1 to MAS3, SAS1, SAM1, SAF1, MAM1 to MAM6, SWT1, SWT2, SWD1 to SWD4 (>0.5 ha open water wetlands, alone or collectively).	Extends 120 m from a wetland or wetland complex. Upland areas should be at least 120 m wide. Wood Ducks and Hooded Mergansers use cavity trees (>40 cm dbh).	N	Suitable habitat is not present on the Subject Property.
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat	Osprey, Bald Eagle	FOD, FOM, FOC, SWD, SWM, SWC directly adjacent to riparian areas	Nesting areas are associated with waterbodies along forested shorelines, islands, or on structures over water.	N	Suitable habitat is not present on the Subject Property.
Woodland Raptor Nesting Habitat	Barred Owl. <b>Hawks:</b> N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations	>30 ha with > 10 ha interior habitat.	Y	Potential suitable habitat is present in the forested communities on the Subject Property.
Turtle Nesting Areas	Midland Painted Turtle <b>Special Concern:</b> Snapping Turtle, Northern Map Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within: MAS1 to MAS3, SAS1, SAM1, SAF1, BOO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	N	Suitable habitat is not present on the Subject Property.
Seeps and Springs	Wild Turkey, Ruffed Grouse, Spruce Grouse, White-tailed Deer, Salamander spp.	Seeps/Springs are areas where ground water comes to the surface.	Any forested area within the headwaters of a stream/river system. <b>(2 or more confirms SWH type).</b>	N	Suitable habitat is not present on the Subject Property.
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders	FOC, FOM, FOD, SWC, SWM, SWD	Open water wetlands, pond or woodland pool of >500 m <sup>2</sup> within or adjacent to wooded areas. Permanent ponds or holding water until mid-July preferred.	Y	The treed swamp community provides breeding habitat for at least three different species of amphibians.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Amphibian Breeding Habitat (Wetlands)	Toads, Frogs, and Salamanders	SW, MA, FE, BO, OA and SA. Typically isolated (>120m) from woodland ecosites, however larger wetlands may be adjacent to woodlands.	Open water wetland ecosites >500m <sup>2</sup> isolated from woodland ecosites with high species diversity. Permanent water with abundant vegetation for bullfrogs.	N	Suitable habitat is not present on the Subject Property.
Woodland Area-Sensitive Bird Breeding Habitat	Birds (area-sensitive species)	FOC, FOM, FOD, SWC, SWM, SWD	Large mature (>60 years) forest stands/woodlots >30 ha. Interior forest habitat >200m from forest edge.	Y	Five area-sensitive birds were observed during breeding bird surveys across the property. Given the prevalence of area-sensitive forest birds in the larger region, this does not necessarily confirm SWH in this category, but should be considered potential SWH in the absence of region-wide information.
<b>Habitat of Species of Conservation Concern</b>					
Marsh Bird Breeding Habitat	Wetland Birds	MAM1 to MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 <b>Green Heron:</b> SW, MA and CUM1	Wetlands with shallow water and emergent vegetation. Gr. Heron @ edges of these types w/ woody cover.	N	Suitable habitat is not present on the Subject Property.
Open Country Bird Breeding Habitat	Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, N. Harrier, Savannah Sparrow, <b>Short-eared Owl (SC)</b>	CUM1, CUM2	Grassland/meadow >30 ha. Not being actively used for farming. Habitat established for 5 years or more.	N	Suitable habitat is not present on the Subject Property.
Shrub/Early Successional Bird Breeding Habitat	<b>Brown Thrasher + Clay-coloured Sparrow (indicators)</b> , Field Sparrow, Black-billed Cuckoo, E. Towhee, Willow Flycatcher, Yellow-breasted Chat, Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2	Large field areas succeeding to shrub and thicket habitats > 10 ha. Areas not actively used for farming in the last 5 years.	N	Suitable habitat is not present on the Subject Property.
Terrestrial Crayfish	Chimney or Digger Crayfish; Devil Crayfish or Meadow Crayfish	MAM1 to MAM6, MAS1 to MAS3, SWD, SWT, SWM. CUM1 sites with inclusions of the aforementioned.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish (typc. protected by wetland setbacks).	N	Suitable habitat is not present on the Subject Property.
Special Concern and Rare Wildlife Species	Any species of concern or rare wildlife species	Any ELC code.	Presence of species of concern or rare wildlife species.	N	Eastern-wood Pewee was recorded during breeding bird surveys and is provincially listed as Special concern. Numbers are insufficient to consider the habitat as SWH in this category given the relatively frequent occurrence of this species in the region.
<b>Animal Movement Corridors</b>					
Amphibians	Amphibians	all ecosites assoc. w/ water	When Breeding Habitat - wetland confirmed	N	Suitable habitat is not present on the Subject Property.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Deer Movement	White-tailed Deer	all forested ecosites	When Deer Wintering Habitat confirmed	N	Suitable habitat is not present on the Subject Property.
<b>Exceptions for Ecoregion 6E</b>					
Mast Producing: 6E-14	Black Bear	Forested Ecosites	>30 ha w/ mast producing species: Cherry (berries), Oak, Beech (nuts).	N	Suitable habitat is not present on the Subject Property.
Leks: 6E-17	Sharp-tailed Grouse	CUM, CUS, CUT	Grassland/meadow >15 ha adjacent to shrublands, >30 ha adjacent to woodlands. Low agricultural intensity.	N	Suitable habitat is not present on the Subject Property.