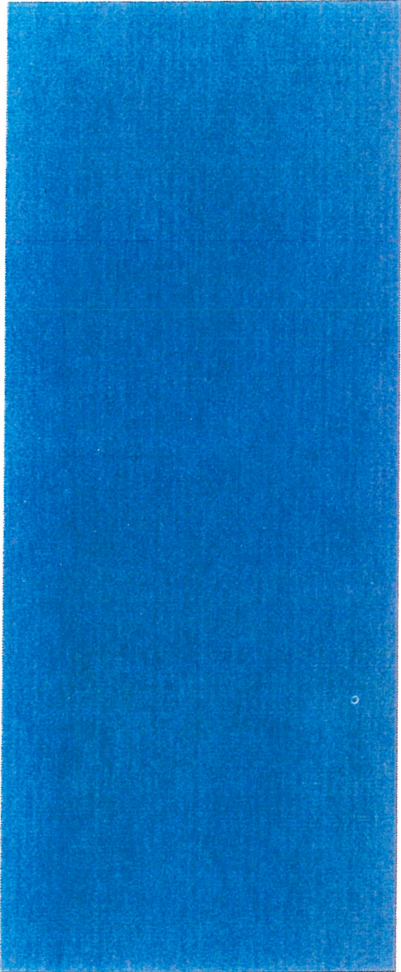


ENVIRONMENTAL IMPACT STUDY
338 MAPLEVIEW DRIVE EAST, BARRIE

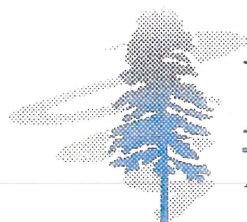


(LOON AVENUE LANDS)

Prepared for:

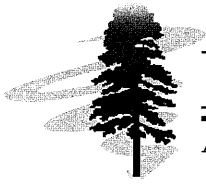
Loon Avenue Lands OP Inc.

February 2022



Michalski Nielsen
ASSOCIATES LIMITED

ENVIRONMENTAL PLANNING BIOPHYSICAL ANALYSIS
LAKE CAPACITY ASSESSMENT RESOURCE MANAGEMENT



Michalski Nielsen

ASSOCIATES LIMITED

February 4, 2022

Colleen and Bob Forrest
340 Maplevue OP Inc.
44 Upjohn Road
Toronto, On M3B 2W1

Re: 340 Maplevue and Loon Lands; Our File 1021

Mr. and Mrs. Forrest:

Enclosed please find our report entitled **ENVIRONMENTAL IMPACT STUDY, 338 MAPLEVIEW DRIVE EAST (LOON AVENUE LANDS)** (January 2022).

Should you have any questions, or if further clarification is required, 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

1.1 Purpose and Scope of Work

In early 2021, Michalski Nielsen Associates Limited was retained by Loon Avenue Lands OP Inc. to undertake natural environment work to guide the potential development of 338 Mapleview Drive East (hereafter referred to as the subject lands). The parcel of 11.5 hectares (ha) borders Mapleview Drive East on the south and the rear lot line of homes on Loon Avenue to the north. The subject lands are currently undeveloped.

Michalski Nielsen Associates Limited has previously undertaken considerable work in this area, including the preparation of a **Scoped Environmental Impact Study (SEIS)** for the adjacent parcel to the west (521 Huronia Road), and due diligence level work on both the subject lands and the adjacent property to the east (340 Mapleview Drive East). As such, we were aware that the subject lands and adjacent properties have a number of environmental constraints, including floodplain associated with Lovers Creek and a tributary to it; these lands are within the Lake Simcoe Region Conservation Authority's (LSRCA's) regulatory limits. The presence of wetlands forming part of the Lovers Creek Swamp Provincially Significant Wetland (PSW) complex, and woodlands that provides connectivity between the individual wetland units, Lovers Creek and its tributary also constitute constraints to development. As well, we recognized that portions of the subject lands are designated in the **City of Barrie Official Plan (2018)** for development. In this regard, approximately 6.03 ha have a General Industrial designation, permitting a range of industrial and employment uses, with the City having recommended their conversion to residential in March 2020, a form of development that is more compatible with adjacent land uses to the north. The remainder of the subject lands are currently designated as Environmental Protection; the area of this designation is 5.53 ha. The purpose of our retainer was therefore to determine **the feasibility of developing a portion of the subject lands for residential development, and subsequently, to prepare a related Environmental Impact Study (EIS)**. This required an assessment of those lands that are appropriate for this purpose and those requiring protection, and how the impacts of any such development on adjacent natural environment features are best mitigated. In the present instance, the scope of work needed to include the following.

- The identification of areas of wetland constraint associated with the floodplain of Lovers Creek and its tributary, which are appropriately designated as being part of the Lovers Creek Swamp PSW. The outer boundaries of the area surrounding the wetland complex was previously confirmed

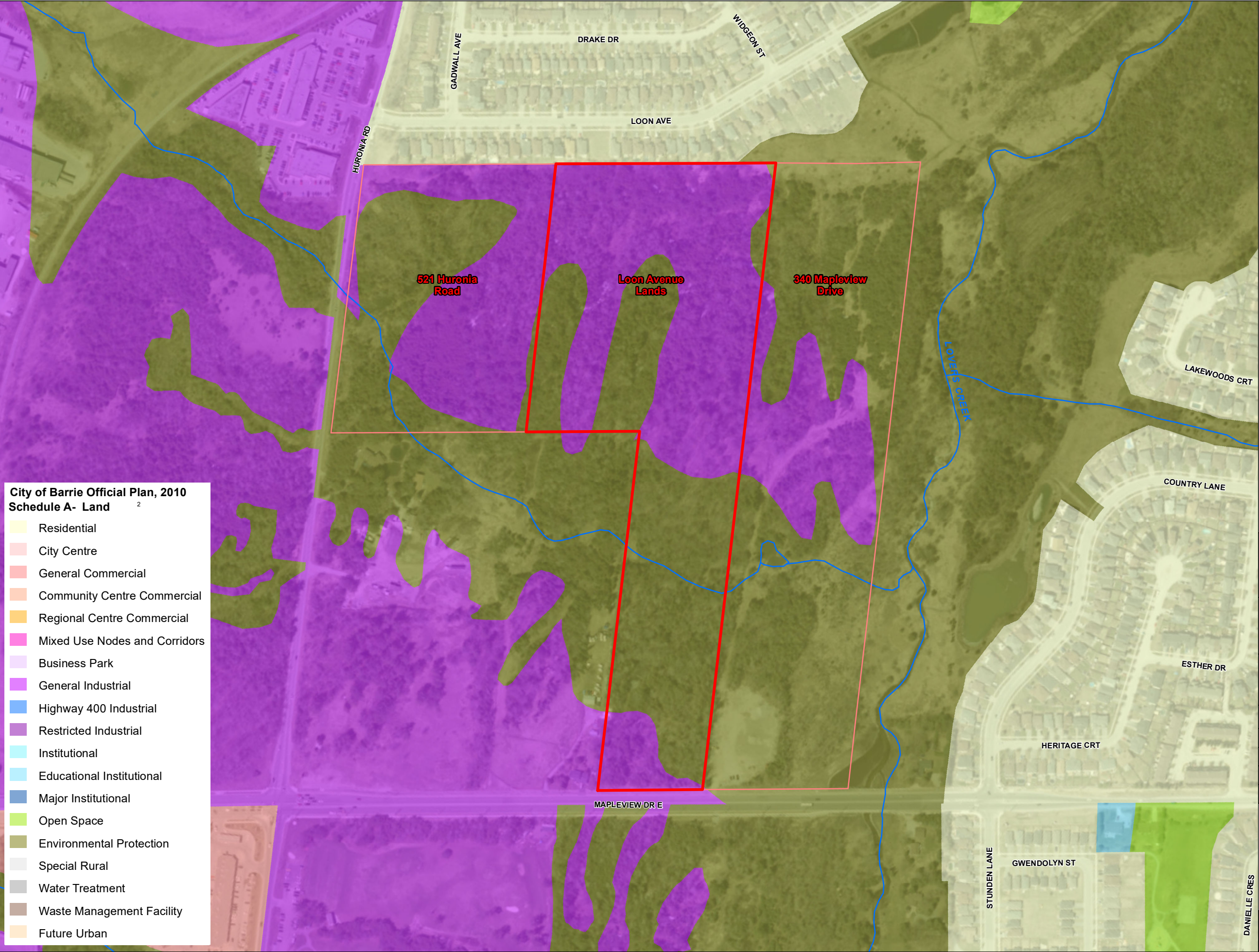
by the Ministry of Natural Resources and Forestry (MNR); but, the individual wetland units that are within that are within the subject lands were not identified.

- The identification of other environmental features and functions that need to be considered in the determination of those lands which are suitable for development, and how such development should be configured.
- The best means of providing long term protection for lands on which there are substantial environmental constraints.
- The location and design of site services, with a particular emphasis on stormwater management.
- Identification of mitigation measures which need to be implemented to protect important natural features on and adjacent to developable lands.

1.2 Site Overview

The subject lands (i.e., Loon Avenue Lands) are shown on **Figure 1**. As is clear from that map, all of the lands are forested, although historic aerial photography indicates that the northerly portion of the subject lands, occupying nearly 2 ha, were previously open pastureland, connecting to a large area of agricultural lands to the north (which is now a residential subdivision), and to agricultural lands on portions of the 340 Maplevue Drive East property to the east. A review of the County of Simcoe's GIS mapping suggests that this area was actively pastured until at least 1978 (**Appendix A**). The southerly portion of the subject lands has been forested since well before 1954, the earliest period for which there are air photos available.

Within the forested portions of the subject lands, the terrain is somewhat hummocky. Given the proximity of Lovers Creek and its tributary, this hummocky terrain has resulted in lower lying areas having a high seasonal water table, and therefore having wetland attributes, interspersed with areas of slightly higher elevation that consist of dry-fresh or fresh-moist forest. A majority of the wetland units within the subject lands, which tend to be very small in size, consist of treed and thicket swamp, with a much smaller number of meadow marsh communities and, at the very southern end of the subject lands, shallow marsh communities. A majority of the wetland communities are only wet underfoot during the early spring or very wet fall periods. Lands east and west of the subject lands have quite similar attributes, although in general terms, areas of larger, more contiguous wetland only occur within the west central and southern portions of the 521 Huronia Road property and within the southern portions of both the subject lands and 340 Maplevue Drive East properties, with the balance of those lands containing a mosaic of small wetlands interspersed with quite broad areas of forest.



LEGEND:

- Subject Property (11.42 ha)
- Adjacent Lands
- ~ Watercourse¹

1. LIO/MNRF
2. City of Barrie map service

Imagery (2018) provided by Simcoe County map service. Contains information licensed under the Open Government Licence - Ontario.

KEY MAP

CLIENT:

Michalski Nielsen
ASSOCIATES LIMITED

PREPARED BY:

Palmer™

0 50 100
metres

PROJECT: Loon Avenue Lands Environmental Review

PROJECT NO.	1603374	REVISION:	1-1
DATE:	Jan 07, 2022	SCALE:	1:4000
DRAWN:	CV	DATUM:	NAD 1983
CHECKED:	ED	PROJECTION:	UTM zone 17

Site Location

Figure 1

As the current Official Plan designations are an important factor in determining future land use, they are shown on **Figure 1**. As is evident from that mapping, a General Industrial designation applies to the northerly portion of the subject lands, extending a considerable distance south in two areas. This designation also applies to that part of the subject lands fronting Maplevue Drive East. As previously noted, the City has recommended conversion of those lands with an Industrial to a Residential designation. While environmental constraints are a critical factor in determining how the lands should be developed, the environmental planning process cannot ignore these existing land use designations.

1.3 Acknowledgements

Michalski Nielsen Associates Limited has been assisted on this project by the Palmer Consulting Group Inc., who was involved in the wetland delineation and assessment work, vegetation community evaluations, amphibian and breeding bird surveys, the Species at Risk (SAR) review and the review of Significant Wildlife Habitat (SWH). As previously noted, our work on the subject lands builds on that which we earlier completed on the 521 Huronia Road property.

2 METHODOLOGY

2.1 Background Review

Relevant background material was reviewed to provide a context for field investigations and to identify any environmental designations and policy requirements. The review included the following:

- Natural Heritage Information Centre (NHIC) Make-a-Map application, which includes the NHIC's species records database and Land Information Ontario (LIO) features;
- **Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement** (MNRF, 2010);
- **Significant Wildlife Habitat Technical Guide** (MNRF, 2000); and
- Aerial photography and topographic mapping.

A Terms of Reference for the EIS was prepared and submitted to the LSRCA. A copy of that Terms of Reference is included in **Appendix B**.

2.2 Field Surveys

Several site visits were conducted on and adjacent to the subject lands in 2021, as summarized in **Table 1**. Field investigations were conducted in accordance with the methods described in Sections 2.2.1 through 2.2.5.

Table 1: Summary of Field Investigations

Date	Field Investigation(s)	Weather Conditions
March 30, June 16/17/30 and July 22, 2021	Vegetation Communities Assessments (including Butternut screening) Wetland Boundary Confirmations	<u>March 30</u> : 9-18°C, 75% cloud cover, moderate breeze <u>June 16</u> : 15°C, full sun and 50% cloud cover, winds constant approximately 15 km/hr <u>June 17</u> : 18 - 24°C, full sun with 0% cloud cover, winds constant approximately 10 km/hr <u>July 22</u> : 20 - 24°C, full sun and full cloud cover during visit, slight winds
April 14, May 20 and June 16, 2021	Amphibian Surveys	<u>April 14</u> : 9°C, 50% cloud cover, light winds <u>May 20</u> : 20°C, overcast, no/little winds <u>June 16</u> : 17°C, winds constant approximately 10 km/hr
June 10 and 22, 2021	Breeding Bird Surveys	<u>June 10</u> : 20°C, 20 to 50% cloud cover <u>June 22</u> : 12°C, 20 to 30% cloud cover

Date	Field Investigation(s)	Weather Conditions
All visits	Incidental Wildlife Observations SAR and SWH Screening	As above

2.2.1 Vegetation and Flora

Ecologists completed field investigations to document existing vegetation communities, natural features, and general site conditions. Vegetation communities were mapped and described based on their best fit to community classifications within standard systems provided in **Ecological Land Classification (ELC) for Southern Ontario** (Lee et al. 1998). The identification of vegetation communities assisted in the assessment of wildlife habitat opportunities. The boundaries of existing wetland throughout the subject lands were delineated in accordance with the **Ontario Wetland Evaluation System (OWES)** protocol (MNRF, 2013).

Botanical surveys were completed by traversing the subject lands and recording species observed in the representative vegetation communities. Provincial plant status was based on the Natural Heritage Information Centre for Ecoregion 6E (NHIC, 2021).

2.2.2 Wildlife

Amphibian Surveys

Breeding amphibian surveys were conducted at 5 locations (**Figure 2**) within/adjacent to the subject lands on April 14, May 20 and June 16, 2021 in accordance with standard field protocols (Gartshore, et al., 2004; **Bird Studies Canada**, 2009). Species were identified by call; an abundance code for each species heard calling was assessed using the following amphibian monitoring protocol:

- Code 0: No calls heard.
- Code 1: Calls not overlapping or simultaneous; number of individual frogs can be counted.
- Code 2: Calls overlapping or simultaneous; number of individuals can still be distinguished. Number of individual frogs cannot be counted, but a reliable estimate of numbers can be made based on location and call voices.



LEGEND:

- Subject Property (11.42 ha)
- Adjacent Lands
- Ecological Land Classification (ELC)
- Previously Determined ELC¹
- Wetland Unit
- Wetland Connection
- Wetland Tree Dripline (0.003 ha)
- PSW Wetland²
- Amphibian Breeding Habitat
- Watercourse²
- Butternut Tree
- Breeding Amphibian Monitoring Station

1. Cunningham Environmental Associates
2. LIO/MNRF

Imagery (2018) provided by Simcoe County map service. Contains information licensed under the Open Government Licence - Ontario.

CLIENT:

Michalski Nielsen
ASSOCIATES LIMITED

PREPARED BY:

Palmer™

0 50 100
metres

PROJECT: Loon Avenue Lands Environmental Review		
PROJECT NO.	1603374	REVISION: 1-1
DATE:	Jan 07, 2022	SCALE: 1:2800
DRAWN:	CV	DATUM: NAD 1983
CHECKED:	ED	PROJECTION: UTM zone 17

**Existing
Environmental
Conditions**

Figure 2

-
- Code 3: Full chorus, calls simultaneous and overlapping, numbers of calling males cannot be reasonably counted or estimated.

Breeding Birds

Breeding bird surveys were conducted on and adjacent to the subject lands on June 10 and 22, 2021 to document the presence of bird species and their breeding. Surveys were carried out between 5:30 a.m. and 10:00 a.m. to coincide with the dawn chorus. Surveys were conducted in general accordance with **Breeding Bird Atlas** protocols (**Bird Studies Canada**, 2001).

Incidental Wildlife Observations

Incidental observations of wildlife were recorded during all visits to the subject lands. Recorded wildlife observations included direct and indirect evidence. Direct evidence included visual or auditory observations of species. Evidence considered indirect included observation of tracks, scat, browse, or other signs.

2.2.3 Species at Risk

Prior to fieldwork, existing SAR records were investigated on the NHIC Make-a-Map online application. Additional species to those identified in nearby NHIC squares were analyzed in this review due to the knowledge of their occurrence within the City. General screening for potential SAR habitat opportunities was completed during field investigations. Habitat opportunities for SAR were then assessed by comparing habitat preferences of species deemed to have potential to occur within the subject lands against current site conditions.

2.2.4 Significant Wildlife Habitat Screening

The **Significant Wildlife Habitat Criteria for Ecoregion 6E** (MNRF 2015) were compared with the habitat attributes of the subject lands to determine the potential for candidate and confirmed SWH.

2.2.5 Aquatic Habitat

There is a tributary of Lovers Creek which flows through the subject lands. However, very early in the process of examining the development potential of the subject lands, it was determined that development would be set back over 120 m from both that tributary and from Lovers Creek itself, located east of the property. Accordingly, there was no need to look at fish habitat or other environmental qualities of these watercourses.

3 ENVIRONMENTAL POLICY CONTEXT

3.1 **Overview**

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)**, Ontario Regulation 179/06 of the LSRCA, the **City of Barrie Official Plan** (Office Consolidation, January 2018), Ontario's **Growth Plan for the Greater Golden Horseshoe** (2006) and the **Lake Simcoe Protection Plan** (2009). A planning analysis of the proposed development was prepared under separate cover by MHBC; 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 *2007 Endangered Species Act (2007 ESA)* be addressed. Our discussion is therefore primarily focused on the above policy documents, as follows.

3.2 **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;
 - 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 lands contain wetland units that form part of the Lovers Creek Swamp PSW; one of the purposes of this **EIS** is to better define the boundaries of individual wetland units within the overall PSW to ensure their protection. The PSW is not connected to the Great Lakes and it therefore is not a coastal wetland.

Significant Woodlands are difficult to identify at a site-specific level. However the City of Barrie has identified a Natural Heritage Resources network which consolidates a number of natural resource features, including PSWs, other wetlands larger than 0.5 ha, watercourses and their minimum vegetation protection zones and Significant Woodlands into areas that it refers to as Level 1, or critical components, of that network. As further discussed in Section 3.4, those portions of the subject lands that are currently designated as Environmental Protection Area are identified as Level 1 areas in the City's Natural Heritage Resources network, whereas those areas designated for development are primarily mapped as "Level 1

with existing development designation subject to 3.5.2.4 d)”. The **PPS** allows municipalities to use their own criteria in the identification of Significant Woodlands, with the City’s inclusion of forest areas within the subject lands as Level 1 components of its Natural Heritage Resources network, reflecting its view that these areas qualify as Significant Woodland.

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 on the designation of such habitat to the discretion of individual municipalities. The City of Barrie’s Natural Heritage Resources network does not expressly include SWH; however, the inclusion of areas of more important natural heritage values, as well as natural connections between such areas, indirectly addresses this. One of the purposes of this **EIS** is to determine whether there is confirmed and/or candidate SWH within the subject lands, and to appropriately consider such habitat part of any proposed development application. In this regard, the policy direction of the **PPS** relating to SWH is permissive; in accordance with Policy 2.1.5, it allows development both within and adjacent to areas of SWH providing that “there will be no negative impacts on the natural features or ecological functions”. For SWH, (i.e., and Significant Woodland), this must be considered in the context of the **PPS** definition of “ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural system”.

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

3.3 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. 2007, c. 6, s. 10 (2).

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, nets, 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 has 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.

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 *2007 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*.

As described later, an assessment of SAR potential has been completed for those lands proposed to be developed (the development site), and adjacent lands.

3.4 The City of Barrie Official Plan

As indicated in **Section 1.1**, Schedule A – Land Use to the **City of Barrie Official Plan** designates the subject lands as General Industrial and Environmental Protection Area (**Figure 1**). Schedule H to that Official Plan constitutes a Natural Heritage Resource overlay to Schedule A. As noted in Section 3.2, those portions of the property which are designated as Environmental Protection Area are mapped as Level 1 resources, whereas those within the General Industrial designation are primarily mapped as “Level 1 with existing development designation subject to 3.5.2.4 d)”. The northeast corner of the subject lands is mapped as Level 3 resources. Level 1 resources are considered critical components of the City's Natural Heritage Resources network, with policy direction on the protection of that network provided under Section 3.5.2.4, Natural Heritage Resources. Relevant portions of that policy read as follows:

3.5.2.4 NATURAL HERITAGE RESOURCES (OPA 14, By-law 2013-059)

- (a) The Natural Heritage Resources in the City of Barrie are depicted on Schedule H. Schedule H is intended to be used as an overlay to Schedule A: Land Use. Through the implementation of the following policies, Schedule H can be used as a guide to promote the protection, enhancement, and restoration of the City's natural heritage features and functions.
 - i. **Level 1** resources represent critical components of the Natural Heritage Resource network. No development shall be permitted within these areas.
 - Environmental Protection Area policy 4.7.2.2 would apply to all properties identified as Level 1.

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- The City will strive to designate all properties identified as having a Level 1 Natural Heritage Resource as Environmental Protection.
 - An Environmental Impact Study will be required for any development or site alteration within 120 metres of an area identified as Level 1 on Schedule H.

Schedule H defines Level 1 resources as follows:

Level 1 resources are critical components of the Natural Heritage Resources network within the City of Barrie including:

- a) Provincially significant wetlands;
 - b) Non-provincially significant wetlands greater than 0.5 hectares;
 - c) Significant woodlands greater than 10 hectares;
 - d) Significant habitat of endangered and threatened species;
 - e) Watercourses, minimum vegetation protection zones and connectivity linkages;
 - f) Lands through the site specific planning and development process identified as Environmental Protection.
- ii. **Level 2** resources represent significant components of the Natural Heritage Resource network. The features and function of these areas should be retained; however, there is potential for development if no negative impacts can be demonstrated or mitigated.
- An EIS will be required to be completed for any development or site alteration in or within 120 metres of an area identified as Level 2 on Schedule H.

Schedule H defines Level 2 resources as follows:

Level 2 resources are significant components of the Natural Heritage Resource network within the City including:

- a) Significant valleylands;
 - b) Provincially significant life science ANSI;
 - c) Significant wildlife habitat, including but not limited to core winter deer yards, colonial water-bird nesting sites, rare vegetation communities (i.e., tall grass prairies) and significant areas of vernal pools;
 - d) Watercourses, minimum vegetation protection zones and connectivity linkages;
 - e) Woodlands greater than 4 hectares and less than 10 hectares.
- (b) A standard Terms of Reference for an EIS will be established by the City in consultation with the appropriate conservation authority, and may be scoped through the development process to reflect a specific feature or function at the discretion of the City in consultation with the applicable conservation authority. Additional Natural Heritage Resources identified through a site specific EIS will be categorized by Level and will be subject to the policies of this section. An amendment to the Official Plan is not required for minor amendments to Schedule H.

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- (c) To ensure the effective management and retention of the features and functions identified on Schedule H, a Natural Heritage Resource will not be reclassified to a lesser level of protection if the feature is intentionally damaged or destroyed. The restoration and rehabilitation of the Natural Heritage Resource to the satisfaction of the City and applicable conservation authority may be required.
 - (d) Notwithstanding the land use limitations applicable to properties identified as Level 1 in Section 3.5.2.4 (a) i), where an existing designation permits other forms of development, such development may proceed subject to the policies of Level 2 in Section 3.5.2.4 (a) ii) and the appropriate planning application processes.
 - (e) Where practical, the City will work with adjoining jurisdictions to provide connectivity and protection for the Natural Heritage Resources identified on Schedule H.
- iii. **Level 3** resources represent significant and supporting components of the Natural Heritage Resource network. There is opportunity for development if the proposal ensures the protection and buffering of the significant feature and/or retains the supporting function of the feature.
- An EIS will be required to be completed for any development or site alteration in or within 30 metres of an area identified as Level 3 on Schedule H.

Schedule H defines Level 3 resources as follows:

Level 3 resources are significant and supporting resources of the Natural Resource network within the City including:

- (a) Regionally significant life science ANSI.
- (b) Woodlands greater than 0.5 ha and less than 4.0 ha.
- (c) Woodland within 30 m of a Level 1 or Level 2 feature.
- (d) Cultural thicket or cultural meadow communities contiguous with woodland or wetland patches.
- (e) Connectivity linkages.

From the above, it is apparent that the lands proposed for development are Level 1 with Existing Development Designation Subject to 3.5.2.4 d) which allows for development provided no negative impacts can be demonstrated or mitigated. The lands that are proposed for development constitute the wooded part of the Environmental Protection Area in Schedule A – Land Use. According to the Natural Heritage Resource Classification system, the wooded area is significant. The criterion for determining woodland significance is wooded areas that are greater than 10 ha (Schedule H, **City of Barrie Official Plan**). It

appears as though the northeastern corner of the development site falls within the Level 3 resource category. These constitute cultural meadows that are contiguous with woodland and wetland patches.

Policy 3.9.4 of the **City of Barrie Official Plan** address development and site alteration. It reads as follows:

3.9.4 DEVELOPMENT AND SITE ALTERATION

3.9.4.1 Where, in accordance with the policies of LSPP, development and site alteration is permitted within 120 metres of the Lake Simcoe shoreline, other lakes in the Lake Simcoe watershed, or any permanent or intermittent stream or a wetland, the development or site alteration should be integrated with and should not constrain ongoing or planned stewardship and remediation efforts.

3.9.4.2 An application for development or site alteration shall, where applicable:

- (a) increase or improve fish habitat in streams, lakes and wetlands, and any adjacent riparian areas;
- (b) include landscaping and habitat restoration that increase the ability of native plants and animals to use valley lands or riparian areas as wildlife habitat and movement corridors;
- (c) seek to avoid, minimize and/or mitigate impacts associated with the quality and quantity of urban run-off into receiving streams, lakes and wetlands; and
- (d) establish or increase the extent and width of a vegetation protection zone adjacent to Lake Simcoe to a minimum of 30 metres where feasible.

3.9.4.3 Where, through an application for development or site alteration, a buffer is required to be established by the implementation of an environmental impact study or natural heritage evaluation, the buffer shall be composed of and maintained as natural self-sustaining vegetation.

3.9.4.4 Where development or site alteration is permitted in relation to existing uses, the following policies apply:

- (a) all existing uses lawfully used for such purposes on the day before the LSPP comes into force are permitted;
- (b) the construction of a building on an existing lot of record is permitted, provided it was zoned for such as of the date LSPP comes into effect, or where an application for an amendment to a zoning by-law is required as a condition of a severance granted prior the date this Plan comes into effect;
- (c) the development permitted in (b), expansion to existing buildings or structures, accessory structures and uses, and conversions of legally existing uses which bring the use more into conformity with this Plan are permitted subject to a demonstration that the use does not expand into a key natural heritage feature, a key hydrologic feature and any minimum vegetation protection zone associated with a feature or the Lake Simcoe shoreline, unless there is no alternative in which case any expansion shall be limited in scope and kept within close geographical proximity to the existing structure;

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- (d) the expansion to existing agricultural buildings and structures, residential dwellings and accessory uses to both, may be considered within a key natural heritage feature, a key hydrologic feature, and any minimum vegetation protection zone associated with these features or the Lake Simcoe shoreline, if it is demonstrated that:
 - i) there is no alternative to the expansion or alteration and the expansion or alteration is directed away from the feature and vegetation protection zone to the maximum extent possible;
 - ii) the impact of the expansion or alteration on the feature and its functions is minimized to the maximum extent possible; and, iii) expansion, maintenance, or replacement of existing infrastructure is permitted.

Section 4.7 of the **City of Barrie Official Plan** provides additional policies on Environmental Protection Areas. Those that are relevant to the subject application are as follows:

4.7.1 GOALS

- (a) To protect, conserve and manage the Environmental Protection Area lands as a permanent and long term public resource.
- (c) To protect, preserve and enhance land with environmentally significant natural features and ecological functions and to maintain and improve where possible, the diversity of natural features or ecological functions for which an area is identified.
- (d) To maintain Environmental Protection Areas as viable and natural ecosystems through the protection of the wildlife and aquatic habitats, the maintenance of the flood control and storage capacities of the flood plain, and the enhancement of the water quality and the natural water filtration capability of the system.
- (e) To identify significant natural features and their associated ecological functions in the City as part of an overall Natural Heritage Strategy and identify natural connections between the features which shall be maintained and improved as environmental corridors and ecological linkages where possible.

4.7.2 POLICIES

Lands designated as Environmental Protection Areas on Schedule A include, but are not limited to:

- (a) Provincially or locally significant features or functions such as those areas containing the following:
 - i) aquifer recharges, headwaters;
 - ii) wetlands;
 - iii) rare species including unique plants;
 - iv) important ecological functions;
 - v) significant habitat of threatened and endangered species;
 - vi) *areas of natural and scientific interest life science and earth science;*

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- vii) significant woodlands;
 - viii) *significant valleylands*;
 - ix) *significant wildlife habitat*;
 - x) surface water features, valley and stream corridors; and
 - xi) fish habitats.
- (b) The City currently contains within its boundaries portions of three Provincially Significant Wetlands. These are the Willow Creek/Little Lake Wetland, the Lovers Creek Wetland and the Bear Creek Wetland identified on Schedule H. The area known as the Allandale Lake Algonquin Bluffs Area of Natural and Scientific Interest located in the southern portion of the Ardagh Planning Area is of Provincial significance and is also to be protected from uses that would detract from its environmental value.
- (c) Natural hazard lands and sites including areas of flood plain, erosion, steep slopes and unstable soils.

4.7.2.2 PERMITTED USES

- (a) Environmental Protection Areas are intended primarily for preservation and conservation in their natural state. Such uses as passive outdoor recreation, forestry, and wildlife management may be permitted where appropriate.
- (b) No buildings or structures shall be permitted in Environmental Protection Areas other than those necessary for flood or erosion control or for conservation purposes as approved by the City in consultation with the applicable *agencies*. Ancillary or accessory uses to permitted uses shall be located on adjacent lands outside of Environmental Protection Areas, unless their location within the Environmental Protection designation is efficient, cost effective and in the public interest, and consistent with protection of the environment; in all cases ancillary and accessory uses shall be developed in accordance with Provincial Policy.

4.7.2.3 GENERAL POLICIES

- (a) Development and site alteration in Provincially Significant Wetlands and *the significant* habitat of threatened and endangered species is contrary to the Provincial Policy Statement and will not be considered *with the exception of public works/utilities subject to Section 5.1.2.1 of this Plan*.
- (b) The redesignation of Environmental Protection Areas *to a designation that permits development and site alteration* shall be discouraged.
- (c) Where an application is made to redesignate Environmental Protection lands other than Provincially Significant Wetlands and the habitat of threatened and endangered species, the City shall require the completion of an Environmental Impact Study to the satisfaction of the City in consultation with the Ministry of Environment, the applicable Conservation Authority and any other relevant agency.
- (d) An amendment to the Environmental Protection Area designation shall only be considered where the results of an environmental study clearly demonstrate that

there will be no negative impacts on the natural features or ecological functions for which the Environmental Protection Area has been identified *with the exception of provincially significant wetlands and habitat of threatened and endangered species*.

- (e) Development and site alteration shall not be permitted in fish habitat areas except in accordance with Provincial and Federal requirements.
- (f) Environmental Protection Areas shall not be acceptable as part of the dedication for parkland as required under the *Planning Act*. The City shall seek to acquire such lands by dedication from land owners.
- (g) All lands dedicated to the City shall be conveyed in a physical condition satisfactory to the City. Where a valley or stream corridor area is to be dedicated, it shall include the watercourse and associated riparian vegetation, floodplain or erosion hazard lands, top of bank and any additional lands deemed necessary to protect ecological functions, or for pedestrian corridors, wildlife habitat, natural area viewing, and maintenance operations.
- (h) Where lands under private ownership are designated Environmental Protection Area, these lands shall not be utilized for the purposes of density calculations for the developable portions of the subject lands.

4.7.2.4 ADJACENT LANDS

- (a) Development and/or site alteration may be permitted on lands adjacent to Environmental Protection Areas if it has been demonstrated through an Environmental Impact Study (EIS) that it will not negatively impact the natural features or ecological functions for which the area is identified. The diversity of natural features in the area and the natural connections between them should be maintained and improved where possible.
- (b) *Adjacent lands are defined by the MNR Natural Heritage Reference Manual as being located 120 metres from a provincially significant wetland and endangered and threatened species habitat, 50 metres from significant woodlands, significant valleylands, significant wildlife habitat, and areas of natural and scientific interest and 30 metres from fish habitat*
- (c) Where the Conservation Authorities have undertaken *mapping and regulations* are in place, approval for any development must be obtained from the relevant Authority.
- (d) The City may consider the reduction or re-allocation of development densities in order to preserve existing woodlots, mature trees and other natural areas and features which are not identified within the Environmental Protection Area designation.
- (e) Where additional buffer areas or connecting links required to maintain ecological function outside of lands designated Environmental Protection re recommended to protect the natural features and functions within lands designated Environmental Protection, these lands shall be designated and zoned Environmental Protection.

4.7.2.5 SURFACE WATER FEATURES, WATERCOURSES AND VALLEY LANDS

- (a) Development and site alteration shall be restricted in or near sensitive surface water features and their related hydrological functions will be protected, improved, or restored.
- (b) Mitigating measures and/or site alternative development approaches may be required in order to protect, improve, or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions.
- (c) Valley and stream corridors shall be protected from development and integrated as part of the natural heritage system network accommodating wildlife and pedestrian movement and passive areas.
- (d) In reviewing any development proposal adjacent to a valley and stream corridor, the City will require the protection and/or enhancement of the feature and its functions to facilitate a natural, open space corridor. The feasibility of rehabilitating watercourses to a natural state will be considered at the time of such review.
- (e) Development limits shall be established by the limit of the valley or stream corridor which shall include the watercourse, and associated riparian vegetation, floodplain or erosion hazard lands, top of bank and any additional lands, such as buffers deemed necessary to protect ecological functions. All lands associated with the valley and stream corridor shall be zoned Environmental Protection and shall not form part of the development.
- (f) Where a watercourse supports warm or cold water fish habitat, an appropriate riparian vegetation zone shall be required. Land uses within the vegetation zone shall be restricted to those which maintain or enhance the natural features and ecological functions of the area.
- (g) Emphasis shall be placed on the potential development of Lovers, Bear, Hewitt's, Sophia, Kidd's, Bunker's, Dymont's, Hotchkiss and Whiskey Creeks, as linear open space corridors. As part of the municipal approvals process, the City shall seek to acquire these areas.
- (h) *Development and site alteration shall not be permitted in significant valleylands unless it has been demonstrated by the proponent, to the satisfaction of the City, that there will be no negative impacts on their natural features and ecological functions*

4.7.2.6 WOODLANDS AND HEDGEROWS

- (a) Development and site alteration shall not be permitted in significant woodlands unless it has been demonstrated that there will be no negative impacts on the natural features and ecological functions.
- (b) Woodlands shall generally be defined as a contiguous wooded area, of no less than 0.2 ha, irrespective of ownership, maturity, composition, and density in accordance with the City's Tree Preservation By-law.
- (c) Where an Environmental Protection Area consists of a woodland, the City will control development adjacent to this area to prevent destruction of trees.

4.7.2.7 WILDLIFE HABITAT

- (a) *Development and site alteration shall not be permitted in significant wildlife habitat unless it has been demonstrated by the proponent, to the satisfaction of the City, that there will be no negative impacts on their natural features and ecological functions.*

The above policy direction has been considered in this EIS, both with respect to which portions of the subject lands should be designated/redesignated as Environmental Protection Area, and how the impacts of adjacent development are to be mitigated.

3.5 **Ontario Regulation 179/06: Lake Simcoe Region Conservation Authority Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses**

Because virtually the entire subject lands are within 120 m of the Lovers Creek Swamp PSW, they are governed by Ontario Regulation 179/06 under the *Conservation Authorities Act*. A permit from the LSRCA will be required prior to any site alteration or development. In this regard, Generic Regulation 179/06 came into effect in the late spring of 2006. Relevant sections are as follows.

Development prohibited

2. (1) Subject to section 3, no person shall undertake development, or permit another person to undertake development in or on the areas within the jurisdiction of the Authority that are,
- d) wetlands; or
 - e) other areas where development could interfere with the hydrologic function of a wetland, including areas within 120 metres of all provincially significant wetlands, and areas within 30 metres of all other wetlands, but not including those where development has been approved pursuant to an application made under the Planning Act or other public planning or regulatory process.

Permission to develop

3. (1) The Authority may grant permission for development in or on the areas described in subsection 2 (1) if, in its opinion, the control of flooding, erosion, dynamic beaches, pollution or the conservation of land will not be affected by the development. (2) The permission of the Authority shall be given in writing, with or without conditions.

Alterations prohibited

5. Subject to section 6, no person shall straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or change or interfere in any way with a wetland.

Permission to alter

6. (1) The Authority may grant a person permission to straighten, change, divert or interfere with the existing channel of a river, creek, stream or watercourse or to change or interfere with a wetland.
- (2) The permission of the Authority shall be given in writing, with or without conditions.

3.6 Lake Simcoe Protection Plan

The subject lands are located within a Settlement Area under the **Lake Simcoe Protection Plan**, with many of the natural feature policies not applicable to Settlement Areas. For example, policies 6.20 through 6.29, relating to Key Natural Heritage and Key Hydrologic Features are not applicable. There are three policies under Section 6, Shorelines and Natural Heritage that relate specifically to Settlement Areas, as follows:

- 6.32 – DP Policies 6.32 – 6.34 apply to existing Settlement Areas and areas of Lake Simcoe adjacent to these lands, including the littoral zone, and these areas are not subject to policies 6.1 – 6.3, 6.5, 6.11 and policies 6.20 – 6.29.
- 6.33 – DP An application for development or site alteration shall, where applicable:
- a. increase or improve fish habitat in streams, lakes and wetlands, and any adjacent riparian areas;
 - b. include landscaping and habitat restoration that increase the ability of native plants and animals to use valleylands or riparian areas as wildlife habitat and movement corridors;
 - c. seek to avoid, minimize and/or mitigate impacts associated with the quality and quantity of urban run-off into receiving streams, lakes and wetlands; and
 - d. establish or increase the extent and width of a vegetation protection zone adjacent to Lake Simcoe to a minimum of 30 metres where feasible.
- 6.34 – DP Where, through an application for development or site alteration, a buffer is required to be established as a result of the application of the PPS, the buffer shall be composed of and maintained as natural self-sustaining vegetation.

Policies 6.33-DP (b) and (c), and 6.34-DP are addressed in Section 6 of this **EIS**.

3.7 Ontario Growth Plan for the Greater Golden Horseshoe

Section 4.2.2 of the **Growth Plan for the Greater Golden Horseshoe** (i.e., **Growth Plan**) indicates that a Natural Heritage System was prepared by the Province to support a comprehensive, integrated, and long term approach to planning for the protection of the region's natural heritage and diversity. However, it excludes lands within settlement area boundaries that were approved and in effect as of July 1, 2017. The **City of Barrie Official Plan** was initially approved in April, 2010; Schedule A clearly shows that the subject lands are within a settlement area. Accordingly, natural heritage policies of the Province's **Growth Plan** do not apply to the subject applications.

4 EXISTING ENVIRONMENTAL CONDITIONS AND CONSTRAINT ASSESSMENT

4.1 Physical Characteristics

The subject lands have a gentle but somewhat hummocky topography, with elevations typically being between 247 metres above sea level (masl) and 243 masl. Slopes through the northern and central portions of these lands are generally from the northwest to southeast, towards the tributary of Lovers Creek. The southern portion of the subject lands generally grades to the northeast, also towards that tributary. However the property's hummocky nature results in imperfect drainage conditions that gives rise to the presence of several shallow wetland units.

A majority of the lands north of the subject lands have been developed as part of a residential subdivision, with the rear yards extending to the northern boundary of the subject lands. There is obvious evidence of drainage improvements having been made, either by the developer during the construction of the subdivision or by landowners subsequent to their purchase of homes, with rear yard drainage being directed into the northern portion of the subject lands through ditching. There are also a number of locations where the amenity areas associated with those homes extend into the subject lands. Further, there are several ad-hoc trails, together with areas of garden waste disposal and other refuse, within the subject lands and on adjacent lands east and west.

4.2 Vegetation Communities and Flora

4.2.1 Regional Vegetation

The subject lands are within Site District 6E-8 and abuts the eastern edge of Site District 6E-6, which is part of the large Site Region 6E. Site District 6E-8 consists of a wide band extending from south of Lake Simcoe, eastward to the Bay of Quinte, including Lake Scugog, Rice Lake and the southern section of the Kawartha Lakes. It is generally described as an area of drumlinized till with local areas of water-lain silt and clay. The majority of the site district is contained within the Peterborough Drumlin Field, a physiographic region typified by drumlinoid hills, drumlin fields and eskers, interrupted by intervening wide river valley basins with muck, spillway and sand deposits (Chapman and Putnam 1984).

Based on a forest classification by Rowe (1972), the subject lands lies within the Huron-Ontario Section of the Great Lakes-St. Lawrence Forest Region. The original forest cover consisted primarily of hardwoods, such as Sugar Maple (*Acer saccharum*) and Beech (*Fagus grandifolia*). Other woody associates include Basswood (*Tilia americana*), White Ash (*Fraxinus americana*), Red Ash (*Fraxinus pennsylvanica*), Yellow Birch (*Betula alleghaniensis*), Red Maple (*Acer rubrum*), Red Oak (*Quercus rubra*), White Oak (*Quercus*

alba) and Bur Oak (*Quercus macrocarpa*). Conifers such as Eastern Hemlock (*Tsuga canadensis*), Eastern White Pine (*Pinus strobus*), and Balsam Fir (*Abies balsamea*) are typical within the tolerant hardwood types. Species such as Largetooth Aspen (*Populus grandidentata*), Butternut (*Juglans cinerea*), Bitternut Hickory (*Carya cordiformis*), Hop Hornbeam (*Ostrya virginiana*), and Black Cherry (*Prunus serotina*) are scattered throughout. Species associated with river-bottoms and swamp sites include Blue-beech (*Carpinus caroliniana*), Silver Maple (*Acer saccharinum*), Slippery Elm (*Ulmus rubra*), Rock Elm (*Ulmus thomasii*), and Black Ash (*Fraxinus nigra*). Eastern White Cedar (*Thuja occidentalis*) is ubiquitous to swampy depressions and on old fields.

The original landscape in many parts of southcentral Ontario has been cleared for settlement and cultivation, and consequently, contiguous, extensive forest tracts are relatively uncommon. Tableland woodlands remaining within settlement (i.e., urban) areas are usually disturbed and/or in various stages of successional growth.

4.2.2 Site Vegetation

Field investigations identified a total of 19 vegetation communities within and adjacent to the subject lands. These communities and their corresponding boundaries are illustrated on **Figure 2**, with community descriptions provided below. **Appendix C** includes a list of plant species recorded during the field surveys. Note that vegetation communities located specifically within the 251 Huronia Road property are described in the **SEIS** completed for that property under separate cover; these communities, together with those on the 340 Maplevue Drive East property, are shown on **Figure 2** for reference purposes.

Cultural System

CUM1-1: Dry – Moist Old Field Meadow: This community comprises the open canopied northeast portion of the subject lands and also occurs to the east. The community is dominated by common meadow species Reed Canary Grass (*Phalaris arundinacea*), Purple Crown-vetch (*Securigera varia*), Common Strawberry (*Fragaria virginiana*), Tall Goldenrod (*Solidago altissima*) and Low Hop Clover (*Trifolium campestre*) (**Photograph 1**)

CUP3-3: Scots Pine Coniferous Plantation: This community occurs just east of the subject lands. The distinct rows and consistent sizes of canopy trees provide evidence of the origin of this community as a plantation. The canopy is dominated by Scots Pine (*Pinus sylvestris*), with smaller amounts of White Pine (*Pinus strobus*). A review of historic aerial photography reveals that these lands were once farmed.

Naturalization throughout the community is evident by establishment of Eastern White Cedar (*Thuja occidentalis*) dominating the subcanopy and understory. Herbaceous groundcover is minimal to non-existent (**Photograph 2**)



Photographs 1 and 2. Typical conditions of cultural meadow (CUM1-1) and conifer plantation (CUP3-3) communities (June 30, 2021)

Terrestrial System

Forest (FO)

FOC2-2: Dry-Fresh White Cedar Coniferous Forest Type: This community is located along the northern boundary and within a central upland portion of the subject lands. The canopy is dense and is dominated by Eastern White Cedar. Ground cover is sparse (10%) and is primarily comprised of Wood Fern, Pennsylvania Sedge and Solomon's Seal (*Maianthemum* sp.). There is abundant fallen wood in this community, which generally has a rolling topography. Abundant anthropogenic impacts are evident throughout the northern portion, including landscape waste deposition and litter (**Photograph 3**).

FOD5-7: Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest: This community is located within the central portion of the subject lands. The canopy and subcanopy is dominated by Sugar Maple with Black Cherry, Eastern Hemlock, Eastern White Cedar and White Ash; it provides more than 80% cover. The understory provides 25% cover, composed of Eastern White Cedar, Black Cherry and Green Ash (*Fraxinus pennsylvanica*). Ground cover includes wood fern (*Dryopteris* sp.) and Sugar Maple saplings, with sparse Baneberry (*Actaea pachypoda*) and Oval-leaved Sedge (*Carex cephalophora*). This community has abundant downed wood and has a slightly rolling topography (**Photograph 4**).

FOM: Mixed Forest: This community comprises a large area within the central portion of the subject lands. The canopy and subcanopy are dominated by a variable mixture of Eastern White Cedar, Sugar Maple, Black Cherry, Eastern Hemlock, Quaking Aspen, Red Oak (*Quercus rubra*) and White Birch. The understory is sparse (20% cover), and is composed of tree saplings that include Sugar Maple, Eastern White Cedar, Quaking Aspen and Green Ash. Ground cover is sparse (20%), and includes occasional Pennsylvania Sedge (*Carex pensylvanica*), Wood Fern and Canada Mayflower (*Maianthemum canadense*).

FOM4-2: Dry-Fresh White Cedar – Poplar Mixed Forest Type: This community is within the northwest portion of the subject lands and supports a canopy/subcanopy comprised of a mixture of Eastern White Cedar and deciduous species that include Trembling Aspen (*Populus tremuloides*), American Basswood (*Tilia americana*), Black Cherry (*Prunus serotina*), White Birch (*Betula papyrifera*), Sugar Maple (*Acer saccharum*), elm (*Ulmus* sp.) and Ironwood (*Ostrya virginiana*). Understory species are sparse and include Eastern White Cedar, Ironwood and Balsam Fir (*Abies balsamea*). Ground cover is sparse and includes Black Cherry and Virginia Creeper (*Parthenocissus quinquefolia*). This community has abundant fallen branches present (**Photograph 5**).

FOM6-1: Fresh-Moist Sugar Maple – Hemlock Mixed Forest Type: This community occurs within several portions of the subject lands. The canopy is dense (greater than 80% cover) and has a shared dominance of Sugar Maple and Eastern Hemlock (*Tsuga Canadensis*). The subcanopy is composed of Ironwood, Quaking Aspen, Eastern White Cedar, Black Cherry and White Ash (*Fraxinus americana*). The understory includes Eastern White Cedar, Sugar Maple, Ironwood, White Ash, Balsam Fir and viburnum (*Viburnum* sp.). Groundcover is variable and in some spots supports species that are indicative of more moist soil conditions, such as the occasional sedge species and Cinnamon Fern (*Osmundastrum cinnamomeum*) (**Photograph 6**).



Photographs 3 and 4. Typical Conditions of FOC2-2 and FOD5-7 communities (July 22, 2021).



Photographs 5 and 6. Typical conditions within FOM4-2 community (June 30) and FOM6-1 community (July 22, 2021).

Wetland System

A summary of each wetland unit including size, vegetation community type and wildlife function has been compiled (**Appendix D**); the location of each unit is shown in **Figure 2**. As our field work included a survey of the adjacent lands to the east, those wetlands are also described. A photo log for each of the wetlands is provided in **Appendix D**. Identified wetland vegetation communities are described below.

Marsh (MA)

MAM2-2: Reed-canary Grass Mineral Meadow Marsh (Wetlands 8 and 16): The canopy and understory is dominated by Balsam Poplar, Willow and Dogwood, providing up to 25% cover in areas. Groundcover is dominated by Reed Canary Grass and Tall Buttercup (*Ranunculus acris*), Tall Goldenrod,

Bladder Sedge, Jewelweed (*Impatiens* sp.), Anemone (*Anemone* sp.), Sensitive Fern, Field Horsetail (*Equisetum arvense*) and Nightshade (*Solanum* sp.), with occasional Narrow Cattail (*Typha angustifolia*).

MAM3-2: Reed - Canary Grass Organic Meadow Marsh (Wetlands 1 and 3 – north portion): These communities are dominated by dense Reed Canary Grass with Sensitive Fern (*Onoclea sensibilis*), Bittersweet Nightshade (*Solanum dulcamara*), Bedstraw (*Galium* sp.) and abundant Gray Dogwood (*Cornus racemosa*).

MAS2: Mineral Shallow Marsh (Wetlands 19 and 21): These communities are dominated by cattail (*Typha* sp.) with abundant Eastern White Cedar in the understory. The groundcover includes Duckweed, Sensitive Fern, Nightshade, Smartweed (*Polygonum* sp.), Jewelweed and Spotted Water-hemlock (*Cicuta maculata*).

MAS3-1: Cattail Organic Shallow Marsh (Wetland 15): The edge of this community has scattered Eastern White Cedar, Balsam Poplar and Elm. The understory is dominated by cattail (*Typha* sp.) and Duckweed (*Lemna* sp.) in the north end, which contained up to 0.5 m of standing water. The south end is comprised of Cattail and Reed Canary Grass, with no standing water. The centre of the community is composed of dense willows. The ground cover includes Sensitive Fern, sedges (*Carex* sp.), Meadow Horsetail (*Equisetum pratense*), Jewelweed, Fringed Sedge (*Carex crinita*) and Bladder Sedge.

Swamp (SW)

SWM3-1: Birch-Conifer Mineral Mixed Swamp (Wetland 20): This community is a small shallow topographic depression located in the southern portion of the subject lands. It primarily supports Yellow Birch, Green Ash and Eastern Hemlock. The groundcover is dominated by wood fern species.

SWM3-2: Poplar-Conifer Mineral Mixed Swamp (Wetland 18): This is a large swamp community through which a portion of a tributary of Lovers Creek extends. It supports a canopy/subcanopy of a mixture of conifer species, including Eastern Hemlock and Eastern White Cedar, and deciduous species such as Black Ash (*Fraxinus nigra*), Yellow Birch, Sugar Maple and Elm. The groundcover layer provides dense cover and supports herbaceous species common to wetlands such as Sensitive Fern, Spotted Jewelweed, Mannagrass (*Glyceria* sp.), Marsh Marigold, Tall Buttercup, Joe Pye Weed and Canada Anemone.

SWM4-1: White Cedar - Hardwood Organic Mixed Swamp (Wetlands 3 – south, 6, 7, 11, 12, 13 – south, 14 and 17): These communities have a tree canopy that is dominated by Eastern White Cedar with a mix of Elm, Yellow Birch (*Betula alleghaniensis*), Eastern Hemlock, Black Ash, White Birch, White Spruce (*Picea glauca*), Black Cherry (*Prunus serotina*), Silver Maple (*Acer saccharinum*) and Red Maple (*Acer rubrum*). The groundcover is comprised of Sensitive Fern, Spotted Water-hemlock, Bittersweet Nightshade, Reed Canary Grass, Jewelweed, Fringed Sedge, Bladder Sedge (*Carex intumescens*), Fox Sedge (*Carex alopecoidea*), Anemone, Smooth Nettle (*Urtica dioica*) and Mannagrass.

SWM6-2: Poplar - Conifer Organic Mixed Swamp (Wetland 2): The canopy of this community is dominated by Eastern White Cedar (*Thuja occidentalis*), with elm (*Ulmus* sp.) and Eastern Cottonwood (*Populus deltoides*). Understory and groundcover is comprised of Reed Canary Grass, Jewelweed, Bittersweet Nightshade, Sensitive Fern and Virginia Creeper.

SWT2: Mineral Thicket Swamp (Dogwood and Willow) (Wetland 9): The edges of the community include Eastern White Cedar, Trembling Aspen and Eastern White Pine. The understory is dominated by dense Dogwood and Willow (*Salix* sp.) with Riverbank Grape (*Vitis riparia*). Groundcover is dominated by Reed Canary Grass with Nightshade, Tall Buttercup and Wild Cucumber (*Echinocystis lobata*).

SWT2-2: Willow Mineral Thicket Swamp (Wetland 4): The canopy of this community is comprised of Balsam Poplar on the edges. The understory is dominated by willow with dogwood (*Cornus* sp.) at the southwest edge, providing 75% cover. Groundcover includes Reed Canary Grass, Spotted Water-hemlock and Bladder Sedge.

SWT2-9: Gray Dogwood Mineral Thicket Swamp (Wetland 10): The understory of this community is dominated by Gray Dogwood. Ground cover includes Reed Canary Grass, Spotted Water-hemlock, Riverbank Grape, Sensitive Fern, Nightshade and Bladder Sedge. There is abundant downed woody debris in this community.

SWT3-10: Gray Dogwood Organic Thicket Swamp (Wetlands 5 and 13 – north): The canopy cover of this community is dominated by Eastern White Cedar and elm, providing greater than 60% cover. The understory is dominated by Gray Dogwood with Riverbank Grape, providing 75% cover. Groundcover includes dense Sensitive Fern with Spotted Water-hemlock, Bladder Sedge, Aster (*Aster* sp.), Spotted Joe Pye Weed (*Eutrochium maculatum*) and Smooth Bedstraw (*Galium mollugo*).

Figure 2 shows two areas connecting between wetlands on or adjacent to the subject lands in a pink tone. These are forested areas which are generally more low lying than adjacent forested lands, and which provide some connectivity between wetland units. While these corridors include some wetland vegetation, the overall vegetation composition did not result in their being classified as wetland. Nevertheless, we have recognized these areas as providing some potential hydrological connectivity between wetland units.

4.2.3 Flora

A total of 87 species of vascular plants were observed during field surveys on the subject lands. For those plants identified to species, the flora records result in 56 species (64%) identified as native, and 19 species (22%) as being non-native to Ontario.

Most of the native species have S-Ranks of S5 or S4, indicating they are either common and secure, or apparently secure, in the province. One S3 species, Black Ash (*Fraxinus nigra*), was recorded in the swamp communities within the southeastern limits of the subject lands (Wetlands 18 and 22). Species listed as S3 are vulnerable in the province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making them vulnerable to extirpation. There are no plant species considered regionally rare in Ecoregion 5E (Crins, 2004a) or locally rare in Ecoregion 5E-8 (Crins, 2004b) on the subject lands.

The rarity of plant species on a watershed level was also screened in accordance with **State of the Lake Simcoe Watershed** (2003), prepared as part of the Lake Simcoe Environmental Strategy. A review of this document indicated that three on-site species are rare including: Meadow Horsetail (*Equisetum pratense*), Rough Avens (*Geum laciniatum*) and Butternut (*Juglans cinera*). Of these, only Meadow Horsetail was identified within a part of the property to be directly impacted by the proposed development (i.e., recorded within Wetland 10). Although present within the development footprint, this is not considered a negative impact to the overall population, as the species is widely represented within the remaining on-site wetland units.

A total of four Butternut were encountered within the subject or adjacent lands (refer to **Figure 2** for locations). This species is designated as Endangered within Ontario; a further discussion of the specimens that were encountered is provided in Section 4.4.

4.3 Wildlife

4.3.1 Breeding Amphibians

Amphibian breeding surveys were conducted at a total of five locations within and adjacent to the northern and central portions of the subject lands, as illustrated on **Figure 2**. The selected survey locations allowed for the determination of which wetland units calls were originating from. Four species of amphibians were recorded during the surveys: Spring Peeper (*Pseudacris crucifer*); Wood Frog (*Lithobates sylvaticus*); Northern Leopard Frog (*Rana pipiens*); and Gray Treefrog (*Hyla versicolor*). A summary of the survey results is provided in **Table 2**. **Appendix D** provides a more detailed summary of amphibian activity in relation to each numbered wetland unit.

The shallow water within Wetlands 2, 3, 13 and 15 provide suitable conditions for early to mid-season breeding amphibian activities. Wetland 4 did provide limited early season habitat, a consequence of rear yard drainage from adjacent residential development having been ditched into this feature; however, this artificial drainage is insufficient to maintain any breeding activity beyond the very early spring, and it is very unlikely that the breeding activity observed would have resulted in any successful recruitment. There were no calls recorded in any of the wetlands during the June 16, 2021 survey.

At the onset of our work, we recognized that environmental constraints would preclude development further south within the subject lands; so, we focused our efforts to its northern and central areas. Incidental observations were made of several Green Frogs on June 10 from adjacent Wetland 22. Based on that finding, it is expected that the wetlands located within the southern portion of the subject lands and adjacent lands (i.e., Wetlands 18 and 22) are also likely to provide suitable conditions for breeding amphibians.

Table 2: Summary of Amphibian Survey Results.

Breeding Amphibian Monitoring Stations	Date: April 14	Date: May 20	Date: June 16
Station 1	- none - Spring Peeper – Code 1 (3 individuals), Wood Frog – Code 1 (1 individual) - Spring Peeper – Code 3 (Full chorus), Wood Frog – Code 1 (1 individual)	- Gray Treefrog – Code 1 (1 observed, no calling) - Gray Treefrog – Code 1 (4 individuals)	No calls

Breeding Amphibian Monitoring Stations	Date: April 14	Date: May 20	Date: June 16
Station 2	Spring Peeper – Code 1 (10 individuals), Wood Frog – Code 1 (1 individual)	- No calls	No calls
Station 3	Spring Peeper – Code 3 (Full chorus), Wood Frog – Code 2 (2 individuals)	- Spring Peeper – Code 3 (Full chorus)	No calls
Station 4	Spring Peeper – Code 3 (Full chorus), Wood Frog – Code 2 (2 individuals)	- Gray Treefrog – Code 3 (Full chorus) - Spring Peeper – Code 3 (Full chorus)	No calls
Station 5	Spring Peeper – Code 3 (Full chorus), Leopard Frog – Code 1 (1 individual)	- Gray Treefrog – Code 3 (Full chorus) - Spring Peeper – Code 3 (Full chorus)	No calls

Note:

The calling codes are designated according to the Amphibian Road Call Counts (Gartshore *et al.*, 2004).

They are as follows:

- 1 – Individuals of one species can be counted, calls are not overlapping; second number denotes number of individuals.
- 2 – Calls of one species are overlapping; second number denotes estimated number of individuals.
- 3 – Full chorus of one species, calls continuous and overlapping, individuals not distinguishable.

4.3.2 Breeding Birds

As was the case for amphibian surveys, breeding bird surveys were focused on the northern and central portions of the subject lands and adjacent lands, as it was recognized very early on that development within the more southerly portions of these lands was not feasible. A total of 28 bird species were documented on or adjacent to the subject lands, as summarized in **Appendix E**. The species observed were roughly half forest-dependent (F) and half disturbance-tolerant (DT). The latter are those which, apart from being often found in human-disturbed habitats, are also generally widespread, common, and often found along habitat edges in south-central Ontario. The most frequently observed species in order of abundance were: Black-capped Chickadee (DT) (*Poecile atricapillus*); House Wren (DT) (*Troglodytes aedon*); Song Sparrow (DT) (*Melospiza melodia*); Red-eyed Vireo (F) (*Vireo olivaceus*); and American Goldfinch (DT) (*Carduelis tristis*).

The area with the most diverse bird community, the most forest birds, and all seven of the forest area-sensitive species was the mixed forest and swamp in the southwestern quarter of the subject lands. This

area can also be described as the area around and south of Wetland 12 and the south half of Wetland 13, not westward, but south to Mapleview Drive East, and west of the main trail. Here, the seven area-sensitive species were observed including: Broad-winged Hawk (*Buteo platypterus*), Barred Owl (*Strix varia*), Black-throated Green Warbler (*Setophaga virens*), Yellow-bellied Sapsucker (*Sphyrapicus varius*), Red-breasted Nuthatch (*Sitta canadensis*), Winter Wren (*Troglodytes troglodytes*), Purple Finch (*Carpodacus purpureus*). Some Red-breasted Nuthatch territories were also recorded elsewhere on the property. Area-sensitive species are those which either require larger patches of habitat in which to breed, or which have a higher productivity in larger areas. No grassland or wetland area-sensitive species were recorded.

Almost all of the forest across the north half of the property had a low avian diversity. This was thought to be primarily because of the dominance of cedars or plantation trees together with the relative absence of vegetation in the understory. Blue Jay (*Cyanocitta cristata*), American Crow (*Corvus brachyrhynchos*), Black-capped Chickadee and Red-breasted Nuthatch, were some of the species found in this area. The many small wetlands in this northern part of the subject lands contained virtually no breeding birds - one Common Yellowthroat (*Geothlypis trichas*) was observed. This is not surprising because each patch is very small and is therefore generally not large enough to contain even one individual wetland bird territory. Also, each is surrounded by the aforementioned cedar-dominated forest habitat. Some wetland patches contained minimal amounts of emergent vegetation, which is required for most wetland breeding birds.

The Cultural Meadow (CUM 1-1) in the northeastern corner of the subject lands, and extending east beyond these lands, supported a few common meadow species only. For example, Song Sparrow and American Goldfinch were recorded there.

The large wetland (Wetland 22) to the east of the south portion of the subject lands was also not very diverse. Three wetland species were observed there: Common Yellowthroat, Swamp Sparrow (*Melospiza georgiana*) and Tree Swallow (*Tachycineta bicolor*), along with two species generally considered upland species (Song Sparrow and House Wren). Played calls of two rail species were not responded to.

No provincially ranked S1 through S3 (Critically Imperiled through to Vulnerable) species, were recorded in the study area. The Eastern Wood-Pewee (*Contopus virens*) was the only avian SAR observed; it has a status of Special Concern, and does not receive protection under the 2007 ESA. Two were noted in the forest area south of Wetland 13; this species is common and widespread in deciduous and mixed forests, both small and large, in southern Ontario; accordingly, its presence is expected.

4.3.3 Incidental Wildlife Observations

Incidental observations of the following wildlife species were made during the 2021 field investigations:

- Mammals
 - Eastern Chipmunk (*Tamias striatus*): observed throughout the subject lands.
 - Red Squirrel (*Sciurus vulgaris*): observed throughout the subject lands.
 - Grey Squirrel (*Sciurus carolinensis*): observed throughout the subject lands.
 - European Hare or Snowshoe Hare (*L. europaeus or americanus*): observed in the CUM1-1 community.
 - Eastern Cottontail (*Sylvilagus floridanus*).
 - White-tailed Deer (*Odocoileus virginianus*): deer tracks observed in the FOD community.
- Birds
 - Wild Turkey (*Meleagris gallopavo*): observed in adjacent Anthropogenic Habitat to the immediate east of the subject lands, adjacent to Mapleview Drive East.

A single Red-backed Salamander (*Plethodon cinereus*) was observed in the south-central portion of the subject lands in mixed-hemlock forest.

Given the reasonable abundance of natural/naturalized habitats in the local area, it is expected that other species common to rural landscapes may also occur within the subject lands. Such species include Raccoon (*Procyon lotor*) and Coyote (*Canis latrans*).

4.4 Species at Risk

The *ESA* provides protection for species listed as Endangered or Threatened in Ontario, including their habitats. The SARO List also identifies species of Special Concern that may become Threatened or Endangered in the future. Species of Special Concern and their habitats are not protected under the *ESA*.

Based on a review of the NHIC database, as well as knowledge of the general area and experience with SAR in the region, the following eight SAR have potential to occur within and adjacent to the vicinity of the subject lands.

Birds

- Eastern Meadowlark (*Sturnella magna*) – Threatened
- Eastern Wood-Pewee (*Contopus virens*) – Special Concern

Turtles

- Snapping Turtle (*Chelydra serpentina*) – Special Concern

Vascular Plants

- Butternut (*Juglans cinerea*) – Endangered

Mammals

- Eastern Small-footed Myotis (*Myotis leibii*) – Endangered
- Little Brown Myotis (*Myotis lucifugus*) – Endangered
- Northern Myotis (*Myotis septentrionalis*) – Endangered
- Tri-colored Bat (*Perimyotis subflavus*) – Endangered

Through vegetation community classification and field investigations for potentially suitable habitat and related features, a habitat screening and assessment of on-site suitability was completed for each of the identified species. This assessment can be found in **Table 3**, and includes a detailed description of each species' habitat, as well as a discussion of habitat suitability within the subject lands and recommendations for mitigation where applicable, as follows.

Eastern Wood-Pewee

As earlier discussed, the presence of Eastern Wood-Pewee within the subject lands is not considered significant as it is widespread throughout Southern Ontario in deciduous and mixed forests. The area where this species was found (i.e., south of Wetland 13) will not be disturbed. Where development is proposed, tree removal must occur outside of the annual breeding window of late April to late August to avoid impacts to nesting individuals of this and other avian species.

Table 3. 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
AVIFAUNA										
Eastern Meadowlark (<i>Sturnella magna</i>)	THR	THR	THR	1	S4B	The Eastern Meadowlark is a bird that prefers pastures and hayfields, but is also found to breed in orchards, shrubby fields and human use areas such as airports and roadsides. Eastern meadowlarks can nest from early May to mid-August, in nests that are built on the ground and well-camouflaged with a roof woven from grasses. The decline in population of these species is thought to be at least partially related to habitat destruction and agricultural practices (Ministry of Natural Resources and Forestry, 2014).	NHIC	Y	The CUM1-1 community may provide suitable habitat conditions However, no evidence of this species was noted during the 2021 breeding bird surveys. Habitat too small in size to support this species.	No impacts anticipated.
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).	Observations	Y - confirmed	This species observed during 2021 breeding bird surveys south of Wetland 13.	Low impacts expected due to widespread population and abundance of habitat locally. Mitigation: Minimize amounts of deciduous and mixed forest removals. Compliance with general breeding bird window recommended. Vegetation clearing shall occur between late August and late April, which is outside of the breeding and nesting season.
HERPTILES										
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	Y	None observed, however wetland communities present that support shallow water conditions.	Low impacts expected. Mitigation: minimize development encroachment towards wetland areas.
VASCULAR PLANTS										
Butternut (<i>Juglans cinerea</i>)	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	Y - confirmed	Four individuals recorded, three on subject lands and one on property to the east.	No impacts as individuals are non-retainable and are well-removed from the development site.
MAMMALS										
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 on-site forested communities.	Low impacts expected. Mitigation: 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.
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 on-site forested communities.	Low impacts expected. Mitigation: 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.

Table 3. 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 may be provided within on-site forested communities.	Low impacts expected. Mitigation: 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.
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 may be provided within on-site forested communities.	Low impacts expected. Mitigation: 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.

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

Snapping Turtle

The limited amount of standing water within wetlands on the subject lands is a substantial limitation to this species. Regardless, all such wetlands to be protected.

Butternut

Detailed transect surveys were completed to search for Butternut on and adjacent to the subject lands. A total of three Butternut were identified within its central portion, with a fourth identified on adjacent lands to the east. Locations of these specimens are shown on **Figure 2**. These were all noted as being either dead or severely impacted by Butternut Canker, thus resulting in a non-retainable status (**Photographs 7 and 8**). That said, none of these specimens are located in proximity to the development site which is later described in Section 5.1.



Photographs 7 and 8. Typical conditions of Butternut located on or adjacent to the subject lands. Extensive damage by Butternut Canker is evident.

It is noted that if components of the development were situated within the regulated 25 m radius of any Butternut, a formal Butternut Health Assessment (BHA) must be submitted to the MECP. Options for management of Butternut are summarized as follows.

- For identified hybrid individuals, no authorization under the *ESA* is required for removal.
- Should a BHA identify a tree as Category 1 (“non-retainable”), no authorization under the *ESA* is required to remove the tree, as such trees are affected by Butternut canker (a fungal disease) to such

an advanced degree that retaining the tree would not support the protection or recovery of Butternuts in the area.

- Should a BHA identify a tree as Category 2 (“retainable”), Registration under section 23.7 of Ontario Regulation 242/08 is likely feasible so long as all requirements of the Regulation are met.
- Should a BHA identify a tree as Category 3 (“archivable”), then a 17(2)(c) Permit is likely required.

The MECP requires a formal BHA to have been conducted during the leaf-on season, which is considered to be between the dates of May 15 and August 31, in order to obtain an accurate assessment of live crown.

Again, the large separation distance (>50 m) between any of the identified Butternut specimens and the proposed development site in the northern part of the subject lands is substantial, and therefore, a BHA is not required.

SAR Bats

Although the majority of the subject lands support forests communities, the northern portion where the development site is proposed is largely comprised of Eastern White Cedar. Such habitat typically does not provide opportunities for bat roosting in comparison with habitats associated with mixed and deciduous forested lands that comprise the remainder of the subject lands. No negative impacts on bats are expected; regardless, any tree removal must occur outside of the period of bat maternity and roosting activities, which for this part of Ontario extends from April 15 to October 31.

4.5 Significant Wildlife Habitat

Significant Wildlife Habitat 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 assist with site level assessments, the MNRF has developed the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E-6* (MNRF 2015).

The Natural Heritage Policies of the **PPS** [Subsection 2.1.4 d)] identify four principal components of SWH, as described in the *Significant Wildlife Habitat Technical Guide* (MNRF, 2000). These are:

- 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 also provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (MNRF, 2015). These criteria were used to screen wildlife habitat for potential SWH, with screening results provided in **Appendix F**. Identified candidate and confirmed SWH are summarized as follows.

- **Seasonal Concentration Areas of Animals**

- Bat Maternity Colonies (CONFIRMED for the central and southern parts of the subject lands) – The central and southern parts of the subject lands have an abundant supply of mixed and deciduous forest cover, likely providing sufficient habitat to be considered confirmed SWH. However, the northern portion of the site is largely comprised of Eastern White Cedar which typically does not provide opportunities for bat roosting. A snag survey conducted on the northern part of the Huronia Road property showed a low density of suitable snags and would not be confirmed SWH; based on field observations, similar low snag densities are evident in the northern part of the subject lands that is proposed for development.
- Turtle Wintering Area (CANDIDATE) – The majority of wetlands on and adjacent to the subject lands do not provide appropriate water depths for turtle wintering. Potential habitat may be available within the open water portions of Wetland 22; however, that wetland unit is on adjacent lands and is far removed from the development site.
- Deer Winter Congregation Areas (CONFIRMED) – The majority of subject lands have been identified through MNRF/Land Information Ontario mapping as being located within “Deer Wintering Area (Stratum 2)” (**Map A**). That said, minimal deer use, including evidence of track, scat or browse in the spring following periods when overwintering would have occurred was noted during the 2021 field investigations. Further, such habitat opportunities will be maintained as the development site will be concentrated in the northern portion of the subject lands.



Map A. Provincial mapping showing Deer Wintering Area (Stratum 2) lands on and adjacent to the subject lands, with the two adjacent properties shown for reference (pink shaded polygon).

- **Specialized Habitat for Wildlife**

- Turtle Nesting Areas (CANDIDATE) – Due to its proximity to marsh lands associated with the Lovers Creek corridor, suitable nesting habitat may be available within the open, anthropogenic, gravel-filled area in the southern portion of the adjacent 340 Mapleview Drive East property for turtle nests. No such habitat occurs within the subject lands itself.
- Amphibian Breeding Habitat (Woodland) (CONFIRMED) – Wetland Unit 13 supported a full chorus of both Spring Peeper and Gray Treefrog; the total size of that wetland unit (0.413 ha, or 4,130 m²) would meet the area criterion (>500 m²) for significance. **All of the other wetlands where amphibian surveys were completed in the northern and central portion of the subject lands and adjacent lands are less than 500 m² and would therefore not meet the criterion of significance.** It is probable that Wetland Units 18 and 22, located at the southern end of the subject lands and adjacent lands respectively, would qualify (amphibian surveys were not completed for these wetlands as they are well-removed from the development site) as SWH.

- **Animal Movement Corridors**

- Deer movement (CONFIRMED) – Given the MNRF’s identification of Deer Wintering Habitat, deer movement opportunities are also present.

Candidate and confirmed SWH will be protected first, by focusing development activities to the northern portion of the subject lands, adjacent to existing residential development, second, by protecting all wetland units within the Lovers Creek Swamp PSW, third, by protecting broad areas of woodland which surround these wetlands and which connect them to Lovers Creek and/or its tributary, and fourth, by ensuring that any tree removal within the development site occurs outside of period when those trees may be used for bird nesting or as bat roosting and maternity habitat. A recommendation addressing this matter is provided in Section 5.2.

4.6 Comments on Significant Woodlands

There are differing criteria that have been applied in various policy documents in Ontario for what constitutes Significant Woodlands; however, the woodlands that occupy virtually all of the subject lands would meet any of these tests. It should be additionally noted that the Province, through the **PPS**, provides latitude to local and regional planning authorities to determine what constitutes Significant Woodlands within their jurisdictions, recognizing that factors such as the amount of forest cover within a given planning area can influence what should or should not be considered significant. As discussed in Section 3.4, the **City of Barrie Official Plan** identifies almost all of the woodland areas within the subject lands as part of its Level 1 Natural Heritage Resources Network, which is reasonably interpreted as the City considering nearly the entire property Significant Woodland. Returning to the direction of the **PPS** on this matter, the policy is that *no development or site alteration shall be permitted, unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions*. For Significant Woodlands negative impacts is defined in the **PPS** as: *degradation that threatens the health and integrity of the natural features or ecological function for which an area is identified*. Again, discretion is left to the local planning authority to consider impacts in the broader context. The **City of Barrie Official Plan** indirectly addresses this; as described in Section 3.4, the policy direction with respect to lands which currently have a General Industrial designation is permissive, allowing for the reduction of some woodland, subject to demonstrating no negative impacts on the features and functions of the remaining woodland area. Further comments in this regard are provided in Section 5.3.

5 COMMENTS AND RECOMMENDATIONS ON DEVELOPMENT

5.1 Site Suitability

As was noted at the onset of this **EIS**, the subject lands have a number of environmental constraints; however, parts of the lands are also designated within the **City of Barrie Official Plan** for development, including the north portion and some of the south portion. The City's designation of developable areas was based on an earlier broader scale assessment of constraints; one of the purposes of this **EIS** was to update the resource mapping and refine the site opportunity and constraint analysis. In general, our work has shown a reasonable consistency with the City's mapping, with much of the lands presently designated as Environmental Protection Area being floodplain and/or containing wetlands. The most northerly portion of the subject lands, adjacent to the existing development on Loon Avenue, has the lowest number and extent of constraints, being outside of the floodplain of Lovers Creek and its tributary. There are two wetland units in this area (i.e., Wetlands 4 and 10), both of which are small; one of these is 0.008 ha, while the other is 0.024 ha. The latter has been modified in relation to residential development to the north; it is largely fed by ditched drainage from the rear yards of the adjacent homes. Neither of these wetlands provide valuable ecosystem functions, particularly given that there are many more complex wetlands to the south (see **Figure 2**). For example, neither wetland would meet the area criterion of significance for woodland amphibian breeding habitat, and would therefore not qualify as SWH. As another example, these wetlands provide virtually no habitat for breeding birds, as they are not large enough to contain even one individual wetland bird territory.

The central portion of the subject lands consists of a mosaic of small wetlands interspersed with forested habitat. Much of that portion of the property is outside of the floodplain of Lovers Creek and its tributary. Development could extend into this area, as was generally contemplated through the **City of Barrie Official Plan** designation (**Figure 1**); the boundaries of any such development would need to be modified to ensure all wetlands within this area are protected.

It is noted that development of the subject lands could take a variety of different forms, including one that fully capitalizes on all or most of the lands presently designated General Industrial (or an adjusted boundary based on environmental constraints), which in the present instance would include fingers of development extending further south into the property. Alternatively, development can be concentrated to a smaller portion of the site, in order to ultimately preserve a much larger and more contiguous block southwards as Environmental Protection Area. **Michalski Nielsen Associates Limited has worked with the owners and their project team through several iterations of development plans, ultimately leading to the Concept Site Plan shown in Appendix G. It takes advantage of the most northerly portion of the subject lands**

which provides meaningful protection for environmental features to the south. The Concept Site Plan protects approximately 80% of the subject lands in a natural state, generally including lands that were not historically farmed. Implementation of the Concept Site Plan will necessitate 5.0 m buffers along the northern boundaries of Wetlands 1, 2, 3 and 6, and the western boundary of Wetlands 9 and 13. Buffer protection around the entire perimeter of Wetlands 1, 2, 3, 6, 9 and 13 is very much a moot point given the presence of the Environmental Protection Area southwards. Wetland 5 requires protection of the 5.0 m buffer around its entire circumference.

Given that buffers adjacent to wetlands will be central to both the City of Barrie's and LSRCA's review of the development proposal, additional discussion on buffers is provided in Section 5.2.

5.2 Wetland Protection

It is important that the City of Barrie and LSRCA recognize the benefits that are provided by the Concept Site Plan in **Appendix G**, which is very similar to that which is in the late stages of approval for 521 Huronia Road to the west (and which will be integrated with that adjacent development). Buffers to wetlands are important, providing a variety of functions including:

- A. flow attenuation (water quantity);
- B. water quality treatment benefits for overland runoff;
- C. screening against human disturbance/changes in land use;
- D. hazard mitigation; and
- E. core habitat protection for wildlife.

In the paragraphs following, we first provide a brief literature review of buffers relative to wetlands. This is followed by an explanation of the appropriateness of 5.0 m widths for this residential proposal.

Literature Recommendations Regarding Buffer Requirements to Protect Wetland Values

A review was completed of the references cited in the annotated bibliography of the **Natural Heritage Reference Manual** (MNRF 2010), prepared in support of the natural heritage policies in the **PPS**, as well as other pertinent references, regarding wetland buffers.

Vegetated buffers to protect wetlands from the impacts of adjacent land uses (i.e., typically agriculture or urbanization) have been under discussion in the scientific and technical literature since the mid-1990's (e.g.,

Norman 1994; Woodard and Rock 1995). One particularly useful review is a document prepared by Beacon Environmental for the Credit Valley Conservation, entitled **Ecological Buffer Guidelines Review** (BEL 2012). It summarizes the overall function of a buffer as follows: “to try to insulate a protected natural area from the impacts of adjacent land uses (usually land use changes) so that this area can continue to provide the same, or a comparable range of ecological goals and services, as it did prior to the change in land use.”

There is wide variation in the literature on buffer requirements for wetlands, ranging from less than 5.0 m to several hundred metres. Larger buffers are deemed most important in situations where the lands adjacent to a wetland serve a variety of supportive functions for wetland wildlife and are seen as part of core habitat areas for wildlife protection. As indicated in the **Natural Heritage Reference Manual** (MNRF 2010), “the physical separation of development from natural features boundaries using vegetated protection areas or vegetation protection zones is one of the most widely used mechanisms for softening or reducing (i.e., buffering) the impacts of land use changes on adjacent natural features.” As noted in the review document, the **Natural Heritage Reference Manual** “shies away from any specific recommendations because appropriate widths for buffers can vary depending on the sensitivity and functions of the features, and proposed adjacent land uses.” With respect to the latter, it must be recognized that the determination of buffer widths for wetlands is most usually done in areas of urbanization, where generally virtually all of the landscape adjacent to whatever buffer is established will be fully developed. Our experience in working on Secondary Plans and other land development initiatives has demonstrated a consistent pattern in which a buffer limit is established, that limit is staked off, then all of the adjacent lands to that buffer are cleared, regraded and developed, except for a protection buffer which is typically not disturbed. **This is a very different situation from the current proposal where the majority of the property (i.e., 80%) is to be retained in its natural state**, ensuring that wildlife connections between wetlands, and wildlife habitat functions which are ancillary to those provided by the wetlands themselves, are being preserved for the long-term. **Appendix H** is a Location Map prepared by MHBC; it shows that the existing developable area will decrease from 6.03 ha to 2.56 ha. With the proposed residential development in place, the Environmental Protection Area designation will increase from 5.53 ha to 9.00 ha, which approximates an increase of nearly 38%.

As noted in the Beacon Environmental review, “due to the number of intrinsic and extensive factors that need to be considered in appropriate buffer determination, there is no ‘silver bullet’ for buffer determination.” That document goes on to state that, “while some plans and policies have opted to set prescribed buffers to simplify the planning process and help ensure natural heritage protection, the

more prescriptive a buffer, the less it considers site-specific conditions and sensitivities, which can be very variable.” The review points out, “clearly, as buffer widths increase within the given range, their effectiveness also tends to increase. However, application of only the widest recommended buffers (i.e., ‘low risk’) without consideration for the site-specific conditions, or sensitivity of receiving attributes, might equally result in the identification of a buffer that is unnecessarily wide.” Site-specific conditions must, of course, take into consideration the nature and intensity of proposed adjacent land uses.

The Beacon Environmental review (BEL 2010) recognized that the determination of buffer widths in relation to development must have a practical element, despite the general tenet of “more is better”. To this end, the review concludes that “in most cases, it is expected that the final buffer width fall within a ‘medium risk’ zone, and thereby represent a reasonable balance between achieving natural heritage protection and efficient land use planning objectives”.

Finally, and important to the determination of the buffer dimensions for this project, the Beacon Environmental review (BEL 2012) states that, “it is also important to keep in mind that buffers need not be uniform” in width. This can include situations where a larger buffer is warranted because of such factors as steep slopes which may decrease the effectiveness of a narrower buffer, or where hydrologic conditions, such as the presence of seepage zones, may specifically warrant a wider buffer. Equally, it may be based on practical considerations. As noted above, while buffer widths of 5.0 m for the northern boundaries of Wetlands 1, 2, 3 and 6, and the western side of Wetlands 9 and 13 will be juxtaposed against residential development, the balance of the wetlands will opportunistically not require buffers by virtue of their being within an Environmental Protection Area designation.

Appropriateness of Wetland Buffers for the Proposed Development

As previously noted, there are two fundamentally different approaches which could have been taken to develop the subject lands. The first would be to capitalize on a larger area of the property, outside of wetlands, resulting in a development plan that extends considerably further south into those lands, in keeping with General Industrial designation in Schedule A of the **City of Barrie Official Plan**. The second is to have a more compact form of development, focusing on lands that were earlier agricultural and which are adjacent to existing development, thus preserving a larger and more contiguous block of land to the south as an Environmental Protection Area. We believe there is considerable merit to the second alternative. In this regard, those wetland units occurring at the interface between the development site and protected lands to the south are small and have limited natural functions. While Wetlands 2, 3 and 13 have some

amphibian breeding use (over the early and mid-season breeding periods only), this function will continue with a buffer width of 5.0 m. These wetlands also have a very limited function in supporting bird habitat, as demonstrated through the breeding bird surveys, and have no other ecological functions that will be negatively impacted on as a consequence of having a buffer of 5.0 m. In other words, a 10 m or 15 m buffer is not going to guarantee any more protective functions than would a 5.0 m buffer.

Further, given that the orientation of the wetland units is along a north-south axis, **the overall buffer width around all of these wetlands will be much greater than 5.0 m.** While the wetlands within the subject lands are important, the mosaic of wetland and woodland habitats has greater ecological values than the wetland units on their own. In our opinion, the emphasis should be on protecting the largest and most contiguous block of this wetland/woodland mosaic, which the Concept Site Plan achieves.

Given the above, Michalski Nielsen Associates Limited recommends that:

- **a 5.0 m natural buffer be implemented and enforced between the proposed development site and the northern boundaries of Wetlands 1, 2, 3, 5 and 6 and the western boundary of Wetlands 9 and 13. The 5.0 m buffer will be required around the entire circumference of Wetland 5; and**
- **the 5.0 m buffer should not be altered or disturbed and vegetation should not be cut or cleared except for safety (i.e., the removal of dead trees or trees of poor health), and for edge management purposes.**

Construction impacts that may affect the remaining vegetation and individual wetland units can result from heavy equipment, soil compaction, siltation, etc. These short-term duration impacts can be mitigated through installation of silt/sediment fencing. In this regard, Michalski Nielsen Associates Limited recommends that:

- **Loon Avenue Lands OP Inc. obtain a tree removal permit from the City of Barrie to remove all trees within the development site shown in the Concept Site Plan in Appendix G;**
- **all tree cutting be undertaken between October 31 and April 15 to avoid impacts on breeding birds and potential bat roosting/maternity activities;**
- **Loon Avenue Lands OP Inc. obtain a permit from the Lake Simcoe Region Conservation Authority prior to any site alteration or development as per Ontario Regulation 179/06: Lake Simcoe Region Conservation Authority Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses;**

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- at the outset of grubbing, and prior to any other earthworks, a temporary heavy-duty silt/sediment fence be installed along the outer edge (i.e., dripline) of the 5.0 m buffer. The fence is to be trenched a minimum of 0.2 m;
 - additional sediment and erosion control works 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 are to be remedied immediately;
 - sediment and erosion controls are to be left in place, until such time as the lands which have been disturbed are certified as being stable by a qualified individual; and
 - for long-term protection of the 5.0 m buffer and contiguous Lovers Creek Provincially Significant Wetland/Significant Woodland Complex, the earlier mentioned temporary silt/sediment fence be replaced with a permanent fence not higher than 1.5 m to be located on property owned by the condominium corporation, in keeping with the style and type set out in Section 5.3.5.4 of Zoning Bylaw 53 (Office Consolidation, September 13, 2019);
 - all lands designated Environmental Protection Area outside the development footprint be dedicated to and owned by the City of Barrie, in keeping with Policy 4.7.2.3 (f) of the City of Barrie Official Plan, with the exception of the 5.0 m buffer protects Wetlands 1, 2, 3, 5, 6, 9 and 13; and
 - ownership and management of the 5.0 m buffer would be the responsibility of the condominium corporation.

Once the development site has been cleared of vegetation, trees on the outer edges of the 5.0 m buffer may be susceptible to windthrow and windscald. The requirement for edge management will include the need for the removal of some trees that pose an existing hazard/potential future hazard because of size and health conditions. Selective tree removal and limbing will be required to establish a more resilient woodland edge, and selective planting of appropriate native trees and shrubs will be needed to increase the robustness of the edge are permitted uses with the 5.0 buffer. Accordingly, Michalski Nielsen Associates Limited recommends that:

- an edge management plan be prepared and implemented by the condominium corporation for the exposed edge of the 5.0 m buffer.

5.3 Rationalization of Removal of a Fringe of Significant Woodland

As indicated earlier, trees from the northern fringe of the Significant Woodland constituting the development site will need to be removed to enable the Concept Site Plan. As mentioned earlier, the area of tree removal amounts to 2.56 ha. From a policy perspective, this can be achieved by focusing new

residential development to the northern part of the subject lands which is constraint-free from wetlands and floodplains. The effect is that a large (i.e., 9.00 ha) contiguous block of woodland/wetland mosaic southwards will remain and be protected. With respect to the development site itself, the woodland has already been substantially fragmented by human activities; it is clearly not a green field situation. It is also important to note that it does not contain any interior wildlife habitat, nor does it provide habitat for provincially significant flora or fauna (i.e., Endangered or Threatened species). Further, historical agricultural land uses coupled with the relatively young and common tree species that will be removed do not warrant “significance”. Similarly, low avian diversity was clearly observed in this area, primarily because of the dominance of Eastern White Cedar and/or plantation trees together with the absence of understorey vegetation. In this regard, there will be a slight shift from early successional woodland dependent to edge dependent bird species, as well as a minor increase in species tolerant of an urban setting (e.g., Black-capped Chickadee, Blue Jay, European Starling, American Crow, Chipping Sparrow, White Breasted Nuthatch, American Robin).

In our opinion, removal of 2.56 ha of woodland fringe already affected by man-made influences would not undermine the ecological integrity of the overall PSW/Significant Woodland complex. Accordingly, there are no compelling environmental reasons why trees cannot be removed from the proposed development site; in short, no negative impacts are anticipated.

Human intrusions into the lands designated Environmental Protection Area already occur, as evidenced by the many paths and openings that were observed during our field investigations. The above recommended permanent fence will be effective in diminishing physical encroachment by new homeowners and household pets. At the same time, there are attributes of the PSW/Wetland Complex that provide meaningful social and educational benefits (e.g., birdwatching, nature appreciation, wildlife photography, etc.); in our opinion, these should be encouraged. Accordingly, Michalski Nielsen Associates Limited recommends that:

- **given that Lovers Creek Swamp Provincially Significant Wetland is of Provincial Interest and is within an Environmental Protection Area designation in the City of Barrie Official Plan, the applicant prepare a “Stewardship/Homeowners’ Manual” to be registered on title and be distributed by the condominium corporation to participating homeowners. The document will provide educational material regarding the ecological significance of resource features and functions, as well as information on the conservation roles/actions that individual homeowners can take. Examples of inclusions are:**

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- **natural features associated with the Provincially Significant Wetland and Environmental Protection Area designations;**
 - **refuse/yard waste composting;**
 - **fertilizer and pesticide use (i.e., inclusive of herbicides and insecticides);**
 - **impacts of noise and lighting on wildlife populations;**
 - **benefits of stormwater treatment;**
 - **trail use;**
 - **domestic pet impacts and controls; and**
 - **control of invasive plants.**

The development proposal provides an opportunity to formalize the presently unorganized network of trails within the subject lands and beyond. In our opinion, a passive recreational trail would minimize impacts of uncontrolled human/pet incursion into the designated Environmental Protection Area. Accordingly, Michalski Nielsen Associates Limited recommends that:

- **the City of Barrie in consultation with the Lake Simcoe Region Conservation Authority consider the design and implementation of a low-impact footpath/walkway originating from the proposed amenity area, and having the potential to be linked into the City's outdoor recreational program. Such a pathway would obviously contribute to educational and passive recreational opportunities, which are not otherwise available to the public at this location.**

5.4 Proposed Connection Between Wetlands 6 and 13

As illustrated on **Figure 2**, there is an area of forested lands between Wetland 6 and Wetland 13 which provides connectivity between the two units. While not wetland, this corridor is more lowlying than adjacent forested lands. The implementation of the proposed Concept Site Plan in **Appendix G** will result in some disruption of this area. While it is generally desirable to leave existing woodland areas in an undisturbed fashion, an exception should be made in this instance to recreate a shallow trough or swale to the south of the development site in order to ensure that hydrologic connection is maintained between the two wetlands. This can be quite easily accomplished, landscape treatment implemented to ensure this area is restored to a forested condition.

5.5 Ecological Offsetting

The LSRCA has in place an Ecological Offsetting Policy which must be addressed to compensate for the proposed removal of 2.56 ha of woodland, inclusive of two small anthropogenically-influenced wetlands

which are not part of the Lovers Creek Swamp PSW. The Policy provides two options: woodland/wetland replacement, or cash-in-lieu. At this time, the landowner is considering a hybrid of the two options. In this regard, Michalski Nielsen Associates Limited recommends that:

- **Loon Avenue Lands OP Inc. enter into discussions with the Lake Simcoe Region Conservation Authority to confirm an appropriate approach to feature removal and related compensation, as per its Ecological Offsetting Policy.**

5.6 Passive Amenity Area

The Concept Site Plan integrates all of the various wetland units which are appropriately considered as PSW by protecting intervening forested lands, which will continue as an Environmental Protection Area. However, to address the City's requirement for an amenity area as part of this development, an environmentally sensitive passive feature is proposed within the forested lands just south of the development site itself. That open space area will include a trail with benches and exercise stations, and will also contain a small central children's play area. The intent is to be able to work with existing grades, and to protect the tree canopy through a layout which capitalizes on the reasonably open nature of mature trees, avoiding removal of any trees larger than 20 cm diameter at breast height (dbh). Permeable surface treatments will also be used in the design. Accordingly, Michalski Nielsen Associates Limited recommends that:

- **the passive amenity area have a site specific zoning (e.g., Open Space, with restrictions), which not only recognizes its use but its function as a connected landscape of woodlands and wetlands.**

5.7 Stormwater Management

A Functional Servicing Report has been prepared by Counterpoint Engineering Inc. (Draft, January 2022). It recognizes that there is currently no stormwater servicing in vicinity of the subject lands. The development site is 1.90 ha in size, and is considered a single drainage area, which naturally grades to wetland areas to the south/southeast. The proposed stormwater treatment system will capture flows through catch basins within the private road system, directing these to a storage chamber that is located within the southeast portion of the development site; the storage chamber will be equipped with an outlet structure which controls flows from storm event sizes ranging from 2 years to 100 years to predevelopment levels. The stormwater outlet will be equipped with a level spreader before releasing the treated stormwater to Wetland 13, which is the largest of the adjacent wetlands and the one which currently receives much of the

runoff from the adjacent landscape to the north, as evidenced by its longer hydro-period than surrounding smaller wetland units. Plant and animal species in this wetland (i.e., and others on the subject lands) have well-adapted over the years to both natural and man-made changes in moisture regimes. Accordingly, any impacts will be negligible to non-detectable, with no reduction in wetland features or functions.

There will be 0.58 ha of the development site, consisting of landscape areas and some roof areas, that will be uncontrolled because of grading constraints; these lands will sheet flow to adjacent Wetlands 1, 2, 3 and 5. In our opinion, there will be no negative impacts given that these wetlands have already adapted to a wide range of moisture regimes.

A stormfilter unit is proposed for quality control; it will have high total suspended solids and phosphorus removal capabilities, protecting water quality of the receiving wetland (Counterpoint Engineering Inc. [Draft, January 2022]).

The passive recreational amenity area being proposed between Wetlands 3, 5 and 6 is being designed such that it does not change/minimally changes the permeability of the landscape, and with virtually no changes in existing grading. As such, this area will simply continue to sheet flow towards those adjacent wetland units.

The Functional Servicing Plan does not provide details on an erosion and sediment control plan; however, a robust plan which protects downgradient wetlands from water quality impacts during the construction phase of the project will be prepared at the detailed design stage.

5.8 Additional Aspects of Site Servicing

Water supply is to be provided through a looped system involving existing infrastructure on Loon Avenue to the north and Huronia Road to the west, together with planned infrastructure to service the 521 Huronia Road site. All water supply infrastructure, will follow existing and proposed roads and will be set back a substantial distance from the Environmental Protection Area.

Sanitary servicing within the subject lands will also follow the proposed internal road system; however, it will need to outlet through a new sewer to a manhole on City-owned property, located 180 m to the northeast of the subject lands. While the sewer can be installed by directional drilling, it will require an intermediate manhole. Michalski Nielsen Associates Limited has walked potential alignments of this sewer, with all potential alignments located in an area of cultural meadow, and with no wetland constraints; it is our opinion

that a manhole can be constructed within this area with minimal, and only short-term, impacts on this vegetation community.

6 POLICY CONFORMITY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Conformity With Environmental Policies/Regulations

The subject lands include a number of environmental constraints, including floodplains associated with Lovers Creek and a tributary to it, wetlands forming part of Lovers Creek Swamp PSW, and connecting Significant Woodlands. The functions, attributes and boundaries of these features have been very carefully considered in identifying a development site which provides appropriate protection. That development site additionally recognizes:

- existing land use permissions;
- the adjacency of existing residential development, with the proposed development being compatible in character with the neighbouring land uses; and
- historical uses of the development site (it was formerly agricultural land), and the resultant young age of forested areas that presently occupy most of it.

The proposed community that is to be built additionally addresses the protection of all environmentally sensitive portions of the subject lands, through proper attention to the natural environment on such matters as:

- wetland buffering and ownership and management of same;
- land use designations that ensure long-term protection of environmentally sensitive lands southwards;
- stormwater management inclusive of pre- and post-development water balancing and quality (i.e., suspended solids and phosphorus) control;
- other aspects of site servicing and construction management; and
- long term disposition of the Environmental Protection Area designation.

It is noted that the removal of a small area of woodland and two small anthropogenically-influenced wetlands (not forming part of the PSW) that occur within the development site will require Ecological Offsetting through the LSRCA; the purpose of the ecological offsetting program is to ensure an overall net increase in the extent of natural/naturalized landscapes within the watershed.

The development of this community appropriately considers all relevant environmental policy direction. A brief summary of how the direction of those policies is being addressed is provided in the paragraphs following.

6.2 Provincial Policy Statement

The individual wetland units comprising the PSW have all been identified and evaluated as part of our work, and will be protected. In this regard, 5.0 m buffers are recommended for the northern edges of Wetlands 1, 2, 3, 6, 9 and 13, and the western boundaries of Wetlands 9 and 13. The buffer will need to completely surround Wetland 5. As well, heavy duty silt/sediment curtains are proposed on the northern outside buffer limits for Wetlands 1, 2, 3 and 6, and the western outside buffer limit of Wetlands 9 and 13, and completely around the outer buffer limit of Wetland 5 in the short term, that is during this construction and “green-up” periods. In the long-term, when the proposed development is built out and fully occupied, silt/sediment fencing will be replaced with a permanent fence, in keeping with a design/type satisfactory to the City of Barrie. Recognizing that the buffer will be within the Environmental Protection Area, it will be owned and managed by the condominium corporation. This will assist in diminishing encroachment by homeowners and household pets into the wetland/woodland complex.

There has been careful consideration of Significant Woodlands in directing development to the northern part of the subject lands. The Concept Site Plan shown in **Appendix G** indicates robust protection for those woodland areas that are important in providing connectivity between wetlands, and between such areas and the floodplain of Lovers Creek and its tributary. In our opinion, removal of 2.56 ha of woodland fringe already affected by man-made influences would not undermine the ecological integrity of the overall PSW/Significant Woodland complex. Accordingly, there are no compelling environmental reasons why trees and other vegetation cannot be removed from the development site. With implementation of the recommendations set out herein, there will be no negative impacts on Significant Woodlands. A key recommendation that will also contribute to protecting the Environmental Protection Area is the preparation of a “Stewardship/Homeowners Manual” and provision of same to potential purchasers and homeowners.

Significant Wildlife Habitat was confirmed for deer (i.e., winter congregation areas and movement corridors), bat maternity colonies, and woodland amphibian breeding habitat (i.e., Wetland 13). These will be protected by:

- focusing development activities to the northern portion of the subject lands;

-
- protecting all wetland units including Wetland 13 within the Lovers Creek Swamp PSW;
 - protecting broad areas of woodland which surround these wetlands and which connect to Lovers Creek and its tributary; and
 - by virtue of the Environment Protection Area designation provided in the **City of Barrie Official Plan**.

A stormwater treatment system has been designed to balance pre- and post-development flows. All discharges will be directed via a level spreader to Wetland 13 or as uncontrolled sheet flow to Wetlands 1, 2, 3 and 5. Quality control will be achieved for suspended solids and phosphorus by means of a stormfilter unit. Any impacts on the downgradient wetlands will be negligible to non-detectable, with no reduction in features or functions.

6.3 Endangered Species Act

A detailed review of SAR was carried out. Four Butternut (i.e., Endangered) were identified, three in the central part of the subject lands and one on the property to the east. All trees are either dead or severely impacted by Butternut Canker, resulting in a non-retainable status. As well, all are well removed (i.e., >50 m) from the development site. With respect to Endangered species of bats, the vegetation communities in the northern part of the property are dominated by conifer species, primarily Eastern White Cedar, which does not provide habitat for bat roosting; accordingly, no negative impacts are anticipated on Endangered species of bats. Higher quality roosting and maternity habitat is associated with the mixed deciduous/coniferous forested lands southwards and well-removed from the development site, providing potential habitat during the active season.

6.4 City of Barrie Official Plan

No part of the proposed residential development is within the Lovers Creek Swamp PSW; the entire development is on adjacent lands, with individual wetland units protected by upland buffers that are 5.0 m in width. A number of mitigation measures to offset potential impacts are recommended to ensure the long-term integrity of the PSW and its related Significant Woodland. In this regard, policies that are relevant to the development proposal are set out in **Table 4**, together with our responding comments. It is our opinion that the contemplated residential development that is shown in **Appendix G** conforms to relevant environmental policies of the **City of Barrie Official Plan**.

Table 4. City of Barrie Official Plan policies relevant to the proposed development, and related responses.

Policy	Commentary
3.5.2.4 Natural Heritage Resources	(a) The Natural Heritage resources in the City of Barrie are depicted on Schedule H. Schedule H is intended to be used as an overlay to Schedule A: Land Use. Through the implementation of the following policies, schedule H can be used as a guide to promote the protection, enhancement, and restoration of the city's natural heritage features and functions. (i) Level 1 resources represent critical components of the Natural Heritage Resource network. No development shall be permitted within these areas. • Environmental Protection Area policy 4.7.2.2 would apply to all properties identified as Level 1. • The City will strive to designate all properties identified as having a Level 1 Natural Heritage Resource as Environmental Protection. • An Environmental Impact Study (EIS) will be required for any development or site alteration within 120 metres of an area identified as Level 1 on Schedule H. <i>Comment: As indicated in Schedule H, the principle of development (i.e., General Industrial) has been established on the upland woodland part of the subject lands. The balance is designated Environmental Protection Area. Schedule H which is an overlay to Schedule A confirms the General Industrial designation subject to 3.4.2.4 (d). This EIS recognizes the presence of a PSW, Significant Woodlands, and the existing Environmental Protection Area designation on the subject lands.</i> ii. Level 2 resources represent significant components of the Natural Heritage Resource network. The features and function of these areas should be retained, however, there is potential for development if no negative impact can be demonstrated or mitigated. • An EIS will be required to be completed for any development or site alteration in or within 120 metres of an area identified as Level 2 on Schedule H. <i>Comment: This EIS acknowledges and protects the presence of Level 2 resources including SWH (i.e., deer wintering and movement corridors, bat maternity colonies in the central and southern parts of the subject lands and woodland amphibian breeding habitat [i.e., Wetland 13]), and woodlands greater than 4.0 ha..</i> (b) A standard Terms of Reference for an EIS will be established by the City in consultation with the appropriate conservation authority, and may be scoped through the development process to reflect a specific feature or function at the discretion of the City in consultation with the applicable Conservation Authority. Additional Natural Heritage resources identified through a site specific EIS will be categorized by level and will be subject to the policies of this section. An amendment to the Official Plan is not required for minor amendments to Schedule H. <i>Comment: A Terms of Reference has been prepared for the proposed development; it is included in Appendix B. No additional Natural Heritage Resources were identified through field investigations. However, wetland boundaries were refined and incorporated into the Concept Site Plan (Appendix G).</i>

Table 4 (Cont'd.)

Policy	Commentary
	(c) To ensure the effective management and retention of the features and functions identified on Schedule H, a Natural Heritage resource will not be reclassified to a lesser level of protection if the feature is intentionally damaged or destroyed. The restoration and rehabilitation of the Natural Heritage resource to the satisfaction of the City and applicable conservation authority may be required. <i>Comment: A narrow fringe of forest (i.e., 2.56 ha) on the northern edge of the development site will need to be removed to enable the proposed Concept Site Plan (Appendix G). As well, Wetlands 4 and 10 will need to be removed; both are small, one being 0.008 ha and the other 0.024 ha. The latter has been modified by residential development to the north; neither provide valuable ecosystem functions. Removal of these features will not undermine the ecological integrity of the overall PSW/Significant Woodland complex. The applicant will need to satisfy the LSRCAs Ecological Offsetting Policy to compensate for the removal of these features.</i> (d) Notwithstanding the land use limitations applicable to properties identified as Level 1 in Section 3.5.2.4 (a) i), where an existing designation permits other forms of development, such development may proceed subject to the policies of Level 2 in Section 3.5.2.4 (a) ii) and the appropriate planning application processes. <i>Comment: Residential rather than General Industrial development is proposed, subject to the policies of Level 2 in Section 3.5.2.4 (a) ii). Refer to Level 2 above.</i> (e) Where practical, the City will work with adjoining jurisdictions to provide connectivity and protection for the Natural Heritage Resources identified on Schedule H. <i>Comment: To be determined by City of Barrie.</i>
3.9.4 Development and Site Alteration 3.9.4.1	Where, in accordance with the policies of LSPP, development and site alteration is permitted within 120 metres of the Lake Simcoe shoreline, other lakes in the Lake Simcoe watershed, or any permanent or intermittent stream or a wetland, the development or site alteration should be integrated with and should not constrain ongoing or planned stewardship and remediation efforts. <i>Comment: At present, there are no known stewardship or remediation efforts being contemplated or undertaken in the context of the Lovers Creek Swamp PSW/Significant Woodland Complex. This EIS recommends a suite of mitigation/stewardship</i>

Table 4 (Cont'd.)

Policy	Commentary
	<i>actions that will contribute to avoiding any negative impacts, inclusive of locating the development site away from significant features and their functions.</i>
3.9.4.2	An application for development or site alteration shall, where applicable: (a) increase or improve fish habitat in streams, lakes and wetlands, and any adjacent riparian areas. <i>Comment: The individual wetland units in the northern part of the subject lands do not constitute fish habitat as they are ephemeral.</i> (b) include landscaping and habitat restoration that increase the ability of native plants and animals to use valley lands or riparian areas as wildlife habitat and movement corridors; <i>Comment: An Edge Management Plan has been prepared for the 5.0 m wetland buffer to ensure its ecological values and protective functions. As described herein, 2.56 ha of forested land and two small wetlands will be removed to enable development of the Concept Site Plan shown in Appendix G. Woodland/wetland replacement and/or cash-in-lieu will be undertaken in keeping with LSRCA's Ecological Offsetting Policy. Also, a restoration/landscape/planting plan will be prepared by a landscape architect for areas temporarily disturbed during construction.</i> (c) seek to avoid, minimize and/or mitigate impacts associated with the quality and quantity of urban run-off into receiving streams, lakes and wetlands; and <i>Comment: A stormwater treatment system has been designed to balance pre- and post-development overland flows. All discharges will be directed via a level spreader to Wetland 13, or as uncontrolled sheet flow to Wetlands 1, 2, 3 and 5. Quality control will be achieved for suspended solids and phosphorus by means of a stormfilter unit acceptable to the City of Barrie and the LSRCA. Any impacts on the downgradient wetlands will be negligible to non-detectable, with no reduction in features or functions.</i> (d) establish or increase the extent and width of a vegetation protection zone adjacent to Lake Simcoe to a minimum of 30 metres where feasible. <i>Comment: Policy not applicable.</i>

Table 4 (Cont'd.)

Policy	Commentary
3.9.4.3	Where, through an application for development or site alteration, a buffer is required to be established by the implementation of an environmental impact study or natural heritage evaluation, the buffer shall be composed of and maintained as natural self-sustaining vegetation. <i>Comment: Determination and justification of a 5.0 m buffer for wetlands 1, 2, 3, 5, 6, 9 and 13 is discussed in Section 5.2 of this EIS. As well, an Edge Management Plan is recommended for the 5.0 m buffers to ensure that their ecological values and protective functions will be sustained in the long term.</i>
4.7 Environmental Protection Areas 4.7.1 Goals	(a) To protect, conserve and manage the Environmental Protection Area lands as a permanent and long term public resource. <i>Comment: The principle of development (i.e., General Industrial) has already been established for the upland woodland part of the property (Schedules A and H of the City OP). The PSW and Significant Woodland are critical components of the Environmental Protection Area designation. No part of the proposed development will encroach or be located in the downgradient PSW. Removal of an already altered fringe of the Significant Woodland (i.e., 2.56 ha in area) will not undermine the ecological integrity and functions of the Lovers Creek Swamp PSW/Significant Woodland complex.</i> (c) To protect, preserve and enhance land with environmentally significant natural features and ecological functions and to maintain and improve where possible, the diversity of natural features or ecological functions for which an area is identified. <i>Comment: No part of the proposed development will encroach or be located in the downgradient PSW. Removal of an already altered fringe of the Significant Woodland will not undermine the ecological integrity and functions of the feature as a whole.</i> (d) To maintain Environmental Protection Areas as viable and natural ecosystems through the protection of the wildlife and aquatic habitats, the maintenance of the flood control and storage capacities of the flood plain, and the enhancement of the water quality and the natural water filtration capability of the system. <i>Comment: No development or site alteration is proposed within the flood plain limit.</i> (e) To identify significant natural features and their associated ecological functions in the City as part of an overall Natural Heritage Strategy and identify natural connections between the features which shall be maintained and improved as environmental corridors and ecological linkages where possible. <i>Comment: The PSW/Significant Woodland complex and associated wildlife species within the subject lands were identified, inventoried and evaluated, with corridors maintained both north and southwards, all within an Environmental Protection Area designation.</i>

Table 4 (Cont'd.)

Policy	Commentary
4.7.2 Policies 4.7.2.1 Definition	Lands designated as Environmental Protection Areas on Schedule A include, but are not limited to: (a) Provincially or locally significant features or functions such as those areas containing the following: i) aquifer recharges, headwaters; ii) wetlands; iii) rare species including unique plants; iv) important ecological functions; v) significant habitat of threatened and endangered species; vi) <i>areas of natural and scientific interest life science and earth science</i>; (Mod E (ggg)(i)) vii) significant woodlands; viii) <i>significant valleylands</i>; ix) <i>significant wildlife habitat</i>; x) surface water features, valley and stream corridors; and xi) fish habitats. <i>Comment: The property is characterized as having a PSW/Significant Woodland complex, fish habitat (i.e., tributary to Lovers Creek), and confirmed SWH (i.e., deer wintering and movement corridors, bat maternity colonies in the central and southern parts of the subject land and woodland amphibian breeding habitat (Wetland 13). No Endangered or Threatened species under the 2007 EIS were identified, except for Butternut. Three Butternut were observed well-removed from the development site; all were dead or severely impacted by Butternut Canker. No negative impacts are anticipated on potential Endangered bat maternity/roosting habitat, which is located in the south/central part of the subject lands, well-removed from the development site.</i> (b) The City currently contains within its boundaries portions of three Provincially Significant Wetlands. These are the <i>Willow Creek/Little Lake Wetland</i>, the <i>Lovers Creek Wetland</i> and the <i>Bear Creek Wetland identified on Schedule H</i>. The area known as the <i>Allandale Lake Algonquin Bluffs Area of Natural and Scientific Interest</i> located in the southern portion of the

Table 4 (Cont'd.)

Policy	Commentary
	Ardagh Planning Area is of Provincial significance and is also to be protected from uses that would detract from its environmental value. <i>Comment: The Lovers Creek Swamp PSW is present on the subject lands.</i> (c) Natural hazard lands and sites including areas of flood plain, erosion, steep slopes and unstable soils. <i>Comment: Floodplain mapping has been prepared for the subject lands. A small encroachment of the 15 m floodplain offset is evident in the northeastern corner of the subject lands, which is mitigable.</i>
4.7.2.2 Permitted Uses	(a) Environmental Protection Areas are intended primarily for preservation and conservation in their natural state. Such uses as passive outdoor recreation, forestry, and wildlife management may be permitted where appropriate. <i>Comment: Outside of the proposed development footprint, the natural features inclusive of the PSW/Significant Woodland complex which is designated as Environmental Protection Area in the City OP will be dedicated to the City of Barrie. This approximates 9.0 ha. Recommended herein is a low- impact footpath/walkway originating from the proposed amenity area, and having the potential to be linked into the City's outdoor recreation program. Its purpose is to limit physical encroachment by new homeowners and household pets while at the same time providing opportunities for social and educational benefits such as nature appreciation, bird watching, wildlife photography.</i> (b) No buildings or structures shall be permitted in Environmental Protection Areas other than those necessary for flood or erosion control or for conservation purposes as approved by the City in consultation with the applicable <i>agencies</i>. Ancillary or accessory uses to permitted uses shall be located on adjacent lands outside of Environmental Protection Areas, unless their location within the Environmental Protection designation is efficient, cost effective and in the public interest, and consistent with protection of the environment; in all cases ancillary and accessory uses shall be developed in accordance with Provincial Policy. <i>Comment: There is no development or site alteration within the boundary of the Environmental Protection Area.</i>
4.7.2.3 General Policies	(a) Development and site alteration in Provincially Significant Wetlands and <i>the significant</i> habitat of threatened and endangered species is contrary to the Provincial Policy Statement and will not be considered <i>with the exception of public works/utilities subject to Section 5.1.2.1 of this Plan.</i>

Table 4 (Cont'd.)

Policy	Commentary
	<i>Comment: There will be no development or site alteration in individual wetland units of the Lovers Creek Swamp PSW. No Endangered or Threatened species were identified during field investigations and from a review of background file information. Endangered species of bats and their related habitats potentially occur in the south/central part of the subject lands, well-removed from the development site; no negative impacts are anticipated. Three Butternut are also well-removed from the development site are dead or of poor health owing to Butternut Canker.</i> (b) The re-designation of Environmental Protection Areas to a designation that permits development and site alteration shall be discouraged. <i>Comment: The proposed residential development will require a refinement to the boundary of Environmental Protection Area, resulting in a larger Environmental Protection Area designation post-development (i.e., 9.0 ha proposed in contrast to 5.53 ha at present.</i> (c) Where an application is made to re-designate Environmental Protection lands other than Provincially Significant Wetlands and the habitat of threatened and endangered species, the City shall require the completion of an Environmental Impact Study to the satisfaction of the City in consultation with the Ministry of Environment, the applicable Conservation Authority and any other relevant agency. <i>Comment: The proposed application for residential development will require a refinement of the Environmental Protection lands, with the result that its area will be increased from 5.53 ha to 9.0 ha, which amounts to a 38% increase.</i> (d) An amendment to the Environmental Protection Area designation shall only be considered where the results of an environmental study clearly demonstrate that there will be no negative impacts on the natural features or ecological functions for which the Environmental Protection Area has been identified with the exception of provincially significant wetlands and habitat of threatened and endangered species. <i>Comment: as a result of detailed field investigations, the Environmental Protection Area will be increased in future, that is from 5.53 ha to 9.0 ha.</i> (e) Development and site alteration shall not be permitted in fish habitat areas except in accordance with Provincial and Federal requirements. <i>Comment: Not relevant as there is no fish habitat on that part of the subject lands to be developed.</i>

Table 4 (Cont'd.)

Policy	Commentary
	(f) Environmental Protection Areas shall not be acceptable as part of the dedication for parkland as required under the <i>Planning Act</i>. The City shall seek to acquire such lands by dedication from land owners. <i>Comment: The intent of Loon Avenue Lands OP Inc. is to dedicate/convey the Environmental Protection Area within the subject lands to the City of Barrie, except for the 5.0 m buffer which will be in the ownership of the condominium corporation.</i> (g) All lands dedicated to the City shall be conveyed in a physical condition satisfactory to the City. Where a valley or stream corridor area is to be dedicated, it shall include the watercourse and associated riparian vegetation, floodplain or erosion hazard lands, top of bank and any additional lands deemed necessary to protect ecological functions, or for pedestrian corridors, wildlife habitat, natural area viewing, and maintenance operations. <i>Comment: The intent of Loon Avenue Lands OP Inc. is to convey/dedicate the Environmental Protection Area within the subject lands in its existing condition.</i>
4.7.2.4 Adjacent Lands	(a) Development and/or site alteration may be permitted on lands adjacent to Environmental Protection Areas if it has been demonstrated through an Environmental Impact Study (EIS) that it will not negatively impact the natural features or ecological functions for which the area is identified. The diversity of natural features in the area and the natural connections between them should be maintained and improved where possible. <i>Comment: The development proposal is on adjacent lands to the Environmental Protection Area; this EIS has demonstrated that there will be no negative impacts on the natural heritage features or their ecological functions inclusive of the Lovers Creek Swamp PSW, and its Significant Woodland, confirmed SWH (i.e., deer wintering and movement corridors, bat maternity colonies in the central and southern parts of the subject lands and woodland amphibian breeding habitat associated with Wetland 13), and potential maternity and roosting habitat for Endangered species of bats located in the central and southern parts of the subject lands which are well-removed from the development site.</i> (b) <i>Adjacent lands are defined by the MNR Natural Heritage Reference Manual as being located 120 metres from a provincially significant wetland and endangered and threatened species habitat, 50 metres from significant woodlands, significant valleylands, significant wildlife habitat, and areas of natural and scientific interest and 30 metres from fish habitat.</i> <i>Comment: No comments needed.</i>

Table 4 (Cont'd.)

Policy	Commentary
	(c) Where the Conservation Authorities have undertaken <i>mapping and regulations</i> are in place, approval for any development must be obtained from the relevant Authority. <i>Comment: The subject lands is within 120 m of the Lovers Creek Swamp PSW, which is regulated by the LSRCA (i.e., Regulation 179/06). Accordingly, a permit will be required prior to any site alteration or development; a recommendation has been made in this regard.</i> (d) The City may consider the reduction or re-allocation of development densities in order to preserve existing woodlots, mature trees and other natural areas and features which are not identified within the Environmental Protection Area designation. <i>Comment: Policy not applicable to proposed residential plan, as shown on Concept Site Plan in Appendix G.</i> (e) Where additional buffer areas or connecting links required to maintain ecological function outside of lands designated Environmental Protection are recommended to protect the natural features and functions within lands designated Environmental Protection, these lands shall be designated and zoned Environmental Protection. <i>Comment: Policy not required.</i>
4.7.2.5 Surface Water Features, Watercourses and Valleylands	(a) Development and site alteration shall be restricted in or near sensitive surface water features and their related hydrological functions will be protected, improved, or restored. <i>Comment: Proposed residential development will respect and protect adjacent surface water features and related hydrological functions through implementation of a array of mitigation measures (refer to Section 6.8 herein).</i> (b) Mitigating measures and/or site alternative development approaches may be required in order to protect, improve, or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions. <i>Comment: A number of practical mitigation measures are recommended for implementation in Section 6.8 herein. All are intended to protect existing on-site and downgradient terrestrial and aquatic features.</i> (c) Valley and stream corridors shall be protected from development and integrated as part of the natural heritage system network accommodating wildlife and pedestrian movement and passive areas. <i>Comment: There are no valley or stream corridors associated with the proposed development site. The downgradient tributary to Lovers Creek and its riparian areas are well-removed southwards from the proposed area of development.</i>

Table 4 (Cont'd.)

Policy	Commentary
	(d) In reviewing any development proposal adjacent to a valley and stream corridor, the City will require the protection and/or enhancement of the feature and its functions to facilitate a natural, open space corridor. The feasibility of rehabilitating watercourses to a natural state will be considered at the time of such review. <i>Comment: Policy not relevant to the proposed development, as the tributary to Lovers Creek is well-removed southwards. There are no valleys or valley corridors on the subject lands.</i> (e) Development limits shall be established by the limit of the valley or stream corridor which shall include the watercourse, and associated riparian vegetation, floodplain or erosion hazard lands, top of bank and any additional lands, such as buffers deemed necessary to protect ecological functions. All lands associated with the valley and stream corridor shall be zoned Environmental Protection and shall not form part of the development. <i>Comment: Valley or stream corridor is not relevant to the proposed development, as the tributary to Lovers Creek is well-removed southwards. Floodplain mapping has been prepared for the subject lands. There is a small encroachment of the 15 m floodplain offset in the northeastern corner of the subject lands, which is mitigable.</i> (f) Where a watercourse supports warm or coldwater fish habitat, an appropriate riparian vegetation zone shall be required. Land uses within the vegetation zone shall be restricted to those which maintain or enhance the natural features and ecological functions of the area. <i>Comment: Policy not relevant to the proposed development, as the tributary to Lovers Creek is well-removed southwards.</i> (g) Emphasis shall be placed on the potential development of Lover's, Bear, Hewitt's, Sophia, Kidd's, Bunker's, Dymen's, Hotchkiss and Whiskey Creeks, as linear open space corridors. As part of the municipal approvals process, the City shall seek to acquire these areas. <i>Comment: The intent of Loon Avenue Lands OP Inc. is to dedicate/convey the Environmental Protection Area within the subject lands to the City of Barrie, inclusive of lands adjacent to the tributary of Lovers Creek, as per Policy 4.7.2.3 (f) of the City of Barrie Official Plan.</i> (h) Development and site alteration shall not be permitted in significant valleylands unless it has been demonstrated by the proponent, to the satisfaction of the City, that there will be no negative impacts on their natural features and ecological functions

Table 4 (Cont'd.)

Policy	Commentary
	<i>Comment: Policy not relevant to the proposed residential development as there are no significant valleylands on the developable part of the property, or on adjacent lands.</i>
4.7.2.6 Woodlands and Hedgerows	(a) Development and site alteration shall not be permitted in significant woodlands unless it has been demonstrated that there will be no negative impacts on the natural features and ecological functions. <i>Comment: Significant Woodlands make up a substantial part of the fabric of the adjacent PSW/Significant Woodland complex. The development proposal calls for the removal of 2.56 ha of an already altered fringe of the Significant Woodland. The impact will not undermine the integrity of the feature, and is acceptable, as demonstrated in this EIS.</i> (b) Woodlands shall generally be defined as a contiguous wooded area, of no less than 0.2 ha, irrespective of ownership, maturity, composition, and density in accordance with the City's Tree Preservation By-law. <i>Comment: Woodlands on the subject lands are considered to be Significant Woodlands.</i> (c) Where an Environmental Protection Area consists of a woodland, the City will control development adjacent to this area to prevent destruction of trees. <i>Comment: This EIS includes a number of recommendations that will prevent indiscriminate destruction of trees (Section 6.8).</i>
4.7.2.7 Wildlife Habitat	(a) Development and site alteration shall not be permitted in significant wildlife habitat unless it has been demonstrated by the proponent, to the satisfaction of the City, that there will be no negative impacts on their natural features and ecological functions. <i>Comment: Confirmed SWH (i.e., deer wintering and movement corridors, bat maternity colonies in the central and southern parts of the subject lands and woodland amphibian breeding habitat [Wetland 13]) will be protected first, by focusing residential development to the northern part of the development site; second, by protecting and not encroaching into any wetland units of the Lovers Creek PSW; third, by protecting broad areas of woodland which surround these units and which connect them to Lovers Creek and/or its tributary; and fourth, by ensuring that tree removal within the development site occurs outside of periods when those trees may be used for bird nesting or as bat roosting and maternity habitat (i.e., October 31 to April 15).</i>

6.5 Ontario Regulation 179/06

The requirements of Ontario Regulation 179/06 can be fully met with the selected development site, and implementation of the recommendations set out herein. These include but are not limited to: floodplain constraints; water balance; phosphorus loadings from urban runoff; impacts on significant natural features; ecological offsetting; etc. It is acknowledged that a permit will be required from the LSRCA before undertaking any site alteration or development.

6.6 Lake Simcoe Protection Plan

As indicated in Section 3.6, the subject lands are located within a Settlement Area under the **Lake Simcoe Protection Plan**, with many of its natural heritage policies specifically not applicable to Settlement Areas. For example, policies 6.20 through 6.29, relating to Key Natural Heritage and Key Hydrological Features and their buffers are not applicable. There are two relevant policies under Section 6, Shorelines and Natural Heritage that relate specifically to Settlement Areas:

- 6.33-DP b Include landscaping and habitat restoration that increase the ability of native plants and animals to use valleylands or riparian areas as wildlife habitat and movement corridors.

Response: The owner will provide a landscape concept plan, reflecting requirements of Section 4.1.6 of the City of Barrie's Site Plan Application Manual. As well, an Edge Management Plan has been prepared for the 5.0 m buffer to ensure its ecological values and functions over the long term. As described herein, 2.56 ha of forested land and two small wetlands will be removed to enable development of the Concept Site Plan. Woodland/wetland replacement and/or cash in lieu is recommended in keeping with LSRCA's Ecological Offsetting Policy.

- c. seek to avoid, minimize and/or mitigate impacts associated with the quality and quantity of urban run-off into receiving streams, lakes and wetlands.

Response: A stormwater treatment system has been designed to balance pre-and post-development overland flows. All discharges will be directed via a level spreader to Wetland 13, or as uncontrolled sheet flow to Wetlands 1, 2, 3 and 5. Quality control will be achieved for suspended solids and phosphorus by means of a stormfilter unit acceptable to the City of Barrie and the LSRCA. Any impacts on the downgradient wetlands will be negligible to non-detectable, with no reduction in features or functions.

- 6.34-DP Where, through an application for development or site alteration, a buffer is required to be established as a result of the application of the **PPS**, the buffer shall be composed of and maintained as natural self-sustaining vegetation.

Response: Determination and justification of a 5.0 m buffer for Wetlands 1, 2, 3, 5, 6, 9 and 13 is discussed in Section 5.2 herein. As well, an Edge Management Plan has been prepared for the 5.0 m buffers to ensure that their ecological values and protective function will be sustained in the long term. The buffer will be owned and maintained by the condominium corporation.

6.7 Ontario Growth Plan for the Greater Golden Horseshoe

In connection with the **Growth Plan**, a natural heritage system has been prepared, “. . . by the Province to support a comprehensive, integrated, and long-term approach to planning for the protection of the region’s natural heritage and biodiversity.” Section 4.2.2 clearly excludes lands within settlement area boundaries that were approved and in effect as of July 1, 2017. The **City of Barrie Official Plan** was approved in 2010, confirming that **Growth Plan** policies relating to natural heritage features do not apply to the proposed development.

6.8 Concluding Remarks and Recommendations

1. In early 2021, Michalski Nielsen Associates Limited was retained to determine the feasibility of developing a portion of the subject lands for residential development, and subsequently to prepare an **EIS**. This required an assessment of those lands that are appropriate for development, and those requiring protection, and how the impacts of any such development on adjacent natural heritage features are best mitigated.
2. The subject lands border Maplevue Drive East on the south and the rear lot line of homes on Loon Avenue to the north.
3. The current land use designation in Schedule A – Land Use in the **City of Barrie Official Plan** are General Industrial and Environmental Protection Area. The former applies to the northern portion of the subject lands, extending a considerable distance south in two areas; this designation also applies to lands fronting Maplevue Drive East. Schedule H constitutes a Natural Heritage Resource overlay to Schedule A. Those part of the subject lands which are designated as Environmental Protection Area are mapped as Level 1 resources, whereas those within the General Industrial designation are primarily mapped as “Level 1 with existing development designation subject to 3.5.2.4 d). From a policy perspective, the natural features that have been identified for the subject lands include: the Lovers Creek Swamp PSW; significant habitat of Endangered and Threatened species; Significant Woodlands, SWH, and the floodplain of Lovers Creek and a tributary to it.

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4. The boundaries of the individual wetland units of the Lovers Creek Swamp PSW were confirmed, staked and surveyed through field investigations. This resulted in an developable area (i.e., 2.56 ha) at the northern limit of the subject lands adjacent to the back lot lines of residences on Loon Avenue.
 5. The subject lands are presently forested. However, historic aerial photography indicates that the northern part (i.e., roughly approximating the area to be developed) was previously open pastureland, connecting to a large area of agricultural lands to the north (i.e., which is now a residential subdivision), and to agricultural lands on portions of 340 Mapleview Drive East property eastwards. The southerly portion of the subject lands has been forested since well before 1954, the earliest period for which there are aerial photographs available. A tributary of Lovers Creek traverses the central portion of the subject lands, well-removed from the proposed development area and well-buffered by a mosaic of terrestrial and wetland features.
 6. Extensive field inventories and evaluations of natural features were conducted during the spring and summer seasons of 2021, with the following results.
 - (a) Nineteen ELC vegetation communities were identified within and adjacent to the subject lands, twelve associated with the Lovers Creek Swamp PSW. Individually, none of the communities are rare or otherwise significant on either a national or provincial level.
 - (b) A total of 87 species of vascular plants were observed during field investigations. For those plants identified to species, the floral records resulted in 56 species (64%) as native, and 19 species as non-native to Ontario. There are no plant species on the subject lands considered regionally rare in Ecoregion 5E, or locally rare in Ecoregion 5E-8. Most of the native species have S-Ranks of S5 or S4, indicating they are either common and secure, or apparently secure in the Province. Black Ash (i.e., an S3 species) was identified in Wetlands 15 and 22, well-removed from the development site. S3 species are vulnerable in Ontario due to a restricted range, or relatively few populations (i.e., often 80 or fewer), or undergoing recent and widespread declines, or other factors making them vulnerable to extirpation. Also, a review of the **State of the Lake Simcoe Watershed** (2003) indicated that Meadow Horsetail, Rough Aven and Butternut are rare. Of these, only Meadow Horsetail was identified in Wetland 10 which will be removed to accommodate the Concept Site Plan. However, this is not considered a negative impact, as the species is widely represented within the remaining on-site wetland units. Comments on Butternut are provided in 6 (e).
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- (c) Four species of amphibians were recorded during field surveys: Spring Peeper; Wood Frog; Northern Leopard Frog; and Gray Treefrog. Wetlands 2, 3, 13 and 15 provide suitable conditions for early to mid-season breeding activities; there were no calls recorded in any of the wetlands during the June 16, 2021 survey. Wetland 4 did provide limited early season habitat, a consequence of rear yard drainage from adjacent residential development; however, the artificial drainage is insufficient to maintain any breeding activity beyond the very early spring, and it is very unlikely that the breeding activity observed would have resulted in any successful recruitment.
- (d) A total of 28 bird species were identified on or adjacent to the subject lands, roughly half forest-dependent, and half disturbance tolerant. The area with the most diverse bird community, the most forest birds including seven forest area-sensitive species was the mixed forest and swamp in the central and southern parts of the subject lands. Almost all of the forest across the northern part of the subject property had low avian numbers and diversity, primarily because of the dominance of Eastern White Cedar or plantation trees together with the absence of understorey vegetation. The small wetlands in the northern part of the subject lands contained virtually no breeding birds – one Common Yellow Throat. This is not surprising because each habitat patch is small and generally not large enough to contain even one individual wetland bird territory.
- (e) No Endangered or Threatened SAR were observed, except for Butternut, as follows.
- Three Butternut (Endangered) were identified within the central part of the subject lands. All were either dead or severely impacted by Butternut Canker, thus resulting in a non-retainable status. Regardless, all three trees are well-removed and south of the development site.
 - No Endangered species of bats were observed. The forest community in the northern part of the subject lands (i.e., where development is proposed) is largely comprised of Eastern White Cedar, which typically does not provide opportunities for bat roosting. In contrast, the mixed and deciduous forested lands in the central and southern parts of the subject lands provide potential habitat for maternity and roosting activities. Regardless, any tree removal in the area to be developed must occur outside of the active season for bats which in this part of Ontario extends from April 15 to October 31. Accordingly, no negative impacts on Endangered species of bats are anticipated.

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- The presence of the Eastern Wood-Pewee (i.e., a Special Concern species that has no protection under the 2007 ESA) was noted in the forest south of Wetland 13. This area will not be disturbed. The species is common and widespread in deciduous and mixed forests, both large and small, in southern Ontario.

(f) Screening of SWH was undertaken for the subject lands, with the following habitats confirmed.

- Bat Maternity Colonies (in the central and southern parts of the subject lands)
- Deer Winter Congregation Areas
- Amphibian Breeding Habitat Woodland (i.e., Wetland 13)
- Deer Movement Corridors.

Any impacts on SWH need to be evaluated in a landscape context. Yes, trees will need to be removed to accommodate the proposed development, and yes, minor impacts from contractors during the period of build out and on-going residential user activities may occur. However, when considered not only within the context of the subject lands, the majority of which will remain in their natural state, negative impacts on confirmed SWH are certain to be negligible. Of importance is that related species and their habitats will continue to frequent the landholding in the long term.

7. A 5.0 m buffer is recommended on the northern boundaries of Wetlands 1, 2, 3, 6, 9 and 13 based on field investigations and subsequent data analyses; such buffers are not needed around the balance of the perimeters of these wetlands by virtue of their being within an Environmental Protection Area designation. A 5.0 m buffer will be required around the entire circumference of Wetland 5.
8. In justifying the 5.0 m buffer width it is noted that all wetlands have limited natural functions. While Wetlands 2, 3 and 13 have some amphibian breeding use (i.e., only over the early spring and mid-season breeding periods), this function will continue with a buffer width of 5.0 m. Also, the wetlands have a very limited function in supporting bird habitat, as demonstrated through the breeding bird surveys, and have no other ecological functions that will be negatively impacted on as a consequence of having a 5.0 m buffer. In other words, a 10 m or 15 m buffer is not going to guarantee any more protective functions than would a 5.0 m buffer.

9. The proposed development includes 105 townhouse units and related infrastructure (i.e., roads and parking, potable water and sewage distribution systems, and a stormwater treatment system). Of importance is that there will be no negative impacts on the Lovers Creek Swamp PSW or the City of Barrie's designated Environmental Protection Area; all of the ecological functions associated with these features will be protected post-development. In fact, the proposed Official Plan Amendment will show an increase in Environmental Protection Area post-development, that is from 5.53 ha to 9.00 ha; this will decrease the developable area footprint 6.03 ha to 2.56 ha. The environmental implications of the proposed development are as follows.

- Reduction of ELC units FOC2-2 and FOM6-1.
- Encroachment into a small fringe of the Significant Woodland.
- Short term displacement of local wildlife species, and diminishment of concomitant wildlife habitat due to reduction of the above ELC units.
- Short term minor construction impacts (i.e., noise and dust) on wildlife species, composition and habitats.
- Potential uncontrolled encroachment of humans and pets into the Lovers Creek Swamp PSW/Significant Woodland Complex.
- Potential impacts of treated stormwater (i.e., quantity and quality) on the downgradient Lovers Creek Swamp PSW.

10. All of these impacts are thoroughly addressed in Sections 4 and 5 of this EIS. A suite of measures to mitigate potential negative impacts are recommended, with particular emphasis on protecting ecological functions of the Lovers Creek Swamp PSW/Significant Woodland Complex. These are as follows.

- **A 5.0 m natural buffer (i.e., also referred to as the Edge Management Zone) be implemented and enforced between the proposed development site and the northern boundaries of Wetlands 1, 2, 3 and 6 and the western boundary of Wetlands 9 and 13. The 5.0 m buffer will be required around the entire circumference of Wetland 5.**
- **The 5.0 m buffer should not be altered or disturbed and vegetation should not be cut or cleared except for safety (i.e., the removal of dead trees or trees of poor health), and for edge management purposes.**
- **Loon Avenue Lands OP Inc. obtain a tree removal permit from the City of Barrie to remove all trees within the development site shown in the Concept Site Plan in Appendix G.**
- **All tree cutting be undertaken between October 31 and April 15 to avoid impacts on breeding birds and any potential bat roosting/maternity activities.**

-
- **Loon Avenue Lands OP Inc. obtain a permit from the Lake Simcoe Region Conservation Authority prior to any site alteration or development as per Ontario Regulation 179/06: Lake Simcoe Region Conservation Authority Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.**
 - **At the outset of grubbing, and prior to any other earthworks, a temporary heavy-duty silt/sediment fence be installed along the outer edge of the 5.0 m buffer. The fence is to be trenched a minimum of 0.2 m.**
 - **Additional sediment and erosion control works 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 are to be remedied immediately.**
 - **Sediment and erosion controls are to be left in place, until such time as the lands which have been disturbed are certified as being stable by a qualified individual.**
 - **For long-term protection of the 5.0 m buffer and contiguous Lovers Creek Provincially Significant Wetland/Significant Woodland complex, the earlier mentioned temporary silt/sediment fence be replaced with a permanent fence not higher than 1.5 m to be located on property owned by the condominium corporation, in keeping with the style and type set out in Section 5.3.5.4 of Zoning Bylaw 53 (Office Consolidation, September 13, 2019).**
 - **All lands designated Environmental Protection Area outside the development footprint be dedicated to and owned by the City of Barrie, in keeping with Policy 4.7.2.3 (f) of the City of Barrie Official Plan, with the exception of the 5.0 m buffer that protects Wetlands 1, 2, 3, 5, 6, 9 and 13.**
 - **Ownership and management of 5.0 m buffer would be the responsibility of the condominium corporation.**
 - **An edge management plan be prepared and implemented for the exposed edge of the 5.0 m buffer.**
 - **Given that Lovers Creek Swamp Provincially Significant Wetland is of Provincial Interest and is within an Environmental Protection Area designation in the City of Barrie Official Plan, the applicant prepare a “Stewardship/Homeowners’ Manual” to be registered on title and distributed by the condominium corporation to participating homeowners. The document will provide educational material regarding the ecological significance of the resource features and their functions, as well as information on the conservation roles/actions that individual homeowners can take. Examples of inclusions are:**
 - **natural features associated with the Provincially Significant Wetland and Environmental Protection Area designations;**
 - **refuse/yard waste composting;**

-
- fertilizer and pesticide use (i.e., inclusive of herbicides and insecticides);
 - impacts of noise and lighting on wildlife populations;
 - benefits of stormwater treatment;
 - trail use;
 - domestic pet impacts and controls; and
 - control of invasive plants.
15. The City of Barrie in consultation with the Lake Simcoe Region Conservation Authority consider the design and implementation of a low-impact footpath/walkway originating from the proposed amenity area, and having the potential to be linked into the City's outdoor recreational program. Such a pathway would obviously contribute to educational and passive recreational opportunities, which are not otherwise available to the public at this location.
16. Loon Avenue Lands OP Inc. enter into discussions with the Lake Simcoe Region Conservation Authority to confirm an appropriate approach to feature removal and related compensation, as per its Ecological Offsetting Policy.
17. The passive amenity area have a site specific zoning (e.g., Open Space, with restrictions), which not only recognizes its use but its function as a connected landscape of woodlands and wetlands.

7 REFERENCES

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**APPENDIX A – 1978 AERIAL PHOTOGRAPHY
SHOWING SUBJECT LANDS**



**APPENDIX B – TERMS OF REFERENCE FOR
ENVIRONMENTAL IMPACT STUDY**



Michalski Nielsen

ASSOCIATES LIMITED

Memorandum

Date: January 6, 2022

From: Gord Nielsen

To: Liam Munnoch

Our File: 1021 **Re:** Terms of Reference for Environmental Impact Study, 338 Mapleview Drive East, Barrie, On., APID: 105026

Further to your Planning Act Application Pre-consultation checklist of November 5, 2021, Michalski Nielsen Associates Limited is working as the environmental consultant on this file on behalf of the applicant, Loon Avenue Lands OP Inc., to prepare the Environmental Impact Study and to work with the project team, City of Barrie and your office on the environmental approvals process for this infill development. I note that we have had a similar function on the adjoining development plans for 521 Huronia Road. The purpose of the present correspondence is to provide your office with the requested Terms of Reference for our Environmental Impact Study, which is provided as follows.

1. General Review of Existing Environmental Information

- This review includes existing information previously obtained for these and adjacent lands, including the extensive work completed in support of planning applications for development on the adjoining 521 Huronia Road.
- This review also includes topographic mapping, aerial photography, information from the Province's Natural Heritage Information Centre (NHIC) database and Land Information Ontario (LIO) data bank, and from other published information for this area.
- It additionally includes a review of relevant environmental policy and legislation documents, including the Provincial Policy Statement, *Endangered Species Act*, Ontario Regulation 179/06 and related policies of LSRCA, the City of Barrie Official Plan, Ontario's Growth Plan for the Greater Golden Horseshoe and the Lake Simcoe Protection Plan.

2. Field Investigations and Natural Environment Assessment (note: extensive field work was completed in 2021).

- Vegetation Communities Assessment (March 30, June 16/17/30 and July 22, 2021). Ecological communities were delineated and described in accordance with *Ecological Land Classification (ELC) for Southern Ontario* (Lee et al., 2008) and Ontario Wetland Evaluation System (MNR, 2014) protocols. A botanical inventory for the site was also compiled.
- Amphibian Breeding Surveys (3 evenings: April 14, May 20 and June 16, 2021). Breeding call surveys were conducted to confirm the presence/absence of breeding amphibians within on-site wetlands. These surveys were conducted in accordance with protocols within the *Marsh Monitoring Program Participant's Handbook for Surveying Amphibians* (Bird Studies Canada, Revised 2008).
- Breeding Bird Surveys (2 mornings: June 10 and 22, 2021). Two visits to the subject property were completed to characterize the existing avian population. The surveys were conducted in accordance with standard *Ontario Breeding Bird Atlas* (OBBA) protocols.
- Incidental Wildlife Observations (all visits). All incidental observations of wildlife were recorded during conducted field investigations. Screening for suitable SAR and SWH habitat was also conducted during all investigations to the subject property, including specific screening for Butternut (*Juglans cinerea*).
- Wetland Delineation and Assessment. All wetlands within the property were delineated by an OWES – certified wetland evaluator. Information on each wetland, including its size, vegetation conditions, hydrological attributes, amphibian breeding values, breeding bird activity, and other wildlife attributes, was collected. This information was provided to the MNR to allow it to update its mapping for wetlands within the Lovers Creek Swamp PSW complex, with the majority of the wetland units within the subject property being part of that complex.
- Aquatic Habitat Assessment. A tributary of Lovers Creek flows through the subject property. However, very early in the process of examining the development potential of these lands it was determined that development would be set back over 120 m from both that tributary and from Lovers Creek, located to the east of the property. Accordingly, there was no need to look at fish habitat or the environmental qualities of these watercourses.
- Species at Risk Assessment. A preliminary list of potential Species at Risk for this area was compiled from NHIC records, other published information and based on local knowledge of the area. During all field investigations, habitat opportunities for Species at Risk were then assessed by comparing habitat preferences of species deemed to have potential to occur against associated site conditions. Targeted surveys were also undertaken for Butternut.

- Significant Wildlife Habitat Screening. The Significant Wildlife Habitat Criteria for ecoregion 6E were compared with the habitat attributes of the property to determine the potential for candidate Significant Wildlife Habitat.

3. **Environmental Impact Study Report and Related Analyses**

A report is to be prepared which includes the following:

- mapping showing the limits of the subject property and its relationship to environmental features and designations, and introductory remarks on our approach to determining the feasibility of **limited** development on these lands, in concert with the need to protect important environmental features and attributes;
- an overview of site conditions;
- a detailed discussion of our methodologies, including those relating to our background review and field surveys, with time and weather conditions of each survey date included;
- a detailed discussion of the environmental policy context;
- a detailed description of site conditions, including:
 - mapping and descriptions of vegetation communities;
 - a discussion of flora;
 - a description of amphibian breeding activity, including a tabular survey of results by station location and date, and a tabular survey of results for each wetland unit;
 - breeding bird results, including a tabular summary, comments on any identified avifauna Species at Risk or area sensitive birds, and comments on the value of the various wetland units as bird habitat;
 - an assessment of Species at Risk, including a detailed tabular summary of the habitat requirements of each species included in the assessment, the potential of this property to support such habitat, and migration requirements where appropriate;
 - an assessment of Significant Wildlife Habitat, including a detailed tabular summary of each category of potential habitat, whether there is candidate habitat of that type on site, and mitigation requirements where appropriate; and
 - an assessment of the feasibility of the proposed development from the perspective of protecting significant woodlands.
- identification of wetland units and their boundaries which contribute to the Lovers Creek Swamp PSW, including mapping and a tabular description of each of these wetlands;

- on the basis of site constraints, in concert with Official Plan designations and other environmental policy considerations, a determination of whether any development is appropriate to this property and, if so, where such development should be located and how it should be configured;
- a detailed discussion of how wetlands are to be protected, which includes a literature review of buffer requirements to protect wetlands, a consideration of options to develop this property which afford differing wetland buffers, and our assessment and recommendations around the proposed development footprint, as it relates to wetland protection and buffering;
- comments on Stormwater Management, including both sedimentation and erosion controls during construction and long-term controls, from a natural environment perspective;
- comments on additional aspects of site servicing; and
- comments and recommendations on construction management.

* * * * *

It is noted that our report will form part of a package of information that will inform development plans, with that additional information including, but not limited to:

- planning justification;
- functional servicing;
- hydrogeology;
- floodplain analysis; and
- traffic.

In closing, I trust this comprehensive Terms of Reference meets your office's requirements, however please let me know if you have any questions or comments. We look forward to continuing the work with your office as this application progresses through the approvals process.

Regards,
Gord Nielsen
Ecologist

**APPENDIX C – LIST OF VASCULAR PLANTS
IDENTIFIED ON SITE**

Scientific Name	Common Name	Presence within Communities to be Impacted				COSEWIC Status	SAR Schedule 1 Status	SARO Status	S Rank	N Rank	Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	LSRCA (2003)
		FOC2	FOM6-1	Wetland 4	Wetland 10									
<i>Abies balsamea</i>	Balsam Fir		X						S5	N5	5	-3		
<i>Acer rubrum</i>	Red Maple								S5	N5	4	0		
<i>Acer saccharinum</i>	Silver Maple								S5	N5	5	-3		
<i>Acer saccharum</i>	Sugar Maple	X	X						S5	N5	4	3		
<i>Achillea millefolium</i>	Common Yarrow								SNA	NNR		3	-1	
<i>Actaea pachypoda</i>	White Baneberry								S5	N5	6	5		
<i>Anemone</i> sp.	Anemone Species													
<i>Betula alleghaniensis</i>	Yellow Birch								S5	N5	6	0		
<i>Betula papyrifera</i>	Paper Birch	X							S5	N5	2	3		
<i>Bromus inermis</i>	Smooth Brome								SNA	NNA		5	-3	
<i>Caltha palustris</i>	Yellow Marsh Marigold								S5	N5	5	-5		
<i>Carex alopecoidea</i>	Foxtail Sedge								S4	N4N5	6	-3		
<i>Carex comosa</i>	Bearded Sedge								S5	N5	5	-5		
<i>Carex gracillima</i>	Graceful Sedge								S5	N5	4	3		
<i>Carex intumescens</i>	Bladder Sedge			X	X				S5	N5	6	-3		
<i>Carex pensylvanica</i>	Pennsylvania Sedge	X							S5	N5	5	5		
<i>Carex</i> sp.	Sedge Species													
<i>Circaea alpina</i>	Small Enchanter's Nightshade								S5	N5	6	-3		
<i>Cornus racemosa</i>	Grey Dogwood			X	X				S5	N5	2	0		
<i>Dactylis glomerata</i>	Orchard Grass								SNA	NNA		3	-1	
<i>Dryopteris</i> sp.	Wood Fern Species	X												
<i>Echinocystis lobata</i>	Wild Cucumber								S5	N5	3	-3		
<i>Equisetum pratense</i>	Meadow Horsetail				X				S5	N5	8	-3		X
<i>Erigeron annuus</i>	Annual Fleabane								S5	N5	0	3		
<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed				X				S5	N5	3	-5		
<i>Fragaria vesca</i>	Woodland Strawberry								S5	N5	4	3		
<i>Fraxinus americana</i>	White Ash								S4	N5	4	3		
<i>Fraxinus nigra</i>	Black Ash					THR			S3	N5	7	-3		
<i>Fraxinus pennsylvanica</i>	Red Ash	X	X						S4	N5	3	-3		
<i>Galium mollugo</i>	Smooth Bedstraw				X				SNA	NNA		5	-2	
<i>Geum aleppicum</i>	Yellow Avens								S5	N5	2	0		
<i>Geum laciniatum</i>	Rough Avens								S4	N5	4	-3		X
<i>Geum</i> sp.	Avens Species													
<i>Glyceria</i> sp.	Manna Grass Species				X									
<i>Hypericum perforatum</i>	Common St. John's-wort								SNA	NNA		5	-3	
<i>Impatiens capensis</i>	Spotted Jewelweed				X				S5	N5	4	-3		
<i>Juglans cinerea</i>	Butternut	X				END	END	END	S2?	N2	6	3		x
<i>Juncus tenuis</i>	Path Rush								S5	N5	0	0		
<i>Leucanthemum vulgare</i>	Oxeye Daisy								SNA	NNA		5	-1	
<i>Lonicera</i> sp.	Honeysuckle Species													
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil								SNA	NNA		3	-2	
<i>Maianthemum racemosum</i>	Large False Solomon's Seal	X							S5	N5	4	3		
<i>Mentha arvensis</i>	field mint										3	-3		
<i>Monotropa uniflora</i>	Indian-pipe	X							S5	N5	6		3	
<i>Myosotis arvensis</i>	Field Forget-me-not								SNA	NNA		3		
<i>Onoclea sensibilis</i>	Sensitive Fern				X				S5	N5	4	-3		
<i>Osmunda regalis</i>	Royal Fern								S5	N5	7	-5		
<i>Osmundastrum cinnamomeum</i>	Cinnamon Fern								S5	N5	7	-3		
<i>Ostrya virginiana</i>	Eastern Hop-hornbeam								S5	N5	4	3		
<i>Parthenocissus quinquefolia</i>	Virginia Creeper								S4?	N4?	6	3		
<i>Phalaris arundinacea</i>	Reed Canarygrass			X	X				S5	N5	0	-3		
<i>Phleum pratense</i>	Common Timothy								SNA	NNA		3	-1	

Scientific Name	Common Name	Presence within Communities to be Impacted				COSEWIC Status	SAR Schedule 1 Status	SARO Status	S Rank	N Rank	Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	LSRCA (2003)
		FOC2	FOM6-1	Wetland 4	Wetland 10									
<i>Picea glauca</i>	White Spruce								S5	N5	6	3		
<i>Pilosella caespitosa</i>	Meadow Hawkweed								SNA	NNA		5	-2	
<i>Pinus strobus</i>	Eastern White Pine	X	X						S5	N5	4	3		
<i>Pinus sylvestris</i>	Scots Pine		X						SNA	NNA		3	-3	
<i>Populus balsamifera</i>	Balsam Poplar			X					S5	NNR	4	-3		
<i>Populus deltoides</i>	Eastern Cottonwood								S5	N5	4	0		
<i>Populus tremuloides</i>	Trembling Aspen	X	X						S5	N5	2	0		
<i>Potentilla recta</i>	Sulphur Cinquefoil								SNA	NNA		5	-2	
<i>Prunella vulgaris</i>	Common Self-heal	X							S5	N5	0	0		
<i>Prunus serotina</i>	Black Cherry	X	X						S5	N5	3	3		
<i>Quercus rubra</i>	Northern Red Oak	X							S5	N5	6	3		
<i>Ranunculus acris</i>	Common Buttercup				X				SNA	NNA		0	-2	
<i>Rhamnus cathartica</i>	European Buckthorn	X							SNA	NNA		0	-3	
<i>Salix sp.</i>	Willow Species			X										
<i>Schoenoplectus acutus</i>	Hard-stemmed Bulush								S5	N5	5	-5		
<i>Scirpus atrocinctus</i>	Black-girdled Bulrush								S5	N5	5	-5		
<i>Scirpus atrovirens</i>	Dark-green Bulrush				X				S5	N5	3	-5		
<i>Securigera varia</i>	Purple Crown-vetch								SNA	NNA		5	-2	
<i>Solanum dulcamara</i>	Bittersweet Nightshade				X				SNA	NNA		0	-2	
<i>Solidago altissima</i>	Tall Goldenrod								S5	N5	1	3		
<i>Solidago sp.</i>	Goldenrod Species													
<i>Symphotrichum novae-angliae</i>	New England Aster				X				S5	N5	2	-3		
<i>Symphotrichum puniceum</i>	Purple-stemmed Aster								S5	NNR	6	-5		
<i>Thuja occidentalis</i>	Eastern White Cedar	X	X	X	X				S5	N5	4	-3		
<i>Tilia americana</i>	Basswood		X						S5	N5	4	3		
<i>Toxicodendron radicans</i>	Poison Ivy	X							S5	N5	2	0		
<i>Trifolium campestre</i>	Low Hop Clover								SNA	NNA		5	-1	
<i>Tsuga canadensis</i>	Eastern Hemlock	X		X	X				S5	N5	7	3		
<i>Tussilago farfara</i>	Coltsfoot								SNA	NNA		3	-2	
<i>Typha angustifolia</i>	Narrow-leaved Cattail								SNA	N5		-5		
<i>Typha latifolia</i>	Broad-leaved Cattail			X					S5	N5	1	-5		
<i>Ulmus sp.</i>	Elm Species	X			X									
<i>Urtica sp.</i>	Nettle Species													
<i>Viburnum sp.</i>	Viburnum Species													
<i>Vitis riparia</i>	Riverbank Grape	X			X				S5	N5	0	0		

**APPENDIX D – SUMMARY CHARACTERISTICS OF
WETLANDS WITHIN AND ADJACENT
TO SUBJECT LANDS**

WL No.	Area (ha)	ELC Code(s)	Community Description(s)	Wildlife Usage - Breeding Amphibians *	Other notes
1	0.04	MAM3-2	Reed-canary Grass Organic Meadow Marsh	None	Standing water approx. 3 inches deep covers majority of feature (90%) (June 16, 2021)
2	0.037	SWM6-2	Poplar-Conifer Organic Mixed Swamp	1st: SPPE & WOFR Code 1 (approx 3)	Standing water early in season only, saturated soils and occassional pools during June 16 2021 visit.
				2nd visit: GRTR Code 1 (single)	
3	0.212	MAM3-2 (north)	Reed-canary Grass Organic Meadow Marsh	1st: SPPE Code 3 (Full Chorus), WOFR Code 1 (approx 3)	North: saturated soils, no standing water. South: Approx 50% standing water (few inches deep) (June 16, 2021)
		SWM4-1 (south)	White Cedar - Hardwood Organic Mixed Swamp	2nd: GRTR Code 1 (approx 4)	
4	0.024	SWT2-2	Willow Mineral Thicket Swamp	1st: SPPE Code 2 (approx 10), WOFR Code 1 (single)	Residential lawn along immediate west side - evidence of grading changes and ditching of rear yard flows into the area. No standing water in June 2021.
5	0.093	SWT3-10	Gray Dogwood Organic Thicket Swamp	None	Saturated soils, but no standing water during June 2021 investigations.
6	0.045	SWM4-1	White Cedar - Hardwood Organic Mixed Swamp	None	Majority of feature comprised of standing water (approx 4 inches deep)Surface water connection to WL13 via vegetated swale.
7	0.054	SWM4-1	White Cedar - Hardwood Organic Mixed Swamp	None	Minimal standing water (occasional ponding), but saturated soils (during June 16, 2021 visit).
8	0.069	MAM2-2	Reed-canary Grass Mineral Meadow Marsh	None	No standing water, no saturated soils (June 2021 investigations).
9	0.028	SWT2	Mineral Thicket Swamp (Dogwood and Willow)	None	No standing water
10	0.008	SWT2-9	Gray Dogwood Mineral Thicket Swamp	None	Small round topographic depression, no standing water or saturated soils (June 2021)
11	0.094	SWM4-1	White Cedar - Hardwood Organic Mixed Swamp	None	No standing water, but saturated soils (June 2021)
12	0.145	SWM4-1	White Cedar - Hardwood Organic Mixed Swamp	None	Abundant standing water (few inches depth, June 2021)
13	0.413	SWM4-1 (south)	White Cedar - Hardwood Organic Mixed Swamp	1st: SPPE Code 3 (Full Chorus), WOFR Code 1 (approx 2)	No standing water, but soft saturated soils (June 2021)
		SWT3-10 (north)	Gray Dogwood Organic Thicket Swamp	2nd: SPPE Code 3 (Full Chorus), GRTR Code 3 (Full Chorus)	
14	0.053	SWM4-1	White Cedar - Hardwood Organic Mixed Swamp	None	Standing water (30% cover), with remaining saturated soils. Connection to WL 15 via Sensitive Fern dominated path (June 2021)
15	0.171	MAS3-1	Cattail Organic Shallow Marsh	1st: SPPE Code 3 (Full Chorus), LEOPARD Code 1 (single)	MAS3-1 with standing water (approx 6 inches - 1 foot) (June 2021)
				2nd: SPPE Code 3 (Full Chorus)	
16	0.006	MAM2-2	Reed-canary Grass Mineral Meadow Marsh	None	No standing water or saturated soils (June 2021). Small topographic depression.
17	0.028	SWM4-1	White Cedar - Hardwood Organic Mixed Swamp	None	Standing water (approx 4-6 inches) (July 2021)
18	0.61	SWM3-2	Poplar-Conifer Mineral Mixed Swamp	None	Along portion of Lover's Creek tributary. No standing water (July 2021).
19	0.119	MAS2	Mineral Shallow Marsh	None	Shallow water up to 1 foot.
20	0.015	SWM3-1	Birch-Conifer Mineral Mixed Swamp	None	Small depression, non saturated soils (dry)
21	0.54	MAS2	Mineral Shallow Marsh	None	
22	2.835	MAS2-1	Cattail Mineral Shallow Marsh	Incidental - Green Frog (June 17, 2021)	Open water component and shallow water throughout MAS2-1. No standing water in SWM1-1 (June 2021).
		SWM1-1	White Cedar Hardwood Mineral Mixed Swamp	None	
23	2.721	SWMO1-1	White Cedar Hardwood Organic Mixed Swamp	Refer to EIS Report	
		MASO1-1	Cattail Organic Shallow Marsh		
24	0.185	SWDM4-5	Poplar Mixed Deciduous Swamp	Refer to EIS Report	
25	0.038	SWDM4-5	Poplar Mixed Deciduous Swamp	Refer to EIS Report	
Connections					
WL13 - WL6	0.081	SW	Swamp	1st: SPPE Code 3 (Full Chorus), WOFR Code 1 (approx 2)	Narrow, shallow, supports amphibian breeding.
				2nd: SPPE Code 3 (Full Chorus)	

* No distinct wetland avian population recorded during 2021 Breeding Bird Surveys. Majority of wetland units considered too small and narrow to support, and larger wetland units observed to support avian population consistent with adjacent upland communities.

2021 Inventory Dates

Breeding Amphibians

14-Apr-21
20-May-21
16-Jun-21 *no calls recorded in any wetland during this visit*

Breeding Birds

10-Jun-21
22-Jun-21
ELC/Wetland Delin/Bn Screening

30-Mar-21
16-Jun-21
17-Jun-21
30-Jun-21
22-Jul-21

Photo Log – Wetlands



WL 1 – Southerly view (June 16, 2021)



WL 2 – Southerly view (June 16, 2021)



WL 3 – Northern portion (June 16, 2021)



WL 3 – Southern portion (June 16, 2021)



WL 4 – Interior conditions (June 16, 2021)



WL 4 – West edge along residential lawn (June 16, 2021)

Photo Log – Wetlands



WL 5 – Easterly view (June 16, 2021)



WL 6 – Southerly view (June 16, 2021)



WL 7 – General view (June 16, 2021)



WL 8 – Southerly view (June 16, 2021)



WL 9 – Typical conditions (June 16, 2021)



WL 10 - Typical conditions (June 16, 2021)

Photo Log – Wetlands



WL 11 – southerly view (June 16, 2021)



WL 12 – Interior conditions (June 16, 2021)



WL 13 – Southern conditions (June 16, 2021)



WL 13 – Northern conditions (June 16, 2021)



WL 14 - Typical conditions (June 16, 2021)



WL 15 – Typical conditions (June 16, 2021)

Photo Log – Wetlands



WL 16 - Typical conditions (June 16, 2021)



WL 17 – Typical conditions (June 30, 2021)



WL 18 - Watercourse (Lover's Creek) (June 17, 2021)



WL 18 – Typical conditions (June 17, 2021)



WL 19 – Typical conditions (July 22, 2021)



WL 20 – Typical conditions (July 22, 2021)

Photo Log – Wetlands



WL 21 – Northern conditions (July 22, 2021)



WL 22 – open cattail marsh community (June 17, 2021)

APPENDIX E – BREEDING BIRD SURVEY RESULTS

Breeding Birds encountered on or adjacent to 338 Mapleview Drive.

Common Name	Scientific Name	Status				Number of Pairs/Territories
		National Species at Risk COSEWIC ^a	Species at Risk in Ontario Listing ^a	Provincial breeding season SRANK ^b	Area-sensitive (OMNR) ^c	
Broad-winged Hawk	<i>Buteo platypterus</i>			S5	A	1
Great Horned Owl	<i>Bubo virginianus</i>			S4		1
Barred Owl	<i>Strix varia</i>			S5	A	1
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>			S5	A	1
Downy Woodpecker	<i>Picoides pubescens</i>			S5		1
Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC	S4		2
Great Crested Flycatcher	<i>Myiarchus crinitus</i>			S4		1
Tree Swallow	<i>Tachycineta bicolor</i>			S4		1
Blue Jay	<i>Cyanocitta cristata</i>			S5		3
American Crow	<i>Corvus brachyrhynchos</i>			S5		3
Black-capped Chickadee	<i>Poecile atricapillus</i>			S5		7
Red-breasted Nuthatch	<i>Sitta canadensis</i>			S5	A	4
Brown Creeper	<i>Certhia americana</i>			S5	A	1
House Wren	<i>Troglodytes aedon</i>			S5		5
Winter Wren	<i>Troglodytes troglodytes</i>			S5	A	1
American Robin	<i>Turdus migratorius</i>			S5		3
Red-eyed Vireo	<i>Vireo olivaceus</i>			S5		4
Black-throated Green Warbler	<i>Setophaga virens</i>			S5	A	3
Mourning Warbler	<i>Geothlypis philadelphia</i>			S4		2
Common Yellowthroat	<i>Geothlypis trichas</i>			S5		3
Northern Cardinal	<i>Cardinalis cardinalis</i>			S5		3
Indigo Bunting	<i>Passerina cyanea</i>			S4		2
Chipping Sparrow	<i>Spizella passerina</i>			S5		1
Song Sparrow	<i>Melospiza melodia</i>			S5		5
Swamp Sparrow	<i>Melospiza georgiana</i>			S5		3
Common Grackle	<i>Quiscalus quiscula</i>			S5		1
Purple Finch	<i>Carpodacus purpureus</i>			S4		1
American Goldfinch	<i>Carduelis tristis</i>			S5		4

Field Work Conducted On:	Date	Temp (°C)	Wind (Beaufort Scale)	Cloud Cover (%)	Start time (am)	End time (am)
Site visit 1	June 10, 2021	18	2/3	20- 80	7:45	9:45
Site visit 2	June 22, 2021	12	0/1	25	6:00	7:45

Number of Species: 28

Number of (provincial and national) Species at Risk: 1 (Special Concern Eastern Wood-Pewee)

Number of S1 to S3 (provincially rare) Species: 0

Number of forest Area-sensitive Species: 7

KEY

a COSEWIC = Committee on the Status of Endangered Wildlife in Canada

a Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)

END = Endangered, THR = Threatened, SC = Special Concern

^b SRANK (from Natural Heritage Information Centre) for breeding status if:

S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)

SZB (breeding migrants or vagrants) and SR (reported as breeding, but no persuasive documentation) .

SE (exotic, i.e. non-native)

c Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

**APPENDIX F – SIGNIFICANT WILDLIFE HABITAT
SCREENING – ECOREGION 6E**

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial)	Ducks	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May	N	Habitat not available
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, Swamps, Shallow Water Ecosites	Sewage & SWM ponds not SWH. Reservoir managed as a large wetland or pond/lake qualifies.	N	Habitat not available
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Sewage treatment ponds and storm water ponds not SWH.	N	Habitat not available
Raptor Wintering Area	Eagles, Hawks, Owls	Hawks/Owls: Combination of both Forest and Cultural Ecosites Bald Eagle: Forest or swamp near open water (hunting ground)	Raptors: >20ha, with a combo of forest and upland. Meadow (>15ha) with adjacent woodlands. Eagles: open water, large trees & snags for roosting.	N	Habitat not available
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites not SWH.	N	Habitat not available
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Decidious or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	N	On-site deciduous and mixed forest communities in the central and southern parts of the subject lands may provide suitable snags for roosting opportunities. However, in the proposed development footprint snag endisities are low and would not constitute SWH; as well, is the dominant species which does nto provide preferred habitat for bat roosting/maternity functions.
Turtle Wintering Area	Turtles (Midland, N. Map, Snapping)	SW, MA, OA, SA, FEO, BOO (requires open waters)	Free water beneath ice. Soft mud substrate. Permanent water bodies, large wetlands, bogs, fens with adequate DO.	Candidate	The majority of on-site wetlands do not provide appropriate depths for turtle wintering. Potential habitat may be available within the open water portions of Wetland 22; however, this is away from the proposed development.

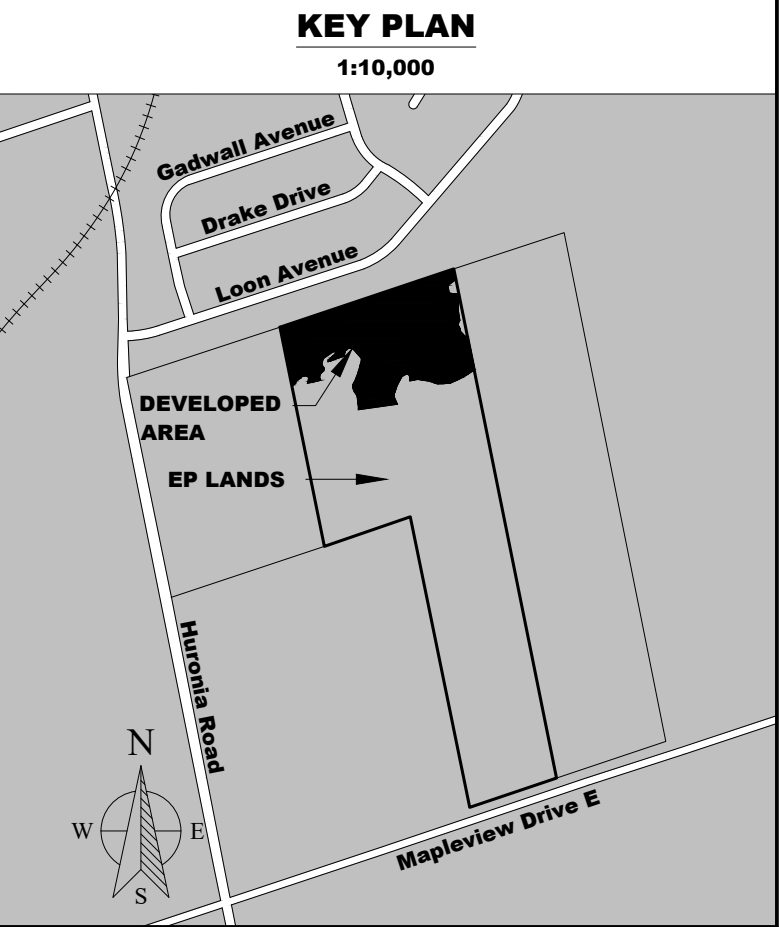
SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Reptile Hibernaculum	Snakes	Snakes: Any ecosite (esp. w/ rocky areas), other than very wet ones. Five-lined Skink: FOD and FOM, FOC1, FOC3 - with rock outcrops	Access below frost line: burrows; rock crevices, piles or slopes, stone fences or foundations. Conifer/shrubby swamps/swales, poor fens, depressions in bedrock w/ accumulations of sphagnum moss or sedge hummock ground cover.	N	Habitat not available
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, not a licensed/permitted aggregate area or new man-made features (2 yrs).	N	Habitat not available
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	Based on breeding bird surveys it was determined that the on-site swamp wetlands no not support a diverse bird population.
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer’s Blackbird	Gulls/Terns: Rocky island or peninsula in lake or river. Brewer’s Blackbird: close to watercourses in open fields or pastures with scattered trees or shrubs.	Gulls/Terns: islands or peninsulas with open water or marshy areas. Brewers Blackbird colonies: on the ground in low bushes close to streams and irrigation ditches.	N	Habitat not available
Migratory Butterfly Stopover Area	Painted Lady, Red Admiral, Special Concern: 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	Habitat not available
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	Habitat not available
Deer Yarding Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	Habitat not available
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	Y	The majority of subject property is located within Stratum 2 Deer Wintering Area, as per MNRF mapping. However, minimal deer evidence was recorded during the 2021 field investigations.
Rare Vegetation Communities					
Cliffs and Talus Slopes		TAO, TAS, CLO, CLS, TAT, CLT e.g., Niagara Escarpment (contact NEC)	Cliff: near vertical bedrock >3m Talus Slope: coarse rock rubble at the base of a cliff	N	Habitat not available

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
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	Habitat not available
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. Need 4 of the 5 Alvar Indicator Spp. <50% vegetation cover are exotic species.	N	Habitat not available
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	Habitat not available
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	Habitat not available
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	Habitat not available
Other Rare Vegetation Communities		Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	N	Habitat not available
Specialized Habitat for Wildlife					
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	Habitat not available
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	Habitat not available
Woodland Raptor Nesting Habitat	Barred Owl. Hawks: N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations	>30 ha with > 10 ha interior habitat.	N	Habitat not available

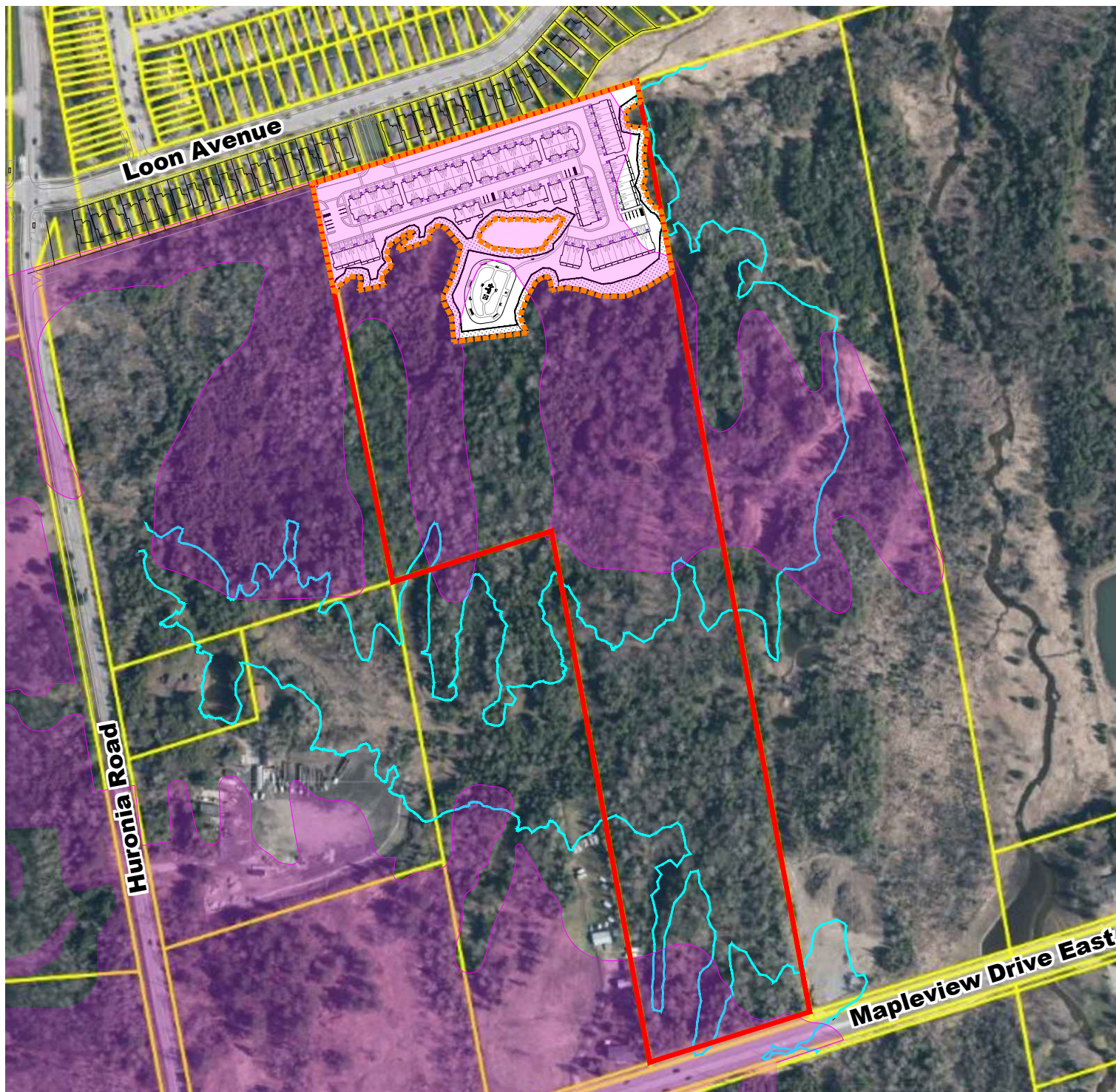
SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Turtle Nesting Areas	Midland Painted Turtle Special Concern: Snapping Turtle, Northern Map Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within: MAS1 to MAS3, SAS1, SAM1, SAF1, BOO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	Candidate	Due to its proximity to marsh-lands associated with the Lover's Creek corridor, suitable nesting habitat may be available within the open anthropogenic gravel-filled area within the southern portion of 340 Mapleview Drive. Such habitat was not identified in the northern part of the subject lands where development is proposed.
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. (2 or more confirms SWH type).	N	Habitat not available
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders: Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	FOC, FOM, FOD, SWC, SWM, SWD	Open water wetlands, pond or woodland pool of >500 m ² within or adjacent to wooded areas. Permanent ponds or holding water until mid-July preferred. Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3	Y	Wetland #13 supported full chorus of both Spring Peeper and Gray Treefrog; the total size of the wetland unit (0.413 ha or 4,130 m ²) would meet the size criteria for significance.
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 ² isolated from woodland ecosites with high species diversity. Permanent water with abundant vegetation for bullfrogs.	N	Habitat not available
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.	N	Habitat not available
Habitat of Species of Conservation Concern					
Marsh Bird Breeding Habitat	Wetland Birds	MAM1 to MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 Green Heron: SW, MA and CUM1	Wetlands with shallow water and emergent vegetation. Gr. Heron @ edges of these types w/ woody cover.	Candidate	Potential habitat may be present throughout the

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Open Country Bird Breeding Habitat	Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, N. Harrier, Savannah Sparrow, Short-eared Owl (SC)	CUM1, CUM2	Grassland/meadow >30 ha. Not being actively used for farming. Habitat established for 5 years or more.	N	Habitat not available
Shrub/Early Successional Bird Breeding Habitat	Brown Thrasher + Clay-coloured Sparrow (indicators) , 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	Habitat not available
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	Habitat not available
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	Although Eastern Wood-Pewee was observed during 2021 breeding bird surveys, suitable habitat is well represented locally. This species is considered widespread. Thus, the on-site forest communities would not be considered SWH, based on the presence of this species.
Animal Movement Corridors					
Amphibians	Amphibians	all ecosites assoc. w/ water	When Breeding Habitat - wetland confirmed	N	Habitat not available
Deer Movement	White-tailed Deer	all forested ecosites	When Deer Wintering Habitat confirmed	Y	
Exceptions for Ecoregion 6E					
Mast Producing: 6E-14	Black Bear	Forested Ecosites	>30 ha w/ mast producing species: Cherry (berries), Oak, Beech (nuts).	N	Habitat not available
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	Habitat not available

APPENDIX G – DEVELOPMENT CONCEPT PLAN



APPENDIX H – LOCATION MAP



Gross Site Area 115,712 sqm 28.59 ac

Existing Developable Area	60,353 sqm	(14.91 ac)	52.1% of Net Site Area
Proposed Developable Limit	25,623 sqm	(6.33 ac)	22.1% of Net Site Area
Existing lands designated General Industrial in OP	60,353 sqm	(14.91 ac)	52.1% of Net Site Area
Proposed residential designation in application	25,623 sqm	(6.33 ac)	22.1% of Net Site Area
Existing lands designated EP in OP	55,359 sqm	(13.67 ac)	47.8% of Net Site Area
Proposed lands designated EP in application	90,089 sqm	(22.25 ac)	77.8% of Net Site Area
Proposed increase in EP designation	33,722 sqm	(8.33 ac)	37.8% increase

LEGEND

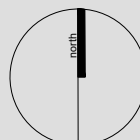
- Subject Lands
- Flood Plain Boundaries
- General Industrial Land Use Designation
- Development Limit

Location Map

338 Maplevue Drive East,
Barrie, Ontario

DATE: February 1, 2022

SCALE 1:4000



N:\1219\H - Loon Avenue, Barrie\2021\Figures\CAD\1219H - Figure Mapping - 25 January 2021-C.dwg

MHBC PLANNING
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