BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

Preliminary Environmental Impact Study Bryne Drive City of Barrie

Prepared For:

Barrie-Bryne Developments Limited

Prepared By:

Beacon Environmental Ltd.

Date: *Project:*

March 2022 **220476**

Table of Contents

Figures

Tables

Appendices

1. Introduction

Beacon Environmental Limited (Beacon) has been retained by Barrie-Bryne Developments Limited (The Landowner) to conduct an Environmental Impact Study (EIS) as part of a proposed mixed development application for an approximately 33 ha (82 acres) property, bisected by a municipal road allowance for the future Bryne Drive extension, located in the City of Barrie ("subject property"; **Figure 1**). The site is bounded by Highway 400 to the east, commercial development to the south, residential development to the west, a City of Barrie stormwater management (SWM) pond to the north, Harvie Road to the northeast and bisected by the Bryne Drive right of way running north-south. The Lovers Creek tributary and associated small, forested valley traverses the southeastern corner of the subject property. Presently the subject property is undeveloped and consists of active agricultural fields.

The purpose of the EIS is to identify existing natural heritage features on the site and to address the interaction between the proposed development and existing conditions as they relate to natural heritage features, consistent with the City of Barrie Official Plan (2010), the new City of Barrie Official Plan (2021), Lake Simcoe Protection Plan (2009), Lake Simcoe Region Conservation Authority (LSRCA) Watershed Regulation and Policies (2021), the Provincial Policy Statement (PPS 2020) and the *Endangered Species Act* (ESA 2007).

2. Goals and Objectives of Study

The study commenced with a background review, followed by an investigation of the ecological and physical characteristics of the subject property, their functions, significance and sensitivity, including Species at Risk (SAR). In consideration of this information, the development opportunities, and constraints within the subject property were assessed from an environmental perspective, including the relevant environmental planning policies. This information was reviewed in the context of the initial development concept, to provide recommendations to support the planned development, to respect the significant environmental features on and adjacent to the subject property and to comply with the applicable planning policies.

The goals of this EIS are to:

- Determine the development opportunities and environmental constraints within the subject property;
- Ensure that the proposed development can proceed in a manner that will not result in negative impacts to significant ecological features and functions; and
- Demonstrate conformity to the applicable natural environment regulations and policies.

The specific objectives that have been completed as part of this EIS include the following:

- Provide an evaluation of the terrestrial and aquatic features, including SAR and their habitats on the subject property through background review and field investigations;
- Identify and map any key ecological features (i.e., rare species, watercourses), key ecological attributes, and sensitivities of the subject property;
- Evaluate and identify appropriate buffers to adjacent features through an evaluation of ecological features and functions; and

- Provide appropriate recommendations for the mitigation and protection of natural heritage features and functions.

A site visit was undertaken with the Lake Simcoe Region Conservation Authority (LSRCA) on December 3, 2021, to stake the top of slope for the two watercourse valleys on the subject property. The proposed scope of work was approved by the LSRCA, via email correspondence on November 2, 2021 (**Appendix A**).

This EIS was completed by a review of background information and documents including results of field investigations completed previously by Beacon in 2012 and by other firms (Sernas Associates 2007, Hatch 2017). Seasonally appropriate field investigations to be completed by Beacon in the 2022 field season will include breeding amphibian and bird surveys, vegetation surveys, a confirmation of the presence, characteristics and habitats of natural heritage features, and investigations into the potential presence of species of conservation concern or SAR on the subject lands. These data will be provided as an addendum to this preliminary EIS, including an analysis of natural heritage functions and features and confirmed against the existing policy framework.

3. Policy Context

Relevant municipal, provincial and federal policies that apply to the subject property are addressed in this section. These include:

- Provincial Policy Statement (2020);
- Growth Plan for the Greater Golden Horseshoe (Office Consolidation 2020);
- Lake Simcoe Protection Plan (2009);
- Lake Simcoe Region Conservation Authority Policies and Regulation;
- The New City of Barrie Official Plan (2021); and
- The City of Barrie Official Plan (2010, Office Consolidation 2018).

Note: Currently a new Official Plan (OP) for the City of Barrie has been approved by Barrie City Council and enacted by an implementation by-law on March 7, 2022, pending approval from the Minister of Municipal Affairs and Housing. Considering that, at the time of this report, the province has yet to approve the new OP, the current OP (2010, Office Consolidation 2018) would apply. In this report, we have reviewed the applicable sections of both the current, and the new OP as this represents Council's long-term vision.

3.1 Provincial Policy Statement (2020)

Policy 2.1 of the Provincial Policy Statement (PPS; 2020) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources. The PPS defines seven natural heritage features and provides planning policies for each. The *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement* (OMNR 2010) is a technical document used to help assess the natural heritage features listed below:

Site Location	Figure 1
Bryne Drive Barrie SmartCentres EIS	
BEACON ENVIRONMENTAL	Project: 220476 Last Revised: February 2022
Client: Barrie-Bryne Developments Limited	Prepared by: BD Checked by: GP
N 1:7,500	Inset Map: 1:60,000

Contains information licensed under the Open Government License–Ontario
Orthoimagery Baselayer: 2020 (FBS)

C:\ODB\OneDrive - Beacon Environmental\GeoSpatial\Geo Projects\2020\220476 Bryne Drive Barrie SmartCentres EIS & TIPP\Q Project Files\2022-01-13 - Bryne Drive Barrie SmartCentres EIS & TIPP - 220476.qgz

- Significant wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant Areas of Natural and Scientific Interest (ANSIs);
- Significant wildlife habitat;
- The habitat of endangered and threatened species; and
- Fish habitat.

Each of these features is afforded varying levels of protection subject to guidelines, and in some cases, regulations. Of these features, Provincially Significant Wetlands (PSW) can be designated by the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) while municipalities can define regional or local significance. Habitat of endangered or threatened species designated under the *Endangered Species Act* (2007) is regulated by the Ministry of the Environment, Conservation and Parks (MECP) if a species is identified on a property through subject property specific investigation or through existing information. Fish habitat is governed by Fisheries and Oceans Canada (DFO). The identification and regulation of the remaining features is the responsibility of the municipality or other planning authority.

3.2 Growth Plan for the Greater Golden Horseshoe (Office Consolidation 2020)

The PPS provides overall policy directions on matters of provincial interest related to land use and development in Ontario and applies to the Growth Plan for the Greater Golden Horseshoe (GPGGH 2020), except where this Plan or another provincial plan provides otherwise. Like other provincial plans, this Plan builds upon the policy foundation provided by the PPS and provides additional and more specific land use planning policies to address issues facing specific geographic areas in Ontario. This Plan is to be read in conjunction with the PPS.

The province has mapped a Natural Heritage System (NHS) for the GPGGH to support a comprehensive, integrated, and long-term approach to planning for the protection of the region's natural heritage and biodiversity. The NHS mapping excludes lands within settlement area boundaries that were approved and in effect as of July 1, 2017.

The subject property is within a settlement area (City of Barrie) and the GPGGH indicates that beyond the NHS, including within settlement areas, the municipality:

a) will continue to protect any other natural heritage features in a manner that is consistent with the PPS; and
b) may continue to protect any other natural heritage system or identify new systems in a manner that is consistent with the PPS.

Fish habitat is the only natural heritage feature identified in the PPS that occurs within or abuts the subject property.

3.3 Lake Simcoe Protection Plan (2009)

The *Lake Simcoe Protection Act*, which was passed in December 2008, provides a legislative framework for protecting the Lake Simcoe watershed. Among other items, the *Act* includes the requirement for a Protection Plan with legally binding policies.

The Lake Simcoe Protection Plan (2009) has separate requirements depending on whether the proposed development is located within an existing settlement area or outside an existing settlement area. For greater certainty, where lands are incorporated into a settlement area after the effective date of the Plan, an application for development or site alteration within those lands are subject to the policies in Chapter 6 excluding policies 6.32 to 6.34 which refer specifically to lands in existing settlement areas.

The subject property is located within an existing settlement area and is therefore subject to the following policies under the Act.

> *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.*

3.4 Lake Simcoe Region Conservation Authority Watershed Policies and Regulation

The LSRCA regulates hazard lands including watercourses, valleylands, shorelines, and wetlands, including lands adjacent to these features.

The LSRCA regulates all depressional features associated with a river or stream, whether or not they contain a watercourse. With respect to wetlands, the regulated area extends to 120 m from a Provincially Significant Wetland (PSW) and 30 m from all other wetlands. With respect to flood plain and valleylands, the regulation extends 15 m from the greater level of constraint.

Subject to conformity with the applicable OP, completion of appropriate studies, and completion of the Conservation Authority permit process, development may be permitted within a regulated area. Application for development and interference in regulated areas requires the issuance of a permit from the LSRCA. Obtaining a permit generally requires an EIS. Once requested studies have been

completed there may be a requirement for features to be maintained and/or for protective buffers to be placed on features or hazard lands within the study area.

There are regulated areas on the subject property adjacent to the top of banks associated with the two watercourses (Whiskey Creek and Lovers Creek), where the LSRCA requires a 6 m easement setback.

3.5 The City of Barrie Official Plan (2010, Office Consolidation 2018)

On April 23, 2010, the Ministry of Municipal Affairs and Housing (MMAH) approved the OP for the City of Barrie. The applicable natural heritage or environmental policies are detailed below.

3.5.2.3 WATER RESOURCE MANAGEMENT

(a) In reviewing development proposals, the City shall protect, maintain and enhance water and water related resources on an integrated watershed management basis.

3.5.2.3.1 FLOOD PLAIN MANAGEMENT, EROSION, HAZARDOUS SITES AND FILL CONTROL

(a) *Flood plain management and control will occur in partnership with the applicable Conservation Authorities.*

(f) The placing or dumping of fill of any kind, the straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, the construction of any building or structure in or on a pond or swamp or any area susceptible to flooding shall not be permitted in a regulated Conservation Authority area except with written approval of the Conservation Authority. Authorization may be required from Fisheries and Oceans Canada for any in-water works.

3.5.2.3.2 SURFACE WATER PROTECTION

(a) The City will work in partnership with adjacent municipalities and the Conservation Authorities, provincial ministries, the Health Unit and other partners to develop practices that maintain and improve the quality and quantity of lakes and watercourses, and to protect headwater areas from land uses that have the potential to contaminate downstream water systems.

(b) The City will co-operate with the Conservation Authorities and adjacent municipalities in identifying and mapping surface water features, groundwater features, hydrologic functions and natural heritage features and areas which are necessary for the ecological and hydrological integrity of the watershed. These features will be incorporated into the Plan as Schedules by amendment.

(c) The natural quality and hydrologic characteristics of watercourses and lakes, including aquatic habitat, base flow, water quality, temperature, storage levels or capacity are to be maintained, and no development shall be permitted that has the potential to create a negative impact on any of the watercourses and lakes.

(d) Development and site alteration shall be restricted in or near lakes and watercourses such that these features and their related hydrologic functions will be protected, improved or restored. In general, development and site alteration shall be setback a minimum 30 metres from lakes and watercourses.

(e) Mitigation measures or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features such that

these features and their related hydrologic functions will be protected, improved or restored.

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.*
- *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.*

*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.*

*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.*

(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.

(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.

3.9.4 DEVELOPMENT AND SITE ALTERATION

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.

4.7 ENVIRONMENTAL PROTECTION AREAS

4.7.2.3 GENERAL POLICIES

(e) Development and site alteration shall not be permitted in fish habitat areas except in accordance with Provincial and Federal requirements.

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 Lover's, Bear, Hewitt's, Sophia, Kidd's, Bunker's, Dyment'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.

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.

On the subject property there are two watercourses and several areas identified on the City's current OP Schedule H - Natural Heritage Resource areas. These include two areas of Level 1: Whiskey Creek and associated valley in the north, and Lovers Creek tributary in the south; one area of Level 1 with Existing Development designation subject to 3.5.2.4.d): the valleyland associated with Lovers Creek tributary in the south; and the remaining tablelands are identified as Level 3 Natural Heritage Resource.

The wooded area within the Lovers Creek valley is a contiguous wooded area in excess of 0.2 ha and as such is regulated under the City's Tree Preservation By-law.

It is not likely there is significant wildlife habitat on the subject property; however, site investigations will confirm.

3.6 The New City of Barrie Official Plan (2021)

On February 14, 2022, the City of Barrie adopted a new OP (Final Version – December 15, 2021). It has been sent to the Ministry of Municipal Affairs and Housing (MMAH) and is currently pending approval. The applicable natural heritage or environmental policies in the new OP are detailed below.

5.3.1 Natural Heritage System General Policies

a) Lands part of the Natural Heritage System are subject to a series of natural heritage protection overlays identified on Map 3.
b) The City will protect its natural heritage features and areas for the long term.
c) The City will seek to restore and naturalize watercourses that have been piped, or otherwise altered by employing principles of natural channel design.
d) The City will seek to maintain, restore, and where possible improve the diversity and connectivity of natural heritage features in an area, and the long-term ecological function and biodiversity of the Natural Heritage System.
e) The City will seek to maintain and enhance ecological linkages between and among natural heritage features and areas, surface water features, and ground water features to ensure a connected and resilient Natural Heritage System.
f) The City is committed to studying and protecting the Glacial Lake Algonquin Ridgeline and its associated Natural Heritage System features.

g) *The policies of Section 6.6.4 regarding stormwater management and Section 6.6.5 regarding low impact development should be addressed when seeking to enhance the Natural Heritage System.*

h) *The City will work with adjoining municipalities to provide connectivity and protection for the Natural Heritage System features identified on Map 3.*

i) *Where, through a development application or site alteration, a natural heritage feature is identified on lands designated other than Natural Heritage System and Greenspace, the Natural Heritage System policies of this Plan shall apply to those lands until:*

   i) An environmental impact study has been approved by the City that evaluates the natural heritage features of the lands; and,

   ii) The lands are designated and zoned appropriately, in accordance with the recommendations of the City.

j) *A standard terms of reference for an environmental impact study 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 appropriate Conservation Authority. Additional natural heritage resources identified through a site-specific environmental impact study will be categorized by level and will be subject to the policies of this section. An amendment to the Plan is not required for minor amendments to Map 3 if an environmental impact study has been approved through a plan of subdivision, site plan, Zoning By-law amendment, or consent application.*

k) *To ensure the effective management and retention of the features and functions identified on Map 3, a Natural Heritage System feature 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 System feature, to the satisfaction of the City and applicable Conservation Authority, may be required.*

l) *Development shall not be permitted in fish habitat except in accordance with provincial and federal requirements.*

m) *Development shall not be permitted in the habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.*

n) *Development shall not be permitted in significant wildlife habitat and/or significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on natural features or their ecological functions.*

5.3.2 Managing Floodplains, Hazard Lands and Fill

a) *Floodplain management and control will occur in partnership with the applicable Conservation Authority and as guided by the City's drinking water policies. Floodplains are identified on Appendix 1 to this Plan.*

b) *Floodplain management within the Lake Simcoe Region Conservation Authority and the Nottawasaga Valley Conservation Authority jurisdictions includes the one zone, two zone or the special policy area concept. The one-zone floodplain management concept shall be used within the City. Any application of the two-zone concept will require an amendment to this Plan and written approval from the Conservation Authority. The establishment of a new special policy area, or any changes within an existing special policy area, will only be permitted with the prior written approval of the appropriate agencies.*

c) *New development on existing lots, redevelopment, additions, and existing uses that, by their nature, must be located in the floodplain shall be protected by*

acceptable flood proofing action or measures subject to the approval of the City and the applicable Conservation Authority.

d) *Notwithstanding policy 5.3.2(c), new development including the creation of new lots in floodplains is prohibited in accordance with the regulatory flood standard.*
e) *Mitigation measures or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features.*
f) *The precise boundaries of floodplains and erosion hazard areas and their associated setbacks shall be established to the satisfaction of the City, without further amendment to this Plan, in consultation with the applicable Conservation Authority; through the Drainage and Stormwater Master Plan and other appropriate studies; and as part of the review of specific development applications. Changes to the boundaries may include any reductions, such as those due to the introduction of additional or larger culverts downstream. The flood and erosion hazard boundaries may potentially be redefined by completing studies as requested and to the satisfaction of the Conservation Authority.*
g) *Development in floodplains and erosion hazard areas determined through the process outlined in 5.3.2(f) shall be subject to the policies of the Natural Heritage System regardless of their designation. In addition, the applicable Conservation Authority shall be satisfied with respect to its own legislative and regulatory powers. Development in lands which are established to be outside the floodplain and erosion hazard areas shall be in conformity with the underlying land use designation.*

5.4.2 Environmental Protection Areas Overlay

5.4.2.1 Environmental Protection Area – Level 1

a) *Level 1 resources represent the components of the Natural Heritage System that have the highest level of protection. These areas include: provincially significant wetlands (PSWs); unevaluated wetlands greater than 0.5 hectares in size; significant woodlands greater than 4.0 hectares in size; woodlands greater than 10.0 hectares in size; significant habitat of endangered species; natural areas abutting Lake Simcoe; significant valleylands and threatened species; watercourses, minimum vegetation protection zones and connectivity linkages; and lands identified as environmental protection through site-specific planning and the development process.*
b) *Natural Heritage System land use designation policies of Section 2.6.6 apply to all properties containing an identified Level 1 feature.*
c) *An environmental impact study will be required to be completed by a qualified professional for any proposed development or site alteration within 120.0 metres of an area identified as Level 1 on Map 3.*
d) *Notwithstanding the land use limitations applicable to properties identified as Level 1, where a land use designation, as found on Map 2, permits other forms of development, such development may proceed subject to the policies of Level 2 and the appropriate planning application processes.*
e) *Watercourses shall generally be maintained in their existing locations. Where a development proposal seeks to relocate a watercourse, it must be demonstrated that the relocation will maintain the existing function of the watercourse, will result in a net ecological gain and will not negatively impact the Natural Heritage System.*
f) *Any relocation or significant alteration of a watercourse must incorporate natural channel design and be supported by a fluvial geomorphological assessment.*

g) *Any relocation of a watercourse must be in compliance with conservation authority regulations, and any other applicable provincial or federal regulations.*

5.5.1 Protecting Natural Hydrologic Features

a) In accordance with applicable provincial policy, this Plan will protect and enhance the City's hydrologic features as well as align with the City's drinking water policies. As such it is the policy of the City to:

iii)Maintain the natural quality and hydrologic characteristics of watercourses and lakes, including aquatic habitat, base flow, water quality, temperature, storage levels or capacity, with no development being permitted that has the potential to create a negative impact on any of the watercourses and lakes;

iv) Restrict development in or near lakes, watercourses and fish habitat. Development shall generally be setback a minimum 30.0 metres from lakes and watercourses;

v) Only permit development in a manner that protects, improves, or restores any features and their related hydrologic functions; and,

vi) Require mitigation measures or alternative development approaches in order to protect, improve, or restore sensitive surface water features and their related hydrologic functions.

On the subject property there are two watercourses and several areas identified on the City's new OP Map 3 - Natural Heritage Protection Overlays. These include: two Environmental Protection Areas (EPA) Level 1: Whiskey Creek and associated valley in the north, and Lovers Creek tributary in the south; one area of EPA - Level 1 with Existing Development Designation Subject to 5.4.2.1.d): the valleyland associated with Lovers Creek tributary in the south; and the remaining tablelands are identified as EPA Level 3.

The wooded area within the Lovers Creek valley is a contiguous wooded area in excess of 0.2 ha and as such is regulated under the City's Tree Preservation By-law.

It is not likely there is significant wildlife habitat on the subject property; however, site investigations will confirm.

4. Methodology

4.1 Background Review

Background information was gathered and reviewed at the outset of the project. This involved documentation for the subject property from sources that included:

- Lake Simcoe Protection Plan (2009);
- The City of Barrie Official Plan (2010);
- The new City of Barrie Official Plan (2021);
- Lake Simcoe Region Conservation Authority (LSRCA);
- Barrie Creeks, Lovers Creek, and Hewitt's Creek Subwatershed Plan (LSRCA 2012);
- MNDMNRF Natural Heritage Information Centre (NHIC) Make-A-Map;

- Summary of the Results of Preliminary Geotechnical Investigation – Proposed Commercial and Industrial Development (AMEC Earth and Environmental 2006);
- Aquatic Habitat Assessment Harvie Road/400 Developments Inc. (Geomorphic Solutions 2007);
- Final Pond Lv14 Stormwater Management Facility Retrofit Municipal Class Environmental Assessment Document (City of Barrie 2009);
- Whiskey Creek Master Drainage Plan Update Environmental Assessment Document (AECOM 2009);
- Schedule C Municipal Class Environmental Assessment, Phase 3 and 4 – Natural Heritage Impact Assessment Report Bryne Drive (Hatch 2017); and
- Colour orthorectified 2020 aerial photography from First Base Solutions.

Other sources of information, such as topographic maps, were also consulted prior to commencing field investigations.

4.2 Field Investigations

4.2.1 Timing of Field Visits

Two reconnaissance site investigations were undertaken 2021 by Beacon Environmental staff, see **Table 1**, below.

Table 1. Site Investigations

Site Visit Task	Date
Initial Reconnaissance Site Walk	November 11, 2021
Feature Staking (top of bank) with LSRCA	December 3, 2021

The first site walk occurred with the landowner to investigate the general site conditions and natural heritage features. A feature staking occurred during the second visit with staff from LSRCA (C. Hawson and S. Filson), the landowner, and surveyors from J.D. Barnes Limited.

Because Beacon was retained after the 2021 summer season, further site investigations will take place in spring/summer 2022 as per the terms of reference agreed to with the LSRCA (**Appendix A**). Field visits will be timed to coincide seasonally and temporally to best document vegetation and wildlife on the site.

It should be noted that Beacon conducted natural heritage studies in 2012 as part on an initial development proposal for a portion of the subject property that did not proceed.

4.2.2 Aquatic Assessment

A number of studies have previously been undertaken regarding the aquatic habitat of both Whiskey Creek and Lovers Creek on and adjacent to the subject property. Site specific fish sampling for either Whiskey Creek or Lovers Creek was not considered necessary since sufficient background information

is available. This was agreed upon with the LSRCA through review of Beacon's scope of work (**Appendix A**).

A previous study by Hatch (2017) for the City of Barrie was also used for background information on fish species present in watercourses on the subject property. The existing aquatic resources information is presented in the Existing Natural Heritage Conditions section (5.2) below. This existing information was reviewed prior to the site visits undertaken by Beacon and will be confirmed during field investigations in 2022.

4.2.3 Terrestrial Assessment

Vegetation Communities and Flora

Vegetation community units on the subject property were described and mapped on 2020 colour orthophotography of the lands using the Ecological Land Classification system for southern Ontario (Lee *et al*. 1998). These classifications are based on fall 2021 site visits but also incorporated information from field investigations previously completed by Beacon on April 25 and June 20, 2012. These communities and boundaries will be confirmed in summer 2022 along with an updated botanical inventory.

Amphibians

Amphibian surveys will be undertaken in the spring of 2022 and will follow the protocol of the Marsh Monitoring Program (MMP) developed by Bird Studies Canada (Gartshore *et al.* 2004). Beacon staff will visit the subject property at least one half hour after dusk and identify calling male frogs and toads by listening at each specified station for three minutes. Amphibian surveys will be undertaken during the evenings after dusk at suitable temperature conditions. Potential breeding sites will be examined by habitat assessment and auditory searches.

Breeding Birds

Breeding birds will be surveyed on two dates in spring and early summer 2022 during the morning under appropriate weather conditions. The entire site will be walked such that all singing birds can be heard and recorded.

Species at Risk and Other Wildlife

Beacon reviews numerous information sources in a Geographic Information System (GIS) environment that facilitates an assessment of the likelihood that SAR and other significant natural heritage features and functions are present in an area of interest. This system allows Beacon to combine the most current information provided by MNDMNRF through the Land Information Ontario (LIO) portal with GIS layers from provincial floral and faunal atlases. All relevant layers can then be overlaid on the most recent high resolution orthoimagery. The screening process helps identify areas that can then be targeted (e.g., potential habitat) during field assessments to maximize the efficiency and effectiveness of on-site investigations.

The following information sources were reviewed:

- Provincially Tracked Species Layer (1 km grid) from LIO;
- Herps of Ontario on iNaturalist.com (formerly Ontario Reptile and Amphibian Atlas [ORAA]);
- Ontario Breeding Bird Atlas (OBBA);
- Natural Heritage Information Centre (NHIC) Data via the Make-A-Map application;
- Species at risk range maps https://www.ontario.ca/environment-and-energy/species-risk-ontario-list; and
- Aerial photography of the subject property.

Natural and physical feature layers from LIO include wetlands (provincially significant and unevaluated wetlands), and watercourses with thermal regime. Incidental observations of wildlife species, including mammals will be made during all field investigations.

Landscape Connectivity

A landscape connectivity assessment was undertaken after features on the subject property were described. This assessment was supported by topographic mapping, aerial photography, and reconnaissance of surrounding accessible lands by road.

5. Existing Natural Heritage Conditions

The following subsections provide the results of the existing conditions review of the subject property using existing information and the results of Beacon's field work and analyses.

5.1 Terrestrial Resources

5.1.1 Bedrock and Quaternary Geology

The bedrock throughout the subject property is generalized as limestone, dolostone, shale, arkose, and sandstone. The bedrock was formed during the Paleozoic Era (542 to 251 million years ago) (Ontario Geological Survey 2003). The area generally consists of fine to very coarse grained sand, gravelly sand and gravel, minor amounts of silt, clay and flow tills. The most northern section consists of silt-dominated rhythmites originating from glaciolacustrine fine-grained sediments, and the most southwestern section of the subject property is shown to consist of wetland sediments.

The Quaternary Geology of Ontario Southern Sheet (Barnett et al. 1991) describes the subject property and surrounding lands as consisting of Newmarket Till (Simcoe lobe) containing ice-contact stratified deposits of sandy silt to silt matrix, moderate to high in matrix carbonate content with a clast content moderate to high.

5.1.2 Physical Geography

The property lies within the Peterborough Drumlin Field, a regional-scale physiographic region as defined by Chapman and Putnam (1984). The region includes several pockets of land across central Ontario characterized by drumlins and till plains. Located near the western extent of this physiographic region, the subject property is situated on a till plain with substrates typical of till soils and are often underlain by calcareous lower horizons of limestone (Chapman & Putnam 1984).

5.1.3 Soils

The soils within the subject property are classified as Tioga sandy loam with a section of Dundonald sandy loam in the most western portion (Armstrong and Dodge 2007). The Tioga sandy loam is calcareous outwash sand with good drainage and the Dundonald sandy loam is outwash sand underlain by calcareous loam or sandy loam till, also with good drainage. A number of studies undertaken within the subject property confirm these soil conditions as their investigations generally encountered well drained sand to silty sand in the south and silty clay soils in the north (Terraprobe 2005, AMEC Earth and Environmental 2006, Hatch 2017).

5.1.4 Vegetation

The subject property lies within Lake Simcoe-Rideau Ecoregion 6E. More specifically, the subject property lies within the Barrie Ecodistrict 6E-6, which covers some 560,878 ha, including portions of Simcoe County, York Region, and Durham Region. Ecodistrict 6E-6 extends from clay and limestone plains in the north (just south of the Canadian Shield) to the Simcoe County Lowlands and Schomberg Clay Plains in the south. Vegetation resources of the ecoregion are characterized primarily by deciduous forests and wetlands, the majority of which are swamp (Henson & Brodribb 2005).

The vegetation communities within most of the subject property, as well as the adjacent land to the east, have been dramatically altered by human activities. The vegetation communities found on the subject property are illustrated in **Figure 2** and are described with only preliminary detail below.

CUM1-1 Dry – Moist Old Field Meadow

This community is found in linear areas on the subject lands along the City's sewer easement and a narrow area along the eastern boundary next to Highway 400. It is a result of past anthropogenic disturbance from farming. The vegetation is dominated by non-native species in varying proportions and includes Smooth Brome (*Bromus inermis*), Orchard Grass (*Dactylis glomerata*), Queen Anne's Lace (*Daucus carota*), Cow Vetch (*Vicia cracca*), Common Milkweed (*Asclepias syriaca*), Clammy Ground-cherry (*Physalis heterophylla*), Canada Bluegrass (*Poa compressa*) and Canada Goldenrod (*Solidago canadensis*) (**Photograph 1**). Drier areas support Sheep Sorrel (*Rumex acetocella*), Mouse-ear Hawkweed (*Hieracium pilosella*) and lichen species. Scattered woody species include Staghorn Sumac (*Rhus typhina*) and immature Trembling Aspen, Manitoba Maple (*Acer negundo*) and Scots Pine (*Pinus sylvestris*).

FOD8-1 Fresh – Moist Poplar Deciduous Forest

This immature forest community occupies the shallow creek valleys of the subject property. The community consists of a canopy of young Trembling Aspen (*Populus tremuloides*), Green Ash (*Fraxinus pennsylvanica*) with some American Elm (*Ulmus americana*) and some scattered White Pine (*Pinus strobus*) and White Birch (*Betula papyrifera*) (**Photograph 2**). Some of the species of shrub found in the understory include Common Blackberry (*Rubus alleghaniensis*), Wild Red Raspberry (*Rubus idaeus*), Red-osier Dogwood (*Cornus sericea*), Guelder-rose Viburnum (*Viburnum opulus*), Thicket Creeper (*Parthenocissus vitacea*) and Riverbank Grape (*Vitis riparia*). The herbaceous layer is sparse and consists of scattered Enchanter's Nightshade (*Circaea lutetiana ssp. canadensis*), Yellow Avens (*Geum aleppicum*), and Canada Goldenrod.

FOM5-2 Dry - Fresh Poplar Mixed Forest

This small immature forest is located in the northern end of the subject property and extends beyond the property boundary into the Whiskey Creek valley. The canopy consists of immature and mid-aged mix of deciduous and coniferous tree species including Trembling Aspen, White Birch, Scots Pine and Eastern White Cedar (*Thuja occidentalis*) (**Photograph 3**).

CUT1-5 Raspberry Cultural Thicket

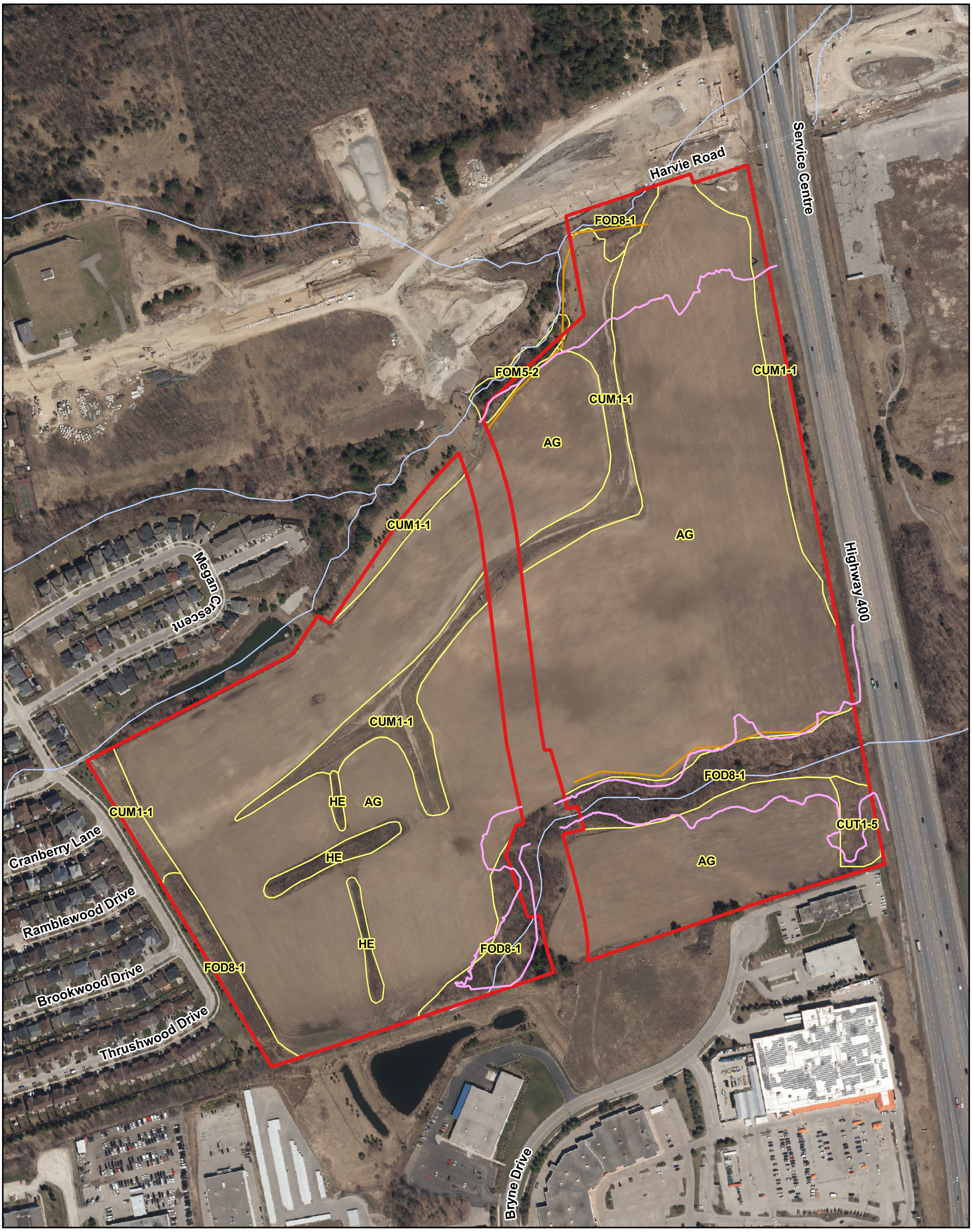
Located in the southeast corner of the subject property, this small area is dominated by Wild Red Raspberry, a few Trembling Aspen saplings, and a mix of old-field herbaceous species such as Canada Goldenrod.

HE – Hedgerows

These remnant disturbed areas are long, narrow naturalized areas that support immature Trembling Aspen, Green Ash, scattered shrubs and grasses typical of naturalized old-fields.

AG – Agricultural Fields

The majority of the subject property is currently being actively farmed. These are the tablelands outside of the creek valleys and the City road right of way. Based on reconnaissance site investigations, corn was grown during the 2021 season.



Legend

- Subject Property
- Ecological Communities
- Top of Bank
- Watercourse (MNRF 2021)
- Existing Floodline

Code	Forest Communities
FOD8-1	Fresh - Moist Aspen Deciduous Forest
FOM5-2	Dry - Fresh Aspen Mixed Forest
	Cultural Communities
CUM1-1	Dry - Moist Old Field Meadow
CUT1-5	Raspberry Cultural Thicket
	Other Communities
AG	Agricultural Crop
HE	Hedgerow

Existing Conditions

Figure 2

Bryne Drive Barrie SmartCentres EIS

BEACON ENVIRONMENTAL

Project: 220476
Last Revised: March 2022

Client: Barrie-Bryne Developments Limited

Prepared by: BD
Checked by: GP

N

1:3,600

0 80 160 m

C:\ODB\OneDrive - Beacon Environmental\GeoSpatial\Geo Projects\2020\220476 Bryne Drive Barrie SmartCentres EIS & TIPP\Q Project Files\2022-01-13 - Bryne Drive Barrie SmartCentres EIS & TIPP - 220476.qgz

Photograph 1. Dry – Moist Old Field Meadow (CUM1-1) and Active Agricultural Fields in Background (November 11, 2021)

Photograph 2. Fresh – Moist Poplar Deciduous Forest (FOD8-1) Within the Creek Valleys (November 11, 2021)

Photograph 3. Dry – Fresh Poplar Mixed Forest on Northern Edge of Subject Property (November 11, 2021)

5.1.1 Flora

The results of the botanical survey to be conducted in 2022 will be provided in an Addendum. It is anticipated that the subject property supports a higher than average percentage of non-native species for a specific site, when compared with about 25% of the flora of Ontario being non-native. At the subject property level, a higher percentage of non-native species is indicative of higher levels of disturbance and in this case a low floristic quality. Non-native species were recorded within all vegetation community types with higher numbers found in the Old Field Meadow areas.

5.1.2 Rarity

The list of plants for the subject property that will be compiled in summer 2022 will be compared to available lists of local, regional or provincial rarity or conservation significance. A complete list of vascular plant species recorded from the subject property will be provided in an Addendum.

5.2 Aquatic Resources

The subject property contains a reach of Lovers Creek and is adjacent to Whiskey Creek. Lovers Creek traverses the southeastern portion of the subject property and Whiskey Creek runs parallel with the subject property's northern property line, within the neighbouring property. Both tributaries empty into Kempenfelt Bay of Lake Simcoe. Whiskey Creek is within the Barrie Creeks subwatershed, and Lovers

Creek is within the Lovers Creek subwatershed. Both watercourses are classified by the LSRCA as cool water fisheries (LSRCA 2012). Descriptions of both drainage features are provided below.

5.2.1 Whiskey Creek

Whiskey Creek originates in the Veteran's Drive area, to the west of Highway 400 and drains a catchment area of approximately 635 hectares. The Whiskey Creek Watershed is an urban watershed of which approximately 60% is developed (AECOM 2009). The creek flows east through natural and urbanized reaches, finally discharging to Kempenfelt Bay in Lake Simcoe, adjacent to Minet's Point Park. North of the subject property, Whiskey Creek flows in a northeast direction and under the recently reconstructed Harvie Road. The flow originates from storm water management facilities associated with the residential subdivision to the west.

The portion of Whiskey Creek north of the subject property is a headwater tributary of the Whiskey Creek system and is mapped as a cool water fishery by the LSRCA (2012).

An aquatic habitat assessment of the reach of Whiskey Creek north of the subject property was undertaken by Geomorphic Solutions in 2007 and by Hatch in 2017. A summary of the existing conditions follows:

- The headwater tributary north of the subject property originates at a SWM facility upstream;
- Downstream of the stormwater pond, north of the subject property, the tributary is a well-defined active channel with significant flows;
- The active channel ranges from 1 to 2 m bankfull width with water depth ranging from 10 to 40 cm;
- Substrates consist primarily of sand and gravel with some cobble in the upstream reach;
- Instream cover consists of undercut banks (up to 15 cm deep), woody debris, deep pools, overhanging vegetation and instream vegetation in backwater areas; and
- Visually there were no signs of impairment such as turbidity.

Whiskey Creek is a permanently flowing, cool water watercourse that sustains populations of Brook Trout (*Salvelinus fontinalis*) and Mottled Sculpin (*Cottus bairdi*) among others (**Appendix B**; LSRCA 2012). As described in the October 2009 Whiskey Creek Master Drainage Plan (MDP), Whiskey Creek can be classified as a Type 1 fish habitat that contains spawning areas for species with stringent spawning requirements (upwelling for brook trout), highly productive feeding areas, and groundwater recharge areas. This watercourse has a timing restriction for in-water works between October 1 to June 1. It should be noted that the LSRCA's records for fish sampling shows no fish were caught in the reach of Whiskey Creek on the subject property.

5.2.2 Lovers Creek

The Lovers Creek Subwatershed covers 5,995 ha, with approximately 91km of watercourses flowing through predominantly woodland, agricultural and residential landscapes (Beacon and LSRCA 2007). Lovers Creek traverses the southeastern corner of the subject property, flowing from west to east eventually flowing under Highway 400 to the east. On the subject property the creek originates from piped drainage from the commercial area to the south where the drainage is dissipated by rip rap into a dry meadow just south of the subject property. An aquatic habitat assessment of the Lovers Creek

tributary within the subject property was undertaken by Geomorphic Solutions in 2007 and Hatch in 2017, and supplemented by observations by Beacon. A summary of the existing conditions follows:

- Where the Lovers Creek enters the subject property at the south edge there is a low-lying area with no active channel that captures flow from the south;
- Surface flows then dissipate through a wet thicket with no indication of a permanent or seasonal channel;
- The first active defined channel is located downstream of the thicket, approximately 200 m upstream of Highway 400;
- The active channel had flow during site visits in July through October 2007 and 2012;
- The active channel had a distinct meandering pattern with instream cover including undercut banks, woody debris, side channels, overhanging vegetation and substrate cover;
- Bankfull widths ranged between 0.50 and 2.0 metres and water depths ranged between 5 to 10 cm;
- Creek substrates included silt, sand, gravel and cobble;
- The creek is actively connected to the adjacent floodplain as evidenced by pockets of water in the overbank area; and
- Visually there were no signs of impairment such as turbidity.

The portion of Lovers Creek on the subject property is a headwater tributary and is identified as a cool water fishery (LSRCA, 2012). Downstream, the tributary is historically known to support Brook Trout among other fish species (**Appendix B**; LSRCA 2012). However, fish sampling found no fish within this tributary immediately downstream from the subject property on the east side of Hwy 400.

5.3 Amphibians

A potential breeding amphibian area in the southeast corner of the subject property was identified within the upper reach of the Lover's Creek tributary during Beacon's fall 2021 site visits (**Figure 2**). Amphibian Breeding Call surveys will be conducted in the spring of 2022.

In 2012, Beacon's previous surveys found several species calling from the headwaters of the Lovers Creek tributary in the SWM facility upstream of the subject property to the south. No calls were heard within the subject property by Beacon in 2012, nor by Hatch in 2017.

With respect to potential breeding amphibian habitat on the subject property, there is some shallow open water habitat for breeding amphibians in the Lovers Creek tributary. However, given the low volume of standing water in this area, it likely experiences dry conditions during years with less than average precipitation during April, May, and June.

5.4 Birds

In 2012, Beacon recorded a total of 28 breeding bird species on the subject property. However, given the time lapse and conversion of the much of the site to agriculture, breeding bird surveys will be conducted again in the spring and early summer of 2022.

In 2012, the site supported a good abundance of birds, although all species are common species of thickets, early successional habitat, or edges. The most common species recorded were Song Sparrow (*Melospiza melodia*), Red-winged Blackbird (*Agelaius phoeniceus*) and American Goldfinch (*Cardeulis tristis*). Sufficient trees are present such that some species requiring trees are present [e.g. Baltimore Oriole (*Icterus galbula*), American Robin (*Turdus migratorius*) and Red-eyed Vireo (*Vireo olivaceus*)].

One area-sensitive species, Savannah Sparrow, (*Passerculus sandwichensis*) was recorded on the subject property in 2012. Area-sensitive species are those which either requires larger patches of habitat in which to breed, or which are more productive in larger patches of habitat. Two Savannah Sparrows were observed in the more open areas. This species is found frequently in both agricultural and old fields in Southern Ontario. Although the Savannah Sparrow requires large areas of open land, it will breed in many types of large field habitats. It is a common to abundant species in southern Ontario.

In 2012, there were no SAR or provincially rare species recorded as breeding species.

In 2017, Hatch conducted breeding bird surveys along the Bryne Drive alignment and did not record any SAR on the subject property (Hatch 2017).

5.5 Incidental Wildlife

In 2012, Incidental wildlife observations were made during the various site visits. **Table 2** is a list of wildlife species that were observed. This list will be supplemented by observations made in 2022.

Table 2. Incidental Wildlife Observed on the Subject Property (2012)

Common Name	Scientific Name
White-tailed Deer	*Odocoileus virginianus*
Northern Raccoon	*Procyon lotor*
Coyote	*Canis latrans*
Wild Turkey	*Meleagris gallopavo*
Red Squirrel	*Tamiasciurus hudsonicus*

The mammals of the settled landscapes of southern Ontario are mostly species that have benefited from agricultural expansion and other human activities. Since many of the sensitive species have already been extirpated, the remaining species are generally widespread and common, as were all of the species detected on the subject property. These species probably use the subject lands all year round. Uncommon, rare or urban sensitive species would not be expected to use the subject lands.

5.6 Landscape Connectivity

Landscape connectivity, including the concept of wildlife corridors, has become recognized as an important part of natural heritage planning. Although there is not universal agreement on the net benefits of corridors, a wide range of benefits can be attributed to maintaining connectivity within the natural landscape. In the fragmented landscape of southern Ontario, connectivity functions range from low,

where major development features (e.g., highways, railways) fragment a pathway, to high, where natural features dominate the landscape and are more or less contiguous.

The subject property occurs adjacent to a major highway (Hwy 400) in a rapidly urbanizing area where the local landscape is dominated by residential/commercial development, resulting in low natural heritage connectivity. Landscape connectivity function at a regional level is met through Greenland and Potential Greenland Linkage designations as well as Natural Heritage Units and Linkages in the County of Simcoe Official Plan (2007); these designations do not occur on or adjacent to the subject property. Locally, the City of Barrie identifies the subject property to be adjacent to an area of Environmental Protection (Schedule A – Land Use); the Whiskey Creek corridor north of the subject property is shown as an EP zone. The subject property is also identified as part of an area of Natural Heritage Features (Schedule H – Natural Heritage Resources). The majority of the subject property is currently actively cultivated (corn in 2021) and has a low natural heritage and connectivity value.

The primary area of connectivity on the subject property is the portion associated with Lovers Creek. The reach of Lovers Creek in the southeast corner of the subject property presently is a low-lying area that captures flow from the south which then dissipates through a wet thicket with no indication of a permanent or seasonal channel. The Lovers Creek corridor provides limited connectivity to the downstream reaches east of Highway 400.

As a result of the previous and current anthropogenic activity and the surrounding land uses, the landscape connectivity associated with the free movement of wildlife within and adjacent to the subject property is minimal.

5.7 Species At Risk

Based on Beacon's desk-top GIS-based screening of numerous sources, there are recorded occurrences of 16 species that are designated either threatened or endangered with 5 km of the subject property. These species and their designations are listed in **Table 3**.

Table 3. Species at Risk Records in the Vicinity (5 km) of the Subject Property

Species	ESA[1] Status	SARA[2] Status	COSEWIC[3] Status	Species or Habitat Present on the Subject Property
Spotted Turtle *Clemmys guttata*	Endangered	Endangered schedule 1	Endangered	**No**, No open water wetlands, no suitable habitat.
Chimney Swift *Chaetura pelagica*	Threatened	Threatened schedule 1	Threatened	**No**, no buildings or structures for nesting.
Butternut *Juglans cinerea*	Endangered	Endangered	Endangered	**Not likely,** none found; to be confirmed in summer 2022.
Little Brown Myotis *Myotis lucifugus*	Endangered	Endangered schedule 1	Endangered	**No**, wooded areas are immature and lack any cavity trees for day or maternal roosting.
Eastern Small-footed Myotis *Myotis leibii*	Endangered	N/A	N/A	**No**, wooded areas are immature and lack any cavity trees for day or maternal roosting.
Barn Swallow *Hirundo rustica*	Threatened	Threatened schedule 1	Threatened	**No**, no structures (barns, bridges) present on the subject property. To be confirmed in 2022.
Massasauga *Sistrurus catenatus*	Threatened	N/A	Threatened	**Not likely**, subject property is highly disturbed and fragmented/isolated from other suitable habitat.
Northern Myotis *Myotis septentrionalis*	Endangered	Endangered schedule 1	Endangered	**No**, wooded areas are immature and lack any cavity trees for day or maternal roosting.
Eastern Whip-poor-will *Antrostomus vociferus*	Threatened	Threatened schedule 1	Threatened	**Possible**, potential habitat (open areas adjacent to treed areas are present). Nocturnal surveys needed to confirm in 2022.
Henslow's Sparrow *Ammodramus henslowii*	Endangered	Endangered schedule 1	Endangered	**Not likely**, rare bird that breeds in tallgrass prairies, wet grasslands. Subject property supports small areas of old field meadow. To be confirmed in 2022.
Louisiana Waterthrush *Parkesia motacilla*	Threatened	Special Concern	Threatened	**Not likely**, prefers steep wooded ravines with fast-flowing water which is not present on the subject property. To be confirmed in 2022.
Bobolink *Dolichonyx oryzivorus*	Threatened	Threatened schedule 1	Threatened	**Not likely**, most open fields are actively cultivated and not nesting habitat. To be confirmed in 2022.
Tri-colored Bat *Perimyotis subflavus*	Endangered	Endangered schedule 1	Endangered	**No**, wooded areas are immature and lack any cavity trees for day or maternal roosting.
Bank Swallow *Riparia riparia*	Threatened	Threatened schedule 1	Threatened	**No**, no steep, vertical cutbanks for nesting.
Eastern Meadowlark *Sturnella magna*	Threatened	Threatened schedule 1	Threatened	**Not likely**, most open fields are actively cultivated and not nesting habitat. To be confirmed in 2022.
Blanding's Turtle *Emydoidea blandingii*	Threatened	Threatened schedule 1	Endangered	**No**, No open water wetlands, no suitable habitat.

6. Summary of Key Functions and Attributes

Based on preliminary field investigations and analysis, the following attributes have been identified on the subject property:

- Fish habitat;
- Amphibian breeding habitat;
- Breeding birds; and
- Connectivity.

These attributes and functions have also been used as a surrogate for other wildlife values. Existing information was also integrated into this assessment. **Table 4** provides a summary of the potential key functions and attributes that have been identified on the subject lands in 2012 but will be further investigated in 2022.

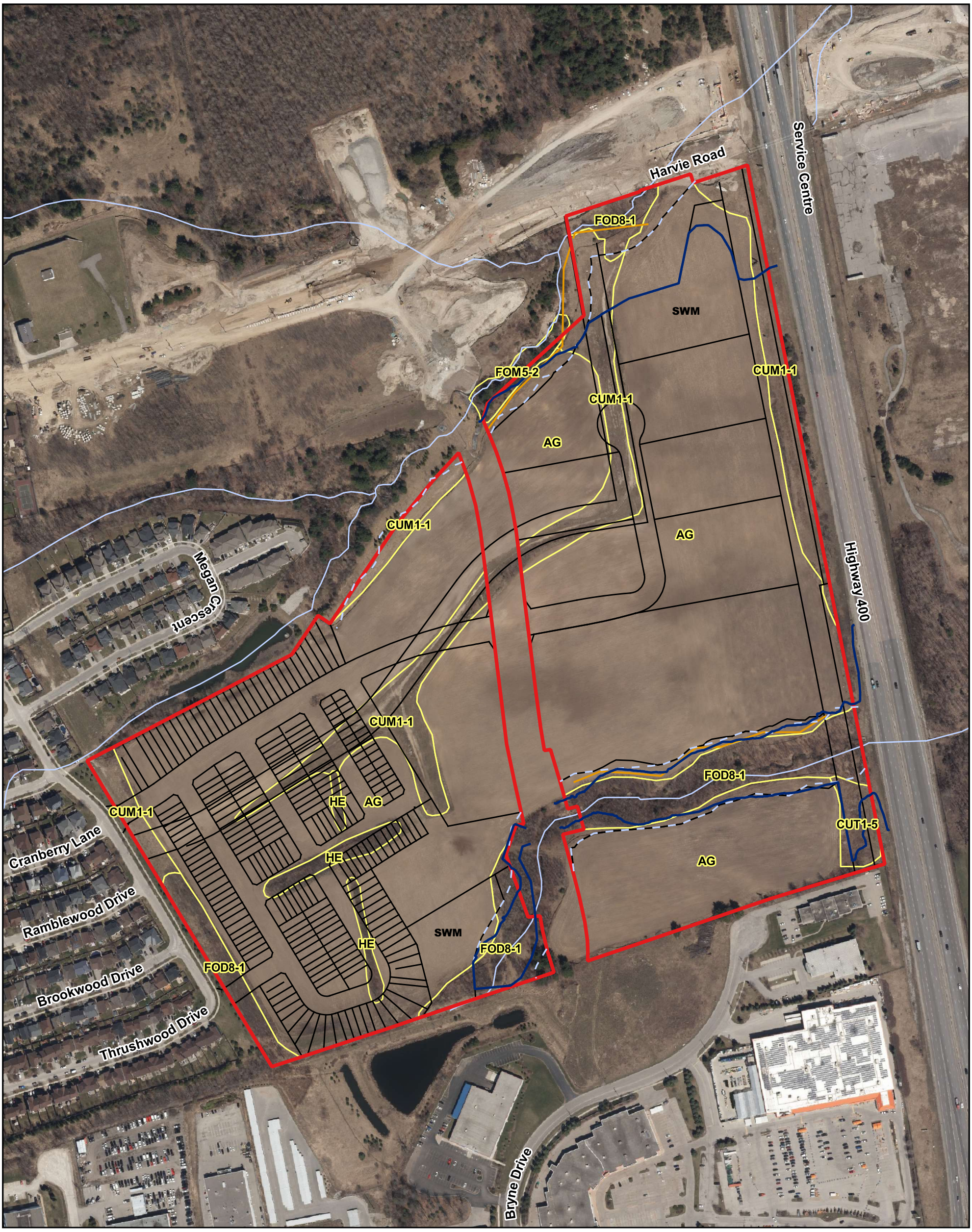
Table 4. Summary of Key Functions and Attributes on the Subject Property

Key Functions	Attributes	Location in Subject Property
Fish Habitat	• Contributing fish habitat	• Reach of Lovers Creek – southeastern corner • Whiskey Creek
Amphibian breeding habitat	• Poor or unavailable breeding habitat	• Within the upper reach of Lover's Creek
Breeding Birds	• Area Sensitive Bird – Savannah Sparrow (*Passerculus sandwichensis*). (This species and any SAR to be confirmed in 2022).	• Observed in the open field areas in 2012.
Connectivity	• The Lovers Creek corridor provides a linkage to the downstream reach of Lovers Creek	• Adjacent to and including the Lovers Creek corridor.

In 2012, field investigations of the flora and fauna within the subject property did not identify any species designated as endangered, threatened or special concern in Ontario. Surveys in 2022 will confirm if this is still the case.

7. Proposed Development Plan

The proposed development concept was prepared by Weston Consulting (2021). The proposed land uses will be divided by the future extension of Bryne Drive north though the central part of the subject property and connect with Harvie Road. The west side is proposed for residential, including semi-detached homes, townhomes, two mid-rise residential blocks, a park, SWM pond and associated roads. The east side is proposed for eight employment use blocks, a SWM pond and associated roads and parking areas. The proposed development plan is shown on **Figure 3**.



Legend

- Subject Property
- Ecological Communities
- Proposed Floodline
- Top of Bank
- Watercourse (MNRF 2021)
- Watercourse + 30 m
- Proposed Development

Code	Forest Communities
FOD8-1	Fresh - Moist Aspen Deciduous Forest
FOM5-2	Dry - Fresh Aspen Mixed Forest
	Cultural Communities
CUM1-1	Dry - Moist Old Field Meadow
CUT1-5	Raspberry Cultural Thicket
	Other Communities
AG	Agricultural Crop
HE	Hedgerow

Proposed Development

Figure 3

Bryne Drive Barrie SmartCentres EIS

BEACON ENVIRONMENTAL

Project: 220476
Last Revised: March 2022

Client: Barrie-Bryne Developments Limited

Prepared by: BD
Checked by: GP

N

1:3,600

0 80 160 m

C:\ODB\OneDrive - Beacon Environmental\GeoSpatial\Geo Projects\2020\220476 Bryne Drive Barrie SmartCentres EIS & TIPP\Q Project Files\2022-01-13 - Bryne Drive Barrie SmartCentres EIS & TIPP - 220476.qgz

A draft Functional Servicing Report (FSR) and draft Preliminary Stormwater Management Report (SWMR) and a draft Natural Hazards Assessment for the proposed development have been prepared by Tatham Engineering (2022a,b,c). A preliminary Hydrogeological Investigation was completed by WSP (2022). Beacon has reviewed these draft preliminary reports to include an analysis of potential impacts on natural heritage features and functions.

8. Impact Assessment

8.1 Proposed Land Use Adjacent to Natural Features

In general, potential effects of the proposed development on aquatic and terrestrial resources of the subject lands could include the following:

- Redirection of surface runoff and groundwater to the SWM areas and subsequent reduction in baseflow to Whiskey Creek and Lovers Creek;
- Increased nutrient input, erosion, sedimentation, and flow fluctuations in the watercourses;
- Thermal impacts (warming) to the watercourses;
- Direct loss of vegetation and wildlife habitat; and
- Noise and light effects.

In a general sense, urbanization at the landscape scale likely results in instability in the populations of "urban-sensitive" species. These species are more often habitat specialists, and their numbers decline, whereas numbers of generalist species that are often "urban tolerant" tend to increase. To some extent this effect is already reflected in the communities and species that have been recorded in the past on the subject property, whether birds, mammals or plants. Although there will be a direct loss of vegetation and wildlife habitat on the subject property, the majority of the habitat (agricultural fields and old field meadow) is of low ecological value and integrity. The hedgerow area is quite young, owing to recent clearing and as such, there has been no development of complex habitat structures and associated functions such as large standing dead trees. The shrub and herbaceous vegetation are also sparse and low in species diversity. Urban sensitive species were likely displaced previously as a result of the land clearing in the past. Further changes in species composition can be anticipated as the general area continues to urbanize.

External lighting, particularly that originating from parking lots, could be problematic if stationary light sources such as overhead light standards are oriented in such a way that they cast a large amount of ambient light that spills over into the creek corridors. The simplest way to mitigate these potential impacts is through the implementation of individual lot design standards that require downward facing street and parking lot lights that strictly focus the area of illumination and eliminate light pollution. This will be a consideration during detailed site design.

8.2 Terrestrial Resources

In general, potential effects of the proposed development to terrestrial resources of the subject property could include the following:

- Direct loss of vegetation and wildlife habitat;
- Noise and light effects to the valleyland; and
- Encroachment into natural areas such as garbage, and trampling and cutting of vegetation.

In addition to these effects of the proposed development, other effects can be anticipated as the landscape urbanizes.

8.2.1 Loss of Vegetation

The proposed development encompasses most of the subject property with the exception being the 60 m wide Open Space corridor allocated for the protection of Lovers Creek and the 30 m setback form Whiskey Creek in the northeast. Presently within the proposed development, the vegetation communities have been dramatically altered by human activities and consist of active agricultural fields, remnant old field meadows and small, narrow areas of immature poplar regeneration. None of the remaining vegetation communities on the subject property are considered provincially rare. It is not anticipated the subject property supports any candidate significant wildlife habitat or plants of conservation significance, but this will be confirmed through field investigation in 2022.

8.2.2 Loss of Wildlife and Wildlife Habitat

8.2.2.1 Potential Impacts to Amphibian Habitat

With respect to breeding amphibian habitat on the subject property, it appears that only the existing SWM pond located beyond the southern property boundary presently provides limited areas of shallow open water marsh habitat for breeding amphibians. The presence or absence of breeding amphibians within the subject property will be confirmed in the spring of 2022.

8.2.2.2 Species at Risk and Other Wildlife

A GIS-based SAR database screening of the subject property for potential SAR habitat was completed through identification of potential suitable habitat types for the target species. Field investigations in 2022 will include a formal breeding bird survey and opportunistic surveys for wildlife during all subject property visits in potentially suitable habitats, including a screening for Butternut. A summary of the species with occurrence records within 5 km of the subject property and an initial assessment as to whether the species or its habitat was observed on the subject property is provided in **Table 2**.

8.3 Aquatic Resources

The construction of any development infrastructure has the potential to impact fish habitat either directly or indirectly. For the subject property, fish habitat is associated with both Whiskey Creek and Lovers Creek.

8.3.1 Direct Impacts

Direct loss of fish habitat is subject to Section 35(2) of the Federal *Fisheries Act* which prohibits the Harmful Alteration, Disruption or Destruction (HADD) of fish habitat. Development limits from both Whiskey Creek in the north and Lovers Creek in the south are proposed to maintain a 30m set back from both watercourses, and as such, there will be no direct loss of fish habitat.

8.3.2 Indirect Impacts

Indirect impacts to Whiskey Creek and Lovers Creek that could result from this development include:

- Redirection of surface runoff and groundwater to SWM ponds and subsequent reduction in base flow;
- Increased nutrient input, erosion, sedimentation, and flow fluctuations;
- Thermal impacts (warming) to the watercourses; and
- Reduction of infiltration resulting from increase in impervious surfaces.

Stormwater flows from the subject property will be conveyed to an existing SWM pond on the north side of the subject property, and two proposed SWM ponds; one in the northeast corner that will outlet to Whiskey Creek, and the other in the south end on the west side of planned Bryne Drive extension and will outlet to the Lovers Creek tributary.

The draft FSR recommends that SWM should capture and convey stormwater flows to the creeks and will provide design criteria for the SWM for the subject property that includes the requirements of the City of Barrie, the MECP and the LSRCA.

Erosion, sedimentation, and flow fluctuation due to stormwater runoff are often the greatest cause of impacts to fish habitat resulting from new development. The proposed SWM facilities are expected to attenuate flow and hence minimize erosion and sedimentation to both Whiskey Creek and Lovers Creek.

Based on Tatham's draft SWM report, there will be no negative impacts to Whiskey Creek and Lovers Creek through advanced level treatment train that includes membrane filter units (Jellyfish), lot-level infiltration practices and proper design of the SWM facilities.

The proposed development will result in an increase in impervious surfaces and, without mitigation measures, result in a reduction in groundwater infiltration and an increase in surface water runoff. To mitigate these impacts, the WSP report recommends,

> *Low Impact Development mitigation opportunities that should be considered at the detailed design stage include capturing and infiltrating roof drainage and runoff from pervious areas, reducing impervious areas, and enhancing infiltration through the use of more pervious materials. (p. 48).*

Using these recommended mitigation measures, the draft Preliminary Hydrogeological Investigation Report (WSP 2022) estimates that:

> *Within the Barrie Creeks Subwatershed (Whiskey Creek), there is an overall infiltration surplus of 6,865 m^3/year or 12% when compared to the predevelopment conditions.*

Previously the unmitigated water balance for this subwatershed was estimated to have a deficit of 41,559 m^3/year of 75% when compared to the pre-development conditions.

The runoff to Whiskey Creek is estimated to increase by approximately 68,618 m^3/year or 199.8% when compared to the pre-development conditions. Previously the unmitigated water balance for this subwatershed estimated runoff to increase by 126,441 m^3/year or 368.1%.

For the Lovers Creek tributary, there is an overall infiltration surplus of 22,647 m^3/year or 57% when compared to the predevelopment conditions. Previously the unmitigated water balance for this subwatershed was estimated to have a deficit of 26,394 m^3/year or 66% when compared to the pre-development conditions.

The runoff to Lovers Creek is estimated to increase by approximately 3,946 m^3/year or 15.8% when compared to the pre-development conditions. Previously the unmitigated water balance for this subwatershed estimated runoff to increase by 43,725 m^3/year or 174.7%.

With the implementation of LID measures, it is anticipated that there will be a surplus of water infiltration and thus no negative impact to the quantity of groundwater inputs. Impacts from increased stormwater runoff should be largely mitigated though proper design of stormwater management ponds.

The draft Natural Hazards Assessment report (Tatham 2022c) proposes a cut and fill approach to addressing natural hazard due to flooding. Areas of cut and fill shall be graded and revegetated with self-sustaining vegetation over the long term and comprised of native species.

8.4 Human Intrusion

As a general rule, establishing a commercial (Employment Lands) use versus a residential use adjacent to a natural area is less likely to result in environmental impacts related to alteration of adjacent habitats. Where residential lots back onto a natural feature such as an old field, a woodlot or a wetland, there is a greater tendency for direct interference in the form of extending backyards into the feature (resulting in the removal of vegetative cover and potential erosion), the dumping of yard waste (leaves, lawn clippings), the introduction of non-native, invasive plant species, and local drainage alterations by diverting rear yard runoff away from the valley and into the storm sewer system.

Other stressors on the natural environment typically associated with residential subdivisions, such as the introduction of urban-sponsored predators (i.e., household cats and dogs), can adversely affect local wildlife populations. However, this potential impact will be absent within the eastern portion of the subject property where the proposed development is for commercial use.

9. Mitigation

9.1 Loss of Vegetation

The small amount of forested or treed hedgerow areas that would be lost due to development within the subject property are of low ecological value and integrity. The areas are quite young, owing to recent clearing and little time for development of complex habitat structures and associated functions (large standing dead trees, large woody debris, or microhabitat created by “pit and mound” topography resulting from large trees falling over). These treed areas are relatively homogenous consisting of young stands of Trembling Aspen saplings with sparse shrub and herbaceous layers. None of the tree species is considered rare or uncommon at a local, regional, provincial, or national level.

Similarly, within the floodplain, where a cut and fill approach is proposed to maintain flood capacity, these areas are currently immature treed or vegetated areas that will be revegetated native species and sustained over the long term.

9.2 Buffers

As noted previously, the subject property contains a reach of Lovers Creek and is adjacent to Whiskey Creek. Lovers Creek traverses the southeastern portion of the subject property and Whiskey Creek runs parallel with the subject property northern property line, within the neighbouring property. Both watercourses are classified by the LSRCA as cool water fisheries (LSRCA, 2012).

A vegetation protection zone (VPZ), or riparian or forested buffer can be an area along a shoreline, wetland, or stream where development is restricted or prohibited. The primary function is to physically protect and separate a stream, lake, or wetland from future disturbance or encroachment.

It is well documented in scientific and technical literature within the past 20 years that maintenance of a VPZ or buffer along watercourses can mitigate against some impacts related to land use changes on the watercourse. Parameters such as sediment, nutrients, toxins, stream temperature, as well as the ability to protect aquatic organisms have all been studied.

Pollutant removal is primarily achieved by slowing the surface water flow that transports the sediments and the pollutants adhered to them. The effectiveness will vary according to a number of conditions including soil type, pollutant concentrations, land use and the size of the area draining into the buffer, width and slope, and the size, age, and density of the vegetation in the buffer.

The protection of a shoreline, wetland, or stream by a buffer is dependent on the site-specific conditions. A review of pertinent research indicates that while the results are highly variable between and even within studies (e.g., Leavitt 1998; Lowrance *et al*. 1997; Lowrance *et al*. 2002), effective water quality protection is best afforded by buffers in the 30 m range (e.g., Dillaha et al. 1986; Environmental Law Institute 2008; Wenger 1999).

Since Lovers Creek and Whiskey Creek are both classified as a cool-water fishery streams, **Beacon recommends** that:

- A 30m buffer from the centreline of the Lovers Creek, as defined by City of Barrie policy, should be included in the design of the proposed development; and
- A 30m buffer from Whiskey Creek, as defined by City of Barrie policy, should be included in the design of the proposed development. (**Figure 3**).

9.3 General Mitigation Measures

In addition to the mitigation measures detailed in the previous section, the following measures should also be undertaken.

Sediment Control

As a general protection measure, SWM facilities will be required to meet MOE Level 1 criteria with respect to total suspended solids.

Construction works such as grading, grubbing and excavation can cause the movement of sediment into watercourses, both on and downstream of the subject property. As a result, a sediment control plan should be prepared for the construction phase of the development and approved by LSRCA, prior to the start of construction works to the standards outlined in the *Erosion and Sediment Control Guideline for Urban Construction* (TRCA 2019).

To ensure that heavy equipment does not impinge on natural areas and cause soil compaction, filter fabric and page wire fencing should be properly installed to define the development limit prior to site alteration, and it should be maintained during the development process. All silt fencing should be removed when development work is completed, and exposed soils stabilized. **Beacon recommends** that:

- When the native soil is exposed, sedimentation and erosion control works, in the form of page wire silt fencing and straw bales, be implemented along the development limit;
- Straw bales and page wire silt fence should be stock piled on site to be prepared for potential breaches in the silt and erosion control works; and
- Where sedimentation and erosion control works are installed, these works are to be maintained in good working order until the exposed soils have been stabilized.

Standard Best Management Practices should also be employed during the construction process.

Construction Dewatering

Disposal of groundwater into surface water features, such as wetlands and watercourses, may not be permitted and will be dependent on the time of year, duration and the quantities involved. A permit from LSRCA for the dewatering activities, discharge locations, etc. may be required. This should be evaluated during the detailed design once the requirements of dewatering are fully understood.

Naturalization of Storm Water Management Facilities

Where possible, any SWM facilities should be naturalized with planting of native trees and shrubs. The naturalization planting plan should be developed and implemented following the LSRCA's Technical Guidelines for Stormwater Management Submissions (2016). Design criteria should provide fringe area planting for both water level shading and water quality polishing.

Directional Downward Lighting

It is recommended that downward facing street and parking lot lights be installed where internal roads and parking lots will be situated adjacent to the Lovers Creek and Whiskey Creek corridors. The purpose of this directional downward lighting is to focus the area of illumination, thereby reducing the amount of light that could enter the natural areas.

Timing

The breeding bird season in southern Ontario is generally from mid-April to mid-July. The clearing of vegetation and site grubbing within the construction footprint during the bird breeding season could result in the incidental destruction of migratory bird nests and young. Under Section 6 of the Migratory Birds Regulations, destruction of nests (eggs/young) is prohibited; therefore, the clearing of vegetation should be outside of this period. For any proposed clearing of vegetation within these dates, or where birds may be suspected of nesting outside of typical dates, an ecologist should undertake detailed nest searches immediately prior to site alteration to ensure that no active nests are present.

10. Policy Conformity

The development has been designed with consideration of the natural features and functions described in this report. The first line of protection is avoidance, with direct avoidance of sensitive areas and further buffering to mitigate the transition from developed to natural areas.

Section 3 of this report provided an overview of the natural heritage policies and regulations of the PPS, the County of Simcoe Official Plan, the City of Barrie Official Plans, the Lake Simcoe Protection Plan, the Growth Plan for the Greater Golden Horseshoe, the *Conservation Authorities Act*, and the LSRCA Watershed Policies and Regulation. The proposed undertaking, existing conditions and net effects of the proposed development are reviewed here in the context of those natural heritage policies and regulations.

10.1 Provincial Policy (2020)

Policy 2.1 of the PPS provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources. The *Natural Heritage Reference Manual* (OMNR 2010) is a technical document used to help assess the natural heritage features.

Based on the background review, field investigations to date, and the assessment of features and functions provided in this Preliminary EIS, there are no provincially significant features designated on the subject property.

10.2 Growth Plan for the Greater Golden Horseshoe (Office Consolidation 2020)

The City of Barrie is a designated settlement area and is excluded from the province's Natural Heritage System mapping and the associated policies. Within the City of Barrie natural heritage features continue to be protected, through their Official Plan policies, in a manner that is consistent with the PPS. Sections 10.5 and 10.6, below, outline how the proposed development adheres to the City's natural heritage policies.

10.3 Lake Simcoe Protection Plan (2009)

The Lake Simcoe Protection Plan provides a number of policies under the *Lake Simcoe Protection Act* that apply to existing development areas.

Beacon:

Policy 6.33-DP is addressed through maintaining the riparian area and wildlife corridor of Lovers Creek (Sections 5.6 and 9.1), mitigating impacts associated with urban runoff into Whiskey Creek and Lovers Creek (Sections 8 and 9), and the protection of the vegetation protection zone providing a minimum buffer from the creeks (Sections 8.1 and 8.2).

Policy 6.34-DP speaks to the requirement for any buffers to be composed of and maintained as natural self-sustaining vegetation. This Policy is addressed in Section 9.1 which proposes buffers from the centre of both Whiskey Creek and Lovers Creek.

10.4 Lake Simcoe Region Conservation Authority Watershed Policies and Regulation

The LSRCA regulates hazard lands including creeks, valleylands, shorelines, and wetlands.

Beacon:

This Preliminary EIS was scoped with LSRCA staff prior to commencing the field investigations. A staking exercise was conducted with LSRCA staff to identify the top of bank within the subject property for both watercourses. Watercourses will be maintained and protective buffers (30 m from the watercourse or top of bank, whichever is greater) plus an additional 6 m access easement setback from the top of bank, are recommended on these features. The proposed development plan, with the associated recommendations, addresses the regulatory interest of the LSRCA.

10.5 The City of Barrie Official Plan (2010)

On April 23, 2010, MMAH approved an Official Plan for the City of Barrie. Portions of the OP have been appealed to the Ontario Municipal Board (OMB). The applicable policies with Beacon's comments are detailed below.

3.5.2.3 WATER RESOURCE MANAGEMENT

(a) In reviewing development proposals, the City shall protect, maintain and enhance water and water related resources on an integrated watershed management basis.

Beacon:

A recommendation was made for a 30m buffer from the centreline of both Lovers Creek and Whiskey Creek, as per City of Barrie policy, or the staked top of bank, (whichever is greater). A 6m access easement, as defined by the LSRCA guidelines, should be included in the design of the proposed development.

3.5.2.3.1 FLOOD PLAIN MANAGEMENT, EROSION, HAZARDOUS SITES AND FILL CONTROL

(a) *Flood plain management and control will occur in partnership with the applicable Conservation Authorities.*

(f) The placing or dumping of fill of any kind, the straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream or watercourse, the construction of any building or structure in or on a pond or swamp or any area susceptible to flooding shall not be permitted in a regulated Conservation Authority area except with written approval of the Conservation Authority. Authorization may be required from Fisheries and Oceans Canada for any in-water works.

Beacon:

Some minor cut and fill within the Lovers Creek floodplain, within the regulated area of the LSRCA, is proposed. None of the proposed works will be within the watercourse. Approval from the LSRCA will be required.

3.5.2.3.2 SURFACE WATER PROTECTION

(a) *The City will work in partnership with adjacent municipalities and the Conservation Authorities, provincial ministries, the Health Unit and other partners to develop practices that maintain and improve the quality and quantity of lakes and watercourses, and to protect headwater areas from land uses that have the potential to contaminate downstream water systems.*

(b) The City will co-operate with the Conservation Authorities and adjacent municipalities in identifying and mapping surface water features, groundwater features, hydrologic functions and natural heritage features and areas which are necessary for the ecological and hydrological integrity of the watershed. These features will be incorporated into the Plan as Schedules by amendment.

(c) The natural quality and hydrologic characteristics of watercourses and lakes, including aquatic habitat, base flow, water quality, temperature, storage levels or

capacity are to be maintained, and no development shall be permitted that has the potential to create a negative impact on any of the watercourses and lakes.

(d) Development and site alteration shall be restricted in or near lakes and watercourses such that these features and their related hydrologic functions will be protected, improved or restored. In general, development and site alteration shall be setback a minimum 30 metres from lakes and watercourses.

(e) Mitigation measures or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features such that these features and their related hydrologic functions will be protected, improved or restored.

Beacon:

A 30m buffer setback is recommended, as per the City of Barrie policy. The recommendations in the Functional Servicing and Stormwater Report (Tatham 2022), as well as the general erosion and sediment control measures recommended in this report mitigate the potential impacts to Whiskey Creek and Lovers Creek that could result from this development.

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.*

iv. **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.

v. **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.

vi. **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.

Beacon:

The two creeks on the subject property and their associated valleys are identified as Level 1 Natural Heritage Resources, and a small area adjacent to the Lovers Creek is identified as Level 1 with Existing Development Designation Subject to 3.5.2.4 d. No Development is proposed within any areas identified as Level 1.

NOTE: the remaining portion of the subject property is identified as Level 3 in the City's OP; however, these areas are currently active agricultural fields and do not support any of the natural heritage features that define a Level 3 Natural Heritage Resource.

3.9.4 DEVELOPMENT AND SITE ALTERATION

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*.

Beacon:

The 30 m buffer setbacks from Lovers Creek and Whiskey Creek will provide natural, native vegetation along the creek corridor, enhancing the present vegetation community. A landscape planting plan should be prepared for all areas within the 30 m buffer that may be disturbed or is not already naturalized.

4.7 ENVIRONMENTAL PROTECTION AREAS

4.7.2.3 General Policies

(e) *Development and site alteration shall not be permitted in fish habitat areas except in accordance with Provincial and Federal requirements.*

Beacon:

No in-water works are contemplated to accommodate the proposed development and as such, will not result in the Harmful Alteration, Disruption or Destruction of fish habitat. SWM facility designs have not been finalized but if they require in-water works for a storm water outlet, they will be submitted to DFO for review, in necessary.

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 Lover's, Bear, Hewitt's, Sophia, Kidd's, Bunker's, Dyment'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.

Beacon:

The 30 m buffer setbacks from Lovers Creek and Whiskey Creek will provide natural, native vegetation along the creek corridor, enhancing the present vegetation community. A landscape planting plan should be prepared for all areas within the 30 m buffer that may be disturbed or is not already naturalized. The 30 m buffer setbacks include the identified floodplain, with minor modifications, the staked top of bank and 6 m access setback.

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.

Beacon:

Most of the subject property, outside of the creek valleys, is currently under active agriculture. The wooded areas (hedgerows) within the proposed development area are not considered significant woodlands, nor are they greater than 0.2 ha in size. The wooded areas within the EPAs (creek valleys) are not proposed for any development and will be protected.

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.

Beacon:

Presently within the proposed development, the vegetation communities within the subject property have been dramatically altered by human activities. None of the remaining vegetation communities on the subject property is considered provincially rare or support attributes such as significant wildlife habitat.

10.6 The New City of Barrie Official Plan (2021)

The applicable natural heritage or environmental policies in the new OP are detailed below.

5.3.1 Natural Heritage System General Policies

j) A standard terms of reference for an environmental impact study 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 appropriate Conservation Authority. Additional natural heritage resources identified through a site-specific environmental impact study will be categorized by level and will be subject to the policies of this section. An amendment to the Plan is not required for minor amendments to Map 3 if an environmental impact study has been approved through a plan of subdivision, site plan, Zoning By-law amendment, or consent application.

k) To ensure the effective management and retention of the features and functions identified on Map 3, a Natural Heritage System feature 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 System feature, to the satisfaction of the City and applicable Conservation Authority, may be required.

l) Development shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

m) Development shall not be permitted in the habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

n) Development shall not be permitted in significant wildlife habitat and/or significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on natural features or their ecological functions.

Beacon:

Terms of reference were established in consultation with the LSRCA (**Appendix A**). The 30 m buffer setbacks from Lovers Creek and Whiskey Creek will provide natural, native vegetation along the creek corridor, enhancing the present vegetation community. A landscape planting plan should be prepared for all areas within the 30 m buffer that may be disturbed or is not already naturalized.

No in-water works are contemplated to accommodate the proposed development and as such, will not result in the Harmful Alteration, Disruption or Destruction of fish habitat. SWM facility designs have not

been finalized but if they require in-water works for a storm water outlet, they will be submitted to DFO for review, in necessary.

Although no habitat of endangered or threatened species is currently known within the subject property, should further site investigation identify any, the MECP will be consulted to ensure conformity with the ESA and associated regulations.

None of the vegetation communities on the subject property is considered provincially rare or support attributes such as significant wildlife habitat. This will be confirmed through detailed site investigations in 2022.

5.3.2 Managing Floodplains, Hazard Lands and Fill

a) Floodplain management and control will occur in partnership with the applicable Conservation Authority and as guided by the City's drinking water policies. Floodplains are identified on Appendix 1 to this Plan.

b) Floodplain management within the Lake Simcoe Region Conservation Authority and the Nottawasaga Valley Conservation Authority jurisdictions includes the one zone, two zone or the special policy area concept. The one-zone floodplain management concept shall be used within the City. Any application of the two-zone concept will require an amendment to this Plan and written approval from the Conservation Authority. The establishment of a new special policy area, or any changes within an existing special policy area, will only be permitted with the prior written approval of the appropriate agencies.

c) New development on existing lots, redevelopment, additions, and existing uses that, by their nature, must be located in the floodplain shall be protected by acceptable flood proofing action or measures subject to the approval of the City and the applicable Conservation Authority.

d) Notwithstanding policy 5.3.2(c), new development including the creation of new lots in floodplains is prohibited in accordance with the regulatory flood standard.

e) Mitigation measures or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features.

f) The precise boundaries of floodplains and erosion hazard areas and their associated setbacks shall be established to the satisfaction of the City, without further amendment to this Plan, in consultation with the applicable Conservation Authority; through the Drainage and Stormwater Master Plan and other appropriate studies; and as part of the review of specific development applications. Changes to the boundaries may include any reductions, such as those due to the introduction of additional or larger culverts downstream. The flood and erosion hazard boundaries may potentially be redefined by completing studies as requested and to the satisfaction of the Conservation Authority.

g) *Development in floodplains and erosion hazard areas determined through the process outlined in 5.3.2(f) shall be subject to the policies of the Natural Heritage System regardless of their designation. In addition, the applicable Conservation Authority shall be satisfied with respect to its own legislative and regulatory powers. Development in lands which are established to be outside the floodplain and erosion hazard areas shall be in conformity with the underlying land use designation.*

Beacon:

Floodplains on the subject property have been identified and refined by Tatham Engineering Ltd. (2022) and are shown on **Figure 2**. Some cut and fill within the Lovers Creek and Whiskey Creek floodplains, within the regulated area of the LSRCA, is proposed to regularize the development design and maintain flood storage capacity. None of the proposed works will be within the watercourses. Approval from the LSRCA will be required.

5.4.2 Environmental Protection Areas Overlay

5.4.2.1 Environmental Protection Area – Level 1

a) Level 1 resources represent the components of the Natural Heritage System that have the highest level of protection. These areas include: provincially significant wetlands (PSWs); unevaluated wetlands greater than 0.5 hectares in size; significant woodlands greater than 4.0 hectares in size; woodlands greater than 10.0 hectares in size; significant habitat of endangered species; natural areas abutting Lake Simcoe; significant valleylands and threatened species; watercourses, minimum vegetation protection zones and connectivity linkages; and lands identified as environmental protection through site-specific planning and the development process.

b) Natural Heritage System land use designation policies of Section 2.6.6 apply to all properties containing an identified Level 1 feature.

c) An environmental impact study will be required to be completed by a qualified professional for any proposed development or site alteration within 120.0 metres of an area identified as Level 1 on Map 3.

d) Notwithstanding the land use limitations applicable to properties identified as Level 1, where a land use designation, as found on Map 2, permits other forms of development, such development may proceed subject to the policies of Level 2 and the appropriate planning application processes.

e) Watercourses shall generally be maintained in their existing locations. Where a development proposal seeks to relocate a watercourse, it must be demonstrated that the relocation will maintain the existing function of the watercourse, will result in a net ecological gain and will not negatively impact the Natural Heritage System.

f) Any relocation or significant alteration of a watercourse must incorporate natural channel design and be supported by a fluvial geomorphological assessment.

g) Any relocation of a watercourse must be in compliance with conservation authority regulations, and any other applicable provincial or federal regulations.

Beacon:

The two creeks on the subject property and their associated valleys are identified as Level 1 Environmental Protection Areas, and a small area adjacent to the Lovers Creek is identified as Level 1 with Existing Development Designation Subject to 5.4.2.1. d). This Preliminary EIS has been prepared because there is development proposed within 120 m of the Level 1 areas. No development is proposed within any areas identified as Level 1. Neither of the watercourses are proposed for alteration or realignment.

NOTE: the remaining portion of the subject property is identified as Level 3 in the City's new OP; however, these areas are currently active agricultural fields and do not support any of the natural heritage features that define a Level 3 Environmental Protection Area.

5.5.1 Protecting Natural Hydrologic Features

a) In accordance with applicable provincial policy, this Plan will protect and enhance the City's hydrologic features as well as align with the City's drinking water policies. As such it is the policy of the City to:

iii) Maintain the natural quality and hydrologic characteristics of watercourses and lakes, including aquatic habitat, base flow, water quality, temperature, storage levels or capacity, with no development being permitted that has the potential to create a negative impact on any of the watercourses and lakes;

iv) Restrict development in or near lakes, watercourses and fish habitat. Development shall generally be setback a minimum 30.0 metres from lakes and watercourses;

v) Only permit development in a manner that protects, improves, or restores any features and their related hydrologic functions; and,

vi) Require mitigation measures or alternative development approaches in order to protect, improve, or restore sensitive surface water features and their related hydrologic functions.

Beacon:

A 30 m buffer setback is recommended, as per the City of Barrie policy. The recommendations in the FSSR (Tatham 2022), as well as the general erosion and sediment control measures recommended in this report mitigate the potential impacts to Whiskey Creek and Lovers Creek that could result from this development.

11. Summary

A background review, pre-consultation with LSRCA staff on-site, and reconnaissance field investigations were undertaken as part of this Preliminary Environmental Impact Study. An analysis of features and functions will be undertaken and summarized in more detail once seasonal ecological surveys are completed in 2022. This Preliminary EIS has identified the extent of natural features on the subject property and identified potential impacts as a result of the proposed development. Mitigation measures have been identified including buffers and stormwater design criteria.

The results and analysis of the forthcoming field investigations will be included in an addendum that will document and confirm/refine the natural features. The significant natural heritage features and functions on the subject property are associated with Lovers Creek and Whiskey Creek, and will be buffered and protected and where required, appropriate mitigation is recommended.

During the 2022 field investigations, any plant or wildlife species of conservation significance on the subject property will be recorded. A review of the NHIC database identified records of significant species from within five kilometres of the subject property. The presence/absence of these species or habitats will be confirmed through targeted site investigations in 2022. None of the vegetation communities on

the subject property is considered provincially rare based on the NHIC status of vegetation communities for southern Ontario.

The proposed residential and commercial development, with proposed mitigation measures, is not anticipated to have significant negative impacts on the adjacent natural areas. Impacts such as increased impervious areas can be mitigated using LIDs. Light pollution can be mitigated through the use of downward-oriented light standards with little spillage.

Given the foregoing, it is concluded that the proposed residential and commercial development, with the implementation of appropriate mitigation measures and stormwater quality and quantity controls can occur without adversely affecting either Whiskey Creek or Lovers Creek, and their associated fish communities and habitats.

It is our opinion that the development plan as proposed, subject to analysis of 2022 field investigations, approvals and permits as may be required as part of the operation, can proceed in a manner that is consistent with the relevant policies of the Provincial Policy Statement, City of Barrie Official Plans (2010 and 2021), Lake Simcoe Protection Plan (2009), and Lake Simcoe Region Conservation Authority (LSRCA) Watershed Regulation and Policies.

Report prepared by:
Beacon Environmental

Geri Poisson, B.A. (Hons.), Dipl. Eco. Restoration
Senior Terrestrial Ecologist,
ISA Certified Arborist (ON-1288A)

Report reviewed by:
Beacon Environmental

Jamie Nairn, M.Sc., P.Ag.
Senior Ecologist, Northern Lead

12. References

AECOM Canada Ltd. 2009.
Whiskey Creek Master Drainage Plan Update, Environmental Assessment Document. Prepared for the City of Barrie

AMEC Earth and Environmental (2006).
Summary of the Results of Preliminary Geotechnical Investigation, Proposed Commercial and Industrial Development, Highway 400 and Harvie Road.

Armstrong, D.K. and Dodge, J.E.P. 2007.
Paleozoic geology of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 219.

Azimuth Environmental Consulting Inc. 2004
Environmental Impact Assessment Storm Water Management Pond – B, City of Barrie (Proposed)

Barling, R.D. and I.D. Moore. 1994.
Role of buffer strips in management of waterway pollution: A review. Environmental Management 18:543–558.

Barnett , P.J., W.R. Cowan, and A.P. Henry. 1991.
Quaternary Geology of Ontario; Southern Sheet. Ontario Geological Survey, Map 2556.

Beacon Environmental and the Lake Simcoe Region Conservation Authority. 2007.
Natural Heritage System for the Lake Simcoe Watershed. Prepared for the Lake Simcoe Region Conservation Authority and the Lake Simcoe Environmental Management Strategy. 142 pp plus appendices.

Chapman, L.J. and D.F. Putnam. 1984.
The Physiography of Southern Ontario, Third Edition. Ontario Geological Survey Special Volume 2.

Desbonnet, Alan, Pamela Pogue, Virginia Lee, and Nicholas Wolff, 1994.
Vegetated Buffers in the Coastal Zone. Coastal Resource Center, Rhode Island Coastal Sea Grant, University of Rhode Island. Providence, Rhode Island

Dillaha, T.A., J. H Sherrard and D. Lee. 1986.
Long-term effectiveness and maintenance of vegetative filter strips. Va. Water Res. Res. Ctr. Bull 151 Backsburg, Va. 30

Environmental Law Institute. 2008.
Planner's Guide to Wetland Buffers for Local Governments, ISBN 978-1-58576-137-1, ELI Project No. 0627-01, 25 pp.

Gartshore, M.E., M.J. Oldham, R. van der Ham, F.W. Schueler, C.A. Bishop and G.C. Barrett. 2004.
Amphibian Road Call Counts Participants Manual. Environment Canada, Ontario Region, 23 pp. + Appendices

Geomorphic Solutions. 2007.
Aquatic Habitat Assessment Harvie Road/400 Developments Inc.

Henson, B.L. and K.E. Brodribb. 2005.
Great Lakes Conservation Blueprint for Terrestrial Biodiversity. Volume 2. Ecodistrict Summaries. Nature Conservancy of Canada, Toronto, Ontario. 344 pp.

Lake Simcoe Region Conservation Authority. 2006.
Regulation of Development, Interference with Wetlands and Alteration to Shorelines and Watercourses. Ontario Regulation 179/06. May 20, 2006.

Lake Simcoe Region Conservation Authority. 2007.
Lake Simcoe Watershed 2007 Environmental Monitoring Report

Lake Simcoe Region Conservation Authority. 2022.
Ontario Regulation 179/06 Implementation Guidelines (Formerly Watershed Development Guidelines) Development, Interference with Wetlands and Alteration to Shorelines and Watercourses Regulation. Approved by the LSRCA Board of Directors November 26, 2021.

Lake Simcoe Region Conservation Authority. 2016.
LSRCA Technical Guidelines for Stormwater Management Submissions. September 1, 2016. 130 pp.

Lake Simcoe Region Conservation Authority. 2012.
Barrie Creeks, Lovers Creek, and Hewitt's Creek Subwatershed Plan. 374 pp.

Leavitt, J.1998.
The Functions of Riparian Buffers in Urban Watersheds. University of Washington, Masters of Science, Dept. of Civil and Environmental Engineering, 34 pp.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig, and S. McMurray. 1998.
Ecological Land Classification for Southern Ontario: First Approximation and its Application. Ontario Ministry of Natural Resources, South central Science Section, Science Development and Transfer Branch. SCSS Field Guide FG-02.

Lowrance, R., L. S. Altier, J. D. Newbold, R. R. Schnabel, P. M. Groffman, J. M. Denver, D. L. Correll, J. W. Gilliam, J. L. Robinson, R. B. Brinsfield, K. W. Staver, W. Lucas and A. H. Todd. 1997.
Water quality functions of riparian forest buffers in Chesapeake Bay watersheds. Environmental Management, Vol. 21, Issue 5, pp. 687-712.

Lowrance, R., Dabney, S. and R. Schultz. 2002.
Improving water and soil quality with conservation buffers. Journal of Soil and Water Conservation, Vol. 57, Issue 2, pp. 37-43A.

Ontario Geological Survey. 2003.
Surficial geology of Southern Ontario; Ontario Geological Survey, Miscellaneous Release--Data 128.

Ontario Ministry of the Environment. 2009.
Lake Simcoe Protection Plan. Queens Printer for Ontario.

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

Ontario Ministry of Natural Resources. March 2010.
Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.

Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry. 2022.
Natural Heritage Information Centre. Make-a-map database accessed online 2022.

Sernas Associates. 2012
Functional Servicing and Stormwater Management Report in Support of Draft Plan Barrie II South – Industrial Subdivision Harvie Road & Highway 400.

Tatham Engineering Limited. 2022a.
Functional Servicing Report – Draft. Barrie-Bryne Developments Limited. March 11, 2022. File 421487.

Tatham Engineering Limited. 2022b.
Preliminary Stormwater Management Report – Draft. Barrie-Bryne Developments Limited. March 11, 2022. File 421487.

Tatham Engineering Limited. 2022c.
Natural Hazards Assessment Report – Draft. Barrie-Bryne Developments Limited. March 16, 2022. File 421487.

Terraprobe Limited. 2005.
Hydrogeologic Investigation Proposed Bryne Drive Extension from Veteran's Drive to Commerce Park Drive and North Along Bryne Drive to Essa Road. Prepared for the City of Barrie.

Wenger, S. 1999.
A Review of the Scientific Literature on Riparian Buffer Width, Extent and Vegetation. Office of Public Service and Outreach, Institute of Ecology, University of Georgia.

Woodard, S.E. and C.A. Rock. 1995.
Control of Residential Stormwater by Natural Buffer Strips. Lake and Reservoir Management. 11(1): 37-45.

WSP. 2022.
Draft Preliminary Hydrogeological Investigation, Highway 400 & Harvie Road, Barrie, ON.

Appendix A

Agency Consultation LSRCA ToR

From: Leslie Piercey
To: Geri Poisson
Cc: Melinda Bessey
Subject: RE: SmartCentres - 15 Harvie Road -
Date: November 2, 2021 4:50:31 PM
Attachments: TOR checklist - Bryne Dr Harvie Rd 220476.pdf

Hi Geri;

Melinda forwarded your inquiry over to me for a response. I've reviewed the attached terms of reference for an EIS and the following changes are recommended. I have attached a revised EIS ToR for your review.

- Potential natural features on site may also include wetlands, woodlands and grassland/meadow, based on recent air photo imagery.

- If wetland or woodland communities are identified, a staking exercise may be necessary.

- An aquatic habitat assessment will be required if any impacts to the watercourse are possible. Please note that data collected within the past five years may be used to inform the EIS. An update may be necessary if any direct impacts to the watercourse are contemplated. Additional studies (ie. Fluvial Geomorphological Assessment and Natural Channel Design) will also be required if alteration is unavoidable.

- A catchment-based water balance for the study area should be completed.

- A Landscape/restoration/planting plan for buffer areas will be required.

With regard to the use of the Topographic survey from 2007, it appears that the top of bank is only identified for portions of the watercourses. I would suggest that this limit be pre-staked in the field and assessed during a site walk with LSRCA staff. If any other features that require staking are present, the site visit and staking exercise should occur at the same time if possible.

Let me know if you have any questions.

Regards,

Leslie Piercey
Natural Heritage Ecologist
Lake Simcoe Region Conservation Authority
120 Bayview Parkway,
Newmarket, Ontario L3Y 3W3
905-895-1281| 1-800-465-0437

From: Geri Poisson <gpoisson@beaconenviro.com>
Sent: October 26, 2021 4:57 PM

To: Melinda Bessey <M.Bessey@lsrca.on.ca>
Cc: Tracy Hui <THui@smartcentres.com>; Jamie Nairn <jnairn@beaconenviro.com>; Mark Resnick <MResnick@smartcentres.com>
Subject: RE: SmartCentres - 15 Harvie Road

Hi Melinda,
Following up on your conversation with Mark. Attached is the LSRCA's ToR checklist for this site.

There two items we're looking for clarification/confirmation:

1. A site staking for the top of slope or whichever is the most conservative setback. I have attached the 2007 topo. Let me know if this will suffice.
2. Aquatic habitat survey - there is a recent study by Hatch (2017) of the Lover's Creek and Whiskey Creek for the City of Barrie's EA process for Bryne Drive Extension. Will we be able to reference this study not have to do another aquatic habitat survey?

Please review and let me know if there is anything else.

Thanks,

Geri Poisson, B.A. (Hons.), Dipl. Eco. Restoration / Senior Terrestrial Ecologist, ISA Certified Arborist (he/him)
BEACON ENVIRONMENTAL
6 Cumberland St., Barrie, ON L4N 2P4
T) 705.999.4935 x249 C) 705.828.1196
www.beaconenviro.com

To protect our staff, families, clients and the greater community all Beacon staff are working remotely. We will continue to provide timely communications *via* email and telephone and are committed to providing the highest level of service possible during this challenging time.

From: Mark Resnick <MResnick@smartcentres.com>
Sent: October 26, 2021 2:39 PM
To: Geri Poisson <gpoisson@beaconenviro.com>; Melinda Bessey <M.Bessey@lsrca.on.ca>
Cc: Tracy Hui <THui@smartcentres.com>; Jamie Nairn <jnairn@beaconenviro.com>
Subject: RE: SmartCentres - 15 Harvie Road

Geri,

I connected with Melinda yesterday (cc'd on this email) to discuss the questions below. On the matter of a need to walk the site and what form EIS of can be submitted in advance of your ability to conduct the required flora/fauna survey work next spring Melinda has suggested that you two connect directly and discuss the ToR for your work. **Please speak with Melinda directly and if a site visit is to be scheduled I would like to attend as well (if I am able)**.

As to the complete submission, Melinda will speak with the City planner (Celeste K.) about the

complete submission requirements and get back to me.

Cheers,
Mark.

MARK RESNICK, Senior Director, Development

Phone • 647-362-3212
Mobile • 416-358-0822
Email • mresnick@smartcentres.com

3200 Highway 7, Vaughan, Ontario, L4K 5Z5

From: Mark Resnick
Sent: Wednesday, 20 October 2021 12:49 PM
To: 'Melinda Bessey' <M.Bessey@lsrca.on.ca>
Cc: Tracy Hui (THui@smartcentres.com) <THui@smartcentres.com>
Subject: SmartCentres - 15 Harvie Road

Hi Melinda,

We have commenced preparation of our OPA/ZBA/SUB applications and I am reaching out to request a call with you to discuss the pending submission. 30 minute should do. Concept plan from the PAC meeting attached for reference.

Specifically I want to talk about,

1. Need for a site walk to stake Development limits for the Creeks. If yes can we schedule one in the coming weeks before snow falls.
2. Update on Bryne Drive extension and related realignments of 1) existing trunk sanitary sewer and 2) Lover's Creek Realignment. Part of this item is the separation of responsibilities between City and SmartCentres
3. How to make a complete submission with scoped EIS report when the survey work for SAR etc… cannot be done until Spring 2022. Of assistance here would be allowing us for initial submission reliance on historical work on property from 2013/2104, acknowledging updated reporting must follow.

Cheers,
Mark.

Mark Resnick, Director, Development

Phone • 647-362-3212
Mobile • 416-358-0822
Email • mresnick@smartcentres.com

3200 Highway 7, Vaughan, Ontario, L4K 5Z5

1. General Information:

Date: October 26, 2021

Address: 15 Harvie Road, Barrie

Name of consulting firm: Beacon Environmental Limited

Contact information: gpoisson@beaconenviro.com

2. Identify all <u>potential</u> natural heritage and hydrologic features in the study area (check all that apply):

**The LSRCA recognizes that this is a preliminary assessment to determine what studies may be suitable for the property. A site visit may be required to verify the presence/absence of features.*

- ▣ Wetland
- ▣ Woodland
- ▣ Valleyland
- ☐ Grassland or meadow
- ▣ Wildlife habitat
- ☐ Area of natural and scientific interest (ANSI)
- ☐ Sand barren, savannah or tallgrass prairie
- ☐ Alvar
- ▣ Drainage feature/watercourse
- ☐ Kettle lake
- ☐ Seepage area or spring
- ☐ Lake or pond (and their littoral zone)
- ☐ Lake Simcoe shoreline
- ☐ Natural areas abutting Lake Simcoe
- ▣ Habitat of endangered and threatened species
- ▣ Fish habitat

3. Activities to be undertaken and studies required for a complete NHE/EIS submission:**

*** Some activities/studies are pre-selected (☒) as they are a minimum requirement for NHE/EIS submissions.*

☒ Consult with the appropriate Municipal and Conservation Authority staff, as required, to establish the required scope of study.

☒ Identify an appropriate study area - generally the area of anticipated disturbance plus 120 m.

☒ Collect and include applicable background information and current environmental mapping for natural heritage and hydrologic features, and the natural heritage system within and surrounding the study area.

☒ Identify and provide detailed descriptions of natural heritage and hydrologic features in the study area, their function, and the broader natural heritage system that they are within. Determine the significance of these natural heritage and hydrologic features under applicable policy.

☒ Evaluate existing vegetation communities using Ecological Land Classification (ELC) for Southern Ontario (Lee et al. 1998. Ecological Land Classification for Southern Ontario: first approximation and its applications. SCSS Field Guide FG-02). Provide a description of ELC communities in the study area and include completed ELC field sheets as an appendix.

☒ Conduct a one -season vegetation inventory in the late spring/summer/fall. Include the inventory categorized by ELC community as an appendix and denote any Species at Risk and/or provincially/locally rare species.

▣ Conduct three (3) breeding amphibian surveys as per the Marsh Monitoring Program protocol (Bird Studies Canada). Observational salamander surveys may be required if potential habitat exists in the study area. Include completed field sheets as an appendix.

⬓ Conduct two (2) dawn breeding bird surveys between May 24 and July 15, under appropriate conditions, with a minimum of 10 days between surveys, and record all occurrences and breeding behaviors. Point counts, wandering transects or a combination of the two must be used according to features present and site conditions. Include completed field sheets as an appendix. A third survey will be required if suitable grassland bird habitat is present.

☒ Record observations of all wildlife occurrences and behaviours and assess wildlife habitat function.

☒ Screen for Species at Risk (SAR), listed under the *Endangered Species Act, 2007,* based on existing or potential habitat. Additional species-specific surveys may be required if SAR habitat is present (e.g. butternut health assessments, snag surveys, bat acoustic monitoring surveys, evening whip-poor-will surveys, etc.), please contact the Ministry of Environment, Conservation and Parks (MECP) for further direction. Include any relevant correspondence with the MECP as an appendix

☒ Assess for Significant Wildlife Habitat (e.g. turtle nesting or wintering area, reptile hibernaculum, woodland raptor nesting habitat, seeps, springs, etc.) as per the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, January 2015).

☒ Identify any ecological linkages or movement corridors within the study area. Demonstrate how connectivity within and between natural heritage and hydrologic features will be maintained and, where possible, improved or restored to allow for the effective dispersal and movement of plants and animals.

☒ Provide a general description of the methodology, dates, timing, and locations of completed field surveys.

▣ Confirm the boundaries of any wetland and/or woodland features on the property through a staking exercise with the LSRCA. Boundary points must be surveyed with a high-accuracy GPS device (accurate to within 10 cm). A professional Ontario Land Surveyor (OLS) may be required to attend. Wetland staking exercises must be completed between June 15 and September 30 (exceptions may apply). Note that a site visit fee may apply.

▣ Complete an aquatic habitat assessment for all drainage features/watercourses in the study area, including characterization of hydrologic features (i.e. permanent, intermittent, ephemeral, headwater drainage feature) and suitability as fish habitat. Include a description of instream and riparian cover, bank stability, substrate composition, stream morphology, dimensions and gradient, thermal regime indicators, potential barriers, woody debris distribution, aquatic vegetation, groundwater seepage areas, etc.

⬓ Complete a catchment-based water balance for the study area to assess how existing drainage conditions and moisture regimes that support sensitive hydrologic features (e.g. wetland, woodlands, watercourse) may be impacted by the proposed development. Demonstrate how current hydrologic inputs will be maintained post-development. Please note, the water balance assessment may also be a requirement under other provincial policies, therefore the NHE/EIS should coordinate with/summarize the water balance work undertaken by others.

▣ Recommend the dimensions of an appropriate vegetation protection zone (VPZ)/buffer to natural heritage and hydrologic features required to mitigate impacts from the proposed development. Recommendations for restoration/plantings should be provided for all buffers.

☒ Provide a detailed description of the proposed development.

☒ Map the following information separately on current high quality ortho-air photos:

1) ELC vegetation communities, natural heritage and hydrologic features and their associated VPZs, and the proposed development and anticipated limit of disturbance (e.g. grading limits); and,
2) ELC vegetation communities, survey locations, other environmental features (e.g. linkages, wildlife corridors, seeps, springs, stick nests, wildlife habitat, rare species, invasive species, etc.), and existing structures and/or trails.

☒ Assess the potential direct, indirect, and cumulative impacts of the proposed development on natural heritage and hydrologic features, the natural heritage system, and related ecological and hydrologic functions.

☒ Develop and provide an appropriate avoidance/mitigation/restoration strategy to address the potential impacts of the proposed development.

☒ Demonstrate how the proposed development is in conformity with all federal, provincial, regional, and municipal natural heritage policies applicable in the Lake Simcoe watershed.

☒ Complete one final report for circulation and approval, prepared by qualified professionals, in an electronic format as well as one (1) hard copy.

4. Additional studies or plans that may be required include:

☒ Landscape/Restoration/Planting Plan
☐ Edge Management Plan
☒ Tree Inventory/Arborist Report/Tree Preservation Plan
☐ Trails Impact Study
☐ Ecological Offsetting Strategy (please refer to LSRCA's Ecological Offsetting Policy)
☐ Environmental Monitoring Plan/Report
☒ Fluvial Geomorphological Assessment
☒ Natural Channel Design

5. Additional notes and/or requirements:

An EIS was completed in 2012 by Beacon. We have not proposed detailed aquatic or fisheries surveys as there already exists information on fisheries. In addition, there may be existing, recent aquatic habitat characterization from works led by the City of Barrie for the Bryne Drive crossing. ***As noted below, field survey data is considered valid for 5 years, so existing data that meets this standard can be used to inform the EIS.
Please advise if topographic mapping from 2007 will be satisfactory for demarking top of bank, or if a site staking will be necessary. ***staking may be required if woodlands/wetlands are present. A site visit to confirm the ToB as per the 2007 survey (pre-staked) is recommended .

Please note that changes to the study area, the proposed development, and/or policy changes may require additional information/studies.

Please provide current field survey data in the NHE/EIS submission. Field survey data will be considered valid for five (5) years from the date the survey was conducted, except for Species at Risk screenings, which are valid for one (1) year. If outdated field data is provided, additional surveys may be required.

Appendix B

Fish Species List

Table 5-1: Fish species captured in the Barrie Creeks, Lovers Creek and Hewitt's Creek subwatersheds from 1975-2011.

Fish Species	Barrie Creeks						Lovers Creek	Hewitt's Creek
	Sophia Creek	Kidd's Creek	Bunkers Creek	Dyments Creek	Hotchkiss Creek	Whiskey Creek		
Rainbow trout *(Oncorhynchus mykiss)* ^	*No Fish Captured*							
Brook trout *(Salvelinus fontinalis)*								
Rainbow smelt (Osmerus mordax) ^								
Northern pike (Esox lucius)								
Central mudminnow *(Umbra limi)*								
Common white sucker *(Catostomus commersoni)*								
Northern redbelly dace *(Phoxinus eos)*								
Finescale dace (Phoxinus neogaeus)								
Brassy minnow *(Hybognathus hankinsoni)*								
Hornyhead chub *(Nocomis biguttatus)*								
River chub *(Nocomis micropogon)*								
Golden shiner *(Notemigonus crysoleucas)*								
Emerald shiner *(Notropis atherinoides)*								
Common shiner *(Luxilus cornutus)*								
Blackchin shiner *(Notropis heterodon)*								
Blacknose shiner *(Notropis heterolepis)*								
Spottail shiner *(Notropis hudsonius)*								
Rosyface shiner *(Notropis rubellus)*								
Sand shiner *(Notropis stramineus)*								
Bluntnose minnow *(Pimephales notatus)*								
Fathead minnow *(Pimephales promelas)*								
Blacknose dace *(Rhinichthys atratulus)*								
Longnose dace *(Rhinichthys cataractae)*								
Creek chub *(Semotilus atromaculatus)*								
Pearl dace *(Margariseus margarita)*								
Stoneroller *(Campostoma anomalum)*								
Silver shiner *(Notropis photogenis)*								
Brown bullhead *(Ameriurus nebulosus)*								
Brook stickleback *(Culaea inconstans)*								
Trout-perch *(Percopsis omiscomaycus)*								
Rock bass *(Ambloplites rupestris)*								
Pumpkinseed *(Lepomis gibbosus)*								
Smallmouth bass *(Micropterus dolomieu)*								

Fish Species	Barrie Creeks						Lovers Creek	Hewitt's Creek
	Sophia Creek	Kidd's Creek	Bunkers Creek	Dyments Creek	Hotchkiss Creek	Whiskey Creek		
Largemouth bass *(Micropterus salmoides)*								
Black crappie *(Pomoxis nigromaculatus)*^								
Yellow perch *(Perca flavescens)*								
Rainbow darter (*Etheostoma caeruleum)*								
Iowa darter *(Etheostoma exile)*								
Johnny darter *(Etheostoma nigrum)*								
Logperch *(Percina caprodes)*								
Mottled sculpin *(Cottus bairdi)*								
Slimy sculpin *(Cottus cognatus)*								
	Captured historically (before 1990)							
	Captured historically and present day (before and after 1990)							
	Captured present day (after 1990)							

^ = *Not native to Lake Simcoe Watershed*

* = *Invasive species*