BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

Scoped Environmental Impact Study
664, 674 & 692 Essa Road & 320 Mapleview Drive West
City of Barrie

Prepared For:

Pearl Builders

Prepared By:

Beacon Environmental Limited

Date: *Project:*

December 2022 **222212**

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1. Introduction

Beacon Environmental Limited (Beacon) has been retained by Pearl Builders (the Landowner) to conduct a Scoped Environmental Impact Study (EIS) as part of requirements for a Zoning By-law Amendment and Official Plan Amendment application at the property known municipally as 664, 674 and 692 Essa Road, 320 Mapleview Drive West, in the City of Barrie (subject property) (**Figure 1**). The subject property measures approximately 10.2 hectares (ha) (25.2 acres) and is in the northeast corner of the intersection of Essa Road and Mapleview Drive West. The subject property abuts existing, built-up institutional land to the north and east, existing commercial and residential land use across Essa Road to the west and partially vacant, cleared and built-up commercial land use across Mapleview Drive West to the south. The property lies within the City of Barrie settlement area, is designated as General Commercial and General Industrial in the OP and zoned General Commercial and General Industrial. Presently the subject property is occupied by agricultural and old fields, two single detached residences and associated outbuildings, and scattered individual trees and hedgerows. A small, channelized tributary to Bear Creek (Holly Branch) traverses the southern portion of the subject property flowing from east to west.

The purpose of this EIS is to identify existing natural heritage features on and adjacent to the subject property and to address the interaction between the proposed development and existing conditions as related to natural heritage features, consistent with the Provincial Policy Statement (PPS 2020), the *Endangered Species Act* (ESA 2007), the Growth Plan for the Greater Golden Horseshoe (GPGGH 2020), the Nottawasaga Valley Conservation Authority (NVCA) Planning and Regulation Guidelines and the City of Barrie Official Plan (2018) and the new City of Barrie Official Plan (2022).

2. Goals and Objectives of Study

The goals of this Environmental Impact Study are to:

- Determine 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 applicable natural environment regulations and policies.

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

- Provide an evaluation of terrestrial and aquatic features, and species at risk (SAR) and their habitats on the subject property through background review and field investigations;
- Identify and map any key ecological features (i.e., wetland and woodland boundaries, rare species, watercourses), key ecological attributes, and sensitivities on 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.

The proposed scope of work for this EIS was established with the City of Barrie and the NVCA through a previous, recent application for development on the subject property (**Appendix A**). This EIS was completed based on a review of background information and documents, including results of field investigations. Seasonally-appropriate field investigations conducted by Beacon included breeding amphibian and bird surveys, aquatic habitat assessment, vegetation surveys, a determination of natural heritage feature boundaries, and investigations into the potential presence of species of conservation concern on the subject property. These data were used in 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);
- *Endangered Species Act* (2007);
- Nottawasaga Valley Conservation Authority Policies and Regulation;
- The City of Barrie Official Plan (2010; Office Consolidation 2018); and
- The new City of Barrie Official Plan (2021).

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 Ministry of Municipal Affairs and Housing (MMAH). Considering that the MMAH 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)

The Province of Ontario recently released an updated Provincial Policy Statement (PPS) under section 3 of the *Planning Act*, which came into effect on May 1, 2020. The Provincial Policy Statement is intended to provide policy direction on matters of provincial interest related to land use planning.

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

Section 2.1 of the PPS relates to Natural Heritage. The following subsections are provided.

> *2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.*
> *2.1.4 Development and site alteration shall not be permitted in;*
> *a) significant wetlands in Ecoregions 5E, 6E and 7E; and*

Site Location	Figure 1
Mapleview and Essa EIS and Geomorphology	
BEACON ENVIRONMENTAL	Project: 222212 Last Revised: November 2022
Client: Pearl Builders	Prepared by: BD Checked by: GP
N 1:7,000	Inset Map:1:65,000

C:\ODB\OneDrive - Beacon Environmental\GeoSpatial\Geo Projects\2022\222212 Mapleview and Essa EIS and Geomorphology\Q Project Files\2022-10-12 - Mapleview and Essa EIS and Geomorphology - 222212.qgz

b) significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:

a) significant wetlands north of the Canadian Shield north of Ecoregions 5E, 6E and 7E;
b) significant woodlands in Ecoregions 6E and 7E;
c) significant valleylands in Ecoregions 6E and 7E;
d) significant wildlife habitat;
e) significant Areas of Natural and Scientific Interest (ANSI's); and
f) significant coastal wetlands in Ecoregions 5E, 6E and 7E not covered above;

Unless it has been demonstrated (typically through an EIS or a comparable technical study) that there will be no negative impacts on the natural features or their ecological functions.

2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.
2.1.7 Development and site alternation shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.
2.1.8 Development and site alternation shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5 and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there are no negative impacts on the natural features or on their ecological functions.

Each of these features is afforded varying levels of protection subject to guidelines, and in cases, regulations.

Some of these features (i.e., provincially significant wetlands and ANSIs) are identified by the Ministry of Natural Resources and Forestry (MNRF), while others are to be identified by the local area municipalities or planning authorities (i.e., significant woodlands, significant valleylands and significant wildlife habitat). Threatened and endangered species are designated at the provincial level, but their habitat is typically identified or verified at the site-specific level. It is expected that even where features have been identified at the provincial, regional or local levels that verification and some level of refinement is required on a site-specific basis.

3.2 *Endangered Species Act* (2007)

Ontario's *Endangered Species Act,* (ESA, 2007) came into effect on June 30, 2008. Species that are listed as endangered or threatened on the provincial Species at Risk in Ontario (SARO) List are subject to regulations under the Act.

Section 9 of the ESA prohibits the killing, harming, harassing, possession, collection, buying and selling of extirpated, endangered, and threatened species on the SARO List.

Section 10 prohibits the damage or destruction of habitat of species listed as extirpated, endangered or threatened on the SARO list. Habitat is protected either under a General Habitat protection provision or a Species-Specific Habitat protection provision.

3.3 Nottawasaga Valley Conservation Authority Planning and Regulation Guidelines

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

The NVCA 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 Official Plan, and 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 NVCA. Obtaining a permit generally requires an EIS. Once the 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.

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

On April 23, 2010 The Ministry of Municipal Affairs and Housing (MMAH) approved a new Official Plan 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.

3.5 The City of Barrie Official Plan (2022)

On February 14, 2022, the City of Barrie adopted a new Official Plan (Final Version – December 15, 2021). It has been sent to the MMAH and is currently pending approval. Applicable natural heritage or environmental policies in the new Official Plan 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.

No Environmental Protection Overlays occur on the subject property (**Appendix B**). There is a watercourse identified within the subject property, but it has not been designated with an associated Stream Constraint level.

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, including:

- The City of Barrie Official Plan and schedules (2018);
- The City of Barrie New Official Plan and maps (2022);
- Middle Nottawasaga River Subwatershed Health Check 2018, NVCA;
- MNRF Natural Heritage Information Centre (NHIC) Make-a-map Natural Areas database;
- Colour orthogonally rectified 2021 aerial photography from First Base Solutions; and
- Environmental Impact Study and Channel Relocation Plan, Holly Branch of Bear Creek at 664 and 647 Essa Road/320 Mapleview Drive West, Azimuth Environmental Consulting, Inc. (2015).

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

4.2 Agency Consultation

Upon commencement of this project, the appropriate agencies were contacted to provide guidance and determine study requirements. These agencies included the City of Barrie and the NVCA. A letter was provided to the NVCA, on September 28, 2022, that summarizes the development approach agreed to

in a meeting on August 10, 2022, with the NVCA and the City. A confirmation email from the NVCA was received on December 16, 2022. Correspondence with these agencies is included in **Appendix A.**

4.3 Field Investigations

4.3.1 Timing of Field Visits

Several seasonally-appropriate field investigations were undertaken during the 2020 and 2022 field seasons by Beacon staff. Field visits were timed to coincide seasonally and temporally to best document vegetation and wildlife on the subject property. Additional details regarding survey methods are described in the following sections.

During field visits, existing conditions with respect to natural habitats within the subject property were reviewed. Field investigation dates are summarized below.

Table 1. Field Investigation Dates

Site Visit Task	Date
Breeding Bird Surveys	May 27, June 13 and 29, 2022
Amphibian Survey	June 18, 2020
Vegetation, ELC, Watercourse spot temperature	June 19 and August 5, 2020
Aquatic Habitat Assessment, Benthic sampling	October 15, 2020
Fish Community Sampling (Electro-fishing)	November 3, 2020
Geomorphic Assessment	June 29, 2020

4.3.2 Aquatic Assessment

An assessment of aquatic habitat conditions was undertaken for the Holly Branch of Bear Creek within the subject property on October 15, 2020. Habitat was documented using the Ontario Stream Assessment Protocol and benthic macroinvertebrates samples were collected for identification. Water temperature was measured in two locations in the watercourse on June 19, 2020. Fish sampling was conducted November 3, 2020 using a backpack electro-fisher.

4.3.3 Terrestrial Assessment

Vegetation Communities and Flora

During field investigations completed on June 19 and August 5, 2020 vegetation units on the subject property were described and mapped on 2021 colour orthophotography using the Ecological Land Classification system for southern Ontario (Lee *et al*. 1998). A botanical list of species observed was also compiled.

Amphibians

Amphibian surveys followed the protocol of the Amphibian Road Call Counts developed by Environment Canada (Gartshore *et al.* 2004). As Beacon was retained for the project in mid-June, only one survey was conducted within the remainder of the breeding amphibian season. Beacon staff visited the subject property at least one half-hour after dusk and identified calling male frogs and toads by listening at each specified station for a minimum of three minutes. The amphibian survey was undertaken during suitable temperature, precipitation and wind conditions. Potential breeding sites were examined by habitat assessment and only one area of potential habitat was observed; the shallow watercourse in the southern part of the subject property.

Weather conditions during the single breeding amphibian survey are provided below:

Table 2. Weather Conditions

Weather Parameters	June 18, 2020
Air temperature	20°C
Cloud Cover	<10%
Wind (Beaufort Scale)	0

Calling amphibians, if present, were identified to species and chorus activity was assigned a code from the following options:

0 No calls;
1 Individuals of one species can be counted, calls not simultaneous;
2 Some calls of one species simultaneous, numbers can be reliably estimated; and
3 Full chorus, calls continuous and overlapping.

Breeding Birds

Breeding birds were surveyed May 27, June 13 and 29, 2022 and commenced between the hours of 5:15 am and 7:15 am on days with low to moderate winds (1 - 2 on the Beaufort Scale), no precipitation, and temperatures within 5 ^{O}C of normal average temperature. The entire site was traversed such that all singing birds could be heard or observed and recorded. That is, the surveyor was within 50 -100 m of all parts of the subject property, depending on habitat. All birds heard and seen were recorded in the location observed on an aerial photograph of the subject property.

Species at Risk and Other Wildlife

A screening for potential SAR habitat was completed through identification of potential suitable habitat types for target species. This included a formal breeding bird survey, botanical survey, and opportunistic surveys for wildlife during all subject property visits in potentially suitable habitats. Incidental observations of wildlife species, including mammals, were made during all field investigations.

During site investigations, the subject property was surveyed for any Butternut trees (*Juglans cinerea*), a species listed as endangered under the *ESA*. If trees are found, they are located using a hand-held

GPS and assessed following the MNRF's Butternut Assessment Guidelines - Assessment of Butternut Tree Health for the Purposes of the *Endangered Species Act, 2007* (2014), and the Butternut Health Assessor's Field Guide (2015).

As per MNRF protocol, three breeding bird surveys provide appropriate coverage where potential habitat for threatened Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) is present.

Landscape Connectivity

A landscape connectivity assessment was undertaken once 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 results of the existing conditions review of the subject property referencing 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 property is generalized as limestone, dolostone, shale, arkose, and sandstone. The bedrock was formed during the Paleozoic Era (542 to 251 million years ago). 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 subject 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, within the broader Guelph grey-brown Podzolic soils that are predominantly medium textured loam formed on till. Site

investigations by Beacon and GEI (2022) confirm that the soils are generally medium textured sandy loam.

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).

Vegetation communities within most of the subject property have been dramatically altered by human activities. The vegetation communities found on the subject property are illustrated in **Figure 2** and are described in detail below.

Anthropogenic (ANT)

This community is associated with the two residences on the subject property and consists of buildings, driveways, gardens, planted trees, and mowed, maintained lawns or other highly disturbed and maintained areas.

Dry – Moist Old Field Cultural Meadow (CUM1-1) and Agricultural (AG)

These open areas are on the periphery of the residential areas, portions of which are agricultural fields, and adjacent to portions of the channelized watercourse (**Photograph 1**). These areas were not being cultivated at the time of site visits. These fields support dense herbaceous vegetation (**Photograph 2**) dominated my grasses and weedy forbs such as Smooth Brome (*Bromus inermis*), Timothy (*Phleum pratense*), Kentucky Bluegrass (*Poa pratensis*), Common Milkweed (*Asclepias syriaca*) and Wild Carrot (*Daucus carota*).

Mineral Cultural Thicket (CUT1)

This community is predominantly located along the south side of the watercourse in the eastern half of the subject property with scattered, discontinuous clumps of vegetation along parts of the banks of the watercourse (**Photograph 3**). The community is dominated by Red-osier Dogwood (*Cornus sericea*) with some Meadow Willow (*Salix petiolaris*).

Existing Conditions	Figure 2

Mapleview and Essa EIS and Geomorphology

Legend

- Subject Property (City of Barrie)
- Ecological Communities
- Watercourse
- Fish Sampling Reach
- Benthic Sampling Stations

Code	Cultural Communities
CUM1-1	Dry - Moist Old Field Meadow
CUT1	Mineral Cultural Thicket
	Other Communities
AG	Agricultural Crop
ANT	Anthropogenic

BEACON ENVIRONMENTAL

Project: 222212
Last Revised: November 2022

Client: Pearl Builders

Prepared by: BD
Checked by: GP

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Photograph 1. Old-field Meadow on Upper Slopes Adjacent to Watercourse (June 19, 2020)

Photograph 2. Old-field Meadow in Southern Portion of Subject Property (June 19, 2020)

Photograph 3. Mineral Cultural Thicket on Slopes Adjacent to Watercourse (June 19, 2020)

5.1.5 Flora

The botanical survey resulted in the identification of 70 species of vascular plants, with 35 species (or 50%) non-native to Ontario. This is a higher-than-average percentage of non-native species for a specific site, compared with about 25% of the flora of Ontario being non-native. At a site level, a higher percentage of non-native species is indicative of higher levels of disturbance. Non-native species were recorded within all vegetation community types. Scattered occurrences of the highly invasive species Reed Canary Grass (*Phalaris arundinacea*), Common Buckthorn (*Rhamnus cathartica*), and Tartarian Honeysuckle (*Lonicera tatarica*) were observed.

5.1.6 Rarity

No plants of conservation significance were recorded on the subject property. A review of the NHIC database identified no records of significant species from on or within one kilometre of the subject property. A list of vascular plant species recorded from the subject property is provided in **Appendix C**. None of the vegetation communities on the subject property is considered provincially rare based on the NHIC status of vegetation communities for southern Ontario.

5.2 Aquatic Resources

The subject property is part of the Bear Creek watershed, which is managed by the NVCA under the Middle Nottawasaga River Management Unit (NVCA, 2018). The unit includes the main branch of the Nottawasaga River and small local tributary streams such as Bear Creek, Thornton Creek, and Egbert

Creek. The quality of Bear Creek has been affected by agricultural land use and urban development in its headwaters in the City of Barrie. The 2018 Middle Nottawasaga River Subwatershed Health Check (NVCA 2018) identifies the reach within the subject property as being impaired, or in very poor health.

5.2.1 Tributary to Bear Creek

The tributary to Bear Creek (Holly Branch) is a small, highly channelized feature which traverses the southern portion of the subject property. The watercourse enters the eastern boundary of the subject property through a concrete box culvert, then is immediately piped beneath a residential driveway through three 1.0 m diameter corrugated steel pipes (CSP) (**Photograph 4**). Flowing westward across the property, the watercourse is conveyed beneath one other farm crossing (1.2 m CSP culvert) prior to exiting the property beneath Essa Road by way of a concrete box culvert (**Photograph 5**).

The watercourse is highly channelized and situated within an unconfined valley across the entirety of the subject property. Characterized by a lack of sinuosity, much of the channel is barely discernible through encroachment of emergent vegetative species such as cattail (*Typha* spp.). Riparian vegetation consists primarily of a variety grasses and shrubs, extending the top of the banks at which point vegetation transitions to a mown pathway and grass field. Channel substrate consisted of clay and silt, with organic material.

Spot temperatures were taken in the watercourse on June 19, 2020 at the point where it enters the subject property and where it exits. Water temperature was 29º Celsius at both locations while air temperature was 31º C.

Photograph 4. Channel Corridor Immediately West of the Residential Driveway Entrance (October 15, 2020)

Photograph 5. Tributary Conditions Immediately East of Essa Road (October 15, 2020)

Vegetative encroachment and a complete lack of riffle-pool morphology provide poor quality fish habitat across the subject property. Approaching Essa Road, the watercourse becomes more open, and abundant emergent vegetation transitions to a dense collection of Pondweed (*Potamogeton* sp.) within the channel. Flow across the entirety of the subject property was quite slow during the time of field investigations.

Fish community sampling was undertaken November 3, 2020. Sampling was completed following Section 3 Module 1 of the Ontario Stream Assessment Protocol (OSAP). The Single Pass Survey was completed to provide a quantitative fisheries inventory.

As the tributary is highly channelized across the entire subject property, it was not possible for the sampling location to begin and end at a crossover, as required under OSAP protocol. Site selection was adjusted to ensure inclusion of the required minimal sampling distance of 40 m along what was identified as the highest quality of potential fish habitat on site. Channel conditions outside of the sampling reach were barely discernible due to dense stands of emergent vegetation such as cattail (*Typha sp*.). Due to the lack of flow and abundance of emergent species, multiple barriers to fish passage were noted within the channel upstream of the sampling location.

Conditions within the sampling reach were dominated by a dense cover of Pondweed (*Potamogeton sp*.) and Common Duckweed (*Lemna minor*). Flow within the sample reach was nearly stagnant. A complete lack of riffle-pool morphology was noted across the entirety of the watercourse within the subject property. Wetted depth reached a maximum of 0.41 m and substrate was composed primarily of clay and detritus. Community sampling results are summarized in **Table 3**.

Table 3. Fish Community Sampling Results

Species	Length (mm)
Northern Redbelly Dace (*Chrosomus eos*)	55
Northern Redbelly Dace	57
Pumpkinseed (*Lepomis gibbosus*)	72

Sampling results demonstrated very low species diversity and abundance. A total of three fish were captured across the entire sampling reach. These results support the findings of the habitat assessment, which identified the entirety of the subject property as providing poor fish habitat. Of the two species captured, neither indicates the presence of sensitive habitat. Northern Redbelly Dace are identified as a coolwater fish species, while Pumpkinseed are identified as warmwater species.

5.2.2 Benthic Sampling

Benthic sampling was completed October 15, 2020. Sample collection was undertaken in accordance with standard methods as outlined within the Ontario Benthos Biomonitoring Network (OBBN) Protocol Manual. A 500-micron mesh kick net was used to collect standardized three (3) minute timed 'travelling kick and sweep' samples. Samples were preserved in isopropanol and submitted for taxonomic identification and enumeration. Sampling locations are identified on **Figure 2** and the results of benthic sampling are summarized in **Table 4**.

Table 4. Benthic Sampling Results

Order	Family	Station 1	Station 2	Station 3	Tolerance Value
Amphipoda	Dogielinotidae	1	6	2	4
Coleoptera	Dytiscidae	18	3	7	5
	Haliplidae	0	0	37	7
	Hydrophilidae	1	0	1	5
Diptera	Ceratopogonidae	0	0	1	6
	Chironomidae	67	253	437	8
	Dixidae	2	1	0	1
	Ephydridae	0	2	0	6
	Sciomyzidae	0	2	0	6
	Stratiomyidae	2	3	0	8
	Syrphidae	3	2	0	10
	Tipulidae	3	0	0	3
Ephemeroptera	Baetidae	2	0	319	4
Hemiptera	Belostomatidae	0	4	0	10
Hirundea	Erpobdellidae	2	17	1	10
	Glossiphonidae	20	1	2	10
Lepidoptera	Pyralidae	0	0	19	5
Odonata	Anisoptera (Aeshnidae)	0	1	0	3
	Anisoptera (Libellulidae)	3	1	1	7
	Zygoptera (Coenagrionidae)	53	27	176	9

Order	Family	Station 1	Station 2	Station 3	Tolerance Value
Mollusca	Sphaeriidae	60796	591	1	7
	Gastropoda	32	39	1167	7
Oligochaeta	Tubificidae (immature)	5	0	1	8
Trichoptera	Phryganeidae	0	0	8	4

Invertebrates are used to evaluate water quality; the tolerance values provided within **Table 2** represent their tolerance or intolerance to pollution. The referenced numbers were gathered from the Guide to Aquatic Invertebrates of the Upper Midwest (Bouchard Jr. 2004). In this guide, values of 0 to 3 (green) are considered indicative of a low tolerance to stress, values of 4 through 6 (yellow) a moderate tolerance, and values of 7 through 10 (red) a high tolerance.

The majority of species identified within the subject property fall within the more tolerant of values. Only 3 of 24 families, and a total of 7 individual invertebrates demonstrate an intolerance to pollution. The overall tolerance levels sampled are indicative of a highly channelized and urbanized tributary such the one that traverses the subject property.

5.2.3 Geomorphology

A field assessment was conducted on June 29, 2020 to characterize the existing geomorphic conditions along Reach Be-3, the portion of Holly Branch within the subject property. Reach Be-3 was characterized as an intermittently defined, channelized watercourse. A more detailed description is provided under separate cover in a Geomorphic Assessment, prepared by Beacon (2022).

5.3 Amphibians

The shallow watercourse was identified as the only potential breeding habitat for amphibians on the subject property (**Figure 2**). Four Green Frogs (*Lithobates clamitans*) and one Gray Tree Frog (*Hyla versicolor*) were heard calling from within the watercourse on the subject property.

With respect to the breeding amphibian site on the subject property, the watercourse provides regular, seasonal open water habitat for breeding amphibians.

5.4 Birds

A total of 23 species of breeding birds were recorded on the subject property, which included two non-breeding species that were noted to be foraging on site (**Appendix D**). This avian diversity is reflective of the habitat within the subject property discussed in the preceding sections, where open fields, anthropogenic areas and riparian areas are all present. Avian observations were generally distributed throughout the subject property, with the fewest observations being made within the open agricultural fields.

The majority of breeding records were common species regularly found in urbanizing areas including the following species with multiple territories observed: Song Sparrow (*Melodia melodpiza*), Red-winged Blackbird (*Agelaius phoeniceus*), Savannah Sparrow (*Passerculus sandwichensis*), American Robin (*Turdus migratorius*), and European Starling (*Sturnus vulgaris*). Song Sparrow and Savannah Sparrow were the most abundantly observed species, with five territories each. Other species recorded during these surveys included, Gray Catbird (*Dumetella carolinensis*), Clay-coloured Sparrow (*Spizella pallida*), Eastern Phoebe (*Sayornis phoebe*), Eastern Kingbird (*Tyrannus tyrannus*) and Baltimore Oriole (*Icterus galbula*).

Species that are typically more closely associated with wetland communities were also encountered and were generally recorded within the riparian areas surrounding the drainage channel and drainage features. These birds included Yellow Warbler (*Setophaga petechia*), Red-winged Blackbird, Willow Flycatcher (*Empidonax traillii*) and Eastern Kingbird.

Area-sensitive birds are those that require larger tracts of suitable habitat in which to breed or are those that have a higher breeding success in larger areas of suitable habitat. One such species was recorded and is considered a grassland-sensitive species that requires large areas of open habitat in which to breed. The Savannah Sparrow remains a common breeder in a wide variety of such open habitats, including old-field and agricultural edge habitat. Five Savannah Sparrow pairs were recorded on the subject property.

No species ranked as S1 through S3 (Critically Imperiled through Vulnerable) by the province, or species protected under the ESA were breeding on the subject property. Barn Swallow (*Hirundo rustica*) are a species of threatened aerial insectivore. These birds were noted foraging on the subject property throughout the open field areas, however nesting was absent on site.

5.5 Species At Risk

An assessment was completed to determine whether there were any occurrences or if any suitable habitat was present for any of the endangered or threatened species known to occur in the vicinity (<5 km) of the subject property. This assessment identified a total of 16 species, indicated and discussed in **Table 5**, as having the potential to occur on or adjacent to the subject property.

Table 5. Species at Risk Records within 5 km of Subject Property

Species	ESA[1] Status	SARA[2] Status	COSEWIC[3] Status	Species or Habitat Present on the Subject Property
Northern Myotis (*Myotis septentrionalis*)	Endangered	Endangered	Endangered schedule 1	**No**, roosting habitat (woodlands or treed ecosites) not present.
Butternut (*Juglans cinerea*)	Endangered	Endangered	Endangered	**No**, species not detected during surveys on the subject property
Little Brown Myotis (*Myotis lucifugus*)	Endangered	Endangered	Endangered schedule 1	**No**, roosting habitat (woodlands or treed ecosites) not present.
Bank Swallow (*Riparia riparia*)	Threatened	Threatened	Threatened schedule 1	**No**, nesting habitat for this species is not present.
Chimney Swift (*Chaetura pelagica*)	Threatened	Threatened	Threatened schedule 1	**No**, nesting habitat for this species is not present.

Species	ESA[1] Status	SARA[2] Status	COSEWIC[3] Status	Species or Habitat Present on the Subject Property
Louisiana Waterthrush (*Parkesia motacilla*)	Threatened	Special Concern	Threatened	**No**, species not detected during surveys and no suitable habitat is present.
Tri-colored Bat (*Perimyotis subflavus*)	Endangered	Endangered	Endangered schedule 1	**No**, roosting habitat (woodlands or treed ecosites) not present.
Massasauga (*Sistrurus catenatus*)	Threatened	Threatened	Threatened	**No**, species not detected during surveys and no suitable habitat is present.
Bobolink (*Dolichonyx oryzivorus*)	Threatened	Threatened	Threatened schedule 1	**No**, species not detected on the subject property during breeding bird surveys.
Eastern Meadowlark (*Sturnella magna*)	Threatened	Threatened	Threatened schedule 1	**No**, species not detected on the subject property during breeding bird surveys
Henslow's Sparrow (*Ammodramus henslowii*)	Endangered	Endangered	Endangered schedule 1	**No**, species not detected on the subject property during breeding bird surveys.
Eastern Whip-poor-will (*Antrostomus vociferous*)	Threatened	Threatened	Threatened schedule 1	**No**, nesting habitat for this species is not present.
Barn Swallow (*Hirundo rustica*)	Threatened	Threatened	Threatened schedule 1	**No,** buildings that are potential nesting habitat for this species were found to have no nests. Barn Swallow were observed foraging through the subject property but not breeding on site.
Eastern Small-footed Myotis (*Myotis leibii*)	Endangered	Endangered	Endangered	**No**, roosting habitat (woodlands or treed ecosites) not present.
Spotted Turtle (*Clemmys guttata*)	Endangered	Endangered	Endangered schedule 1	**No**, species not detected during surveys and no suitable habitat is present
Blanding's Turtle (*Emydoidea blandingii*)	Threatened	Threatened	Endangered schedule 1	**No**, species not detected during surveys and no suitable habitat is present

5.6 Incidental Wildlife

Incidental wildlife observations were made during the various site visits. Presence of a species was based either on direct observation or signs such as tracks, scat, nests, etc. Species observations included Grey Squirrel (*Sciurus carolinensis*), Striped Skunk (*Mephitis mephitis*), Eastern Chipmunk (*Tamias striatus*), Racoon (*Procyon lotor*), Groundhog (*Marmota monax*), and Eastern Cottontail (*Sylvilagus floridanus*).

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 the species detected on the subject property. These species likely use the subject property all year round. Uncommon, rare or urban sensitive species would not be expected to use the subject property.

5.7 Tree Inventory and Assessment

A Tree Inventory and Preservation Plan Report was prepared by Strybos Barron King Ltd. (SBK; 2022). The study documented a total of approximately 102 individual trees and six tree groupings situated on the subject property, and 31 individual trees and one group adjacent to the subject property. No species at risk (i.e., Butternut) were found, nor any other tree species of conservation concern. The report recommended the removal of all trees and tree groupings within the subject property to accommodate the proposed development. Tree protection measures were also recommended for those trees recommended for retention, including tree protection fencing, and site visits, pre, during and post construction by either a certified consulting arborist (I.S.A.) to ensure proper installation and maintenance of tree protection measures.

5.8 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 mostly contiguous.

The subject property abuts existing, built-up institutional land to the north and east, existing commercial and residential land use across Essa Road to the west and partially vacant, cleared and built-up commercial land use across Mapleview Drive West to the south.

There are no identified landscape connectivity functions at a regional level. Locally, the City of Barrie (2022) identifies no Environmental Protection Areas or Natural Linkage Areas (Map 3 – Natural Heritage Protection Overlays). The only Natural Heritage Feature shown on the subject property is the existing channelized watercourse. The subject property is a mostly disturbed area as a result of anthropogenic (previous farming) activity and residential land use.

The only area of connectivity is the Bear Creek tributary flowing east to west on the subject property; however, no other natural heritage features are present to the east, and the tributary flows through a narrow riparian corridor to the west.

6. Summary of Key Functions and Attributes

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

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

These attributes and functions have also been used as a surrogate for other wildlife values. Existing information was also integrated into this assessment. **Table 6** provides a summary of the key functions and attributes that have been identified on the subject property by this study.

Table 6. Summary of Key Functions and Attributes

Key Functions	Attributes	Location in Subject Property
Fish Habitat	• Direct fish habitat; low abundance and diversity	• Watercourse in the southern portion of the subject property
Amphibian breeding habitat	• Low quality and quantity	• Watercourse in the southern portion of the subject property
Breeding Birds	• Area Sensitive bird species (Savannah Sparrow)	• Observed within the agricultural and old-field (CUM1-1) on the subject property.

6.1 Species at Risk

A desktop review of species at risk records revealed 16 species recorded within a 5 km radius of the subject property (**Table 5**). None of the species were observed on the subject property.

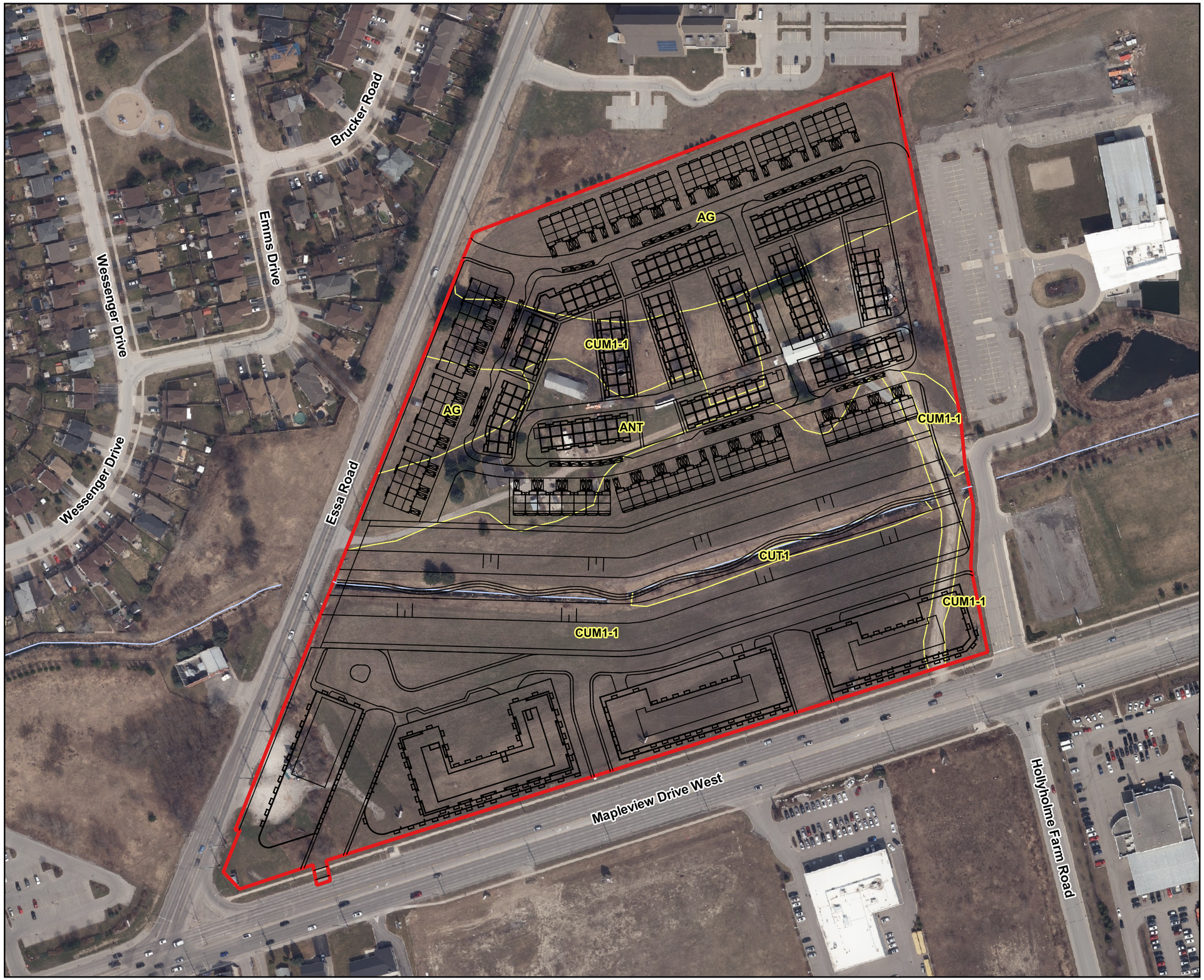
7. Proposed Development Plan

The proposed Site Plan for Mapleview Homes was prepared by Arcadis IBI Group (2022) and includes four mixed use apartment buildings, townhouses, a variety of commercial uses and open space areas that include a naturalized creek channel. The proposed Site Plan is shown on **Figure 3**.

The proposed residential/commercial conceptual plan will incorporate high levels of urban design and engineering standards to support the development of new residential and commercial uses while protecting the surrounding natural environment. The new and improved 69 m wide creek valley being proposed will provide increased fish and amphibian habitat quality through incorporation of a natural channel design and off-line wetland pockets within the valley bottom. The creek valley will be landscaped densely with native species of trees, shrubs and plants, providing an increase in wildlife habitat.

8. Impact Assessment and Mitigation Measures

The following sections present key potential negative effects of the proposed mixed-use development based on the existing condition of the natural heritage features on the subject property. This section also identifies mitigation measures and compensation opportunities that will be used to minimize the negative effects of the project.



Proposed Development

Figure 3

Mapleview and Essa EIS and Geomorphology

Legend

- Subject Property (City of Barrie)
- Proposed Development
- Ecological Communities
- Watercourse

Code	Cultural Communities
CUM1-1	Dry - Moist Old Field Meadow
CUT1	Mineral Cultural Thicket
	Other Communities
AG	Agricultural Crop
ANT	Anthropogenic

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It is expected that in an urbanizing environment, some potential negative effects are anticipated that cannot be mitigated. This is because many effects, especially on fauna, appear to operate at the landscape level. Meaning that as the landscape urbanizes, regardless of buffers or other mitigation measures, some species simply would no longer have sufficient or appropriate habitat.

8.1 Impacts Assessment

Field investigations identified two residential homes with associated outbuildings and driveways, with agricultural fields on the remainder of the property, and the following natural heritage features:

- Scattered individual trees and hedgerows; and
- A straightened and channelized tributary to Bear Creek flowing from east to west through the southern portion of the property.

Potential negative environmental impacts resulting from the proposed development of the subject property will include:

- Direct loss of old-fields and trees;
- Potential impacts from site grading to address channel redesign;
- Temporary effects on fish habitat and marginal amphibian habitat due to temporary dewatering and construction;
- Changes to hydrology/water balance due to an increase in impermeable surfaces; and
- Lawn chemicals and contaminants from paved areas (oil, solvents, grit and salt) entering into the watercourse and fish habitat.

8.1.1 Removal of Vegetation

A total of approximately 102 individual trees and six small tree groupings, mown lawn areas, and weedy old field areas will be removed, and will result in negative effects on flora and fauna. None of the trees are rare or are endangered or threatened species, and many are non-native and invasive species. None of the trees form part of any large contiguous block. All the existing vegetation within the subject property, including scattered saplings and seedlings, are proposed for removal, as identified in the Arborist Report and accompanying Tree Inventory and Preservation Plan prepared by Strybos Barron King Landscape Architecture (2022). Trees located on adjacent lands, along the northern and eastern property boundaries, and one tree within the City's ROW on the west side, are proposed to be retained and protected. The herbaceous vegetation is dominated by non-native species with low native species presence and diversity. The area surrounding the subject property is highly urbanized.

8.1.2 Changes to Grading, Hydrology and Run-off

The existing elevations and grade are proposed to be increased by less than 2 m in the development block north of the creek and by 2 to 3 m in the block south of the creek.

A pre- and post-development water balance was completed by GEI (2022) and suggests that without low impact development (LID) measures, the proposed development will decrease average infiltration

by about 14,874 m^3/year (56% decrease), and increase runoff by about 38,058 m^3/year (291% increase).

Temporary dewatering is also anticipated to be necessary for the construction of underground parking, foundations and infrastructure and, if discharged to the watercourse, may have effects on aquatic habitat if not mitigated or treated prior to discharge.

All the paved or impervious surfaces are proposed to be graded to capture stormwater internally and treated prior to release. The Preliminary Stormwater Management Report (Tatham Engineering 2022) recommends the incorporation of a series of SWM facilities including linear bioswales along the north and south side of the creek valley corridor and other infiltration techniques and LID features to reduce the amount and timing of runoff and improve water quality.

8.1.3 Contaminants

Unmitigated, the run-off of yard chemicals and stormwater into natural systems can create unwanted negative effects. These include effects on water quality in Bear Creek, including fish habitat. The potential negative effects should be reduced in this case by limiting the amount of lawn areas and limiting chemicals such as fertilizers and pesticides, especially in the vicinity of Bear Creek. A naturalized, vegetated buffer, which will not require chemical inputs, planted within the creek corridor, and especially the linear bioswale along north and south sides of the creek corridor, as well as any landscaping areas within the subject property, will also assist in preventing contaminants from entering the watercourse. Stormwater drains will include oil and grit separators and a salt management plan should be implemented.

8.2 Mitigation and Compensation Measures

The following sections identify mitigation and compensation measures to be utilized to minimize effects of the proposed development.

8.2.1 Improvements and Buffers to Natural Heritage Features

The NVCA have requested a 30 m buffer on either side of the proposed channel. The watercourse and associated floodplain are proposed to be redesigned using natural channel design with all proposed buildings and roads to be outside a 33 m setback from the future 3.0 m wide bankfull flow watercourse alignment (within a 14 m wide bottom width), for a total 69 m wide corridor. The watercourse, which has been altered and channelized, is the only natural feature existing on the subject property although highly degraded and with much potential for enhancement and restoration. The proposed redesign will be an improvement on the watercourse's form, features and functions. Natural channel design will include meanders, pools and riffles with small, off-line riparian wetlands and habitat features. The valley slope plus 6 m erosion setback from the top of slope will be revegetated with native species and zoned Environmental Protection. The EP zone will be a total of 47m wide and fenced on both sides of the corridor. The remaining 11 m on either side will consist of an 8 m wide area to accommodate the linear bioswale to infiltrate stormwater runoff, plus a 3 m access allowance.

This will result in an ecological net gain over the existing condition, with cleaner water going to the tributary to Bear Creek and higher quantity and quality of fish and wildlife habitat and all vegetation composed of native species. A permit from the NVCA will be required prior to any works within the vicinity of Bear Creek.

Beacon has prepared a Geomorphic Assessment and Conceptual Design (2022) for the watercourse redesign, and it is provided under separate cover. This assessment includes a preliminary conceptual design that also recommends the following:

- Identifying and selecting appropriate bioengineering treatments and habitat elements to be used within the channel and corridor;
- Preparation of a native planting plan for the corridor, including species and quantities of plants to be used;
- Developing an appropriate Phasing, Erosion and Sediment Control (PESC) plan; and
- Agency consultation to identify an appropriate post-construction monitoring plan.

8.2.2 Construction Timing and Impacts

The timing of vegetation removal should be coordinated to avoid the removal of potential wildlife habitat during times when these habitats may be utilized, and to avoid contravention of federal or provincial legislation.

The federal *Migratory Bird Convention Act* (1994) protects the nests, eggs and young of most bird species from harm or destruction. Environment Canada considers the 'general nesting period' of breeding birds in southern Ontario to be between late March and the end of August. This includes times at the beginning and end of the season when only a few species might be nesting. Considering this, Beacon recommends that during the peak period of bird nesting, no vegetation clearing or disturbance to potential nesting bird habitat occur between May 1 and mid-July. In the 'shoulder' seasons of April 1 to 30, and July 16 to August 31, Beacon suggests that vegetation clearing could occur, but only after an ecologist with appropriate avian knowledge has surveyed the area to confirm lack of nesting. If nesting is found, then vegetation clearing (in an area around the nest) must wait until nesting has concluded. Usually, the smaller and simpler the habitat is, the easier it is to confirm that no nesting is occurring. The likelihood of nesting birds being present in the 'shoulder' seasons also depends on the habitat type. From September 1 through to March 31, of any year, vegetation clearing can occur without nest surveys, but the regulation for nest protection still holds (i.e., if an active nest is known it should be protected).

8.2.3 Erosion and Sediment Control

Construction works such as grading, grubbing and excavation can cause the movement of sediment into watercourses, both on and downstream of the property. An erosion and sediment control plan will be prepared prior to construction works. This plan will be designed and implemented as per the "Erosion and Sediment Control Guideline for Urban Construction" document (TRCA 2019) and address phasing, inspection and monitoring aspects of erosion and sediment control. Silt fencing should be installed to minimize sediment leaving the site and should be removed when development work is completed, and exposed soils stabilized. Standard Best Management Practices should also be employed during the construction process.

As provided in more detail by Tatham Engineering in their Preliminary Stormwater Management Report (2022), stormwater, in the post-construction scenario, will be addressed using a treatment train approach that includes the two linear bioswales and oil and grit separators that will achieve a 90% reduction in Total Suspended Solids (TSS).

8.2.4 Water Balance

A Preliminary Hydrogeological Investigation has been prepared by GEI (2022) for the proposed development that includes a water balance analysis for the site. The report concludes that without mitigation such as low impact development (LID) measures, the proposed development will decrease average infiltration by about 14,874 m^3/year (56% decrease) and increase runoff by about 38,058 m^3/year (291% increase). However, the report also makes several recommendations to mitigate this increase in stormwater runoff by:

- Increasing the topsoil thickness by about two times the normal thickness (up to 30 cm) to retain more water; and
- Implementation of rainwater harvesting which intercepts, diverts and stores roof runoff (i.e., cisterns) for future use.

The GEI report also made the following recommendations to increase infiltration.

- Collection of runoff from the building rooftops and redirection to grass areas and overland flow. If feasible, it is recommended that there be a minimum 5 metre flow path over pervious areas to allow this mitigation method to be fully effective;
- Provision of gentle slopes in open areas or along grass swales in order to allow time for water infiltration;
- Construction of engineered infiltration measures such as soakaway pits, infiltration galleries or bioswales. Subsurface infiltration methods can only be considered in areas where there is sufficient soil permeability and depth to water table to accommodate the systems within the unsaturated zone (typically the infiltration elevation must be kept 1 metre or more above the seasonal high groundwater level); and
- Construction of grass channels or filter strips which allow infiltration, discharge at a lower rate and direct roof runoff to overland flow.

An analysis by Tatham Engineering of the two proposed linear bioswales indicate that they are sized appropriately to provide stormwater retention for storm events ranging from 1 in 2-year storm to 1 in 100-year storm events.

8.2.5 Fisheries Protection

As noted previously, construction works such as grading, grubbing and excavation have the potential to result in the movement of sediment into the onsite watercourse. A sediment control plan should be prepared for the construction phase of the development and approved by the NVCA, prior to the start of construction works and to the standard of “Erosion and Sediment Control Guideline for Urban Construction (TRCA 2019)”. General elements of the sediment and erosion control plan should focus on preventing erosion and include, but not be limited to the following:

- Equipment should not be operated in a watercourse;
- All erosion and sediment control measures should be integrated with a construction operation schedule as determined by the Contractor(s). Operations near any watercourse should not commence until temporary erosion and sediment control measures have been installed;
- Temporary erosion and sediment control measures should be maintained and kept in place until all work within or near the watercourse has been completed and stabilized;
- Temporary control measures should be removed at the completion of the work but not until permanent erosion control measures, as specified in the contract, have been established. This may necessitate removal by others;
- The Contractor should monitor the erosion and sediment control measures and if the measures are found to be ineffective, the Contractor should immediately make changes in order to control erosion and sediment; and
- Standard Best Management Practices should also be employed during the construction process.

In order to prevent further degradation (including thermal) to the onsite watercourse, storm water management systems should be designed to meet Level 1 MECP criteria.

MNRF's In-water Work Timing Window Guidelines (2013) provides guidance on protecting fish from impacts of works or undertakings in and around water during spawning migrations and other critical life stages.

A fish relocation program will be prepared and implemented as part of the permitting process with the NVCA.

The Federal *Fisheries Act* (1985) prohibits any work, undertaking or activity that results in the dealt of fish, or in the harmful alteration, disruption, or destruction of fish habitat. Beacon will complete a Fisheries Act compliance screening to ensure that the project is completed in accordance with the Act. If upon detailed design, it is determined that risks to fish and fish habitat cannot be avoided, the project does not fall within waterbodies where DFO review isn't required or the scope of the project is not entirely covered under standards and code of practice, Beacon will submit a request for review to DFO. Based on the conceptual plan, it is assumed that an authorization will not be required under the Act.

9. Policy Conformity

The development has been designed with consideration of the natural features and functions described in this report. The first line of mitigation and 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 Provincial Policy Statement, the City of Barrie Official Plan (2018 and 2022), and the Nottawasaga Valley Conservation Authority Planning and Regulation Guidelines. 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.

9.1 Provincial Policy (2020)

Policy 2.1 of the Provincial Policy Statement (PPS) (MMAH 2020) 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 and the assessment of features and functions provided in this EIS, there are no provincially significant features designated on the subject property.

9.2 *Endangered Species Act* (2007)

No species designated as endangered or threatened under the *ESA* were observed on the subject property, nor any habitat of endangered or threatened species.

9.3 Nottawasaga Valley Conservation Authority Planning and Regulation Guidelines

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

Beacon: This EIS was scoped with NVCA staff prior to commencing the field investigations. A watercourse within the subject property is proposed to be redesigned and enhanced. Once completed, the improved watercourse will be maintained, and protective buffers are recommended on this feature. The proposed development, with the associated recommendations in this EIS, addresses the regulatory interest of the NVCA. A permit from the NVCA will be obtained prior to the commencement of site works.

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

On April 23, 2010 The Ministry of Municipal Affairs and Housing (MMAH) approved a new Official Plan for the City of Barrie. Portions of the Plan have been appealed to the Ontario Municipal Board (OMB). Only those approved policies current to January 2018 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 30 m buffer from the edge of the redesigned Bear Creek tributary is provided within the design of the proposed development. The buffer will be densely vegetated with native species and combined with a carefully designed linear bioswale along the outer edge of the 60 m buffer on the north and south sides of the creek corridor, which should be sufficient to protect and enhance water quality and fish habitat.

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: Written approval of the NVCA will be obtained for the redesign and enhancement of the watercourse. The corridor has been sized to accommodate the regulatory floodplain plus appropriate setbacks.

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: The recommendations in the Functional Servicing and Stormwater Management Report (Tatham 2022), as well as the general erosion and sediment control measures recommended in this report mitigate the potential impacts to the Bear Creek tributary that could result from this development and the redesign of the watercourse. Combined with a restored and naturalized watercourse, the creek corridor will be landscaped densely with native trees, shrubs and plants, and a minimum 30 m buffer from the edge of the Bear Creek tributary is being provided.

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: A proposed redesign of the Bear Creek tributary will result in an improvement in fish habitat and riparian area and increase the size and function of the corridor as wildlife habitat and movement corridor. Stormwater runoff will be directed to a linear bioswale infiltration bed, among other measures, to avoid, minimize and mitigate the effects of associated with the quality and quantity of runoff. A minimum 30 m buffer is being maintained from the Bear Creek tributary and landscaped with native plants in the design of the proposed development.

4.7 ENVIRONMENTAL PROTECTION AREAS

4.7.2.3 GENERAL POLICIES

(a) Development and site alteration in Provincially Significant Wetlands and the significant habitat of threatened and endangered species is contrary to the Provincial Policy Statement and will not be considered with the exception of public works/utilities subject to Section 5.1.2.1 of this Plan.

(b) The redesignation of Environmental Protection Areas to a designation that permits development and site alteration shall be discouraged.

(c) Where an application is made to redesignate Environmental Protection lands other than Provincially Significant Wetlands and the habitat of threatened and endangered species, the City shall require the completion of an Environmental Impact Study to the satisfaction of the City in consultation with the Ministry of Environment, the applicable Conservation Authority and any other relevant agency.

(d) An amendment to the Environmental Protection Area designation shall only be considered where the results of an environmental study clearly demonstrate that there will be no negative impacts on the natural features or ecological functions for which the Environmental Protection Area has been identified with the exception of provincially significant wetlands and habitat of threatened and endangered species.

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

Beacon: There is no significant habitat of threatened or endangered species on the subject property, nor any areas zoned Environmental Protection Areas (EPA).

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: A minimum 30 m buffer from the edge of the redesigned warm water fish habitat in the Bear Creek tributary is included in the design of the proposed development.

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: There are no woodlands identified on the subject property.

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: No significant wildlife habitat was identified on the subject property

9.5 New City of Barrie Official Plan (Adopted 2022)

The following are the environmental policies of the City of Barrie's new Official Plan applicable in the context of the proposed development. Comments are provided indicating how the proposed development is adhering to the policies.

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.

Beacon: The previously channelized watercourse is the only natural heritage feature identified on the subject property. It will be restored and enhanced using principles of natural channel design and the creek valley will be conveyed to the City.

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.

Beacon: A Functional Servicing Report and Stormwater Management Plan has been prepared by Tatham (2022) that addresses stormwater quantity and quality, including the use of low impact development techniques, such as the bioswale on either side of the creek corridor.

f) 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.

Beacon: The NVCA was consulted prior to and during the preparation of this EIS (see **Appendix A**). The watercourse will be redesigned and naturalized included within a proposed new 47 m wide EP zone with two 8 m wide Open Space zones on either side of the EP zone. Best management practices will be used during the creek and fish habitat improvements. No habitat of threatened or endangered species, no significant wildlife habitat, and no ANSI is present within or adjacent to the subject property.

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: The floodplain and erosion hazard has been determined by Tatham (2022) and is proposed to be rezoned as Environmental Protection. All proposed development has been located outside of the establish floodplain and erosion hazard.

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.

Beacon: The only natural heritage feature on the subject property is the Bear Creek tributary, which is proposed to remain in its existing location but will be enhanced using natural channel design and supported by a geomorphic assessment. All development is proposed to be setback a minimum of 30 m from the watercourse. Through consultations with the NVCA and the City of Barrie, linear bioswales are proposed within the outer 8 m of the 30 m setbacks and will be vegetated with native plants and shrubs.

10. Summary

A background review, pre-consultation with NVCA staff, and field investigations were undertaken as part of this EIS. An analysis of features and functions was undertaken and summarized. This EIS has identified the extent of natural features on the subject property and identified potential impacts as a result of the proposed development.

Consultation with the NVCA is required regarding the proposed redesign and enhancement of the Holly Branch of Bear Creek.

Based upon the findings presented in this report and contingent upon the implementation of the recommendations made herein, it is our conclusion that the proposed development is consistent with the PPS and complies with all other relevant federal and provincial legislation.

We advise that the recommendations in this report be incorporated into the development and site plan agreements for the property.

Prepared by:
Beacon Environmental

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

Reviewed by:
Beacon Environmental

Shelley Gorenc, M.Sc., P.Geo.
Senior Geomorphologist

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Appendix A

Agency Consultation

Geri Poisson

From: Emma Perry <eperry@nvca.on.ca>
Sent: September 29, 2020 10:11 AM
To: 'Michael Matthys'
Cc: 'Dana.Suddaby@barrie.ca'; Mike Francis; Ian Ockenden; Fred Dobbs; Geri Poisson; Matt Brace; 'Nick Millington'; Amanda Kellett; Planning Dept
Subject: RE: Mapleview Essa Development Terms of Reference (NVCA ID #19657)
Attachments: Mapleview Essa Development Terms of Reference (NVCA ID #19657)

Hi Michael,

In the pre-consultation meeting in June of this year, NVCA staff indicated reluctance to support planning applications related to the concept plan in advance of details on the channel relocation and restoration, as well as acceptance of a flood study for the site. This was the basis of NVCA staff recommending advance of the NVCA site alteration permit to relocate the channel prior to submission of planning applications for development on the site.

Through due process review, NVCA can provide support for *Planning Act* applications where the application demonstrates consistency with Provincial Policy on Natural Hazards, and conformity with NVCA Planning and Regulations Guidelines criteria for authorization of permission to develop under the *Conservation Authorities Act.* To date this has not been achieved. The applicant has not submitted the required reports in support of the channel characterization or plans for its relocation, so the NVCA does not have sufficient information to comment on this aspect of the proposal. Though there has been extensive consultation and progress towards delineating the floodplain, the applicant has not yet demonstrated to the satisfaction of the NVCA that the concept plan will provide safe conveyance/storage of the Regulatory flood on the subject site.

For the NVCA to support planning applications at this time, the application for OPA/ZBA would need to demonstrate:

1. The feasibility of the proposal tore-align the watercourse through submission of channel characterization and preliminary re-alignment design;
2. Floodplain delineation in existing and proposed conditions, as well as the feasibility of any proposed alteration;

In accordance with the 31 August 2020 Terms of Reference for permit review (attached).

Should you have any questions or require additional information, please contact the undersigned via email.

Sincerely,
Emma

Emma Perry | **Planner III**

Nottawasaga Valley Conservation Authority
8195 8th Line, Utopia, ON L0M 1T0
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I am currently working remotely as the Nottawasaga Valley Conservation Authority is taking preventative measures to limit the spread of COVID-19. You may experience some delays or disruptions as we follow recommendations of health professionals.

From: Michael Matthys [mailto:mmatthys@svn-ap.com]
Sent: Monday, September 28, 2020 3:48 PM
To: Emma Perry <eperry@nvca.on.ca>
Cc: Geri Poisson <gpoisson@beaconenviro.com>; Dana.Suddaby@barrie.ca; Mike Francis <mfrancis@nvca.on.ca>; Ian Ockenden <iockenden@nvca.on.ca>; Fred Dobbs <fdobbs@nvca.on.ca>; Planning Dept <Planning@nvca.on.ca>; Imran Khan <ikhan@beaconenviro.com>; Matt Brace <mbrace@tathameng.com>; Nick Millington <nmillington@tathameng.com>; Amanda Kellett <akellett@tathameng.com>
Subject: RE: Mapleview Essa Development Terms of Reference (NVCA ID #19657)

Hi Emma,

Thanks for this, we're working on amending the scope of our EIS to take account of the additional habitat studies etc. as outlined below.

We already engaged the NVCA and City of Barrie in a pre-application process to discuss our planning act application back in June, minutes attached. You may recall participating in the meeting to discuss with staff on June 18. I understand that you would have provided your requirements to the City through that process (i.e. an EIS and natural heritage evaluation) and they are reflected in the attached checklist.

Our project schedule has evolved in the last few days and we're now targeting the planning act application this week, and the permit application at a later date. Would you mind confirming NVCA's fees for review of the OPA/ZBA and how many copies of reports you require?

Thanks,
Michael

From: Emma Perry <eperry@nvca.on.ca>
Sent: August 31, 2020 3:41 PM
To: 'Michael Matthys' <mmatthys@svn-ap.com>
Cc: 'Geri Poisson' <gpoisson@beaconenviro.com>; 'Dana.Suddaby@barrie.ca' <Dana.Suddaby@barrie.ca>; Mike Francis <mfrancis@nvca.on.ca>; Ian Ockenden <iockenden@nvca.on.ca>; Fred Dobbs <fdobbs@nvca.on.ca>; Planning Dept <Planning@nvca.on.ca>
Subject: Mapleview Essa Development Terms of Reference (NVCA ID #19657)

Hi Michael,
Below please find NVCA comments on the Terms of Reference (compiled from technical departments) which should comprise a comprehensive list of NVCA requirements to move forward with a complete permit application.

NVCA staff's understanding of the applicant's approach is to apply for permission to undertake the channel relocation (also through site alteration permission from the City of Barrie) in advance of an application under the *Planning Act* for build-out of the site. **Note that this ToR only applies to the proposed permit application for relocation of the channel, and that future planning application requirements will be scoped through due process in consultation with the City of Barrie.**

Ecology

Channel Re-location Design Requirements:

- A natural channel design (riffle-pool sequences, meanders etc.);
- A 30m buffer measured from *on both sides* of the proposed channel (from bankfull flow banks);
- The channel needs to have full access to its floodplain and ability to meander, i.e. proposed pedestrian/recreational infrastructure in the buffer would need to be back far enough that it won't impinge the ability of the creek to move. No artificial hardening (gabion baskets, etc.) to protect the pedestrian/recreational items from channel movement;
- The natural channel design should improve the habitat and state of the watercourse and surrounding riparian community;
- The location of future pedestrian and vehicular crossings should be noted, and consideration for installing bridge abutments/infrastructure at the channel relocation phase should be made to avoid secondary watercourse interference permit requirements during the build-out phase of the project;
- The location in concept of future recreational/pedestrian trails and walkways, as well as any seating and open space areas proposed to be integrated alongside the channel area (NVCA staff will recommend the channel and its 30m buffer be zoned EP, and recreation/pedestrian areas outside the immediate channel buffer);
- Planting plans for of an appropriate mix of herbaceous and woody native re-vegetation within the 30m channel buffer.

Characterizing conditions prior to re-construction of the channel:

- A fluvial geomorphic study will be required to characterize existing conditions of the channel pre-construction and post-channel construction. The report should include:
    - Channel geomorphology assessment using RGA or similar (Rapid Stability and Detailed Assessment is acceptable);
    - Consideration for flood storage and meander erosion hazards.
- An Environmental Impact Study (EIS) will be required:
    - Aquatic ecology scope:
        - Fish habitat assessment following OSAP;
        - Fish community sampling: single pass electro-fishing following Ontario Stream Assessment Protocols (OSAP). If no flow then the NVCA will accept a late spring or early fall sample when flow resumes. If no fish are present, no assessment is required;
        - Complete spot temperature measurements to confirm thermal regime;
        - Benthic macroinvertebrate assessment - *spring OR fall sampling with identification to Family level only*.
    - Terrestrial ecology scope:
        - Riparian vegetation community assessment following Ecological Land Classification protocols;
        - Amphibian survey based on the results of preliminary investigations.
        - Breeding bird survey (3 visits to detect SAR)
        - Tree Inventory and Assessment (City requirement).

- The fluvial geomorphic study and EIS shall each contain post-construction monitoring plans covering two years following the initial construction. The NVCA will require the posting of securities to ensure successful establishment of the feature post-construction. The details of which may be worked out through the design review.

Assessment of enhancements post construction monitoring:

Reports over two years of seasonal post-construction monitoring on the new channel; Demonstration of improvement to habitat/species assemblages based on characterization metrics found pre-construction, including an evaluation of % survival of plantings;

Other items

- Cost estimates for landscaping and grading (securities will be held by NVCA – to be detailed in formal agreement);
- NVCA Permit Application Form;
- NVCA Permit Fees: $5,500.00. A breakdown of fees is provided below:
  - *NVCA Permit Fee (Major Works – Complex): $3000.00;*
  - *Additional fees for significant technical review:*
    - *Terrestrial ecology review: $500.00*
    - *Aquatic ecology review – invertebrates: $500.00*
    - *Aquatic ecology review - fish: $500.00*
    - *Geomorphology engineering review: $500.00*
    - *Natural Hazard (flood, erosion) engineering review: $500.00*
- Drawings and reports (digital only) as detailed above;
- Photos of the site depicting current conditions.

Engineering

NVCA staff confirm acceptance of the Terms of Reference issued by Tatham Engineering dated 17 June 2020 (attached). NVCA staff note the following:

- In relation to existing/proposed flood storage matching: if there is an interim development phase that will proceed in advance of the Essa Road culvert improvements, this phase should either remain outside of the floodplain assuming the existing Essa Road culvert or cut/fill should be balanced assuming existing Essa Road culvert conditions.
- Development phases that proceed to construction after the Essa Road culvert improvements can assume proposed culvert conditions for the existing/proposed flood storage analysis as indicated in the Terms of Reference.

NVCA staff appreciate the opporunity to scope requirements in advance of the development application. We look forward to continuing our review of the application. If you have any questions on the above, please contact the undersigned.

Sincerely,

Emma Perry | **Planner III**

Nottawasaga Valley Conservation Authority
8195 8th Line, Utopia, ON L0M 1T0
T 705-424-1479 ext.244 | **F** 705-424-2115
eperry@nvca.on.ca | **nvca.on.ca**

I am currently working remotely as the Nottawasaga Valley Conservation Authority is taking preventative measures to limit the spread of COVID-19. You may experience some delays or disruptions as we follow recommendations of health professionals.

Memorandum

To: Emma Perry, Planning Ecologist, NVCA

cc: Ben Krul, Manager, Planning Services, NVCA

From: Geri Poisson, Beacon Environmental Ltd.

Date: September 28, 2022

Ref.: BEL 222212

Re: Mapleview and Essa Realigned Watercourse, New Concept Plan and Development Limits

Ms. Perry,

Beacon has been retained by Pearl Builders to prepare an updated Environmental Impact Study and Channel Design Concept and Geomorphic Assessment Report for the properties located at 664, 674 & 692 Essa Road, and 320 & 366 Mapleview Drive West, City of Barrie (the subject property). As presented and discussed in our virtual meeting August 10, 2022, the purpose of this memo is to present the NVCA with a revised conceptual site plan and realignment of the watercourse (tributary to Bear Creek) that traverses the subject property and solicit feedback and support in principle for the proposed development limits associated with the creek corridor and the stormwater management facilities proposed to be located within the creek corridor.

As you are aware, previous plans have been submitted for this subject property and this watercourse. We are pleased to present to you a revised preliminary concept channel design that incorporates a Natural Channel Design concept, with a 30 m setback from the edge of the low flow channel and a 3 m maintenance easement on either side. The 30 m setback is measured from a conceptualized 3 m wide channel located in the centreline of the proposed 14 m wide valley bottom. See the attached Concept Plan which illustrates a central EP zone to be conveyed to the City of Barrie, flanked by Open Space zones where Low Impact Development (LID) bioswales are proposed.

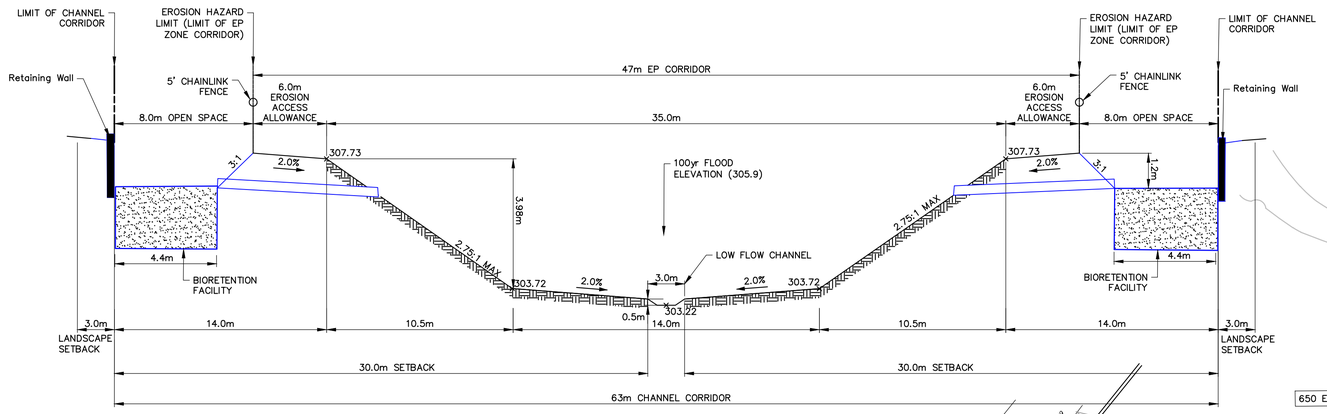
The following points are based on discussions at our meeting on August 10, 2022 and are reflected in the attached Preliminary Channel Corridor Plan and Cross-section.

- The current proposal provides 30m setbacks from the edge of the low flow channel.
- NVCA can support bioretention facilities within the outer edges of the 30m setback.
- City and NVCA will not accept any SWM infrastructure within EP lands to be conveyed and dedicated to the City. All SWM facilities must be within the owner's lands and can drain into the corridor/channel.

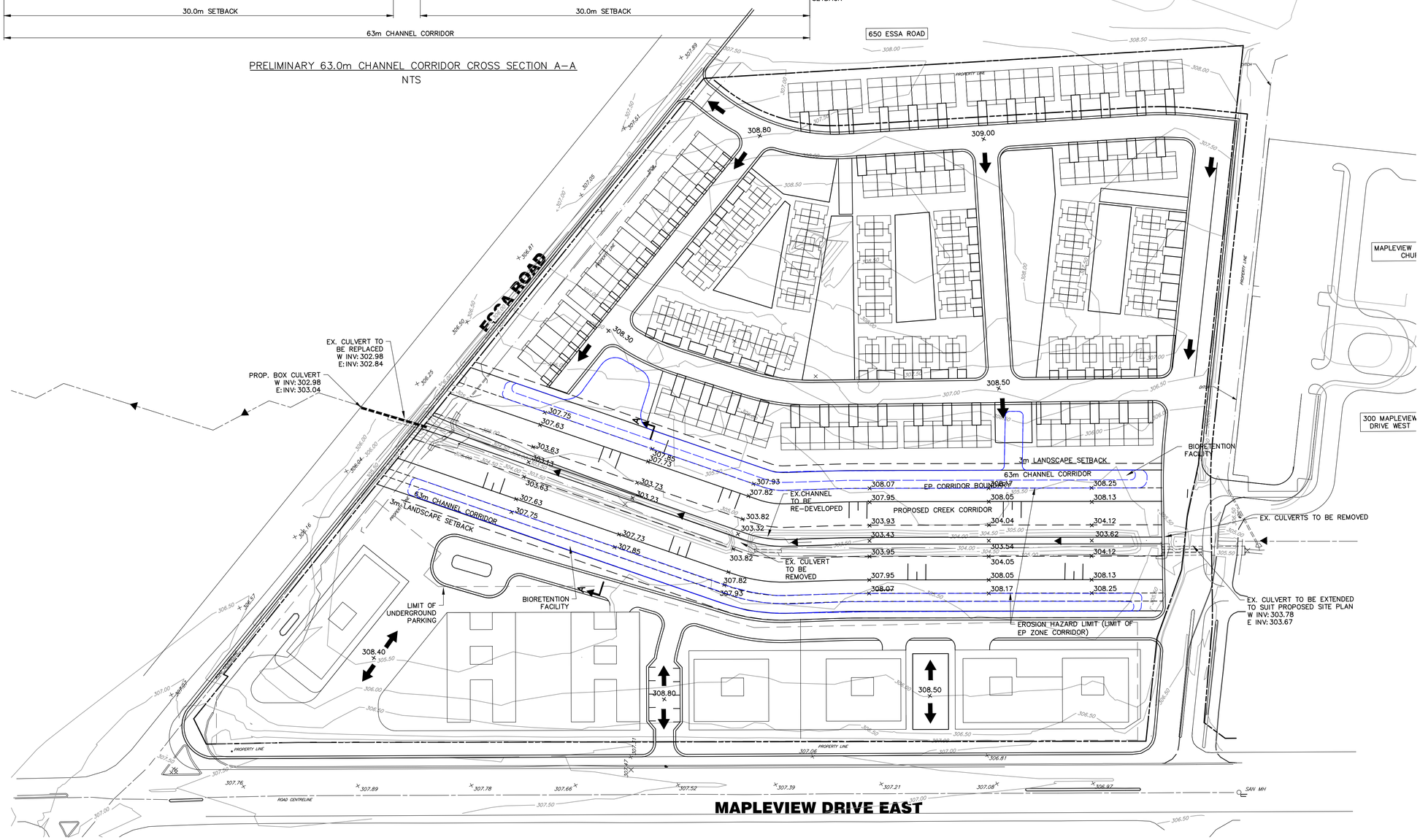
- Based on Tatham's flood hazard analysis, a 47m wide EP corridor is sufficient which includes the 6m erosion access setback from the top of bank.
- NVCA requested a minimum 30m development setback from the edge of the watercourse but is amenable to limiting EP lands to the 6m erosion access setback and permitting bioretention facilities in Open Space zones between the 6m erosion access setback and the 30m development setback limit. An updated cross section and plan is attached for NVCA review.
- LID facilities within the Open Space zones will be held and maintained by the owner/future condo corp. No infrastructure will be proposed within the EP lands.
    - The 30m setback from the watercourse will be maintained. The total channel corridor will be 63m wide, plus 3 m on either side for access.
    - The EP corridor to be dedicated to the City will be 47m wide, leaving 8 metres on either side for potential bioretention facilities that would be landscaped.
- City noted their reliance on NVCA to review and determine required EP corridor width.
    - If NVCA agrees with reduced EP land dedication, exceptions will be included in a zoning bylaw amendment request for a site specific zoning provision to an OS zone.

Please let us know if the NVCA can provide agreement in principle on the preliminary Channel Corridor Plan and Cross-section.

Should you have any questions or points for discussion, please contact me by email at gpoisson@beaconenviro.com, or at 705-999-4935 ext. 249.



PRELIMINARY 63.0m CHANNEL CORRIDOR CROSS SECTION A–A
NTS



KEY PLAN
N.T.S.

LEGEND

- EXISTING CONTOUR
- PROPOSED PROPERTY LINES
- PROPOSED LOT LINES
- EXISTING EDGE OF PAVEMENT
- EXISTING EDGE OF GRAVEL
- EXISTING C/L DITCH
- EXISTING TOP OF DITCH
- EXISTING CULVERT
- PROPOSED LOT LINES
- PROPOSED PROPERTY LINES
- ×232.20 PROPOSED SPOT ELEVATION
- ×231.12 EXISTING SPOT ELEVATION
- OVERLAND FLOW DIRECTION
- CONCEPTUAL SWM FACILITY

DISCLAIMER AND COPYRIGHT

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DRAWING REFERENCES

SURVEY INFORMATION SHOWN ON THIS PLAN PREPARED BY TATHAM ENGINEERING LIMITED IN 2015 AND 2022.

SITE PLAN PREPARED BY IBI GROUP DATED JUNE 14, 2022

BENCHMARKS

BENCHMARK: #03120080060
ELEVATION: 307.474
NORTHING: N4909251.423 EASTING: E602723.077

TBM#1
TOP OF OPERATING NUT OF HYDRANT #6 LOCATED ON NORTH SIDE OF MAPLEVIEW DRIVE WEST APPROXIMATELY 210m EAST OF INTERSECTION OF MAPLEVIEW DRIVE WEST AND ESSA RD. ELEV. 308.395m

TBM#2
TOP OF OPERATING NUT OF HYDRANT #4 LOCATED ON NORTH SIDE OF MAPLEVIEW DRIVE WEST APPROXIMATELY 400m EAST OF INTERSECTION OF MAPLEVIEW DRIVE WEST AND ESSA RD. ELEV. 308.080m

No.	REVISION DESCRIPTION	DATE

ENGINEER STAMP

DRAFT

MAPLEVIEW ESSA DEVELOPMENT
CITY OF BARRIE

TATHAM ENGINEERING

PRELIMINARY GRADING PLAN

DESIGN: NM	FILE: 422433	DWG: GP-1
DRAWN: LCG	DATE: OCT 2020	
CHECK: BFS	SCALE: 1:1000	

Drawing Name: 422433-GP01 – SK.dwg, Plotted: Sep 06, 2022

From:	Emma Perry
To:	Geri Poisson
Cc:	Ben Krul; Firas Al-Sabek; Simon Yee; Shelley Gorenc; Michelle Lu; MapleEssaBarrie@pearlbuilders.com; Jashan Bedi; Bryan Stanton; Jennifer Jaruczek; Matt Brace; Raymond Lee; Ahmed Siddiqui; Andy Khera; Neha Garg; Planning Dept; Winkelmann, Alexander; Daniel Twigger; Bryn Barron; mregimbal@strybos.com; Siavash Vazirnezami; "lynn@junctiongroup.ca"; "Dana Suddaby"; Planning Dept
Subject:	RE: Mapleview & Essa, Channel realignment concept memo NVCA File 19657
Date:	December 16, 2022 3:27:51 PM
Attachments:	D30-002-2020 - NVCA Comments (NVCA File 19657).msg

Good afternoon Geri,
The Nottawasaga Valley Conservation Authority (NVCA) is in receipt of your memo dated 28 September 2022. It is understood that the City of Barrie seeks NVCA's approval of the concept of development in order to move the applicant's project forward. Accordingly, NVCA staff provide the following comments on the proposed development concept.

The existing property is approximately 10.19 hectares and is proposed to include mid to high-density buildings integrating residential and commercial uses with an Environmental Protection block surrounding the Bear Creek corridor. NVCA has reviewed and discussed the development proposal with the City of Barrie and Beacon Environmental, resulting in the current iteration of the development concept which has been requested to review.

The proposed development would amend the land use to mixed use along with an environmental protection corridor around a proposed realigned and naturalized Bear Creek corridor. Integral to the proposal is the re-alignment of the watercourse, which the NVCA has accepted in concept during previous pre-consultations. Permission is required from the NVCA for development and site alteration on regulated portions of the property, including the alteration to the watercourse and mitigation of the flood hazard.

NVCA staff previously provided comments on the development concept to the City of Barrie in response to circulation of application for OPA/ZBA D30-002-2020 (attached). It is noted that Beacon's memo responds to NVCA ecology comments and that NVCA staff have outstanding comments related to the proposed mitigation of natural hazards within the subject site.

The revised concept has addressed the ecology comments issued, with a 30m setback being provided from the watercourse low-flow channel. NVCA staff can support the inclusion of bioretention facilities within the 30m setback, provided these features do not require regular maintenance and can be naturalized. NVCA staff can support zoning of the 47m wide corridor to Environmental Protection, with the 6m access allowance and bioretention facilities zoned Open Space. NVCA staff would request that the Open Space zone be amended with an Exception to have the effect of restriction of development of structures, recreational or pedestrian infrastructure; similar to the EP zone provisions. The entirety of the proposed 30m setback from the watercourse would remain under the NVCA's regulatory jurisdiction for watercourse alteration.

It is understood that the 47m wide EP corridor would be conveyed to the City of Barrie. NVCA staff support this conveyance and advise that reduction in the required 30m watercourse buffer (60m corridor width) can be supported from an ecological perspective based on the high level of naturalization and

improvements to the existing watercourse proposed. Conceptual ideas for the enhanced channel feature include off-line pools and native vegetation planting, which are positive enhancements to the system. NVCA would expect the first submission to depict 100% naturalization of the EP corridor through the planting of woody and herbaceous plants in accordance with NVCA and City of Barrie standards. NVCA's support for channel re-alignment is based on the demonstration of a significant ecological improvement in the system as a whole, which appears to have been conceptualized in the revised concept plans.

The matter of proposed crossings of the realigned watercourse appear to have been addressed through their removal in the latest concept, with use of the existing crossing proposed with relevant engineering upgrades to accommodate flows. It is unclear from the concept plans whether the previously proposed pedestrian bridges will be conceptualized in future iterations of these plans, which NVCA would provide comment on per due process.

As the NVCA has not received response from the applicant to our previously issued engineering comments related to natural hazards, the above support for the proposed development is dependent upon the applicant demonstrating that the flood hazard can be mitigated apropriately in accordance with NVCA and Provincial standards within the areas conceptualized. For the purposes of confirming the apropriate setbacks for development from an ecological perspective, NVCA staff suppor the revised concept plans.

Thank you for the opportunity to provide comments at this early stage in the process, and we look forward to working together on this project in the future.

Sincerely,

Emma Perry, B. Sc., GCER (she/her/hers)
Planning Ecologist

Nottawasaga Valley Conservation Authority
8195 8th Line, Utopia, ON L0M 1T0
T 705-424-1479 ext. 244
eperry@nvca.on.ca | nvca.on.ca

From: Geri Poisson <gpoisson@beaconenviro.com>
Sent: Wednesday, September 28, 2022 10:28 AM
To: Emma Perry <eperry@nvca.on.ca>
Cc: Ben Krul <bkrul@nvca.on.ca>; Firas Al-Sabek <Firas@pearlbuilders.com>; Simon Yee <simon.yee@ibigroup.com>; Shelley Gorenc <sgorenc@beaconenviro.com>; Michelle Lu <michelle.lu@ibigroup.com>; MapleEssaBarrie@pearlbuilders.com; Jashan Bedi <jashan@pearlbuilders.com>; Bryan Stanton <bstanton@tathameng.com>; Jennifer Jaruczek <jennifer.jaruczek@ibigroup.com>; Matt Brace <mbrace@tathameng.com>; Raymond Lee <raymond.lee@ibigroup.com>; Ahmed Siddiqui <asiddiqui@beaconenviro.com>; Andy Khera <andy@pearlbuilders.com>; Neha Garg <neha.garg@ibigroup.com>; Winkelmann, Alexander <awinkelmann@geiconsultants.com>; Daniel Twigger <dtwigger@tathameng.com>; Bryn Barron

<bbarron@strybos.com>; mregimbal@strybos.com; Siavash Vazirnezami <siavash.vazirnezami@ibigroup.com>
Subject: Mapleview & Essa, Channel realignment concept memo

Hello Emma,

Based on our meeting on August 10, please review the attached memo that summarizes our discussion and presents a draft plan of the creek corridor for your review.

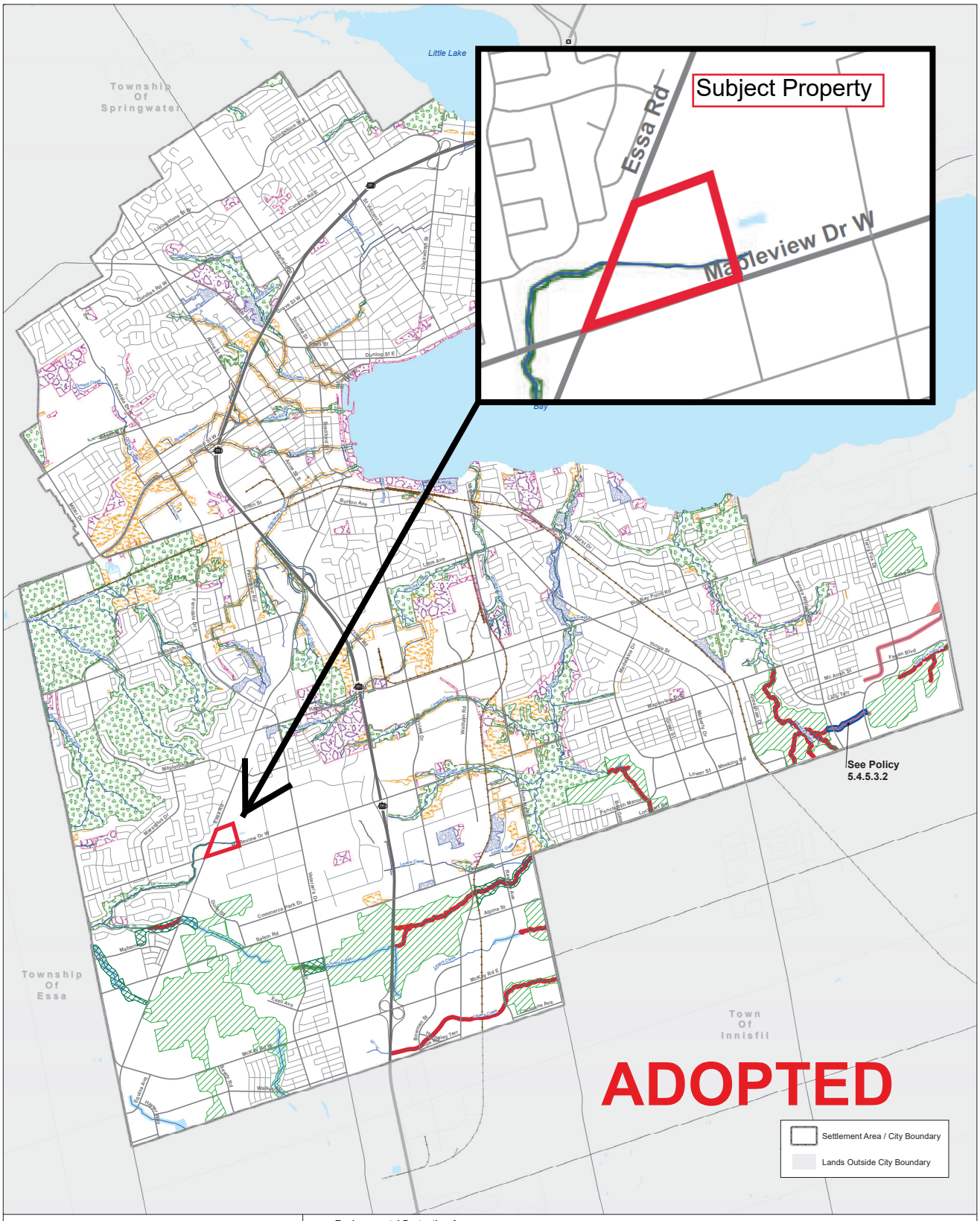
Please let me know at your earliest convenience if the NVCA can support this plan.

Thanks very much,

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

Appendix B

Barrie OP – Map 3 Natural Heritage Protection Overlays



Barrie

OFFICIAL PLAN

MAP 3

Natural Heritage Protection Overlays

February 2022

Environmental Protection Area Classification

- EPA - Level 1
- EPA - Level 1 with Existing Development Designation Subject to 5.4.2.1.d
- EPA - Level 2
- EPA - Level 3

- High Constraint Stream Corridor Area
- High (S) Constraint Stream Corridor Area - Special
- Medium Constraint Stream Corridor Area
- Low Constraint Stream Corridor Area
- High (S) Constraint Stream Corridor - Special Policy Area
- Natural Core Area
- Natural Linkage Area
- Waterbody
- Watercourse

* Where natural heritage protection areas are shown, they are often interconnected and continue beyond the municipal boundary.

** Certain features like roads, parks and trails within the undeveloped designated greenfield area are conceptual and subject to change.

0 1 2 km

Development Services 3/2/2022

Appendix C

Vascular Plant Species List

Appendix C

Vascular Plant Species List

Scientific Name	Common Name	CC	CW	COSEWIC	SARO	SRank	Simcoe County (Riley 1989)
Abies balsamea	Balsam Fir	5	-3			S5	
Acer negundo	Manitoba Maple	0	0			S5	
Acer platanoides	Norway Maple	0	5			SE5	
Acer rubrum	Red Maple	4	0			S5	
Acer saccharum	Sugar Maple	4	3			S5	
Agrostis gigantea	Redtop	0	-3			SE5	
Alisma triviale	Northern Water-plantain	1	-5			S5	
Ambrosia artemisiifolia	Common Ragweed	0	3			S5	
Asclepias syriaca	Common Milkweed	0	5			S5	
Bromus inermis	Smooth Brome	0	5			SE5	
Capsella bursa-pastoris	Common Shepherd's Purse	0	3			SE5	
Cirsium arvense	Canada Thistle	0	3			SE5	
Cirsium vulgare	Bull Thistle	0	3			SE5	
Cornus sericea	Red-osier Dogwood	2	-3			S5	
Dactylis glomerata	Orchard Grass	0	3			SE5	
Daucus carota	Wild Carrot	0	5			SE5	
Echium vulgare	Common Viper's Bugloss	0	5			SE5	
Elaeagnus angustifolia	Russian Olive	0	3			SE3	
Elymus repens	Quackgrass	0	3			SE5	
Equisetum arvense	Field Horsetail	0	0			S5	
Erigeron annuus	Annual Fleabane	0	3			S5	
Erigeron canadensis	Canada Horseweed	0	3			S5	
Fragaria virginiana	Wild Strawberry	2	3			S5	
Fraxinus excelsior	European Ash	0	3			SE2	
Fraxinus pennsylvanica	Red Ash	3	-3			S4	
Galium palustre	Common Marsh Bedstraw	5	-5			S5	

Scientific Name	Common Name	CC	CW	COSEWIC	SARO	SRank	Simcoe County (Riley 1989)
Hypericum perforatum	Common St. John's-wort	0	5			SE5	
Impatiens capensis	Spotted Jewelweed	4	-3			S5	
Juglans nigra	Black Walnut	5	3			S4?	R1 (Nat)
Juniperus virginiana	Eastern Red Cedar	4	3			S5	
Leucanthemum vulgare	Oxeye Daisy	0	5			SE5	
Lonicera tatarica	Tatarian Honeysuckle	0	3			SE5	
Lotus corniculatus	Garden Bird's-foot Trefoil	0	3			SE5	
Malus pumila	Common Apple	0	5			SE4	
Medicago lupulina	Black Medick	0	3			SE5	
Melilotus albus	White Sweet-clover	0	3			SE5	
Oenothera biennis	Common Evening-primrose	0	3			S5	
Onoclea sensibilis	Sensitive Fern	4	-3			S5	
Persicaria amphibia	Water Smartweed	5	-5			S5	
Phalaris arundinacea	Reed Canarygrass	0	-3			S5	
Phleum pratense	Common Timothy	0	3			SE5	
Picea glauca	White Spruce	6	3			S5	
Picea pungens	Blue Spruce	0	3			SE1	
Pinus strobus	Eastern White Pine	4	3			S5	
Poa pratensis	Kentucky Bluegrass	0	3			S5	
Populus deltoides ssp. deltoides	Eastern Cottonwood	4	0			S5	
Potentilla recta	Sulphur Cinquefoil	0	5			SE5	
Quercus rubra	Northern Red Oak	6	3			S5	
Ranunculus acris	Common Buttercup	0	0			SE5	
Rhamnus cathartica	European Buckthorn	0	0			SE5	
Rhus typhina	Staghorn Sumac	1	3			S5	
Robinia pseudoacacia	Black Locust	0	3			SE5	
Salix bebbiana	Bebb's Willow	4	-3			S5	
Salix petiolaris	Meadow Willow	3	-3			S5	
Schoenoplectus tabernaemontani	Soft-stemmed Bulrush	5	-5			S5	
Silene vulgaris	Bladder Campion	0	5			SE5	
Solanum dulcamara	Bittersweet Nightshade	0	0			SE5	
Solidago canadensis	Canada Goldenrod	1	3			S5	

Scientific Name	Common Name	CC	CW	COSEWIC	SARO	SRank	Simcoe County (Riley 1989)
Sonchus arvensis	Field Sow-thistle	0	3			SE5	
Sorbus aucuparia	European Mountain-ash	0	5			SE4	
Spiraea alba	White Meadowsweet	3	-3			S5	
Syringa vulgaris	Common Lilac	0	5			SE5	
Taraxacum officinale	Common Dandelion	0	3			SE5	
Thuja occidentalis	Eastern White Cedar	4	-3			S5	
Trifolium pratense	Red Clover	0	3			SE5	
Tussilago farfara	Coltsfoot	0	3			SE5	
Typha latifolia	Broad-leaved Cattail	1	-5			S5	
Ulmus pumila	Siberian Elm	0	3			SE3	
Vincetoxicum rossicum	European Swallowwort	0	5			SE5	
Vitis riparia	Riverbank Grape	0	0			S5	

Appendix D

Breeding Birds List

Appendix D

Breeding Birds List

Common Name	Scientific Name	Status				# Breeding Territories
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK [b]	Area-sensitive (OMNR)c	
Green Heron	*Butorides virescens*			S4		foraging
Mourning Dove	*Zenaida macroura*			S5		1
Willow Flycatcher	*Empidonax traillii*			S5		1
Eastern Phoebe	*Sayornis phoebe*			S5		1
Eastern Kingbird	*Tyrannus tyrannus*			S4		1
Tree Swallow	*Tachycineta bicolor*			S4		1
Barn Swallow	*Hirundo rustica*	THR	THR	S4		foraging
American Crow	*Corvus brachyrhynchos*			S5		1
American Robin	*Turdus migratorius*			S5		2
Gray Catbird	*Dumetella carolinensis*			S4		2
European Starling	*Sturnus vulgaris*			SE		2
Warbling Vireo	*Vireo gilvus*			S5		1
Yellow Warbler	*Setophaga petechia*			S5		1
Chipping Sparrow	*Spizella passerina*			S5		1
Clay-colored Sparrow	*Spizella pallida*			S4		1
Savannah Sparrow	*Passerculus sandwichensis*			S4	A	5
Song Sparrow	*Melospiza melodia*			S5		5
Red-winged Blackbird	*Agelaius phoeniceus*			S4		4
Common Grackle	*Quiscalus quiscula*			S5		1
Brown-headed Cowbird	*Molothrus ater*			S4		1
Baltimore Oriole	*Icterus galbula*			S4		1
House Finch	*Haemorhous mexicanus*			SNA		1
American Goldfinch	*Spinus tristis*			S5		1

Field Work Conducted On: May 27, June 13 & 29, 2022
Number of Species: 21 + 2 foraging = 23
Number of (provincial and national) Species at Risk: 0
Number of S1 to S3 Species: 0
Number of Forest Area-sensitive Species: 0
Number of Grassland Area-sensitive Species: 1 - Savannah Sparrow