



GUIDING SOLUTIONS IN THE
NATURAL ENVIRONMENT

Scoped Environmental Impact Study

51, 53, 55 & 75 Bradford Street and 20 Checkley Street City of Barrie

Prepared For:

Barrie Lakeshore Developments

Prepared By:

Beacon Environmental Limited

Date: *Project:*

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1. Introduction

Beacon Environmental Limited (Beacon) has been retained by Barrie Lakeshore Developments to prepare a scoped Environmental Impact Study (EIS) in support of an application to redevelop the property at 51, 53, 55 & 75 Bradford Street & 20 Checkley Street (Part of Lot 24 and 25, Concession 5), in the City of Barrie (the “subject property”).

The subject property is approximately 3.5 hectares (8.65 acres) and located between Lakeshore Drive to the east, Bradford Street to the west, access to Checkley Street in the north and Bunkers Creek and an associated Environmental Protection area to the south (**Figure 1**). There are existing residential condominium buildings to the north and south and the Lake Simcoe waterfront to the east across Lakeshore Drive. Adjacent natural features include the Bunkers Creek Eco-park, a constructed pond and wetland adjacent to Bunkers Creek.

The property is within the jurisdiction of and subject to the corresponding policies of the Lake Simcoe Region Conservation Authority (LSRCA), Lake Simcoe Protection Plan (LSPP) and the City of Barrie.

The data presented in this EIS was collected through a review of background documents, submission of a Terms of Reference, consultation with the City and LSRCA, and field investigations undertaken in 2019 and 2020. These field investigations included an assessment of existing natural environment conditions and investigations into the potential presence of species of conservation concern on the subject property and review of supporting information from other team members. Review of fluvial geomorphology data and the staking of the natural features enable an accurate determination of the boundaries of natural heritage features and proposed development buffers tested against the existing policy framework.

The data collected for the subject property was used to characterize the natural heritage features, and was assessed in relation to the policies presented in the City of Barrie Official Plan, and the guidelines and policies provided by regulatory agencies including the LSRCA and the Ministry of Natural Resources and Forestry (MNRF). Finally, this scoped EIS provides an outline of the proposed development plan, identifies potential negative impacts to natural features, and recommends appropriate mitigation measures for retained natural features to satisfy the environmental policy and regulatory objectives.

This report provides an update to the December 2019 EIS to reflect recent changes to the proposed development areas, including grading works to address the regulatory floodplain, and additional seasonally appropriate field work and staking of the wetland feature. As well, comments received from the City of Barrie and LSRCA have been reviewed and addressed where applicable.

2. Methodology

The following methodology was applied to inventory natural heritage features for assessment of impact of the proposed development on the natural environment.

2.1 Background Review

Background information pertaining to the natural and physical setting of the subject property was gathered and reviewed at the outset of the project. These information sources included:

- City of Barrie Official Plan (2010, Office Consolidation 2018);
- LSRCA Regulations and Policies;
- MNRF Natural Heritage Information Centre (NHIC) rare species database;
- Provincial Policy Statement (2020);
- LSRCA's Policies and guidelines;
- *Endangered Species Act* (2007);
- Bird Studies Canada;
- Herpetological Atlas;
- Environmental Impact Study Report – Revised, Blue Simcoe Developments, Proposed Condominiums (Azimuth Environmental Consulting Inc., 2008);
- Barrie Creeks, Lovers Creek, and Hewitt's Creek Subwatershed Plan (LSRCA, 2012); and
- Master Drainage Plan, City of Barrie (Tatham Engineering Limited, 2019).

The 2008 Azimuth EIS report included terrestrial existing conditions, which have been updated in this report. Aquatic conditions were also documented, including fish community sampling, which has been updated with more recent data provided by the LSRCA.

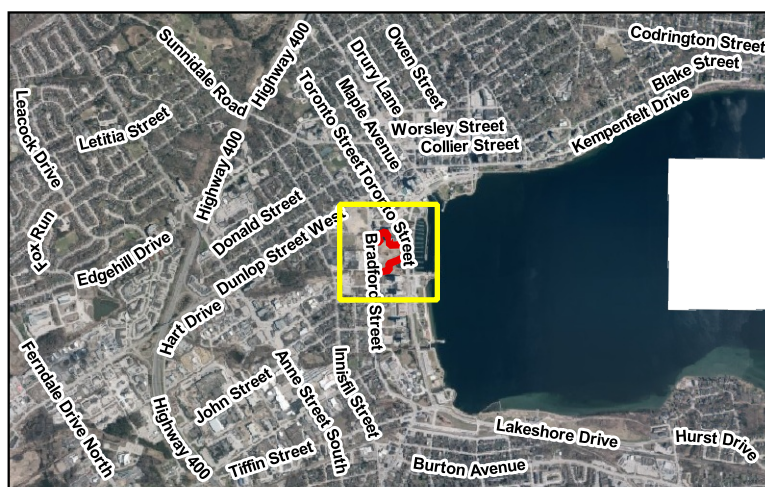
Other sources of information, such as aerial photography and topographic maps, were also consulted prior to commencing field investigations. The LSRCA was contacted to confirm the scope of studies to be included in this EIS. Correspondence received from the MNRF and LSRCA is presented in **Appendix A** and **B**, respectively.

2.2 Field Investigations

Field investigations on the subject property were undertaken by Beacon staff in 2019 and 2020 including, vegetation community mapping, aquatic habitat assessment and watercourse delineation. Additionally, data from the Tree Inventory and Preservation Plan (TIPP) Report prepared by Kuntz Forestry Consulting Inc. (2020) has been included. A description of these investigations follows below, and a summary of the timing is provided in **Table 1**.

Table 1. Summary of Field Investigations

Survey Type	Date
Botanical, ELC, Habitat Assessment	October 25, 2019
Aquatic Habitat Assessment	October 23, 2019
Breeding Bird Surveys	June 5 and 12, 2020
Amphibian Surveys	April 28, May 21 and June 18, 2020
Staking of the Feature Limits with LSRCA	July 10, 2020



Site Location		Figure 1
51-57 Bradford Street, Barrie EIS NHS		
		Project: 219403 Last Revised: December 2019
Client: SmartCentres		Prepared by: BD Checked by: GP
	1:3500	Inset Map: 1:50000
Contains information licensed under the Open Government License—Ontario Orthoimagery Baselayer: 2019 (FBS)		

2.2.1 Vegetation Communities and Floral Survey

Vegetation surveys took place on October 25, 2019. Vegetation units on the subject property were described and mapped on current high-resolution colour ortho-photography of the lands using the Ecological Land Classification System for Southern Ontario (ELC) (Lee *et al.* 1998). This is the standard method used for describing vegetation communities in southern Ontario. At the same time as vegetation community mapping was undertaken, a floral inventory occurred which consisted of a compilation of a list of plants observed on the property. Searches were also conducted for Butternut (*Juglans cinerea*) during site surveys. This is a relatively common tree species in southern Ontario that is listed provincially and federally as endangered.

2.2.2 Tree Inventory

A Tree Inventory and Preservation Plan was completed for the proposed development with all trees located on the subject property inventoried.

Field data was collected by an I.S.A. Certified Arborist from Kuntz Forestry Consulting Inc. on November 12, 2019. Tree species were identified and were measured at dbh, and tree condition was assessed based on trunk integrity, crown structure and crown vigor. Condition ratings include poor, fair and good.

The results of this inventory and recommendations have been presented in a separate report by Kuntz Forestry Consulting Inc. titled, Tree Inventory and Preservation Plan Report, Bradford Street and Simcoe Street, City of Barrie, Ontario (2020) and summarized in the Existing Conditions - **Section 4.3.3** of this report.

2.2.3 Aquatic Habitat Assessment

For this assessment of aquatic habitat conditions we primarily relied on the surveys completed by LSRCA in 2010 and 2016 which were provided to Beacon in February of 2020. A Beacon ecologist completed a site visit on October 23, 2019 to confirm the aquatic habitat conditions on the subject property.

The subject property was walked to identify the presence of watercourses, ponds, water flow regimes and the presence/absence of fish. The drainage features were assessed in accordance with the Credit Valley Conservation/Toronto Region Conservation Authority (2014) document entitled: *Evaluation, Classification and Management of Headwater Drainage Features: Approved July 2013 (Finalized January 2014)* (TRCA & CVC 2014). Each feature was classified according to flow regime, defined as follows:

- *Permanent Watercourse* – maintains continuous surface flows most years, well defined low-flow;
- *Intermittent Watercourse* – water flows for several months during the year, typically during the spring and early summer, and late fall; these watercourses have a defined high-flow channel with a poorly defined or absent low flow channel; or
- *Ephemeral Watercourse* – water flows for a short period of time primarily during snow melt (spring freshet) or storm events, typically have no clearly defined high or low-flow channel

or sorting of substrate, frequently occurring as vegetated swales or bare soils rills in agricultural fields where they are often ploughed through.

Sampling of the aquatic community was not completed to determine presence or absence and species abundance and extent of fish habitat within each feature, as there is sufficient historic information available on Bunkers Creek.

2.2.4 Breeding Bird Surveys

Breeding bird surveys were undertaken in 2020 on June 5th and 12th, with a third to specifically survey for Bobolink and Eastern Meadowlark not deemed necessary based on existing conditions.

The subject property was visited between the hours of 08:15 hrs. and 9:45 hrs. on days with low to moderate winds (0-3 Beaufort Scale) and temperatures within 5°C of normal. The entire subject property was walked so that all singing birds could be heard and/or observed and recorded. That is, the surveyor is within 50-100 m of all parts of the site depending on habitat. All birds heard and seen were recorded in the location observed on an aerial photograph of the site.

All buildings on the subject property that were potential Barn Swallow (*Hirundo rustica*) nesting sites were thoroughly surveyed for nests, looking both for physical nests and dropping piles. These birds are often found in close association with human habitation and exploit vertical surfaces provided by anthropogenic structures such as barns, homes and the underside of bridges. The offsite pond to the southeast of the property was also surveyed from the property limit to determine function and presence/absence of rare species.

2.2.5 Breeding Amphibian Surveys

To assess the study area for potential breeding habitat and active breeding amphibians on and immediately adjacent to the subject property, three amphibian surveys were completed on April 28, May 21 and June 18, 2020. Surveys were conducted following the Marsh Monitoring Protocol (Bird Studies Canada, 2009). The surveys consist of auditory surveys undertaken during the prime breeding period to record calling males that are present, spread throughout the breeding season in an attempt to include the short temporal peak for each species of interest. The surveys involved visiting the subject lands after dusk to listen for calling males. Calling amphibians, if present, were identified to species and chorus activity was assigned a code from the following options, indicating increasing abundance:

- 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; or
- 3 Full chorus, calls continuous and overlapping.

Using this code method, areas that support a Code 1 for a species indicate very low population numbers in the local area, and/or low-quality breeding habitat. Code 3 for species indicates a healthy population and high-quality breeding habitat. Code 2 indicates a moderate population and/or lower quality breeding habitat. Species, calling locations and approximate numbers of calling individuals were to be recorded and mapped.

All potential amphibian breeding locations within the subject lands noted on aerial photographs were surveyed. Specific to the southeast portion of the study area, breeding surveys were conducted along the property limit to determine function of the adjacent offsite pond.

2.2.6 Feature Staking with LSRCA

Staking of the feature limits was completed with the LSRCA on July 10, 2020 to assess the location and extent of the watercourse, top of bank and delineate the wetland. Results of this staking exercise have been incorporated into this study.

2.2.7 Incidental Wildlife

Incidental observations of wildlife species, including mammals, herpetofauna and/or habitat structures made during field investigations in 2019 and 2020 were recorded for the purposes of the EIS. When encountered, the species and locations of the wildlife were noted.

2.2.8 Species at Risk

Screening for potential Species at Risk (SAR) habitat was completed through identification of potential suitable habitat types for SAR species known to occur in Simcoe County. No formal, species-specific surveys were undertaken, apart from those for Butternut, as no SAR records exist for the site, and habitat was not thought to be present for the most frequently observed SAR.

2.2.9 Landscape Connectivity

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

3. Policy Context

3.1 Provincial Policy Statement (2020)

On February 28, 2020, the Ministry of Municipal Affairs and Housing (MMAH) released a new Provincial Policy Statement, 2020 (PPS), which will replace the currently in-force 2014 PPS. It will come into effect on May 1, 2020. All decisions on or after that date under the Planning Act, or that affect a planning matter will be required to be consistent with the new PPS.

The PPS (2020) should be considered and applied as one integrated document. Policy 2.1 of the PPS provides direction to regional and local municipalities regarding planning policies specifically for the protection and management of natural heritage features and resources. The PPS defines seven natural heritage features and provides planning policies for each.

The *Natural Heritage Reference Manual* (MNR 2010) is a technical document used to help assess the natural heritage features listed below:

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

Each of these features is afforded varying levels of protection subject to guidelines, and in some cases, regulations. Identification of these features is made in a variety of ways. Significant wetlands and significant coastal wetlands are identified and evaluated by protocols provided by the Ministry of Natural Resources and Forestry (MNR) as are criteria for Significant Woodlands. Habitat of Endangered and Threatened species is also determined by the Ministry of Environment, Conservation and Parks (MECP) once a species has been identified on a property through site specific investigation or through existing information. Fish habitat is governed by the federal *Fisheries Act* and variously applied by Fisheries and Oceans Canada (DFO). The identification of the remainder of these PPS features is the responsibility of the municipality (or other planning authority), although MNR are responsible for setting the criteria for Significant Woodlands. 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 at the site-specific basis.

Natural heritage features relevant to the subject property include fish habitat and potential habitat of endangered and threatened species (Barn Swallow).

Section 2.1 of the 2014 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
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.

3.2 *Endangered Species Act (2007)*

Ontario's *Endangered Species Act* (2007) (ESA) came into effect on June 30, 2008 and replaced the former 1971 Act. The ESA protects species listed as endangered and threatened by the Committee on the Status of Species at Risk in Ontario (COSSARO). The purposes of the *Endangered Species Act* (ESA) are:

- To identify species at risk based on the best available scientific information, including information obtained from community knowledge and aboriginal traditional knowledge;
- To protect species that are at risk and their habitats, and to promote the recovery of species that are at risk; and
- To promote stewardship activities to assist in the protection and recovery of species that is at risk.

Section 9 of the ESA prohibits the killing, harming, harassing, possession, collection, buying and selling of extirpated, endangered, and threatened species on the Species at Risk in Ontario (SARO) List; and Section 10 prohibits the damage or destruction of protected habitat of species listed as extirpated, endangered or threatened on the SARO List.

The ESA was previously administered by MNRF. Presently, authorization from the Ministry of Environment, Conservation and Parks (MECP) is required under the ESA for any works proposed within the habitat of a threatened or endangered species. Searches for these species require seasonal field work and, in some cases, even if the species are found to be present, certain permit exemptions may be available.

Under the *ESA*, native species that are in danger of becoming extinct or extirpated from the province are identified as being extirpated, endangered, threatened or special concern. These designations are defined as follows:

- Extirpated - a species that no longer exists in the wild in Ontario but still occurs elsewhere;
- Endangered – a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's *Endangered Species Act*;
- Threatened - a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed; and

- Special Concern (formerly Vulnerable) - a species with characteristics that make it sensitive to human activities or natural events.

Under the *ESA*, protection is provided to threatened or endangered species and their habitat, as well as providing stewardship and recovery strategies for species. Permitting is required to conduct works within habitat regulated for threatened or endangered species. Species of special concern require management plans, but individuals or their habitat are not directly protected under the *ESA*.

3.3 Lake Simcoe Protection Plan (2009)

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

The main objectives of the LSPP are to:

- Protect, improve or restore the elements that contribute to the ecological health of the Lake Simcoe watershed;
- Reduce loadings of phosphorus and other nutrients to Lake Simcoe and its tributaries; and
- Prohibit and remove any direct discharge of pollutants to Lake Simcoe and its tributaries.

As outlined in the LSPP, if the construction of a building or buildings with a ground floor area of 500 m² or more, the proposed development constitutes *major development* under the LSPP and, as such, is subject to Policy 4.8-DP of the Plan. This policy outlines various requirements for stormwater management, including the use of an *integrated treatment train approach* to “minimize stormwater management flows and reliance on end-of-pipe controls through measures including source controls, lot-level controls and conveyance techniques”. The stormwater management design must satisfy the *Enhanced Protection level* in the Ministry of the Environment’s (MOE) *Stormwater Management Planning and Design Manual* (2003), as identified in Policy 4.9-DP of the LSPP.

The MOE Enhanced Protection is to be applied when sensitive aquatic habitat will be impacted by end-of-pipe discharge, including receiving waters that have aquatic communities that have adapted to a low suspended solids environment. This level of protection corresponds with end-of-pipe storage volumes required for the long-term average removal of 80% of suspended solids.

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

For development within an existing *Settlement Area*, the LSPP regulates proposed development or site alteration through Policy 6.32-DP. The Designated Policies under Policy 6.32-DP require, where applicable, improvement to riparian areas as wildlife habitat and movement corridors, management and mitigation of impacts associated with urban stormwater run-off to receiving watercourses or wetlands, and the establishment of a buffer through application of the PPS to natural features.

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

- 6.32-DP *Policies 6.32 - 6.34 apply to existing settlement areas and areas of Lake Simcoe adjacent to these lands, including the littoral zone, and these areas are not subject to policies 6.1 – 6.3, 6.5, 6.11 and policies 6.20 - 6.29.*
- 6.33-DP *An application for development or site alteration shall, where applicable:*
- a) Increase or improve fish habitat in streams, lakes and wetlands, and any adjacent riparian areas;*
 - b) Include landscaping and habitat restoration that increase the ability of native plants and animals to use valleylands or riparian areas as wildlife habitat and movement corridors;*
 - c) Seek to avoid, minimize and/or mitigate impacts associated with the quality and quantity of urban run-off into receiving streams, lakes and wetlands; and*
 - d) establish or increase the extent and width of a vegetation protection zone adjacent to Lake Simcoe to a minimum of 30 metres where feasible.*
- 6.34-DP *Where, through an application for development or site alteration, a buffer is required to be established as a result of the application of the PPS, the buffer shall be composed of and maintained as natural self-sustaining vegetation.*
- 6.40-DP *Outside of the Oak Ridges Moraine area, an application for major development within a significant groundwater recharge area shall be accompanied by an environmental impact study that demonstrates that the quality and quantity of groundwater in these areas and the function of the recharge areas will be protected, improved or restored.*

3.4 Lake Simcoe Region Conservation Authority Watershed Policies and Regulation

3.4.1 Ontario Regulation 179/06

For development within an existing *Settlement Area*, the LSPP regulates proposed development or site alteration through Policy 6.32-DP. The Designated Policies under Policy 6.32-DP require, where applicable, improvement to riparian areas as wildlife habitat and movement corridors, management and mitigation of impacts associated with urban stormwater run-off to receiving watercourses or wetlands, and the establishment of a buffer through application of the PPS to natural features.

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

Subject to conformity with the applicable 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 LSRCA. 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.

Subsection 2.1 outlines the required setback from natural features and, as identified in Subsection 2.1(b)(iii) where the river or stream valley is not apparent (as is the case with the subject property), the feature buffer is determined based on the greater of:

- The distance from a point outside the edge of the maximum extent of the flood plain under the applicable flood event standard, plus 15 metres, to a similar point on the opposite side, and
- The distance from the predicted meander belt of a watercourse, expanded as required to convey the flood flows under the applicable flood event standard, plus 15 metres, to a similar point on the opposite side.

Further defined in this Subsection, LSRCA regulates hazard lands, wetlands, and as it applies to the adjacent property, areas within 30 m of non-provincially significant wetlands.

The LSRCA generally requires that all watercourses be protected from adjacent development by a vegetative buffer. A buffer will also be applied from the greater of the maximum extent of the floodplain under the applicable flood event standard or the distance from the predicted meander belt of a watercourse under the applicable flood event standard or stable top of bank.

Regulated features and policy-protected areas occur on the subject property, with a LSRCA regulated watercourse traversing the southern extent.

3.4.2 LSRCA Ecological Offsetting Policy (2019)

LSRCA has developed an Ecological Offsetting Policy for instances where impact from development cannot be avoided or minimized, and provides a compensation ratio relative to the feature or its associated Minimum Vegetation Protection Zone (MVPZ) that is proposed for removal.

As it relates to encroachment in wetlands or their MVPZ, the replacement ratio for the areal extent of the feature is 3:1, and the replacement ratio for the areal extent of the associated vegetation protection zone is 1:1. As well, cash-in-lieu or land purchase/securement may be considered as part of the Ecological Offsetting Strategy.

3.5 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, Bunkers, Dymont's, Hotchkiss and Whiskey Creeks, as linear open space corridors. As part of the municipal approvals process, the City shall seek to acquire these areas.*

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.*

4. Existing Conditions

4.1 General Conditions and Landscape Context

The subject property is approximately 3.5 ha (8.6 ac) in size and is bordered by existing residential condominium buildings to the north, existing commercial properties on both sides of Bradford Street to the west, and Lakeshore Drive on the west side with a marina and Lake Simcoe beyond that. Bunkers Creek flows from west to east along the southern boundary. The property was used for industrial purposes since approximately 1900 but has been mostly vacant with fill placed across the property in recent decades. There is one vacant commercial building (formally a car dealership) and some scattered patches of young regenerating trees and shrubs.

4.1.1 Topography and Drainage

The subject property has higher elevations in the northeast limit and the site generally slopes towards Bunkers Creek to the south. The land in the southeast portion of the property slopes southeast towards the adjacent offline pond.

4.1.2 Soils

Site investigations by GHD (2020) confirm that the soils consist of several metres of fill (up to 6 m) that generally consist of sandy silt, sand and silty sand deposits. In some areas there is a layer of peat at depths of 3 to 6 m. The groundwater is shallow, ranging from approximately 0.27 to 2.85 m below the surface.

4.1.3 Hydrogeology

A Hydrogeologic Assessment (GHD 2020) was completed for the subject property. Six monitoring wells were installed across the property. Ground water levels ranged from 0.27 to 2.85 m below ground level

over the subject property, based on the November 2019 groundwater levels. Groundwater flow is to the northeast and east toward Kempenfelt Bay (GHD 2020).

4.1.4 Watershed Context

The subject property is at the mouth of Bunkers Creek just before it outlets into Lake Simcoe. The Bunkers Creek subwatershed is entirely within the City of Barrie limits. As such Bunkers Creek watershed is surrounded by urban land use, with only small sections having natural heritage cover (LSRCA 2012). The LSRCA considers Bunkers Creek part of the 'Barrie Creeks' Subwatershed (LSRCA 2012).

4.1.5 Ecoregion and Eco District

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).

4.2 Aquatic Resources

The subject property is close (between 25 m and 275 m) to Lake Simcoe shoreline and only separated from the Lake by Lakeshore Drive. Bunkers Creek enters the subject property from the west after passing through two culverts under Bradford Street. It exits the subject property through a culvert under Lakeshore Drive.

4.2.1 Aquatic Habitat

Within the subject property the creek has a low gradient, a relatively uniform and straight channel and slow moving deep water. The substrate is dominated by fines i.e. very fine sand (62.5-125 µm). The average width is 2.54 m and the average depth is 0.24 m. The morphology is dominated by pools (72%). Pools are stretches of a river or stream in which the water depth is above average and the water velocity is below average. Few instream macrophytes were observed. Terrestrial vegetation is abundant throughout and dominated by Cattails (*Typha* spp.).

This reach with slow moving water and abundant emergent vegetation provides a shallow protected area of refuge for many kind of fish in Lake Simcoe. The shallow water warms up early in the spring. These areas are sought out by many fish species to spawn on the substrate or the vegetation. These sheltered embayment are very important for the health of the ecosystem of Lake Simcoe. Due to shoreline developments that have occurred along the Lake Simcoe shoreline these types of habitats are relatively rare.

No headwater drainage features were identified on the subject property.

4.2.2 Fish Community

The fish community was sampled a number of times between 2010 and 2018 by LSRCA. Sampling always occurred during the summer months i.e. June- August. The following list of species is based on fish sampling in this reach of Bunkers Creek by the LSRCA in 2010 and from 2016 to 2018 received from LSRCA in February of 2020. Capture season, thermal regime, spawning season and Subnational Rank (SRank) are all identified for each species. SRank (or Provincial Rank) is the conservation status of a species or plant community within a particular province, territory or state.

Table 2. Fish Community

Common Name	Scientific Name	Capture Season	Thermal Class ¹	Spawning Season ²	Subnational Rank ³
Brook Stickleback	<i>Culaea inconstans</i>	June	Cool	May-July	S5
Common Shiner	<i>Luxilus cornutus</i>	July	Cool	May-June	S5
Creek Chub	<i>Semotilus atromaculatus</i>	June-August	Cool	May-June	S5
Eastern Blacknose Dace	<i>Rhinichthys atratulus</i>	June	Cool	May-June	SNR
Emerald Shiner	<i>Notropis atherinoides</i>	July	Cool	June-August	S5
Fathead Minnow	<i>Pimephales promelas</i>	August	Warm	May-August	S5
Pumpkinseed	<i>Lepomis gibbosus</i>	July	Warm	May-August	S5
Rock Bass	<i>Ambloplites rupestris</i>	June-July	Cool	May-June	S5
Rosyface Shiner	<i>Notropis rubellus</i>	July	Warm	May-July	S4
Round Goby	<i>Neogobius melanostomus</i>	July-August	Cool	May-July	SNA
Spotfin Shiner	<i>Cyprinella spiloptera</i>	July	Warm	June-August	S4
White Sucker	<i>Catostomus commersonii</i>	June-August	Cool	April-June	S5

1-Source: Coker et al (2001); 2-Source Scott & Crossman (1973); 3- Source: NHIC Database maintained by MNRF accessed through the world wide web. Subnational Rank: S4- Apparently Secure Uncommon but not rare; some cause for long-term concern due to declines or other factors; S5- Secure Common, widespread, and abundant in the state or province; SNR- Unranked Province or state conservation status not yet assessed; SNA- Not Applicable A conservation status rank is not applicable because the species is not a suitable target for conservation activities.

The fish community within this reach of Bunkers Creek includes species with coolwater and warmwater thermal preference. As this reach is easily accessible from nearby Lake Simcoe the diverse fish community found in this reach is reflective of the fish community in that Lake which is home to over 50 species of fish.

4.2.3 Thermal Regime

Water temperature monitoring completed by LSRCA in 2016-2019 was used to classify this reach of Bunkers Creek according to the method by Chu et al. (2009). Air temperature data from Environment

Canada was used from the Barrie Landfill Station which is 3 km away. Using the above method this reach is classified as cool-warm water. See Figure 1 below.

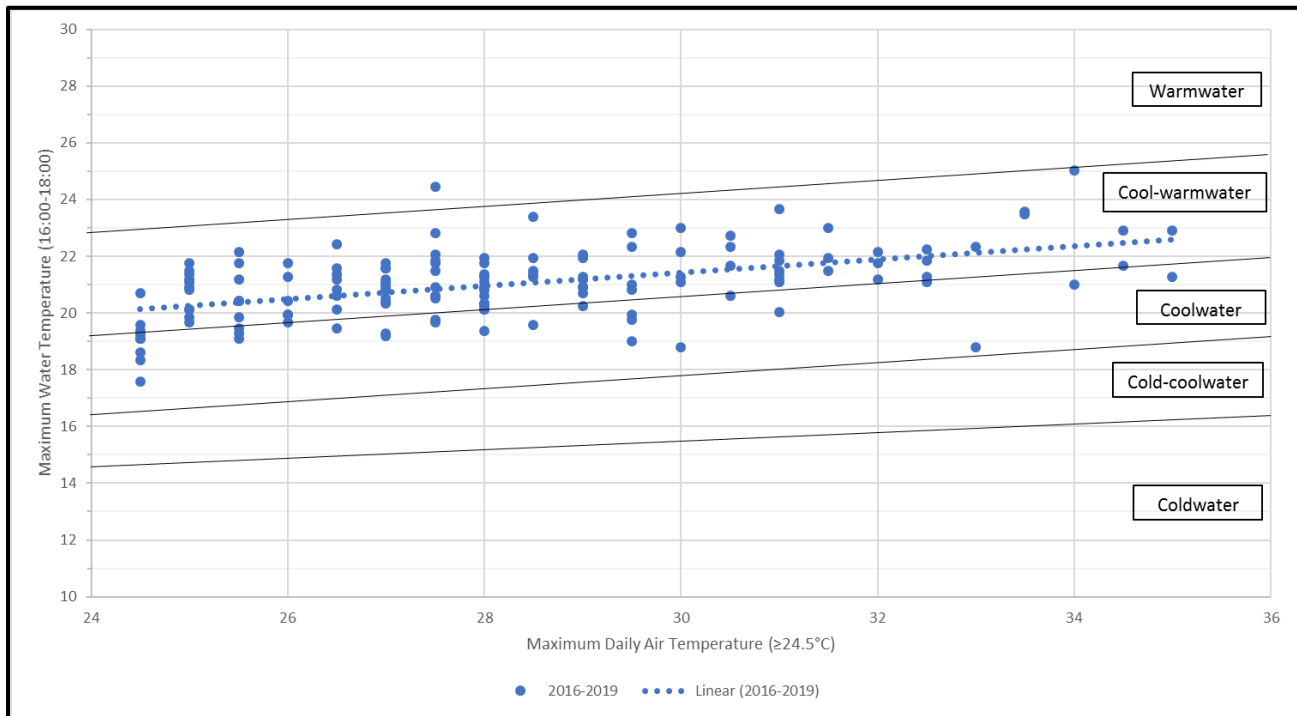


Figure 1. Water and Air Temperature Nomogram

The thermal regime of Bunkers Creek was previously classified as warmwater in the Barrie Creek subwatershed report which states “...the main branch (of Bunkers Creek) changes to warm water habitat downstream of Hwy 400 (LSRCA 2012).”

More recently LSRCA has indicated that this reach has a cool thermal regime based on the fish community.

In that regard we would like to point out that the fish community at this location includes species with cool and warm water preference. As discussed above the fish community at this location is reflective of the fish community in nearby Lake Simcoe. The cool water species captured in this reach use a variety of thermal habitat throughout the year. For example, adult White Sucker are generally found in lakes from where they move to gravelly streams to spawn in the spring. White Suckers were captured in the summer in this reach.

MNRF (Brent Shirley, email correspondence) recommended that a “warmwater” timing window for the protection of fish and fish habitat be applied to unknown spring spawning species.

4.3 Terrestrial Resources

The entire subject property is a product of past disturbance having been industrial or commercial properties for over one hundred years within the City of Barrie. There are scattered patches and individual immature trees, mostly along the edges of the property. Existing conditions are illustrated on **Figure 2**.

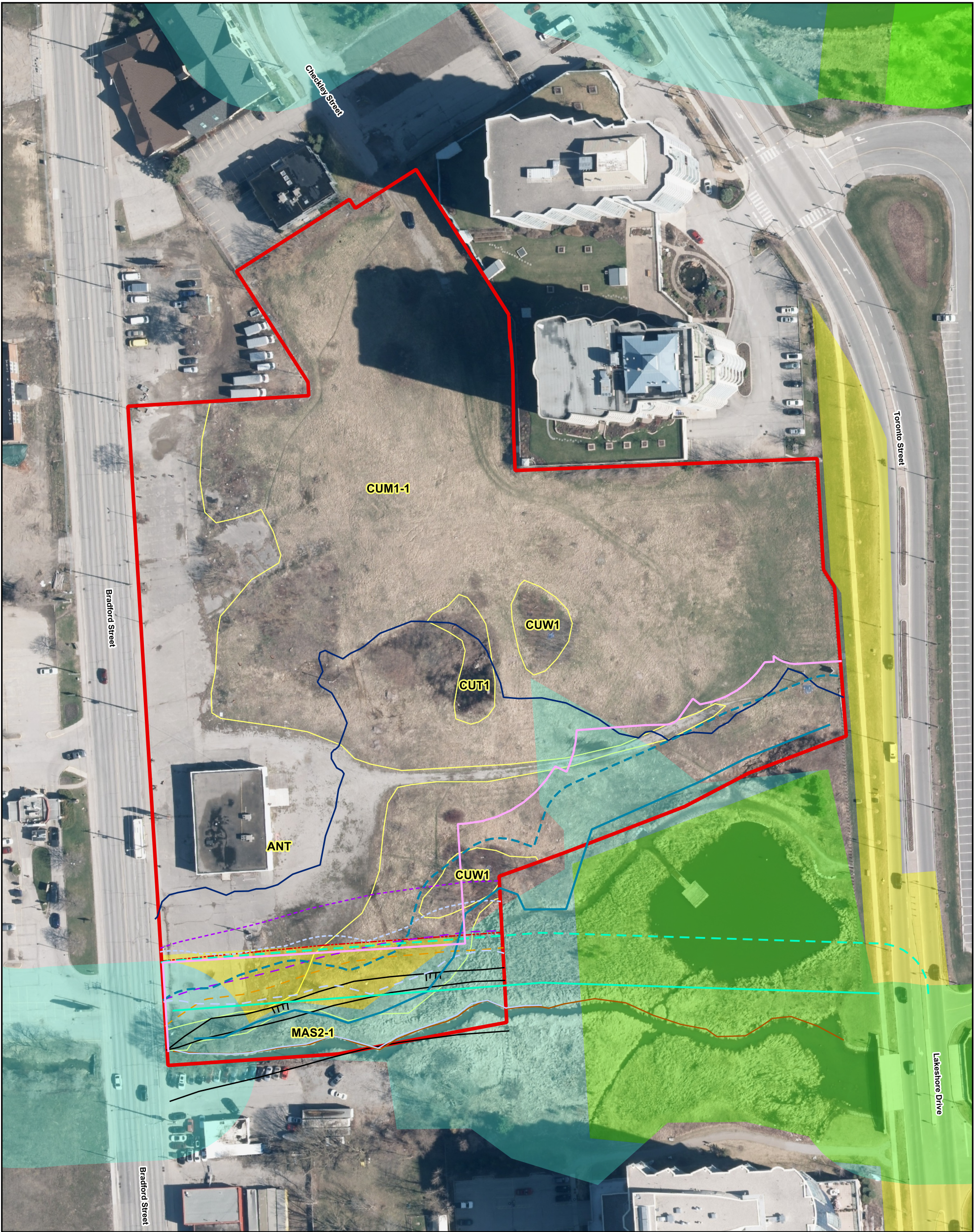
4.3.1 Vegetation Communities

The vegetation communities within the entire subject property have been altered by human activities. As a result, the subject property is classified as one vegetation community illustrated in **Figure 2** and described in detail below.

Upland Communities

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

The majority of the subject property is characterized as open, old-field meadow, that is periodically mowed (**Photograph 1**). The vegetation is mostly grasses such as Kentucky Bluegrass (*Poa pratensis*), Smooth Brome (*Bromus inermis*) and Orchard Grass (*Dactylis glomerata*) with common, weedy species such as Wild Carrot (*Daucus carota*), Creeping Thistle (*Cirsium arvense*), Cow Vetch (*Vicia cracca*), Bird's-foot Trefoil (*Lotus corniculatus*) and New England Aster (*Symphyotrichum novae-angliae*). There are scattered shrubs, such as Staghorn Sumac (*Rhus typhina*) and Tartarian Honeysuckle (*Lonicera tatarica*), and immature trees, the most common of which are Manitoba Maple (*Acer negundo*), Black Locust (*Robinia pseudoacacia*), Siberian Elm (*Ulmus pumila*) and Poplars (*Populus* spp.)



Legend

- Subject Property
- ELC Communities
- Regulatory Floodline (SCS 2020)
- Proposed Floodline (SCS 2020)
- Watercourse (Digitized)
- Watercourse
- Watercourse + 15 m (LSRCA, Warmwater Fish Habitat)
- Watercourse + 30 m (City of Barrie OP)
- Current EP Zoning Boundary
- Proposed Channel (Bunkers Creek Master Drainage Plan)
- Proposed Channel Slope and Grading (Bunkers Creek Master Drainage Plan)

- 6 m Buffer to Proposed Top of Bank
- Proposed Watercourse/Wetland + 15 m
- Proposed Watercourse + 30 m
- Staked Wetland Limit
- Staked Wetland Limit + 15 m
- Meander Belt
- Meander Belt + 15 m

Natural Heritage Resources (City of Barrie, 2019)

- Level 1
- Level 1 with Existing Development Designation Subject to 3.5.2.4 d
- Level 3

Code	Community Description
ANT	Anthropogenic
CUM1-1	Dry - Moist Old Field Meadow
CUT1	Mineral Cultural Thicket
CUW1	Mineral Cultural Woodland
MAS2-1	Cattail Mineral Shallow Marsh

Existing Conditions

Figure 2

51-57 Bradford Street, Barrie EIS NHS



Project: 219403
Last Revised: August 2020

Client: SmartCentres

Prepared by: BD
Checked by: GP



1:1,120

0 20 40 m

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Orthoimagery Baselayer: 2019 (FBS)



Photograph 1. View of Old Field Meadow facing south (Oct. 23, 2019)

Mineral Cultural Woodland (CUW1)

This community occurs in two small, dense patches that consist of sapling sized poplars, Black Locust and Manitoba Maple with some Siberian Elm and shrubs such as Staghorn Sumac, Tartarian Honeysuckle and Common Buckthorn (*Rhamnus cathartica*) (**Photograph 2**). The understory ground cover is variable and consists of weedy species found in the surrounding old fields.

During the staking exercise with LSRCA, it was determined that due to a near monoculture of non-native Black Locust, the woodland is exempt from LSRCA's ecological offsetting compensation policy.



Photograph 2. View of Cultural Woodland in central portion of Subject Property (Oct. 25, 2019)

Mineral Cultural Thicket (CUT1)

Located in the central portion of the subject property, this small community is in a low-lying area caused by the placement of fill. The vegetation is dominated by immature poplar saplings, Staghorn Sumac, Red-osier Dogwood, Siberian Elm, with some Pussy Willow shrubs (*Salix discolor*) and European Highbush Cranberry (*Viburnum opulus*) (**Photograph 3**).



Photograph 3. View of Cultural Thicket (Oct. 25, 2019)

Wetland Communities

Cattail Mineral Shallow Marsh (MAS2-1)

Located adjacent to Bunkers Creek in the southern end of the subject property, this community has been previously disturbed (**Photograph 4**). The dominant species is Narrow-leaved Cattail (*Typha angustifolia*) with Reed Canary Grass (*Phalaris arundinacea*) and some Canada Goldenrod (*Solidago canadensis*), Purple Loosestrife (*Lythrum salicaria*), European Common Reed (*Phragmites australis* ssp. *australis*), Red-osier Dogwood (*Cornus sericea*), and Spotted Joe-pye Weed (*Eutrochium maculatum*).



Photograph 4. View of Mineral Cattail Marsh (Oct. 25, 2019)

4.3.2 Flora

A total of 53 plant species were observed on the subject property with 30 (57%) being non-native plant species (**Appendix B**). This high percentage of non-native plant species is common for properties with disturbed areas within an urbanized landscape. There were no floral species at risk observed on the subject property. All of the native plant species are ranked provincially as S5 (Secure). One of the plant species, Black Walnut, is listed as uncommon or rare in the Lake Simcoe Watershed by the Lake Simcoe Environmental Management Strategy (2003) and in Simcoe County (Riley 1989). However, this status is based on naturally occurring populations. This species is a very common planted and naturalized species.

It should be noted that site investigations occurred in the fall and that some plant species may not be apparent during this season. However, given the long history of extensive disturbance, it is highly unlikely that any plant species of conservation concern would be present.

A query of the MNR's "Make A Map: Natural Heritage Areas" returned one record from 2003 for Fogg's Goosefoot (*Chenopodium foggii*) within 1 km of the subject property. This species is ranked S2 in Ontario, meaning "Imperiled because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation". This species' habitat is rocky woods and is only known to occur in "non-anthropogenic habitats" (Haines and Newcomer 2002). Given the long history of the highly disturbed nature of the subject property, it is highly unlikely that this species is present.

4.3.3 Tree Inventory

All trees on and within six meters of the proposed development were inventoried. A total of 39 trees and four tree polygons were identified on the subject property, with proposed removal of 31 trees and tree polygons. All other trees are noted to be preserved with recommended use of appropriate tree protection measures. The inventory included Black Locust, Manitoba Maple, Siberian Elm, Red Maple and Sugar Maple and others with tree diameters ranging from 3 cm to 75 cm DBH.

Detailed tree inventory is provided in a separate report by Kuntz Forestry Consulting Inc. (2020).

4.3.4 Breeding Birds

A total of 14 species of breeding birds were recorded on the subject property, with an additional two noted as foraging (**Appendix D**). This avian diversity is reflective of the habitat diversity within the subject property discussed in the preceding sections, whereby much of the property is open, anthropogenic and urbanized habitats along with a narrow band of riparian vegetation. A stormwater management pond is situated to the southeast and is entirely outside of the property limits. A separate list of breeding birds associated with this pond was compiled and will be considered when determining function and sensitivity of this feature. Avian observations were generally distributed throughout the subject property.

All of the breeding records were common species regularly found in urbanizing areas including the following species of which multiple breeding territories were recorded: Song Sparrow (*Melodia melodia*), American Robin (*Turdus migratorius*), Common Grackle (*Quiscalus quiscula*), European Starling (*Sturnus vulgaris*) and House Sparrow (*Passer domesticus*). Other species noted included Killdeer (*Charadrius vociferus*), Warbling Vireo (*Vireo gilvus*), Mourning Dove (*Zenaidura macroura*) and Baltimore Oriole (*Icterus galbula*).

Habitat specialists were generally absent within the subject property, though the Yellow Warbler (*Setophaga petechia*) was associating with the riparian habitat in the south. The stormwater management pond that was assessed from the property limits supported a suite of species typically associated with wetland habitats and included Red-winged Blackbird (*Agelaius phoeniceus*), Canada Geese (*Branta canadensis*) and Mallard (*Anas platyrhynchos*). These species were recorded as breeding, however both Barn Swallow (*Hirundo rustica*) and Great Blue Heron (*Ardea herodias*) were foraging in the open water community and are not breeding at this location based on the absence of suitable nesting habitat.

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. These species were not recorded at this location.

No species ranked as S1 through S3 (Critically Imperiled through Vulnerable) by the province, or species protected under the ESA were breeding at this location. As noted previously, Barn Swallow were recorded foraging over the open water off property however no evidence of nesting was present.

4.3.5 Breeding Amphibians

As discussed in **Section 2.2.5**, amphibian surveys were conducted on the subject property in areas where amphibian breeding habitat occurred. No breeding amphibians were noted to occur on the subject property. During the last survey (June 18, 2020), an estimated eight Green Frogs (*Lithobates clamitans*) were heard calling from the offsite pond. These were the only amphibian calls heard during the three surveys in spring 2020 and were also encountered vocalizing during the daytime while staff were on site for unrelated fieldwork.

Based on field investigation results, the offsite pond to the southeast of the subject property provides limited productivity as amphibian breeding habitat, as survey results reflect low species richness and relatively low abundance overall. The pond has been observed to provide permanent standing water, providing a hydroperiod that supports tadpole maturation and winter hibernation. Otherwise, there is limited opportunity presently available on-site for breeding habitat that would support maturation of tadpoles.

4.3.6 Incidental Wildlife

Wildlife observed beyond those noted above include Eastern Gray Squirrel (*Sciurus carolinensis*), Eastern Cottontail (*Sylvilagus floridanus*), Eastern Chipmunk (*Tamias striatus*) and Woodchuck (*Marmota monax*). With respect to the Woodchuck, individuals were observed on the property in addition to a number of burrows. Other wildlife common to urban habitats are likely using the subject property, such as Raccoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*), Red Fox (*Vulpes vulpes*) and Virginia Opossum (*Didelphis virginiana*).

Adjacent to the site is a constructed, open wetland that is supporting amphibian and reptile species such as Green Frog and Snapping Turtle (*Chelydra serpentina*) classified Provincially as a species of Special Concern.

4.3.7 Significant Wildlife Habitat

Based on field investigations and background review, no significant wildlife habitat, such as seasonal concentrations of animals, rare vegetation communities, specialized habitat for wildlife, habitat for species of conservation concern, or animal movement corridors exists within the subject property (OMNR 2000, MNRF 2015).

With observations of Snapping Turtle (Special Concern) within the offsite pond to the southeast the species has the potential to migrate within wetlands along the floor of the valley corridor, however the subject property does not provide overwintering or breeding habitat.

4.4 Species at Risk

Following the characterization of the habitat on the subject property, an assessment was completed to determine if suitable habitat was present for any of the potential endangered, threatened or special concern species known to occur in the vicinity of property. The habitat on the subject property is limited and of poor quality and does not represent ideal habitat for any of the SAR known to occur in Simcoe

County. No individual SAR flora or fauna were observed on the subject property. Despite observation of foraging activity over the adjacent offsite pond, there were no Barn Swallow (*Hirundo rustica*) nests on the abandoned building; this bird species is Threatened, and it frequently nests in buildings.

4.5 Landscape Connectivity

Landscape connectivity has become recognized as an important component 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 essence, corridors allow organisms to move between areas of high habitat importance. Conservation of distinct habitat types to protect species may be less effective unless the corridors between them are also protected or restored.

The subject property occurs in an area where the local landscape has been highly altered through past and present anthropogenic use. From a wildlife perspective, the property is situated between and directly adjacent to existing highly disturbed land uses (Lakeshore Drive, Bradford Street and existing residential and commercial) and is within a highly urbanized landscape. Within and adjacent to the southern property boundary is riparian wetland on either side of the lower reach of Bunkers Creek, which outlets to Lake Simcoe less than 100 m to the east into an existing marina. Upstream to the west, there are natural wooded and wetland areas adjacent to Bunkers Creek. The creek corridor represents a local wildlife movement area.

4.6 Summary of Key Functions and Attributes

Table 3 provides a summary of the natural heritage features that were identified by this EIS. These features will be addressed with respect to potential development impacts. The limits of these features are depicted on **Figure 2**.

Table 3. Summary of Key Functions and Attributes

Features	Key Functions and Attributes
Watercourses	Bunkers Creek located along the southern property boundary. Represents direct fish habitat and local wildlife corridor.
Wetlands	Riparian marsh along the southern property boundary and a constructed open water marsh beyond the southeastern property boundary.

5. Proposed Development

The proposed development will involve the construction of four buildings with approximately 2000 residential units, commercial space, potential hotel space and public corridors that will provide linkages with the existing natural features such as the Bunkers Creek Ecopark and Kempenfelt Bay. The proposed site plan is shown on **Figure 3**.

The proposed development will consist of the following:

- A proposed 6 m wide private laneway with access from Bradford Street and Checkley Street;
- One 25 story high rise residential development (Tower 1), consisting of 230 residential units and 145 hotel units and 6 levels of above ground parking with access from Lakeshore Drive;
- One 39 story-high-rise residential development (Tower 2), consisting of 548 residential units and 7 levels of above ground parking with access from the proposed 6 m wide private laneway;
- One 46 story high rise residential development (Tower 3), consisting of 524 residential units and 7 levels of above ground parking with access from the proposed 6 m wide private laneway; and
- One 36 story high rise residential development (Tower 4), consisting of 421 residential units and 7 levels of above ground parking with access from the proposed 6 m wide private laneway.

It is important to note that, as part of the City's Master Drainage Plan, the reach of Bunkers Creek from Lakeshore Drive to Bradford Street and further to the west to Innisfil Street is planned for improvements with watercourse realignment and widening of the low-flow channel as part of culvert replacements under Bradford Street and Innisfil Street. Therefore, the existing location and condition of the watercourse, wetland and floodplain limits along the subject property's southern boundary, as shown in **Figure 3**, are subject to change.

5.1 Servicing

Servicing for the proposed residential development will include connection to municipal water and sewer at Bradford Street and Lakeshore Drive with details provided in the Functional Servicing and Stormwater Management Report prepared by SCS Consulting (2020).

5.2 Grading and Site Alteration

The proposed grading of the subject property is proposed to address the existing regulatory floodplain, and will include grading from the staked wetland limit, and include one area of a berm that was staked as wetland through an averaging approach at this location.

5.3 Stormwater Management

A companion Functional Servicing and Stormwater Management Report for the proposed development has been prepared by SCS Consulting (2020). It is indicated that quantity control is not required as the proposed development outlets directly adjacent to Bunkers Creek immediately upstream of Lake Simcoe.

The application of infiltration trenches will be utilized for volume control with runoff from the 12.5 mm and 25 mm rainfall event captured and retained.

Quality control will be provided by the use of five proposed infiltration trenches sized to provide 80% TSS removal, and one Jellyfish unit treatment device.

The conclusions of a phosphorus budget indicate an increase in phosphorus loading, which is being addressed through an offsetting fee.

5.4 Hydrogeology

A Hydrogeological Assessment has been prepared by GHD (2020) that includes a preliminary water balance for pre- to post-development hydrologic inputs and recommendations.

As indicated by GHD (pers. comm. Warren Croft, August 19, 2020):

The quality of groundwater at the subject property has been thoroughly investigated through several environmental investigations, which are being completed to support the completion of a Risk Assessment and subsequent filing of a Record of Site Condition under Ontario Regulation 153/04, as amended. The southern portion of the Site along Bunker's Creek is designated in the City of Barrie (City) Official Plan (Natural Heritage Resources) as "environmentally significant" and designated as Level 1 subject to existing development conditions. Additionally, the eastern and southern portions of the Site are mapped within area regulated by the Lake Simcoe Region Conservation Authority. Based on the above information and the definition of "area of natural significance" in accordance with O. Reg. 153/04, the Site is considered to be an area of natural significance for RSC filing purposes. This designation ensures that the highest level of sensitivity is applied to the Risk Assessment process, providing additional protection to local sensitive features.

The Risk Assessment process assessed the potential for groundwater at the Site to have a negative impact on off-Site receptors, including adjacent properties, surface water bodies, and the City of Barrie's municipal water walls. The Risk Assessment did not identify any unacceptable risks to these receptors, and will be thoroughly reviewed by MECP technical reviewers as part of the RSC process. Groundwater impacts at the Site have been identified to be related to the long term industrial use of the Site, as well as the operation of fuel storage tanks, rail lines, etc. These industrial operations have ceased, and the fuel storage tanks and other potential contaminant sources have been removed. Further improvements in soil and groundwater quality will occur through the removal of impacted fill material and localized construction dewatering during building construction. On this basis, it is anticipated that the proposed development will result in an improvement in groundwater quality over time.

5.4.1 Feature Based Water Balance

The findings of the theoretical Water Balance Assessment for Phase Ultimate conditions appears to show that runoff is reasonably preserved (+19%) with an increase in infiltration (+82%). This is interpreted as a result of an increase in impermeable structures and paved areas. The reduction of

evapotranspiration on the proposed subject property means that 7,730 m³ of additional water is directed to other outputs such as infiltration or run-off each year (Beacon 2020a).

Conclusions of the theoretical Catchment-Based Water Balance for Phase Ultimate conditions (Beacon 2020a) appear to show that runoff to the Feature of Interest (FOI) is reduced from existing conditions month to month. Infiltration volumes limited to the FOI Catchment area is increased by approximately 11,372 m³ per year, with highest variation in April – a trend seen in the global site water balance estimate. It is understood that the purpose of this is to prioritize phosphorous removal.

5.5 Fluvial Geomorphic Assessment

A Fluvial Geomorphic assessment was completed for Bunkers Creek by Beacon Environmental (2020). This assessment was completed with regard to meander belt and preliminary channel design requirements for the portion of Bunkers Creek relevant to the subject property.

A meander belt analysis was completed to determine geomorphic based development limits associated with Bunkers Creek. The watercourse was identified as ‘in transition’ with associated widening and degradation. The resulting meander belt of the watercourse is 35 m for the Reach Bu-16 that relates to the subject property, and consistent with LSRCA policy a 15 m buffer has been applied, which is indicated on **Figure 3**.

5.5.1 Bunkers Creek Concept Channel Realignment

Based on the findings the Drainage Master Plan (DMP) prepared by Tatham Engineering (2019), watercourse improvements are proposed along Reach Bu-16 of Bunkers Creek. This includes upgrades to the watercourse crossing at Bradford Street, floodplain grading enhancements to Lakeshore Drive, and property acquisition. The watercourse was proposed to be widened to approximately 15.3 m and redesigned following natural channel design principles. This will ultimately improve the hydraulics and reduce flooding on to adjacent properties. The City of Barrie has retained consultants to undertake the detail design process for the culvert and watercourse improvements. As those design studies progress, Beacon has been requested to review the re-naturalization of Bunkers Creek to support the Site Plan Application for the subject property, including the potential conceptual alignment and a landscape restoration. While the technical parameters that will guide the detail design are not fully understood at this time, the concept design considers the available information for current studies, including the hydraulic modeling analysis by SCS Consulting and the Geomorphic Assessment (Beacon, 2020).

It should be noted that conceptual design completed to support the Site Plan Application will not necessarily be the design and alignment advanced at the detailed design stage through the City of Barrie for the Bunkers Creek Culvert Replacements and Watercourse Improvements project. The following design considerations guided the conceptual channel alignment and landscape restoration plans.

- Property limits – the proposed channel corridor is beyond the subject property and within additional private property limits. The proposed design should consider the spatial location of the alignment, including the upstream tie-in invert at the new culverts and downstream transition to the existing culvert at Lakeshore Drive.

- Erosion hazard – the proposed channel realignment should consider the potential for long-term channel migration and the meander belt width limits.
- Infrastructure – the proposed channel realignment should consider the location of proposed infrastructure (road crossing and storm outlets) to mitigate potential risks to these structures associated with long-term adjustments in channel form (i.e., erosion).
- Channel and floodplain variability – the corridor should be designed to be spatially complex with respect to morphology and hydraulics with the enhancement of wetland features.
- Riparian habitat – the corridor should be designed to ensure that moisture regimes are considered within the riparian planting zones.

Based on the design considerations Drawing G-1 and L-1 have been prepared (**Appendix E and F**). The conceptual design includes total length of the relocated channel of approximately 200 m, within the 35 m wide meander belt width, as identified in the Geomorphic Assessment Report. The realigned channel includes variable bedform features (i.e. runs/riffles, and pools), as well as overbank plantings for additional stability and habitat considerations. The existing wetland and associated floodplain features have been enhanced with plantings to support a variety of vegetation communities, promote energy dissipation during higher flow conditions, and create a more natural floodplain form. A diverse community of native shrub, wetland plant species and upland species will be installed around the periphery of the channel and wetland features, seeded with a wetland seed mix. Outfall channel from the proposed outlets for stormwater management measures will provide energy dissipation, mitigate erosion, and promote the integration of stormwater into the corridor.

6. 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.

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 MVPZs or other mitigation measures, some species simply no longer occur.

In this section site-specific potential negative effects are reviewed and mitigation is recommended. Finally, this NHE concludes with an assessment of net negative impacts and a policy conformity exercise.

6.1 Impacts Assessment

Background review and field investigations identified that the subject property is currently occupied by one vacant commercial building, paved parking areas, with fill on the remainder of the property and the following natural heritage features:

- a) Two small patches of immature trees;

- b) The main channel of Bunkers Creek flowing from west to east along the southern property boundary; and
- c) Cattail marsh community along the sides of Bunkers Creek.

The wetland limit and top of bank was staked with the LSRCA in on July 10, 2020.

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

- Direct loss of vegetated and treed areas on the subject property;
- Site grading to address floodplain limit;
- Changes to hydrology/water balance due to an increase in impermeable surfaces; and
- Run-off of lawn chemicals, contaminants from paved areas (oil, solvents, grit and salt) into the watercourse and fish habitat, and adjacent wetland.

6.1.1 Removal of Vegetation

Three small patches (~30 m²) of immature, weedy trees and shrubs and mown, weedy old field areas will be removed, and will result in minor negative effects on flora and fauna. None of the trees are planted and are mostly non-native and invasive species that do not form part of any large contiguous block. All of the existing vegetation, including a number of scattered saplings and seedlings, are proposed for removal. The herbaceous vegetation is dominated by non-native invasive species with low native species presence and diversity. The area surrounding the subject property is highly urbanized.

6.1.2 Changes to Grading and Hydrology

The existing elevations and grade are not proposed to be significantly altered, based on the preliminary Site Plan and Grading Plan. All the paved or impervious surfaces are proposed to be graded to capture stormwater internally and treated prior to release. The proposed Site Plan will result in an increase in stormwater runoff due to an increase in impervious surfaces compared to existing (GHD 2019). A forthcoming FSR and SWM Plan should incorporate infiltration and LID features to reduce the amount of runoff.

6.1.3 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 Bunkers Creek and Lake Simcoe, 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 Bunkers Creek. A naturalized, vegetated buffer, which will not require chemical inputs, planted within any landscaping areas within the subject property, and especially along the setback from Bunkers Creek and associated wetland, will also assist in preventing contaminants from entering the watercourse and Lake Simcoe. Stormwater drains should include oil and grit separators and a salt management plan for the completed development should be implemented.

6.2 Mitigation and Compensation Measures

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

6.2.1 Minimum Vegetation Protection Zones to Natural Heritage Features

The buffers shown in **Figure 3** are based on the existing location and extent of the natural features. They include a 15 m setback from the edge of the watercourse and a 15 m setback from the edge of the wetland, as staked with LSRCA on July 10, 2020. These 15 m setbacks are typically used as a standard distance to help protect these features from potential development impacts. Alternatively, considering that the watercourse and associated floodplain will be realigned, the creek cross-section of the Final Preferred Alternative Solution in the City's Drainage Master Plan should be used to determine the future wetland and watercourse setbacks. In this scenario, all proposed buildings and roads would be outside a 15 m setback from the future watercourse alignment.

Table 4 indicates the buffer/MVPZ that have been applied to each of the features that were noted as being present on the subject property as identified on **Figure 2** and **3**.

Table 4. Natural Features and Proposed MVPZ

Feature/Function	On-site Description or Locations (see also Figure 2 and 3)	MVPZ Proposed	Comment
Wetland	Bunkers Creek corridor	15 m from wetland	15 m buffer to retained wetland features
Fish Habitat	Bunkers Creek	15 m from watercourse	MVPZ of a minimum 15 m from development, except the SWM facility and outfalls
Habitat of Endangered or Threatened Species	Barn Swallow Habitat	n/a	Nesting not observed onsite, and foraging activity occurred offsite with the pond. Activities to limit disturbance recommended outside of the breeding bird window.
Significant Wildlife Habitat	Snapping Turtle	n/a	Occurs offsite with observations in offsite pond and along Lakeshore Drive. With exception to temporary construction disturbance for installation of SWM outfall, no impact is anticipated.
Landscape Connectivity	Bunkers Creek Corridor	n/a	Realignment of the watercourse may improve fish habitat

In either case, to mitigate effects of the development on the watercourse, the entire buffer and any landscaped areas beyond the buffer areas should be enhanced with densely planted native trees and

shrubs, with mulched area in between plantings. Any paths or hard surfaces within the buffer should be avoided, minimized or constructed using permeable materials. This will result in cleaner water going to Lake Simcoe and higher quality wildlife habitat composed of native species. A permit from the LSRCA will be required prior to any works within the vicinity of Bunkers Creek.

A concept natural channel design and restoration landscape plan are provided in **Appendix E** and **Appendix F**, respectively, for the Bunkers Creek potential realignment and watercourse improvements project.

It is recommended, where timing is conducive, that the City's natural channel design for Bunkers Creek and the landscaping plan for the proposed development be coordinated and developed in tandem.

6.2.2 Wetland Compensation

The removal of 0.025 ha of wetland area and associated buffer will be subject to discussion with LSRCA regarding any additional compensation that may be required. There may be opportunity to provide partial onsite compensation through the creation of wetland features north of Bunkers Creek. Further analysis is provided in **Section 7.1** below.

6.2.3 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. In light of this we recommend that during the peak period of bird nesting, no vegetation clearing or disturbance to 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, we suggest 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. Generally, 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 law for nest protection still holds (i.e. if an active nest is known it should be protected).

6.2.4 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 (December 2006) 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.

6.2.5 Water Balance

A Hydrogeological Assessment has been prepared by GHD for the proposed development that includes a water balance for the site. The report concludes that there will be a net reduction in infiltration due to buildings and pavement and a net increase in runoff of 8,819 m³/yr. However, the report also makes a number of recommendations to mitigate this increase in stormwater runoff with the use of LIDs (Low Impact Developments) such as green roofs, bioswales and underground infiltration tanks.

6.2.6 Dewatering

According to GHD, there will be a need for short-term dewatering to control groundwater levels and maintain dry working conditions during construction of building foundations and servicing. Typical dewatering rate during construction is estimated at approximately 633,000 L/day up to a maximum of 1,900,000 L/day. A permit will be required from the MECP. A permit from LSRCA for dewatering activities, discharge locations, etc. may also be required. This should be evaluated during the detailed design stage, once the requirements of dewatering are fully understood.

6.2.7 Fisheries Protection

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 LSRCA, prior to the start of construction works and to the standard of "Erosion and Sediment Control Guideline for Urban Construction (December 2006)". 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 near a 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 watercourses, 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. Based on the fish community data for this reach of Bunkers Creek, there should be no in-water work done from March 15 to July 15.

7. Net Impacts

The primary net impacts at the site level and after mitigation is applied, will be a reduction in the existing wetland and applicable MVPZ to facilitate grading to address the flood constraint, and encroachment to facilitate the development plan. There will also be an increase in plant species diversity and associated function through the development of a landscape plan for the planting of native trees and shrubs within MVPZ areas that will create additional wildlife habitat adjacent to the natural features.

In an urbanized environment, the total landscape effect is generally what controls wildlife use of a particular area. This landscape level effect cannot be mitigated by site-specific mitigation measures. Given the existing uses of the subject property, the proposed enhancements, the application of typical compensation and the recommended mitigation measures, it is our professional opinion that there will not be a measurable negative effect on the features and their functions that is attributable to the proposed development. After mitigation, the natural heritage system will be maintained, protected, and enhanced.

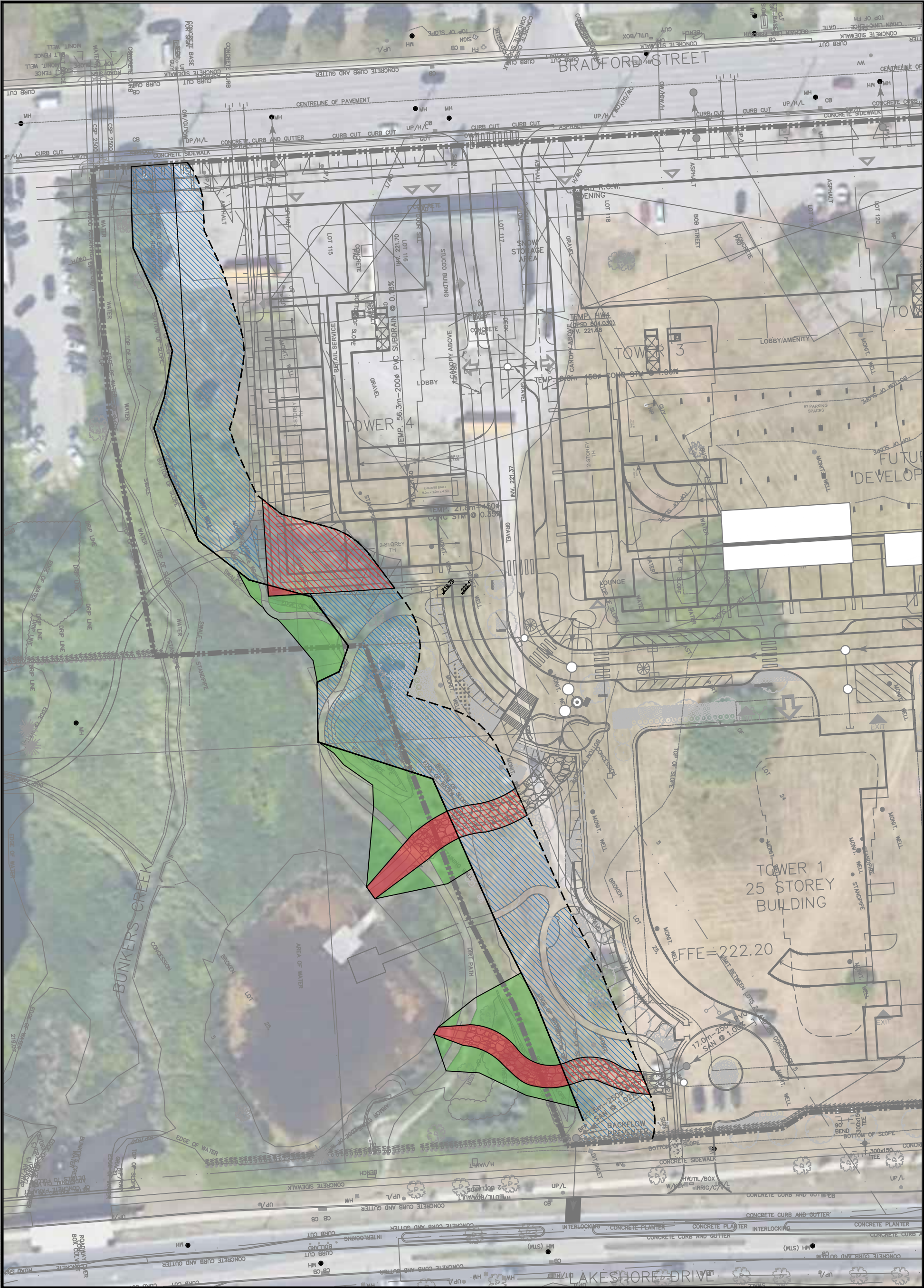
7.1 Summary of Areas Gain/Loss

Based on review of the existing conditions relative to the proposed development concept plan, the following reflects an evaluation of the location and extent of areas gained and lost for the subject development. Natural, semi-natural or cultural areas will be removed as part of the proposed development including cultural woodland and thicket areas. As a result of the development, an area of 0.123 ha will be provided through the development concept plan design to compensate the loss of these areas, in addition to potential creation of wetland areas. A summary of natural areas that will be removed as a result of the development and proposed compensation areas that are proposed are provided in detail on **Figure 4**.

Areas Proposed for Removal

Figure 3 and **4** are provided indicating the following areas lost resulting from development;

- Upland Areas:
 - Removal of Cultural Thicket (CUT1) and Cultural Woodland (CUW1) units at the central portion of the property;



Subject Property Boundary

Area of Existing Wetland Lost (250 m²)

Area of Existing Wetland Buffer Lost (476 m²)

Area of Existing Wetland to be Disturbed and Restored in Place (755 m²)

Area of Existing Wetland Buffer to be Disturbed and Restored in Place (2988 m²)

Existing Staked Wetland Limit

Existing Staked Wetland +15 m

NORTH ARROW

COORDINATE SYSTEM

NAD 83

UTM ZONE 17N

SCALE

1:750

0

10 m

Notes: Scale shown is for an 11" x 17" page.

For illustrative purposes. Do not scale

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BARRIE LAKESHORE DEVELOPMENTS

PROJECT

51, 53, 55 & 75 BRADFORD ST.
& 20 CHECKLEY ST.
BARRIE, ON

SHEET TITLE

WETLAND AND BUFFER AREA GAIN/LOSS

DRAWN BY:

MB

CHECKED BY:

JM

DATE:

19 August 2020

PROJECT N°:

219403

FIGURE N°:

4

- Removal of a Cultural Meadow (CUM1-1) community that dominates the northern portion of the subject property;
 - Transitional grading and encroachment into buffers associated with cut/fill for floodplain to be disturbed and restored in place;
 - Stormwater management outfalls; and
 - Buffer to wetland at location of SE corner of Tower 4.
- Wetland Areas:
 - Encroachment into Shallow Marsh (MAS2-1) wetland area at location of non-native woodland (CUW1); and
 - Encroachment into wetland to permit servicing of stormwater management outfall channels.

Areas Gained

Figure 4 depicts areas gained as summarized below and calculated in **Table 5**.

Areas for compensation and restoration include:

- Buffers to natural features;
- Potential Compensation area north of Bunkers Creek; and
- Additional areas of compensation associated with potential realignment of Bunkers Creek.

Additional consideration should be given for the work required to enhance buffer areas.

As outlined in **Table 5**, calculations are provided for areas removed and gained as indicated above.

The calculation of areas lost and gained has resulted in an overall net gain of 0.226 ha, subject to further discussion with LSRCA on compensation for removal of wetland and associated MVPZ.

Table 5. Summary of Areas Removed and Gained

Areas Removed		Areas Gained		Net Gain (ha)
Feature Type	Area (ha)	Feature Type	Area (ha)	
Upland Features				
Transitional grading encroachment into buffers (restored in place)	-	MVPZ/Buffers	0.299	
Encroachment into Existing Wetland Buffer	0.048			
Total	0.048		0.299	
Wetland Features				
Encroachment into MAS2-1 (SWM outfalls and SE corner Bldg 4)	0.025	Concept Channel Realignment of Bunkers Creek (subject to detail design)	TBD	
Transitional grading encroachment into wetlands (restored in place)	-	Additional Wetland Creation	TBD	
Total	0.025		0.299	
TOTAL	0.073		0.299	0.226

Note: Areas are identified on **Figure 4**.

8. Monitoring

During construction, regular monitoring of the ESC fencing and other temporary storm water management measures should be undertaken by a qualified inspector (i.e., CAN-CISEC), and especially prior to forecasted significant precipitation events, to ensure wetlands and watercourses are protected from sedimentation.

Appropriate monitoring related to groundwater and contaminants is to be addressed by others.

9. Policy Conformity

Section 2 of this report provided an overview of the natural heritage policies and regulations of the Provincial Policy Statement, the City of Barrie, the LSRCA and the *Endangered Species Act*. This section examines conformity with those specific policies and regulations.

9.1 Provincial Policy Statement (2020)

The subject property does not contain, nor is it adjacent to any significant woodland, provincially significant wetlands, significant wildlife habitat, significant valleylands or ANSI. With exception to the proposed concept realignment of Bunkers Creek, no development is proposed within fish habitat and measures are recommended in Section 6.2.7 above, to ensure there will be no negative impacts to the watercourse. The PPS states that development and site alteration may be permitted in fish habitat provided that there will be no negative impacts to the identified natural features and functions.

The MNRF has not identified any provincially significant wetlands or ANSIs within the study area.

Potential Significant Wildlife Habitat (SWH) has been identified as turtle overwintering habitat within the offsite pond, while no specimens were observed during field studies, historic observations have been made by LSRCA.

9.2 *Endangered Species Act (2007)*

Through consultations with the MNRF Midhurst District office, and a screening of the natural heritage features of the subject property, Beacon concluded that there is no occurrence or habitat of any endangered and threatened species, therefore, the project is in conformity with the *Endangered Species Act*.

9.3 *Lake Simcoe Protection Plan (2009)*

The proposed development and the mitigation measures proposed will protect fish habitat and provide a naturalized, self-sustaining buffer composed of native species that will enhance and restore wildlife habitat in the watercourse and adjacent riparian wetland. Through a stormwater management plan, the proposed development will avoid, minimize and/or mitigate impacts associated with the quality and quantity of urban run-off into the adjacent watercourse and wetland.

9.4 *Conservation Authority Regulations and Policies*

The LSRCA regulates hazard lands including creeks, valleylands, shorelines, and wetlands. This EIS was scoped with the LSRCA staff prior to commencing the field investigations. Requested elements of the work plan have been completed. Watercourse functions will be maintained and enhanced. The proposed development plan, with the associated recommendations, addresses the regulatory interest of the LSRCA.

9.5 *City of Barrie Official Plan (2010)*

Through enhancement and mitigation measures, this report demonstrates adherence to the City's policies on Water Resource Management, Floodplain Management, and Surface Water Protection. Similarly, there are no significant woodlands, no contiguous woodlands 0.2 ha or larger, and no significant wildlife habitat on the subject property, thus adhering to the applicable policies.

The project as proposed will make no changes to the adjacent Bunkers Creek, which is identified in the City of Barrie's OP Schedule H – Natural Heritage Resources as Level 1 With Existing Development Designation Subject to Section 3.5.2.4 d). The City's planned culvert replacement under Bradford Street and realignment and improvements to Bunkers Creek would still maintain the Natural Heritage Resource area which generally follows the creek corridor.

The proposed development is adjacent to areas mapped as a Level 1 Natural Heritage Resource, Level 1 (with Existing Development Designation Subject to Section 3.5.2.4 d)), and Level 3, as shown on Schedule H of the Official Plan. However, the portion of the Level 1 (with Existing Development Designation) that is within the proposed development is based on an estimated floodplain limit that is in the process of being revised based on changes to downstream culvert and road reconstruction of Lakeshore Drive. The removal of this area from the Level 1 (with Existing Development Designation) designation represents a minor adjustment and would not require an Official Plan Amendment.

The area of Level 3 designation within the subject property appears to be based on a conceptual creek setback. Given that the creek is planned to be realigned, this Level 3 designated area is likely to change. In any case, the Level 3 area is outside of the building footprint and will be restored or enhanced with native species landscaping and thereby have a net beneficial effect.

Given the minor adjustments to the boundaries of the Natural Heritage Resource areas, the improvements planned for Bunkers Creek by the City and the mitigation measures recommended in this report, there will be no net negative impacts and there will be a net benefit to fish habitat. Therefore, the proposed development will be in conformity with the City's Official Plan policies.

10. Summary

A background review, field investigations and consultation with the LSRCA and MNRF were undertaken as part of this Environmental Impact Study. An analysis of features and functions was undertaken and summarized. This EIS has identified the extent of existing natural features on the subject property and identified potential impacts as a result of the proposed development. Mitigation measures have been identified including enhanced, planted buffers, timing restrictions, ESC plans, and stormwater design criteria.

The results of the field investigations carried out for this EIS confirm the few natural features that were identified within the existing regulations and policies. Natural heritage features or functions within and adjacent to the subject property are associated with the watercourse to the south, and will be buffered and protected and where required, appropriate mitigation is recommended.

The identified features and their approximate MVPZs consist of:

- The Meander Belt with application of a minimum 15 m buffer;
- Fish Habitat – 15 m buffer or greater from Bunkers Creek;
- A 15 m buffer to retained wetland features consistent with the LSRCA policy; and
- Engineered Floodplain to Bunkers Creek.

No plants of conservation significance were recorded on the subject property. A review of the NHIC database identified no records of species at risk in the vicinity of the subject property. None of the remaining vegetation communities on the subject property is considered provincially rare based on the NHIC status of vegetation communities for southern Ontario.

Given the foregoing, it is concluded that the proposed mixed use development, with the implementation of appropriate timing windows, infiltration measures, buffer enhancements (adjacent to the creek and

wetland and in the intervening areas of naturalized landscaping), and stormwater quality and quantity controls can occur without adversely affecting the adjacent wetland and the associated fish community and habitats in Bunkers Creek and Lake Simcoe.

This Environmental Impact Study has:

1. Demonstrated that the proposed development and site alteration will have minimal adverse effects on the adjacent natural area;
2. Identified planning, design and construction practises that will maintain the health, diversity, function, and area of the adjacent natural features;
3. Provided recommendations for design of the detailed building siting based on natural features identified on the subject properties; and
4. Protected fish habitat, wetland and the watercourse riparian corridor by ensuring that development takes place outside of feature limits and related buffers (with exception to one area of encroachment and grading to address the floodplain).

It is our opinion that the development plan as proposed, subject to approvals and permits as may be required as part of the operation, can proceed in a manner that is consistent with the relevant policies of the Provincial Policy Statement, City of Barrie Official Plan (2010, Office Consolidation 2018), Lake Simcoe Protection Plan (2009), and the Lake Simcoe Region Conservation Authority (LSRCA) Watershed Regulation and Policies.

Report prepared by:
Beacon Environmental



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Terrestrial Ecologist,
ISA Certified Arborist (ON-1288A)

Report prepared and reviewed by:
Beacon Environmental



Julianna MacDonald, B.Sc.(Hons.), M.E.S. (PI)
Senior Planning Ecologist

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Appendix A

MNRF Correspondence

Geri Poisson

From: Shirley, Brent (MNRF) <brent.shirley@ontario.ca>
Sent: December 12, 2019 2:09 PM
To: Geri Poisson
Cc: Kate Lillie; Rob Wilson
Subject: RE: Bunker's Creek fisheries/aquatic request for information
Attachments: MNRF-In-water Work Timing Window Guidelines.pdf

Hi Geri,

Based on the fish community data there should be no in-water work done from March 15- July 15. I have attached a copy of MNRF's In-water Work Timing Window Guidelines for your reference.

I think that the water temperature data is a much more accurate method for determining thermal regime than using the fish community assemblage.

If you have any further questions or concerns please don't hesitate reaching out to me.

Best Regards,

Brent Shirley

A/ Management Biologist | Midhurst District Ministry of Natural Resources & Forestry | 2284 Nursery Rd | Midhurst, ON | L9X 1N8 | Phone 705-725-7547 | Fax- 705-725-7584

Please Note: As of July 2, 2019, I will no longer have voicemail services with my office phonenumber. My phone line has been re-directed to Shannon Lawless for messaging; however should I miss your call you can email me directly or send your questions or request to midhurstinfo@ontario.ca where your inquiry will be forwarded back to me or re-directed towards another staff member.

From: Rob Wilson <R.Wilson@lsrca.on.ca>
Sent: December-12-19 12:01 PM
To: gpoisson@beaconenviro.com
Cc: Kate Lillie <K.Lillie@lsrca.on.ca>; Shirley, Brent (MNRF) <brent.shirley@ontario.ca>
Subject: FW: Bunker's Creek fisheries/aquatic request for information

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Geri,

Kate Lillie passed your request onto me.

We have a fisheries site on Bunkers Creek between Bradford Street and Lakeshore Drive that we sample on a regular basis. I have attached a map outlining the location of the fish and temperature monitoring site.

The water temperature suggest a cool water system and because this is very close to the lake we get some lake species using this area for spawning and rearing young.

Here is a list of species we have captured at this site going back as far as 2010 and as recent as 2018:

Common Name	Scientific Name
blacknose dace	<i>Rhinichthys atratulus</i>
brook stickleback	<i>Culaea inconstans</i>
common shiner	<i>Luxilus comutus</i>
creek chub	<i>Semotilus atromaculatus</i>
emerald shiner	<i>Notropis atherinoides</i>
largemouth bass	<i>Micropterus salmoides</i>
pumpkinseed	<i>Lepomis gibbosus</i>
rock bass	<i>Ambloplites rupestris</i>
rosyface shiner	<i>Notropis rubellus</i>
round goby	<i>Neogobius melanostomus</i>
spotfin shiner	<i>Cyprinella spiloptera</i>
white sucker	<i>Catostomus commersoni</i>
yellow perch	<i>Perca flavescens</i>

As you can see it's a mix of cool and warm species. I would suggest that a warmwater migratory timing window would be the best to protect the species that inhabit this system. I would suggest that **no works** be planned between April 1 and June 30. Again this is my suggestion as MNRF sets the timing windows and may have more data that suggests an alternate timing window. I have CC'd Brent Shirley who is the biologist at the Midhurst MNRF office so that you have his contact info.

Also be aware that there is active beaver activity in this stretch of bunkers creek. We have come across them while electrofishing in the last few years. Not fun for the beaver or us.

Let me know if you have more questions.

Thank you,

Rob Wilson

Aquatic Ecologist

Lake Simcoe Region Conservation Authority

120 Bayview Parkway,

Newmarket, Ontario L3Y 3W3

905-895-1281, ext. 235 | 1-800-465-0437

r.wilson@LSRCA.on.ca | www.LSRCA.on.ca

Twitter: @LSRCA

Facebook: LakeSimcoeConservation

The information in this message (including attachments) is directed in confidence solely to the person(s) named above and may not be otherwise distributed, copied or disclosed. The message may contain information that is privileged, confidential and exempt from disclosure under the Municipal Freedom of Information and Protection of Privacy Act and by the Personal Information Protection Act. If you have received this message in error, please notify the sender immediately and delete the message without making a copy. Thank you.

From: Kate Lillie

Sent: December 5, 2019 12:39 PM

To: Rob Wilson
Subject: FW: Bunker's Creek fisheries/aquatic request for information

Hi Rob,

Please see Geri's email below. He's inquiring about whether Bunker's Creek is a warm or cold water system. We have a monitoring station within the particular reach that Geri is asking about. The monitoring station is BCO-A. Could you compile that data for me and I'll provide it back to him?

My understanding is that MNRF is the authority on classifying a watercourse as warm, cool or cold. Right? Can Geri answer this question himself based on the species we've recorded, or should I suggest he contact MNRF for confirmation on this instead?

Thanks for your help!

Kate

Kate Lillie, HBSc, EP, ISA
Natural Heritage Ecologist
Lake Simcoe Region Conservation Authority
120 Bayview Parkway,
Newmarket, Ontario L3Y 3W3
905-895-1281, ext. 286 | 1-800-465-0437
k.lillie@LSRCA.on.ca | www.LSRCA.on.ca

Twitter: @LSRCA

Facebook: LakeSimcoeConservation

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From: Geri Poisson [<mailto:gpoisson@beaconenviro.com>]
Sent: December 3, 2019 2:51 PM
To: Melinda Bessey; Kate Lillie
Subject: Bunker's Creek fisheries/aquatic request for information

CAUTION: This email originated outside of LSRCA. DO NOT click links or open attachments unless you recognize the sender and trusted content. If in doubt, contact the IT Helpdesk at ITHelpdesk@lsrca.on.ca

Hi,
I'm not sure who at LSRCA would have the information I am looking for. Could you pass on my request to the appropriate staff?

We have a project that borders Bunker's creek in Barrie between Bradford and Lakeshore, and we have some old information saying that the LSRCA classifies Bunker's as a cold water system. The Subwatershed Plan (2012) indicates a warmwater system, based on the fish species present.

I know that the LSRCA has a monitoring station just upstream of Innisfil St.

I am looking for confirmation on whether this would be a cold or warm water system.

Thanks!

Geri Poisson, B.A. (Hons) / Certified Arborist, Terrestrial Ecologist

BEACON ENVIRONMENTAL

6 Cumberland St., Barrie, ON L4N 2P4

T) 705.999.4935 Ext. 249 C) 705.828.1196

www.beaconenviro.com

Appendix B

LSRCA Correspondence

November 14, 2019

BEL 219403

Lake Simcoe and Region Conservation Authority
Attn: Melinda Bessey, Acting Director, Planning
Kenneth Cheney, Conservation Engineer
120 Bayview Pkwy
Newmarket, ON L3Y 3W3

via email: m.bessey@lsrca.on.ca

via email: k.cheney@lsrca.on.ca

City of Barrie
Attn: Celeste Kitsemetry, Planner
City Hall, 70 Collier Street
P.O. Box 400
Barrie, ON L4M 4T5

via email: celeste.kitsemetry@barrie.ca

**Re: Terms of Reference – Scoped Environmental Impact Study for 51 – 57 Bradford Street,
City of Barrie**

On behalf of SmartCentres, Beacon Environmental Limited (Beacon) is currently completing a scoped Environmental Impact Study (EIS) for a proposed development on properties identified as 51 – 57 Bradford Street, in the City of Barrie. Beacon has prepared the following draft terms of reference for this EIS, developed based on review of requirements of the City and LSRCA.

The subject property has been identified within the regulated area of the Lake Simcoe and Region Conservation Authority (LSRCA) and is identified by the City of Barrie as partially within an area protected under the Level 1 Natural Heritage Resource designation (southern property boundary) and Level 3 (east property boundary). A watercourse identified as Bunker's Creek and associated floodplain has been identified along the southern limit, and the shoreline of Lake Simcoe is located offsite approximately 64 m east of the eastern property line. Refer to the attached site location (**Figure 1**) with the property limits.

As we would like to confirm what needs to be included in this EIS report, we propose the following:

- Background and natural heritage policy review;
- Field investigations:
 - Vegetation communities will be classified and mapped according to the Ecological Land Classification (ELC) System for Southern Ontario. A cursory plant species inventory will be undertaken that will include determining the presence and location of any Butternut (*Juglans cinerea*), an endangered species of tree, and any other endangered and threatened plants. Given the urbanized character of the site and the time of year, only a single visit is anticipated to be required;

- Aquatic assessment: Bunker's Creek is located on the southern portion of the subject property. An assessment will be completed to determine the function and potential impacts of the proposed development to the feature. A visual assessment is proposed, and does not include sampling of the fish community as it is assumed that sufficient information on this watercourse is available from the LSRCA; and
- Given the time of year and surrounding urban environment, seasonal faunal investigations (i.e. breeding bird surveys, breeding amphibian surveys) have not been included in the scope of this study;
- Feature staking: Staking of natural feature limits, including dripline of contiguous vegetation will be completed with the City and LSRCA and evaluated through the EIS;
- Summary of Existing Conditions on the proposed development (based on field surveys);
- Endangered and Threatened species: Beacon will complete screening for Endangered and Threatened species, their habitat and areas of provincial interest on and surrounding the subject lands. A preliminary assessment for Endangered and Threatened species or their habitat will be completed on site;
- Description of proposed development;
- Assessment of any potential impacts on the natural heritage features (watercourse, wetland and valley land);
- Recommend appropriate mitigation (including recommendations towards buffer restoration); and
- Submission of an EIS report which details the above.

Prepared by:
Beacon Environmental

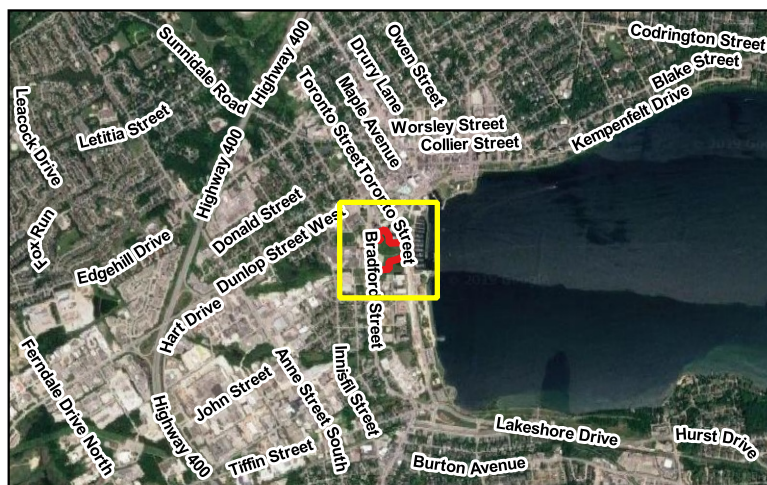


Julianna MacDonald, B.Sc.(Hons), MES (PI)
Senior Planning Ecologist

Reviewed by:
Beacon Environmental



Geri Poisson, B.A. (Hons), CAN-CISEC
Terrestrial Ecologist,
ISA-certified Arborist ON-1288A



Site Location

Figure 1

51-57 Bradford Street, Barrie EIS NHS



Project:
Last Revised: October 2019

Client:

Prepared by: BD
Checked by:



1:3500

Inset Map: 1:50000

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Appendix C

Botanical Inventory

Appendix B

Plant List

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Lake Simcoe (State of the Watershed, 2003)	Simcoe County (Riley 1989)
Anacardiaceae	<i>Rhus typhina</i>	Staghorn Sumac	N			S5		
Anacardiaceae	<i>Toxicodendron rydbergii</i>	Western Poison Ivy	N			S5		
Apiaceae	<i>Daucus carota</i>	Queen Anne's Lace	I			SNA		
Asteraceae	<i>Arctium minus</i>	Lesser Burdock	I			SNA		
Asteraceae	<i>Cichorium intybus</i>	Chicory	I			SNA		
Asteraceae	<i>Cirsium arvense</i>	Creeping Thistle	I			SNA		
Asteraceae	<i>Cirsium vulgare</i>	Bull Thistle	I			SNA		
Asteraceae	<i>Erigeron annuus</i>	White-top Fleabane	N			S5		
Asteraceae	<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	N			S5		
Asteraceae	<i>Eutrochium maculatum</i> var. <i>maculatum</i>	Spotted Joe-pye Weed	N			S5		
Asteraceae	<i>Solidago canadensis</i>	Canada Goldenrod	N			S5		
Asteraceae	<i>Symphyotrichum lanceolatum</i> ssp. <i>lanceolatum</i>	Panicled Aster	N			S5		
Asteraceae	<i>Symphyotrichum novae-angliae</i>	New England Aster	N			S5		
Asteraceae	<i>Taraxacum officinale</i>	Common Dandelion	I			SNA		
Asteraceae	<i>Tussilago farfara</i>	Colt's Foot	I			SNA		
Balsaminaceae	<i>Impatiens capensis</i>	Spotted Jewel-weed	N			S5		
Brassicaceae	<i>Alliaria petiolata</i>	Garlic Mustard	I			SNA		
Caprifoliaceae	<i>Lonicera tatarica</i>	Tartarian Honeysuckle	I			SNA		
Caprifoliaceae	<i>Viburnum opulus</i>	Guelder-rose Viburnum	I			SNA		

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Lake Simcoe (State of the Watershed, 2003)	Simcoe County (Riley 1989)
Cornaceae	<i>Cornus sericea</i> ssp. <i>sericea</i>	Red-osier Dogwood	N			S5		
Equisetaceae	<i>Equisetum arvense</i>	Field Horsetail	N			S5		
Fabaceae	<i>Lotus corniculatus</i>	Bird's-foot Trefoil	I			SNA		
Fabaceae	<i>Medicago lupulina</i>	Black Medic	I			SNA		
Fabaceae	<i>Robinia pseudo-acacia</i>	Black Locust	I			SNA		
Fabaceae	<i>Vicia cracca</i>	Tufted Vetch	I			SNA		
Juglandaceae	<i>Juglans nigra</i>	Black Walnut	N			S4	R	R1 (Nat)
Lythraceae	<i>Lythrum salicaria</i>	Slender-spike Loosestrife	I			SNA		
Plantaginaceae	<i>Plantago lanceolata</i>	English Plantain	I			SNA		
Plantaginaceae	<i>Plantago major</i>	Nipple-seed Plantain	I			SNA		
Poaceae	<i>Bromus inermis</i> ssp. <i>inermis</i>	Smooth Brome	I			SNA		
Poaceae	<i>Phalaris arundinacea</i>	Reed Canary Grass	N			S5		
Poaceae	<i>Phleum pratense</i>	Timothy	I			SNA		
Poaceae	<i>Phragmites australis</i> ssp. <i>australis</i>	European Common Reed	I			SNA		
Polygonaceae	<i>Polygonum cuspidatum</i>	Japanese Knotweed	I			SNA		
Polygonaceae	<i>Rumex crispus</i>	Curly Dock	I			SNA		
Rosaceae	<i>Potentilla recta</i>	Sulphur Cinquefoil	I			SNA		
Rosaceae	<i>Rosa multiflora</i>	Rambler Rose	I			SNA		
Rosaceae	<i>Rubus idaeus</i> ssp. <i>strigosus</i>	Wild Red Raspberry	N			S5		
Rosaceae	<i>Spiraea alba</i>	Narrow-leaved Meadow-sweet	N			S5		
Salicaceae	<i>Populus alba</i>	White Poplar	I			SNA		
Salicaceae	<i>Populus balsamifera</i> ssp. <i>balsamifera</i>	Balsam Poplar	N			S5		
Salicaceae	<i>Populus tremuloides</i>	Quaking Aspen	N			S5		
Salicaceae	<i>Salix discolor</i>	Pussy Willow	N			S5		
Salicaceae	<i>Salix fragilis</i>	Crack Willow	I			SNA		

Family Name	Scientific Name	Common Name	Origin	COSEWIC	COSSARO	S-RANK	Lake Simcoe (State of the Watershed, 2003)	Simcoe County (Riley 1989)
Sapindaceae	<i>Acer negundo</i>	Manitoba Maple	N			S5		
Scrophulariaceae	<i>Linaria vulgaris</i>	Butter-and-eggs	I			SNA		
Scrophulariaceae	<i>Verbascum thapsus</i>	Common Mullein	I			SNA		
Solanaceae	<i>Solanum dulcamara</i>	Climbing Nightshade	I			SNA		
Typhaceae	<i>Typha angustifolia</i>	Narrow-leaved Cattail	N			S5		
Ulmaceae	<i>Ulmus americana</i>	American Elm	N			S5		
Ulmaceae	<i>Ulmus pumila</i>	Siberian Elm	I			SNA		
Verbenaceae	<i>Verbena hastata</i>	Blue Vervain	N			S5		
Vitaceae	<i>Vitis riparia</i>	Riverbank Grape	N			S5		

Appendix D

Breeding Bird Survey Results

Appendix D

Breeding Birds of Bradford St., Barrie

Common Name	Scientific Name	Status					Number of Pairs/Territories	
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK ^b	Regional Status	Area-sensitive (OMNR)c	Area A (Main Site)	Area B (Pond)
Great Blue Heron	<i>Ardea herodias</i>			S4				1 - foraging
Canada Goose	<i>Branta canadensis</i>			S5			3 - foraging	2
Mallard	<i>Anas platyrhynchos</i>			S5				1
Killdeer	<i>Charadrius vociferus</i>			S5			1	
Ring-billed Gull	<i>Larus delawarensis</i>			S5			4 - foraging	
Rock Pigeon	<i>Columba livia</i>			SNA			2	
Mourning Dove	<i>Zenaida macroura</i>			S5			1	
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4				2 - foraging
American Robin	<i>Turdus migratorius</i>			S5			2	
European Starling	<i>Sturnus vulgaris</i>			SE			2	2
Warbling Vireo	<i>Vireo gilvus</i>			S5			2	
Yellow Warbler	<i>Setophaga petechia</i>			S5			1	
Northern Cardinal	<i>Cardinalis cardinalis</i>			S5			1	
Song Sparrow	<i>Melospiza melodia</i>			S5			2	
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			S4				8
Common Grackle	<i>Quiscalus quiscula</i>			S5			2	2
Baltimore Oriole	<i>Icterus galbula</i>			S4			1	
House Finch	<i>Haemorhous mexicanus</i>			SNA			1	
American Goldfinch	<i>Spinus tristis</i>			S5			1	
House Sparrow	<i>Passer domesticus</i>			SNA			2	

Field Work Conducted On: June 5 & 12, 2020

Totals

Number of Species: 20

Number of nesting (provincial and national) Species at Risk: 0

Number of S1 to S3 Species: 0

Number of Area-sensitive Species: 0

Area A (Main Site)

Number of Species: 16

Number of nesting (provincial and national) Species at Risk: 0

Number of S1 to S3 Species: 0

Number of Area-sensitive Species: 0

Area B (SWM Pond)

Number of Species: 7

Number of nesting (provincial and national) Species at Risk: 0

Number of S1 to S3 Species: 0

Number of Area-sensitive Species: 0

KEY

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

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

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

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

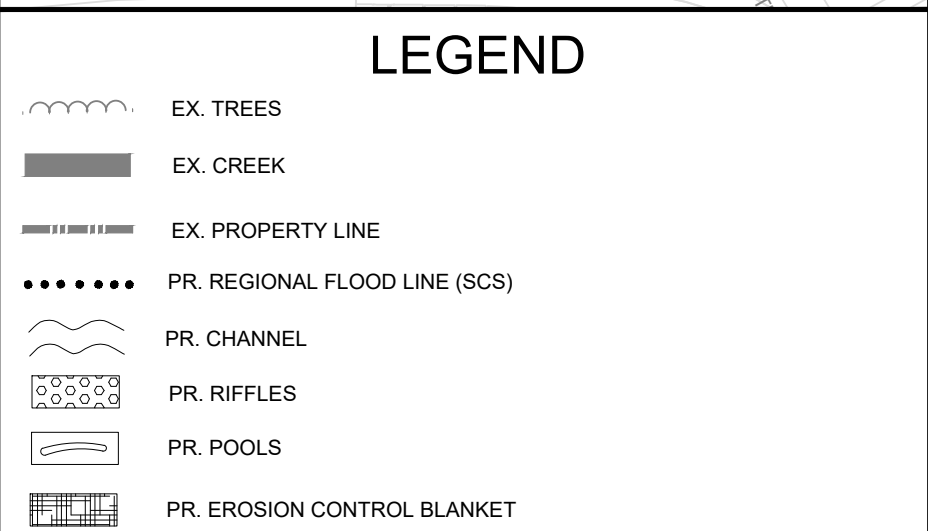
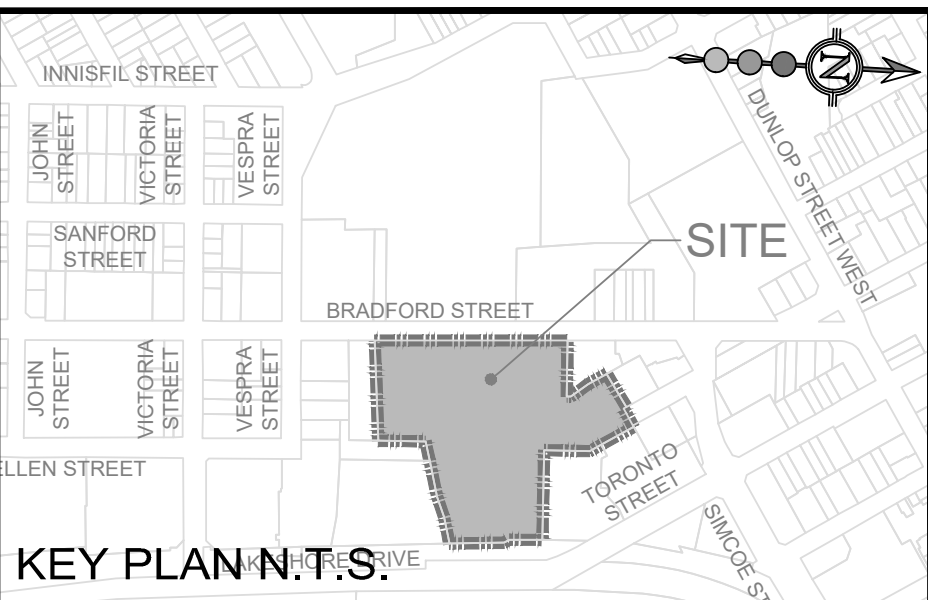
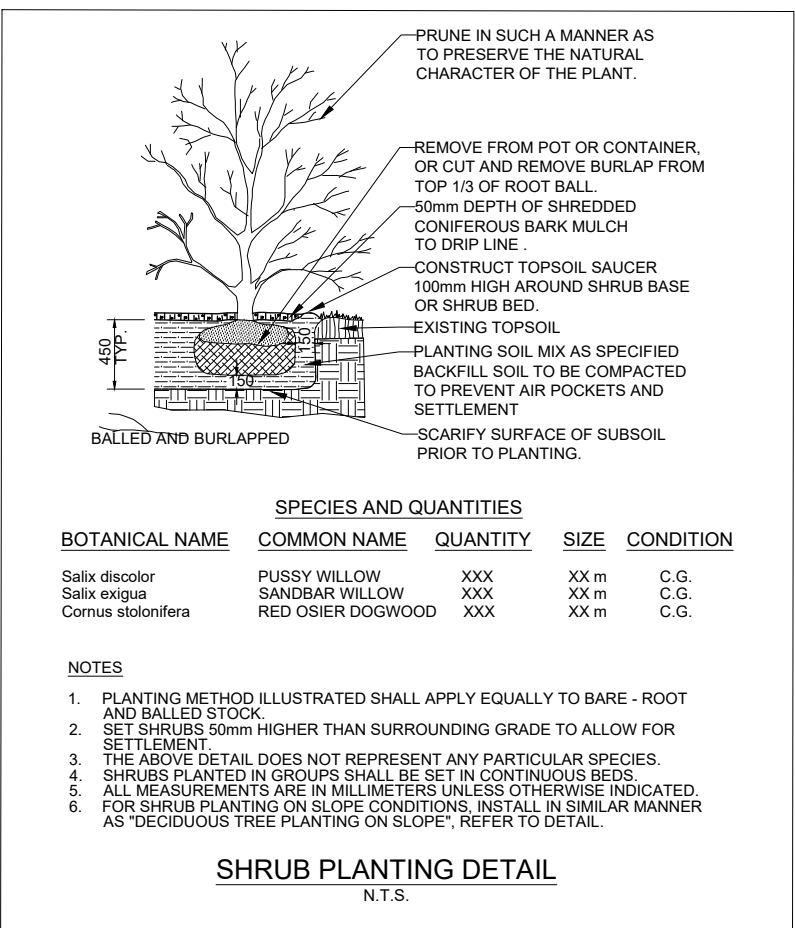
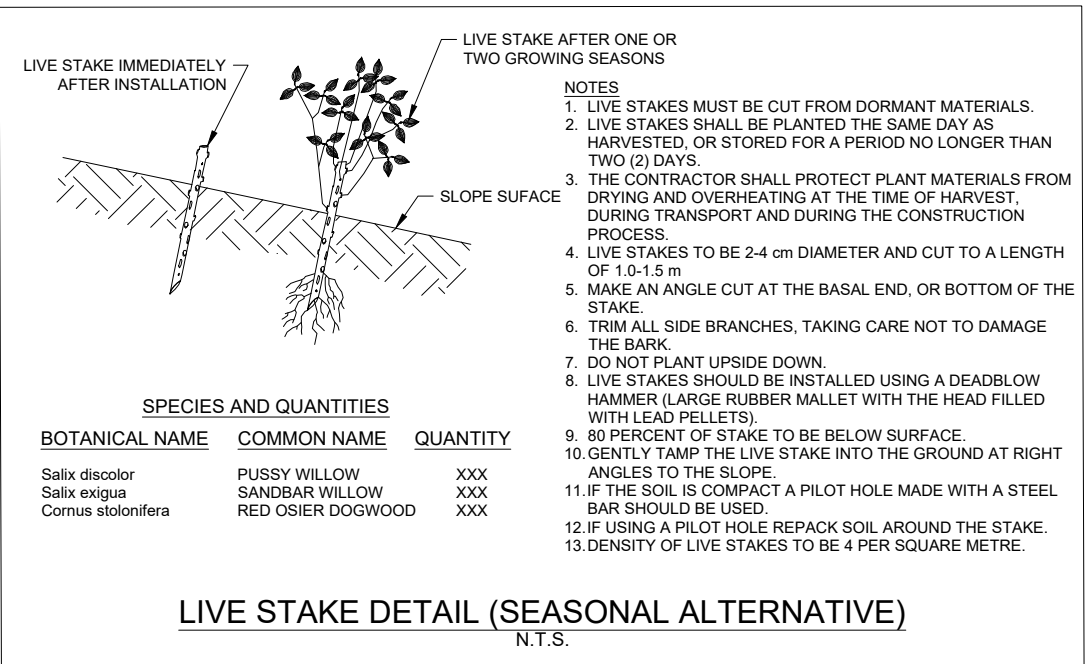
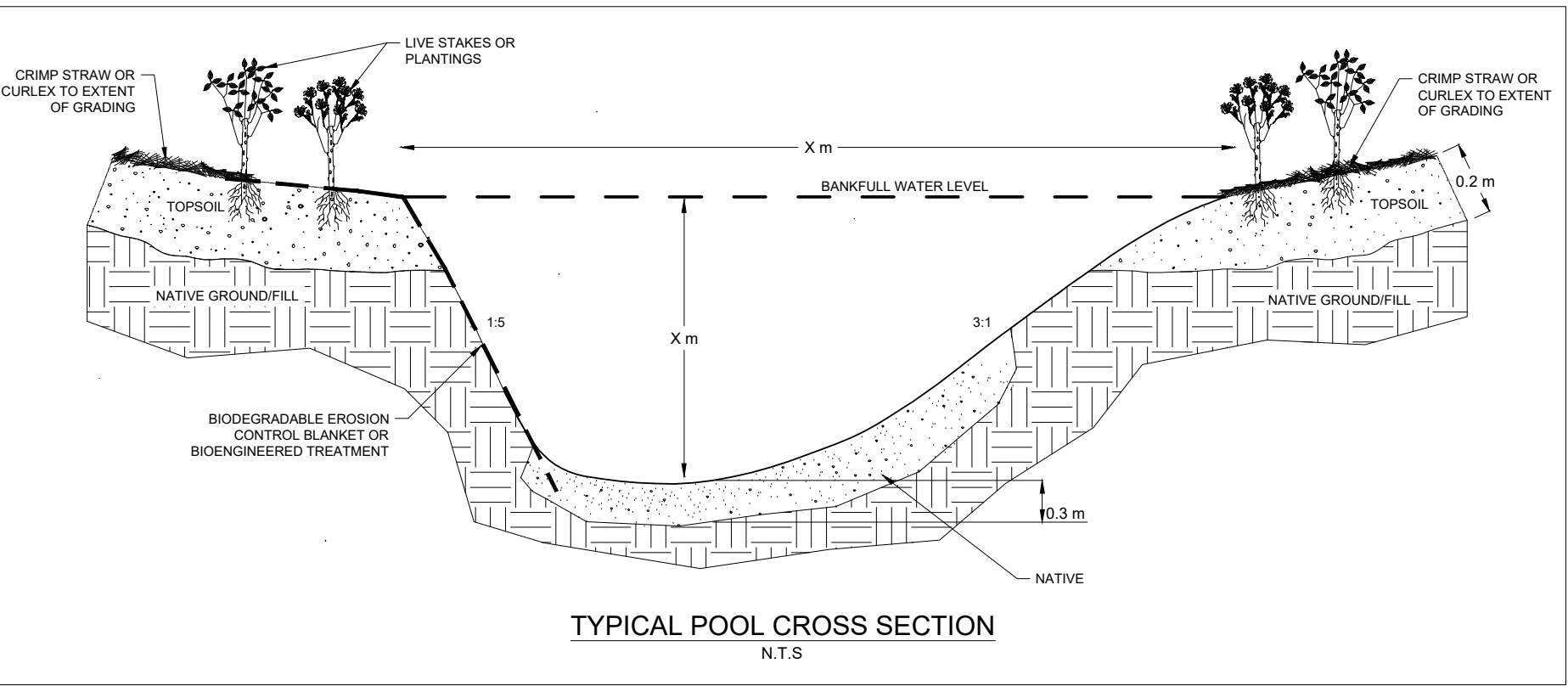
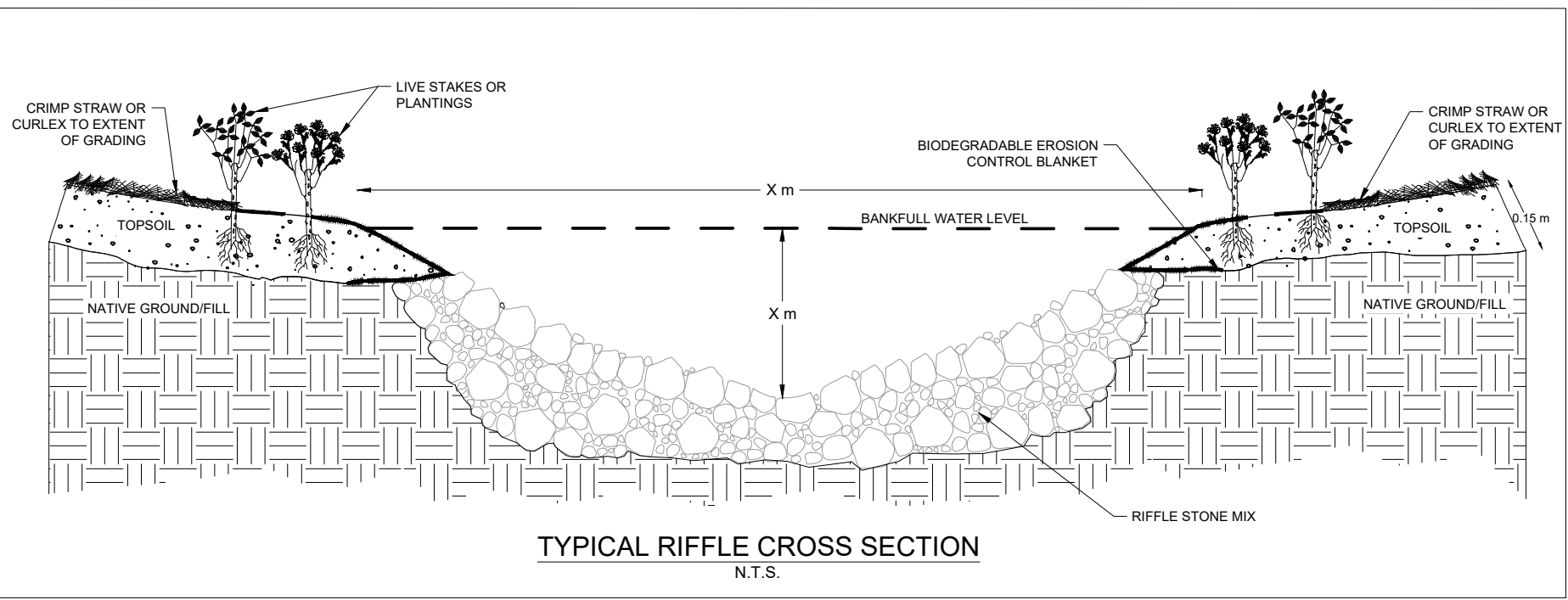
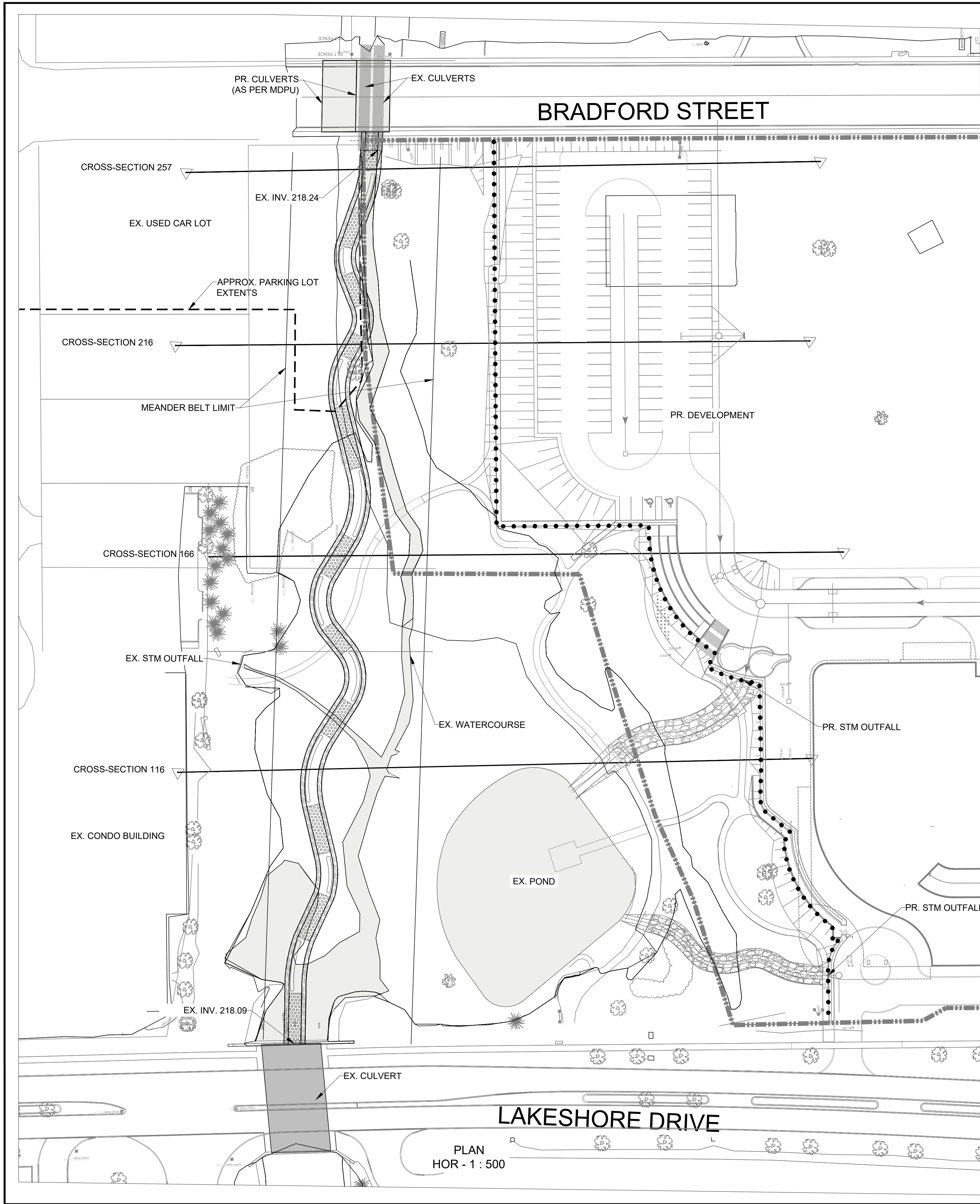
S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)

SNA (Not applicable... 'because the species is not a suitable target for conservation activities'; includes non-native species)

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

Appendix E

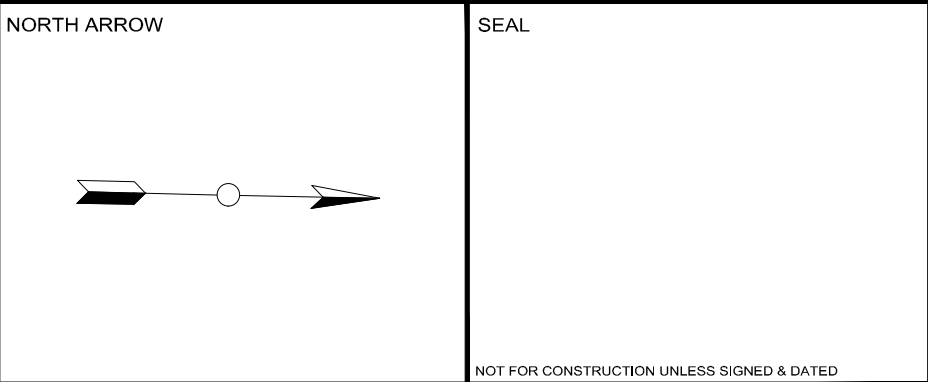
Bunkers Creek Conceptual Design Planform



FOR CONCEPTUAL RESTORATION PLANTING PLAN, REFER TO DRAWING L1, PREPARED BY BEACON ENVIRONMENTAL LTD.

TOPOGRAPHIC SURVEY BY SCHAEFFER DZALDOV BENNETT LTD.
GRADING AND SERVISING BY SCS CONSULTING GROUP LTD.
Notes: Scale shown is for an 36" x 24" page.
For illustrative purposes. Do not scale

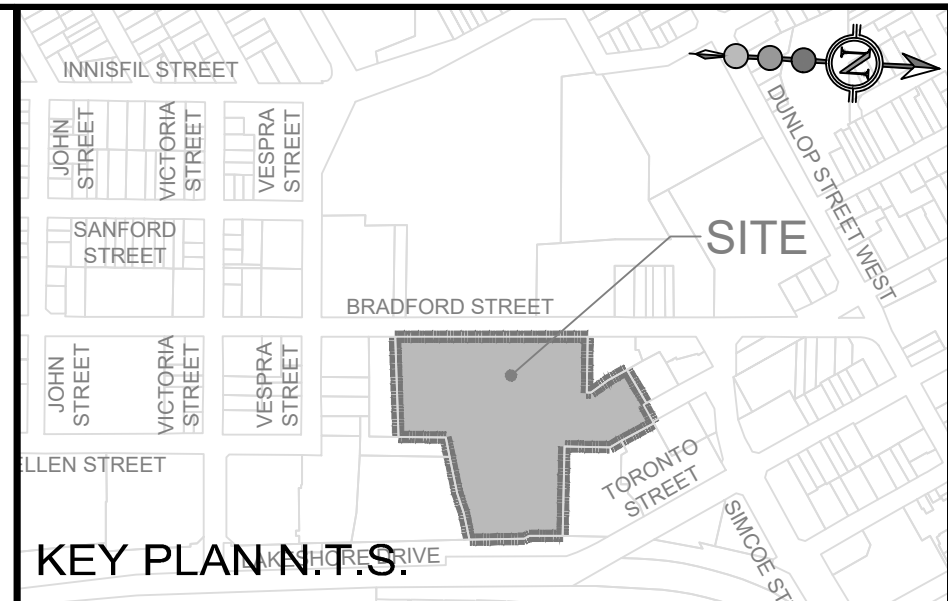
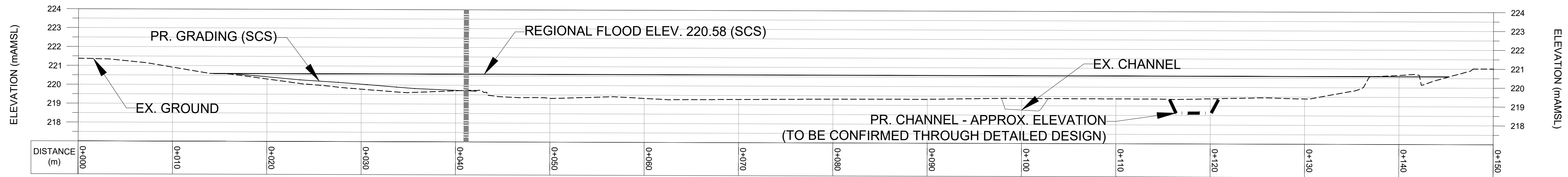
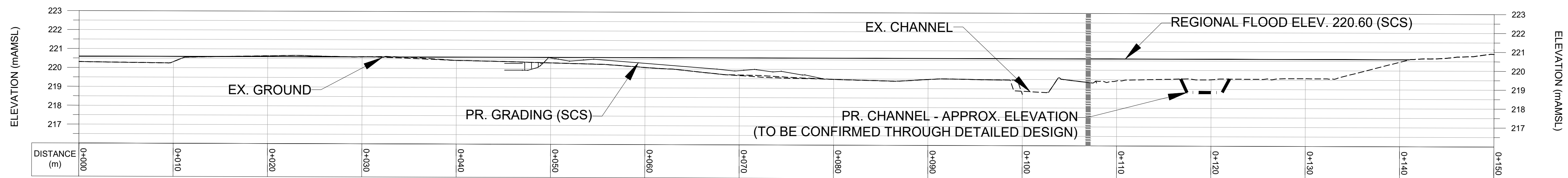
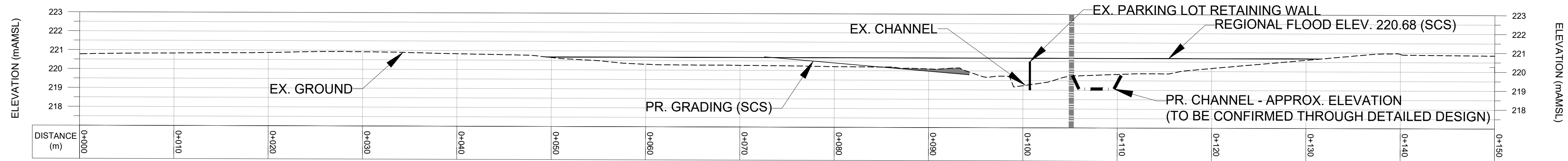
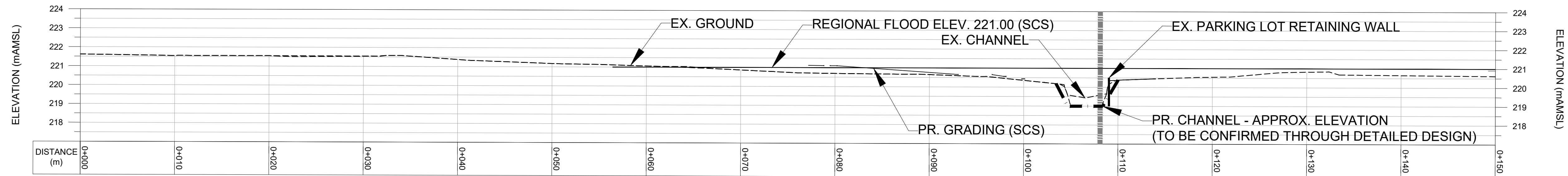
Nº	REVISIONS	DATE:	BY:
6			
5			
4			
3			
2			
1			



PROJECT
51, 53, 55 & 75 BRADFORD ST.
AND 20 CHECKLEY ST.
BARRIE LAKESHORE DEVELOPMENTS

SHEET TITLE
BUNKERS CREEK
CONCEPTUAL DESIGN
PLANFORM

DESIGN BY:	MC	PROJECT Nº:	219403.2
DRAWN BY:	MC	FIGURE Nº:	
CHECKED BY:	IK		
DATE:	18 August 2020		
SCALE:	1:500		
	0 5 10		



LEGEND

- EX. PROPERTY LINE
- REGULATORY FLOODLINE (SCS CONSULTING HEC-RAS MODEL UPDATE 2020)

Notes: Scale shown is for an 36" x 24" page.
For illustrative purposes. Do not scale

Nº	REVISIONS	DATE	BY:
6			
5			
4			
3			
2			
1			

NORTH ARROW	SEAL
NOT FOR CONSTRUCTION UNLESS SIGNED & DATED	



PROJECT
**51, 53, 55 & 75 BRADFORD ST.
AND 20 CHECKLEY ST.**
BARRIE LAKESHORE DEVELOPMENTS

SHEET TITLE
**BUNKERS CREEK
CONCEPTUAL DESIGN
CROSS-SECTIONS**

DESIGN BY: MC	PROJECT Nº: 219403.2
DRAWN BY: MC	FIGURE Nº:
CHECKED BY: IK	
DATE: 18 August 2020	
SCALE: 1:250	
0 5 10	

G-2

Appendix F

Conceptual Restoration Planting Plan

NURSE CROP SEED MIX			
SCIENTIFIC NAME	COMMON NAME	SEEDING RATE (kg PLS per/10 000 sq. m)	PLS REQUIRED (kg PLS per/5000sq. m)
FORBS			
<i>Lolium multiflorum</i>	Annual rye grass	30	15
<i>Avena sativa</i>	Oats	35	17.5
TOTAL NURSE CROP		65	32.5

DATE:	20 August 2020
-------	----------------