BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

591 Liverpool Road, City of Pickering Environmental Impact Study

Prepared For:

Pickering Harbour Company Ltd.

Prepared By:

Beacon Environmental Limited

Date: *Project:*

Revised March 2020 **216450**

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Table of Contents

page

Figures

Tables

Appendices

1. Introduction

Beacon Environmental Limited (Beacon) has been retained by Pickering Harbour Company Ltd. to undertake an Environmental Impact Study (EIS) for the property located at 591 Liverpool Road (hereafter 'subject property'), in the City of Pickering, Regional Municipality of Durham. The subject property is located on the east side of Liverpool Road at the south terminus and fronts onto the bay known as 'Hydro Marsh' (**Figure 1**). Frenchman's Bay Provincially Significant Coastal Wetland Complex (PSW) extends onto the eastern and southern portions of the subject property. The property is occupied by the Frenchman's Bay Marina office and boat storage yard.

As the subject property has been identified on the Region's and City's Official Plan as containing a natural feature (i.e. wetland and waterbody) and located within the Region and City's Natural Heritage System, an EIS is required in support of the proposed development application. The Pickering Harbour Company Ltd., has submitted applications for an Official Plan Amendment and Zoning By-law Amendment to permit a high density mixed use condominium development.

This EIS has been prepared to reflect the updated development limits and revised development plan in response to agency and public comments. The purpose of the EIS is to identify natural heritage features and functions on or adjacent to the subject property, assess impacts of the proposed development, and recommend mitigation measures to ensure that the significant natural features are not adversely affected by the proposed development. The EIS must also demonstrate that the proposed development complies with applicable environmental legislation, policies and regulations at the provincial, regional and local levels.

The findings of the EIS are presented in the following sections.

2. Policy Context

The plans and policies outlined in the following sections give direction and provide requirements for development on the property.

2.1 Provincial Policy Statement (2014)

Natural Heritage Policy 2.1 of the *Provincial Policy Statement* (PPS) (MMAH 2014) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources for applications pursuant to the *Planning Act*. It took effect on April 30, 2014, superseding the PPS of 2005. The PPS defines natural heritage features and provides planning policies for each. The key text from the PPS that applies to the study area is reproduced below. The study area is situated in Ecoregion 6E.

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

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

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

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

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

2.1.6 *Development* and *site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements*.

2.1.7 *Development* and *site alteration* shall not be permitted in *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements*.

Of these features, provincially significant wetlands and significant ANSIs are identified directly by the Ministry of Natural Resources and Forestry (MNRF). Woodlands are identified using MNRF criteria, and other significant features may be identified using MNRF criteria or municipal criteria that meet the same standard. In Ontario, Fisheries and Oceans Canada (DFO) manages fish habitat and the MNRF manages fisheries. Habitat of endangered or threatened species is mainly governed by the provincial *Endangered Species Act* (2007) (See section 2.5).

Furthermore, development and site alteration shall not be permitted on "adjacent lands" to the natural heritage features/areas (i.e., within 120 m) addressed in policies 2.1.4, 2.1.5, 2.1.6 and 2.1.7 "unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated [through an EIS] that there will be no negative impacts on the natural features or on their ecological functions." Adjacent lands are defined in the PPS as "those lands contiguous to a specific natural heritage feature or area where it is likely that development or site alteration would have a negative impact on the feature or area."

2.2 Region of Durham Official Plan (Office Consolidation, 2017)

The Regional Municipality of Durham published its latest Official Consolidated Plan on May 11, 2017. It protects natural heritage features through a Greenlands System.

Greenlands include the following Key Natural Heritage Features (KNHF). The list of KNHFs is similar, but not identical, to the PPS list:

- Significant habitat of endangered and threatened, special concern and rare species;
- Fish habitat;

Site Location

Figure 1

591 Liverpool Road, Pickering
Pickering Harbour Company Ltd.

First Base Solutions
Web Mapping Service 2019

UTM Zone 17 N, NAD 83

N W E S

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Project 216450
March 2020

- Wetlands;
- Life Science Areas of Natural and Scientific Interest (ANSIs);
- Significant valleylands;
- Significant woodlands;
- Significant wildlife habitat;
- Sand barrens, savannahs and tallgrass prairies; and
- Alvars.

The Region of Durham Official Plan also recognizes the following Key Hydrologic Features (KHFs):

- Permanent and intermittent streams;
- Wetlands;
- Lakes and their littoral zones;
- Kettle lakes and their surface catchment areas;
- Seepage areas and springs; and
- Aquifers and recharge areas.

The subject property is designated on Schedule A, Map A-4 Regional Structure of the Durham Region Official Plan as Waterfront Areas which are designated as part of the existing Greenlands System. Key Natural Heritage and Hydrologic Features are identified on and adjacent to the subject property on Schedule B, Map B-1d Natural Heritage System & Key Natural Heritage and Hydrologic Features. Section 2.3.15 states that development or site alteration is not permitted within a key natural heritage and/or hydrologic feature and associated vegetation protection zone.

As per Section 2.3.14, the location and extent of key natural heritage and/or hydrologic features may be further confirmed through an EIS. The subject property falls within an Urban Area and the vegetation protection zone for any features present on the property shall be determined through an EIS completed in accordance with Policy 2.3.43 of the Plan. For development along Waterfront Areas, an EIS shall also incorporate the requirements outlined in Section 10C.2.1 of the Plan, to address impacts on the Lake Ontario shoreline, creeks, wetlands and near-shore wildlife habitat.

2.3 City of Pickering Official Plan (2018)

The City of Pickering published its latest Official Consolidated Plan (Edition 8) dated October 2018. It builds on the framework presented in the Region of Durham's Official Plan and protects natural heritage features through the Open Space System, which incorporates three types of natural areas: core areas, corridors and linkages. Schedule I – Land Use Structure to OPA 27 identifies the subject property as Natural Areas with Marina Areas.

Land uses for Natural Areas in the Open Space System are restricted and include conservation, environmental protection, restoration, education, passive recreation, existing residential and agricultural uses.

The Open Space System recognizes a connected and integrated natural heritage system comprised of KNHF and KHF and includes minimum vegetation protection zones. KNHF and KHF for the City's Open Space System are consistent with those identified in the PPS and Region of Durham OP. The City identifies the Natural Heritage System on Schedules IIIA through IIIE – Resource Management: Natural

Heritage Features of the OP. Schedule IIIA identifies the eastern and southern portions of the subject property as Natural Heritage System and Schedule IIIC identifies the Natural Heritage System on the subject property as being comprised of Shorelines, Significant Valley Lands and Stream Corridors and Wetlands. Schedule IIID identifies the subject property as within an area of High Aquifer Vulnerability and Groundwater Recharge.

Section 16.51 requires that within the Open Space System, outside of the Oak Ridges Moraine and the Seaton Urban Area, development or site alteration proposed within the minimum area of influence of a KNHF or HSF requires an environmental study to be completed. Table 18 summarizes the minimum area of influence and prescribes the following minimum protection zone for KNHF and HSF:

- **Wetlands** – all land within 30 metres of any part of the feature;
- **Fish habitat -** all land within 30 metres of any part of the feature;
- **Significant valleylands -** all land within 30 metres of any part of the feature;
- **Significant woodlands** – all land within 10 metres from the dripline of woodlands;
- **Permanent and intermittent streams inside the Pickering urban area –** all land within 10 metres of the stable top of bank or the limit of the floodplain, whichever is the greater;
- **Seepage areas and springs** – all land within 30 metres of any part of the feature;
- **Shoreline along Lake Ontario** – all lands within 30 m of the shoreline; and
- Any additional distances demonstrated as necessary through technical reports.

The subject property is within the South Pickering urban area and Section 16.51(c) states:

> *Consider vegetation protection zones smaller than those distances specified in Table 18 in the South Pickering where the conservation authority determined it to be appropriate, and where it can be demonstrated that there is no increase in risk to life or property; no impact to the control of flooding, erosion, dynamic beach, or pollution; and where a net environmental benefit can be established on the property.*

2.4 Toronto and Region Conservation Authority Regulations (Ontario Regulation 166/06) (2006)

The Toronto and Region Conservation Authority regulates land use activities in and adjacent to wetlands, shorelines, watercourses and valleylands under Ontario Regulation 166/06 (*Regulation for Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*), made under the *Conservation Authorities Act*.

The TRCA may grant permission to develop within regulated areas "*if, in its opinion, the control of flooding, erosion...pollution or the conservation of land will not be affected by the development*". As part of its permitting process, TRCA typically requires the proponent to prepare an Environmental Impact Statement (EIS), which must demonstrate that the development can proceed without resulting in any alteration to a watercourse or interference to the hydrologic function of a wetland.

Wetland refers to any wetland, regardless of whether they have been formally evaluated or not. Generally, development within the flood limit of a watercourse is not allowed. However, subject to conformity with the applicable Official Plans and the completion of appropriate studies and Conservation Authority permits, development *may* be permitted within other regulated areas. The TRCA generally

requires that all watercourses be protected from adjacent development. This is often achieved through the use of a vegetative buffer.

The entire property is located within a TRCA regulated area due to the proximity to the Lake Ontario shoreline and Frenchman's Bay PSW.

2.4.1 Toronto and Region Conservation Authority Living City Policies for Planning and Development (2014)

The Living City Policies for Planning and Development in the Watersheds of the Toronto and Region Conservation Authority (LCP) was approved by the Authority Board on November 28, 2014. The document replaced TRCA's previous policy document, the Valley and Stream Corridor Management Program (1994).

The LCP has been developed to guide the implementation of TRCA's legislated and delegated roles in the planning approval process. It was developed to conform with provincial legislation including the Oak Ridges Moraine Conservation Plan, the Greenbelt Plan, the Places to Grow Growth Plan, and the 2014 PPS.

The LCP contains policies related to terrestrial resources, water resources, natural features and areas, natural hazards, and potential natural cover and buffers. Section 7.3 contains TRCA's policies for how to define, protect, enhance, and secure a Natural Heritage System. Section 7.3.1.4. prescribes the following buffers to natural features and natural hazards:

- **Valley or Stream Corridors** – a 10 metre buffer from the greater of the long term stable top of slope/bank, stable toe of slope, Regulatory flood plain, meander belt, and any contiguous natural features or areas;
- **Woodlands** - a 10 metre buffer from the dripline and any contiguous natural features or areas;
- **Wetlands** – a 30 metre buffer from provincially significant wetlands and a 10 metre buffer for all other wetlands and any contiguous natural features or areas;
- **Lake Ontario Shoreline** – a 10 metre buffer from the greater limit of the flood hazard, erosion hazard and/or dynamic beach hazard and any contiguous natural features or areas;
- Any additional distances prescribed by federal, provincial, or municipal requirements or standards (e.g., Greenbelt); and
- Any additional distances demonstrated as necessary through technical reports.

2.5 Federal *Fisheries Act* (1985)

All fish habitat (direct and indirect) is protected under the Federal *Fisheries Act* (1985). In Ontario, the federal department of Fisheries and Oceans Canada (DFO) manages fish habitat and the Ontario Ministry of Natural Resources and Forestry (MNRF) manages fisheries.

The *Fisheries Act* was updated through Bill C-38 which came into effect November 25th, 2013. Key changes include the combination of former Sections 32 and 35 into a new Section 35 addressing the removal of Harmful Alteration, Disruption or Destruction (HADD) of fish habitat. The prohibitions on

killing fish and causing harmful alteration, disruption or destruction of fish habitat (HADD) have been replaced with a single prohibition in Section 35 against causing '*serious harm to fish'* that are part of a commercial, recreational or aboriginal fishery, or to fish that support such a fishery.

"Serious harm to fish" is defined as "*the death of fish or any permanent alteration to, or destruction of, fish habitat*". "*Serious harm to fish"* includes the following:

1. *The death of fish; and*
2. *A permanent alteration to fish habitat of a spatial scale, duration or intensity that limits or diminishes the ability of fish to use such habitats as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes*

The destruction of fish habitat of a spatial scale, duration, or intensity that fish can no longer rely upon such habitats for use as spawning grounds, or as nursery, rearing, or food supply areas, or as a migration corridor, or any other area in order to carry out one or more of their life processes.

Determining the applicability of the Section 35 prohibition to particular water bodies is now made on a case-by-case basis through a self-assessment process to determine impacts to fish and fish habitat and next steps. Development activities taking place in or near water may affect fisheries by adversely affecting fish or fish habitat. DFO recommends that proponents of these activities should:

- Understand the types of impacts their projects are likely to cause;
- Take measures to avoid and mitigate impacts to the extent possible; and
- Request authorization from the Minister and abide by the conditions of any such authorization, when it is not possible to avoid and mitigate impacts of projects that are likely to cause serious harm to fish.

2.6 *Endangered Species Act* (2007)

Ontario's *Endangered Species Act*, 2007 (ESA) came into effect on June 30, 2008 and replaced the former 1971 Act. Under the ESA, species in Ontario are identified as extirpated, endangered, threatened, or of special concern and each species is afforded different levels of protection. The ESA protects species listed as threatened or endangered by the Committee on the Status of Species at Risk in Ontario (COSSARO).

Section 9 of the ESA generally prohibits the killing or harming of a threatened or endangered species, as well as the destruction of its habitat. Section 10 of the ESA prohibits the damage or destruction of the habitat of all endangered or threatened species. A permit from MNRF is required under Section 17(2) (c) of the ESA for any works proposed within habitat of a threatened or endangered species.

3. Study Methodology

To characterize natural heritage resources and functions associated with the subject property and adjacent lands, Beacon Environmental completed a review of available background information and undertook seasonal field investigations. A summary of the background information and field investigations undertaken is summarized below.

A Terms of Reference for the EIS was submitted to TRCA and approved on January 10, 2019 (**Appendix A**). Correspondence from Aurora District, MNRF dated November 22, 2017 was received with respect to Species at Risk (**Appendix B)**

3.1 Background Review

Background documents and supporting technical documents containing information relevant to the biophysical features of the subject property were gathered and reviewed. This included the following sources:

- Regional Municipality of Durham Official Plan (2017);
- City of Pickering Official Plan (2018);
- Toronto and Region Conservation Authority Regulations (2006) and Policies (2014);
- Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC);
- *Endangered Species Act* (2007);
- Frenchman's Bay Harbour Entrance Environmental Study Report (2009); and
- Frenchman's Bay Stormwater Management Master Plan (2009).

Other sources of information, such as aerial photography and topographic maps, were also consulted prior to commencing field assessments.

3.2 Field Investigations

Beacon ecologists undertook seasonal field investigations on the subject property and adjacent lands in 2017. A summary of the field visits and survey dates is presented in **Table 1**. More detailed survey descriptions are provided in the subsections that follow.

Table 1. Dates of Field Investigations

Survey	Date of Survey(s)
Amphibian Surveys	April 15, May 24 and June 28, 2017
Breeding Bird Surveys	June 8 and June 20, 2017
Ecological Land Classification & Floristic Inventory	August 24, 2017
Feature Staking with Agencies	September 13, 2017
Aquatic Habitat Assessment	October 6, 2017

3.2.1 Amphibian Surveys

Breeding amphibian surveys were completed according to Environment Canada's Marsh Monitoring Program Protocol (Bird Studies Canada, 2009) and consisted of auditory surveys undertaken during the prime breeding period to record calling males that are present. Three surveys are spread throughout the breeding season to include the short temporal peak for each species of interest. Survey dates are spaced to record different amphibian species that call during different times in the spring. These surveys are conducted to record the presence or absence of breeding amphibians in potentially suitable habitat.

Breeding amphibian surveys on the subject property were completed after dusk and during suitable temperature conditions. All areas that contained potential breeding amphibian habitat (i.e., wetlands) were surveyed from a distance that would enable calling amphibians to be heard. Survey conditions are provided in **Table 2**; wind conditions are provided using the Beaufort Scale.

Table 2. Breeding Amphibian Survey Conditions

Survey Date	Weather
April 15, 2017	Temp.:8°C, Wind: 0. Precip.: None
May 24, 2017	Temp.:17°C, Wind: 3. Precip.: Light rain
June 28, 2017	Temp.:17°C, Wind: 3. Precip.: None

3.2.2 Breeding Bird Surveys

Breeding birds were surveyed during two visits to the subject property; each visit commenced between 6:30 am and 7:30 am, on days with low to moderate winds (0-3 Beaufort Scale), no precipitation, and temperatures within 5 ^{O}C of normal average temperature. The entire site was walked such that all singing birds could be heard 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.

3.2.3 Ecological Land Classification

Vegetation communities were mapped and described according to the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al.*, 1998), which involved delineating vegetation communities on an aerial photograph of the property and recording pertinent information concerning the structure and composition of the vegetation in each community. 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.

3.2.4 Feature Staking with Agencies

Feature staking was conducted with staff from the Ministry of Natural Resources and Forestry (Steve Varga) and Toronto Region Conservation Authority (Elyssa Elton and Gretel Green) to delineate the limits of the PSW, top of bank and dripline on September 13, 2017. Members of the consulting team were also present as well as a land surveyor. The limits of the top of bank and dripline were not staked

in the field but agreed by all parties that the limit of the natural feature (i.e. greater of dripline or top of bank) would be concurrent with the existing chain link fence.

As the staking was undertaken in the fall, the PSW limits staked reflect the limit of the wetland following the high water levels experienced in the summer of 2017.

3.2.5 Aquatic Habitat Assessment

The nearshore aquatic habitat was assessed on October 6, 2017. The nearshore area was accessed using a canoe. Characteristics of the nearshore habitat were documented from the shoreline to a maximum depth of approximately 1 m. Observations were made in regards to the substrate, depth, presence of aquatic macrophytes, shoreline vegetation, signs of recent erosion, presence of man made structures or other anthropogenic influences. A handheld GPS was used to record the position of the observations within 5 m accuracy.

4. Existing Conditions

The subject property fronts onto a bay that is referred to as 'Hydro Marsh' which is connected to Frenchman's Bay through a channel crossed by Liverpool Road. The subject property is currently operating as a storage yard for boats and an office for Frenchman's Bay Marina. Frenchman's Bay and Hydro Marsh are coastal lagoons that are separated from Lake Ontario by a barrier beach. Frenchman's Bay is permanently connected to Lake Ontario by the harbour entrance channel. The eastern and southern portions of the property form part of the Frenchman's Bay Provincially Significant Coastal Wetland Complex.

The site is located in close proximity to silts and clays associated with deep water deposits of glacial Lake Iroquois and modern river deposits consisting of sand, silt and minor gravel. The site is predominantly comprised of native deposits of sandy clayey silt, silty sand, gravelly sand, gravelly silt sand and sand and silt overlain by fill material (Golder 2019).

4.1 Aquatic Resources

As requested by TRCA at the pre-consultation meeting, Sections 4.1.1 and 4.1.2 provide an overview of the watershed in which the subject property occurs.

4.1.1 Frenchman's Bay Watershed

The watershed is approximately 2,260 ha and is comprised of four main tributaries (Amberlea Creek, Dunbarton Creek, Pine Creek and Krosno Creek) and local areas (Bay Ridges and West Shore) which drain into Frenchman's Bay and Hydro Marsh. The watershed is heavily urbanized with more than 75% of the watershed occupied by development and infrastructure. The major areas of natural cover within the watershed are located within the headwaters of Pine Creek and open water courses in Pine Creek and Dunbarton Creek (MMM Group 2009).

The watershed is underlain by several layers of glacial sediment and intersects the shore of the former Lake Iroquois resulting in deposits of lacustrine clary and sands across the upper part of the watershed. The Iroquois Bluff defines the northern boundary of the watershed and groundwater discharge from the foot of the bluff provides baseflow for Dunbarton Creek and Pine Creek (MMM Group 2009).

Frenchman's Bay covers an area of 47 ha including Hydro Marsh. The wetland complex is comprised of 12% swamp and 88% marsh. Aerial photography review of Frenchman's Bay reveals that approximately 60% of the wetland has been lost since 1937 (MMM Group, 2009). Environmental monitoring was undertaken by TRCA in 2002 for Frenchman's Bay and Hydro Marsh and indicated a high level of disturbance within the wetland (MMM Group, 2009).

4.1.2 Krosno Creek Subwatershed

The subject property is located within the Krosno Creek subwatershed. The subwatershed is approximately 670 ha and drains into Hydro Marsh. The surficial geology of the subwatershed is comprised of clay/silt and till with sand/gravel underlaying Hydro Marsh. The majority of the subwatershed is urbanized with approximately 76% occupied by development and infrastructure. The undeveloped portion is limited to the southwest limits of the subwatershed, associated with Hydro Marsh and Alex Roberston Park (MMM Group 2009).

Krosno Creek has a limited extent of open watercourse as the upper reaches are drained by storm sewers and overland flow and the creek is piped north of Highway 401. The creek provides a significant deposition of sediment into Hydro Marsh (MMM Group 2009).

4.1.3 Aquatic Habitat

Hydro Marsh is described as *a warm shallow turbid water system with moderate submergent and emergent vegetation on silty sand substrate (TRCA 2009).* The shoreline and nearshore areas adjacent to the subject property lack the complexity required to provide high quality fish habitat. The majority of the shoreline has been graded and some parts are hardened for shoreline protection. Cover for fish is limited to a couple of dead trees that have fallen in the water from shore and some shallow areas with emergent and submergent aquatic macrophytes. These shallow nearshore areas provide limited opportunity for spawning or as nursery habitat for generalist fish species only. These species are able to thrive in a wide variety of environmental conditions and can make use of a variety of different resources.

Beacon Environmental completed observations of the nearshore habitat and sampling locations are shown on **Figure 2**. It should be noted that the Lake Ontario water level was well above average in 2017. The water level in August 2017 was 67 cm higher than in August 2012 (NOAA 2017). The water was slightly turbid with a greyish tone and with visibility generally less than 1 m depth during the field investigation.

The banks above the water level were steep gradient throughout the study area. At Aquatic Sampling Location 1 (ASL-1; **Figure 2**), the shoreline was hardened by cobble sized stone (rip rap) and boulders.

Shoreline vegetation was dominated by emergent hydrophytic macrophytes with a varying composition of dense stands of cattails (*Typha* spp.; ASL-3), Phragmites (*Phragmites australis*; ASL-1) and Yellow

Existing Conditions

Figure 2

591 Liverpool Road, Pickering
Pickering Harbour Company Ltd.

Legend

- Subject Property
- ELC Communities
- Provincially Significant Wetland (MNRF 2017)
- Dripline (TRCA 2017)
- Aquatic Habitat Survey Locations
- Floodine/High-Water Mark (SKA 2020)

ELC Code	ELC Community
Wetland Communities	
SWT2-2	Willow Mineral Thicket Swamp
MAM2-10	Forb Mineral Meadow Marsh
MAS3-1	Cattail Organic Shallow Marsh
SAF1-1	Water Lily Floating-leaved Shallow Aquatic
Cultural Communities	
CUT1-1	Sumac Cultural Thicket
HE	Hedgerow
ANT	Anthropogenic

UTM Zone 17 N, NAD 83

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Iris (*Iris pseudacorus*; ASL-2 and ASL-3). Woody vegetation is scattered along the shoreline and includes a mature Crack Willow (*Salix fragilis*; ASL-1), Red-Osier Dogwood (*Cornus sericea*) and Willow shrubs (*Salix* spp.; ASL-3). A partially submerged fallen tree provides good cover for fish in the nearshore area at ASL-2.

There is abundant aquatic macrophyte growth throughout the study area comprised of submergent and emergent species including Duckweed (*Lemnoideae* spp.), Canada Waterweed (*Potamogeton canadensis*), Richardson's Pondweed (*Potamogeton richardsonii*), and Slender Pondweed (*Potamogeton pusillus*). Abundant White Water Lily (*Nymphaea odorata*) was observed at ASL-3 and ASL-4.

Throughout the study area, the shoreline is low gradient with average depth of less than 1 m extending out to 5 m from the shoreline. The nearshore substrate consisted of fines throughout the study area with one exception; a small patch of gravel observed at ASL-2.

A section of the shoreline is occupied by an abandoned boat launch/lift constructed of metal and concrete at ASL-2. The foundation of this structure is severely eroding and the concrete is crumbling in many places. A partially collapsed steel wire fence is also present at this location.

Submerged silt fences attached to metal stakes were observed at ASL-4. These fences are located approximately 20 m from the shoreline. The water level was recorded to be approximately 1 m depth in this location. These fences appear to have been installed years ago and are currently in poor condition with large holes and partial detachment from the metal stakes.

4.1.4 Fisheries Resources

The fish community of Frenchman's Bay and Hydro Marsh is described in the Frenchman's Bay Harbour Entrance Environmental Study Report (TRCA, 2009) as follows:

> *Hydro Marsh fisheries monitoring between 1998 and 2008 recorded a total of 1,074 individuals representing a total of 19 species. The dominant species is alewife (*Alosa pseudoharengus*) comprising almost 25% of the total number of fish captured in the study area. Subdominant species present are gizzard shad, brown bullhead, pumpkinseed, common carp, fathead minnow, yellow perch, golden shiner, bowfin, largemouth bass, white sucker and northern pike. Common carp represented more than 50% of the total biomass of the study area. Brown bullhead comprised the second highest biomass followed by bowfin, largemouth bass and pumpkinseed.*

Detailed fisheries surveys were not conducted due to availability of fisheries data and as in-water works are not proposed.

4.2 Terrestrial Resources

4.2.1 Vegetation Communities

The subject property is predominantly anthropogenic as it is comprised of an active marina and municipal parking lot. Frenchman's Bay Provincially Significant Coastal Wetland Complex extends onto the southern and eastern portions of the site.

There are scattered landscape trees located along the existing chain link fence and in the parking lot. These trees were subject to a Tree Inventory and Preservation Plan conducted by D.A. White Treecare (2019).

Vegetation on the subject property was classified according to Ecological Land Classification (ELC) to the vegetation type (**Figure 2**).

4.2.1.1 Wetland Communities

Willow Mineral Thicket Swamp (SWT2-2)

This community forms part of the Frenchman's Bay Provincially Significant Coastal Wetland Complex and is dominated by Sandbar Willow (*Salix exigua*) with Pussy Willow (*Salix discolor*), Bebb's Willow (*Salix bebbiana*), and Red-Osier Dogwood. Associated species include Hybrid Cattail (*Typha x glauca*), Spotted Jewelweed (*Impatiens capensis*), Common Duckweed (*Lemna minor*), and Greater Duckweed (*Spirodela polyrhiza*; **Photograph 1**).

Photograph 1. Willow Mineral Thicket Swamp

Forb Mineral Meadow Marsh (MAM2-10)

This community forms part of the Frenchman's Bay Provincially Significant Coastal Wetland Complex and is comprised of Spotted Jewelweed, Tall Goldenrod (*Solidago canadensis* var. *scabra*), Panicled Aster (*Symphyotrichum lanceolatum*) and Grass-leaved Goldenrod (*Euthamia graminifolia*).

A small area dominated by Water Smartweed (*Polygonum amphibium*) and Water Plantain (*Alisma plantago-aquatica*) are located downstream of a headwall at the western limits of this community (**Photograph 2**).

Photograph 2. Water Smartweed Inclusion at Headwall

Cattail Organic Shallow Marsh (MAS3-1)

This community forms part of the Frenchman's Bay Provincially Significant Coastal Wetland Complex and is dominated by Hybrid Cattail, Broad-leaved Cattail (*Typha latifolia*) and Narrow-leaved Cattail (*Typha angustifolia*). Associated species include Bulbet-Bearing Water Hemlock (*Cicuta bulbifera*), Broad-fruited Bur-reed (*Sparganium eurycarpum*) and Common Reed (*Phragmites australis*) (**Photograph 3**).

Photograph 3. Cattail Organic Shallow Marsh

Water-Lily Floating-leaved Shallow Aquatic (SAF1-1)

This community forms part of the Frenchman's Bay Provincially Significant Coastal Wetland Complex and is dominated by White Water Lily with Common Duckweed, Greater Duckweed and Water-milfoil (*Myriophyllum* sp.; **Photograph 4**).

Photograph 4. Water-Lily Floating-leaved Shallow Aquatic

4.2.1.2 Cultural Communities

Sumac Cultural Thicket (CUT1-1)

This community is dominated by Staghorn Sumac (*Rhus typhina*) with Tatarian Honeysuckle (*Lonicera tatarica*), Common Buckthorn (*Rhamnus cathartica*), and Multi-flora Rose (*Rosa multiflora*). The ground flora is dense and comprised of Tall Goldenrod, Canada Thistle (*Cirsium arvense*), New England Aster (*Symphyotrichum novae-angliae*), Queen Anne's Lace (*Daucus carota*), and Butter and Eggs (*Linaria vulgaris*; **Photograph 5**).

Photograph 5. Sumac Cultural Thicket

Hedgerow (HE)

This community is located along the fence line of the marina and is comprised of planted saplings including White Spruce (*Picea glauca*), Bur Oak (*Quercus macrocarpa*), White Pine (*Pinus strobus*), Red Oak (*Quercus rubra*), and Norway Spruce (*Picea abies*; **Photograph 6**).

Photograph 6. Hedgerow Along Marina Fence Line

Anthropogenic (ANT)

The subject property is predominantly anthropogenic and comprised of an active marina and municipal parking lot. There are scattered landscape trees located along the existing chain link fence and in the parking lot.

4.2.2 Flora

A total of sixty-nine (69) species were recorded on the subject property (**Appendix C**). Native species accounted for 48% of the species recorded on the subject property, the majority of which were located within Frenchman's Bay PSW. No provincially endangered or threatened species or regionally rare species were recorded on the subject property. Two regionally uncommon species – Bur Oak (*Quercus macrocarpa*) and Large Bur-reed (*Sparganium eurycarpum*) were recorded on the eastern portion of the property. Bur Oak occurred within the hedgerow communities and appeared to be planted. Large Bur-reed occurred within Frenchman's Bay PSW along the shoreline of Hydro Marsh. Both regionally uncommon species occurred within the staked feature limits (dripline and PSW).

4.2.3 Amphibians

Surveys for breeding amphibians were conducted on the subject property with a focus on the Frenchman's Bay PSW. The subject property is susceptible to a high degree of background noise from Lake Ontario, Nuclear Power Plant, vehicular traffic and pedestrian traffic, making audio surveys difficult.

During the first survey, a few individuals of Spring Peeper (*Pseudacris crucifer*) were recorded throughout the Frenchman's Bay PSW.

No amphibians were recorded during the second survey.

During the third survey, American Toad (*Anaxyrus americanus*) was recorded in the Frenchman's Bay PSW adjacent to the subject property.

No threatened or endangered amphibian species were recorded and all those observed in the adjacent PSW are common and abundant in Ontario (NHIC 2012).

4.2.4 Birds

4.2.4.1 Breeding Birds

A total of 16 species of breeding birds were recorded on and adjacent to the subject property (**Appendix C**). Surveys were undertaken within Hydro Marsh, by canoe, to the south and east of the subject property.

The avian assemblages at this location fall into one of two categories, either urban generalist species or wetland birds found closely associated with water, reflecting the habitat on site. The most abundant breeding records were common species regularly found in disturbed urban areas including: Red-winged Blackbird (*Agelaius phoeniceus*), Song Sparrow (*Melospiza melodia*), European Starling (*Sturnus vulgaris)*, and House Sparrow (*Passer domesticus*). The wetland birds recorded in the wetland portion of the subject property included Marsh Wren (*Cistothorus palustris*), Willow Flycatcher (*Empidonax traillii*) and Swamp Sparrow (*Melospiza georgiana*).

Two species listed under the ESA were recorded and are discussed in the following paragraphs.

The Least Bittern (*Ixobrychus exilis*) is nesting in wetland areas within the marsh or adjacent the subject property. Least Bittern is a threatened, area-sensitive species that is notoriously difficult to observe due to their cryptic behaviour in tall emergent vegetation characteristic of many shallow marshes. A single Least Bittern was recorded during both breeding bird surveys on the fringes or outside of the property boundaries. Given that only a small portion of marsh extends onto the subject property, it is likely the majority of the bird's territory falls outside of the subject property boundaries and entirely outside of the proposed limit of development.

Barn Swallow (*Hirundo rustica*) is a threatened aerial insectivore and was observed exhibiting breeding behaviour during both breeding bird surveys. Nesting activity was identified on the subject property under a large concrete overhang in the reservoir on the south side of the marina office, however the nest structures were not safely accessible. Approximately two to three pairs were determined to be breeding based on the number of adults present and repeatedly returning to this structure.

The TRCA ranks species of regional conservation concern as L1 (highest concern) through L5 (least concern). Two birds at this location receive an L2 ranking (of regional concern), Least Bittern and Marsh Wren. Both of these birds are wetland specialists and are closely tied to marsh habitats within the Provincially Significant Wetland.

4.2.4.2 Migratory Habitat

Hydro Marsh is a relatively large coastal wetland that is of provincial significance, providing habitat for several species of wetland birds, waterfowl, and songbirds. It is locally known as a hotspot for birding during spring migration given its location on the north shore of Lake Ontario. Many migratory songbirds pass through this area during their spring migration, resting in the trees and vegetation in and around the marsh following a long flight over the lake. Similarly, during fall migration, migrating birds will rest in the vegetation waiting for suitable weather conditions to head south across the lake. These songbirds however, generally rely on the shrub and treed habitats in the park that surround the marsh itself, such as Hydro Park Marsh.

In addition to songbirds, the lakeshore is also an area of concentration for migrating raptors. Unlike migrating songbirds, raptors soar at great heights as they cross the lake. In the autumn, large numbers of raptors can be observed circling over natural areas along the lakeshore. For example, Cranberry Marsh (approximately 10 km to the east) has a long-established raptor watching/counting program where thousands of many species of raptors are counted before they head off south over the lake. The raptors typically fly over the lakeshore areas at great heights in certain weather conditions (i.e., daytime with northerly winds, no precipitation or fog, and often clearing weather). They generally do not interact with the habitat below and could just as easily be observed flying over urban Toronto (here has also been a raptor watch at High Park, Toronto).

4.2.4.3 Overwintering Habitat

There are several species of bird that do not migrate but rather spend their winters in southern Ontario. This includes common backyard or feeder birds such as Black-capped Chickadee (*Poecile atricapillus*), Northern Cardinal (*Cardinalis cardinalis*) and Blue Jay (*Cyanocitta cristata*). Additionally, there are a few other species at also come down from their arctic breeding grounds to spend their winters in the mild winter climate of southern Ontario, including Dark-eyed Junco (*Junco hyemalis*) and American Tree Sparrow (*Spizella arborea*). However, there are generally relatively few birds that overwinter in southern Ontario, and even fewer that overwinter in marshes. The majority of overwintering birds are feeder birds.

The wetland itself and its edges provide habitat for a very few common overwintering birds, including Mallard (when there is open water), Swamp Sparrow, Dark-eyed Junco, House Finch and Black-capped Chickadee.

4.3 Threatened or Endangered Species

In response to a request for information, the MNRF provided correspondence (November 22, 2017) that there are known occurrences of species at risk on or adjacent to the subject property. Beacon has conducted field surveys and/or a general habitat assessment to assess the potential for each of the indicated species to be present. The determination of whether these species have the potential to occur on or adjacent to the subject property was based on the results of seasonal surveys and an assessment of known habitat preferences for each of the species (**Table 3**).

Table 3. Potential Threatened or Endangered Species Which May Occur on Subject Property

Species	ESA[1] Status	SARA[2] Status	COSEWIC[3] Status	Species or Habitat Present on the Subject Property
American Eel *Anguilla rostrata*	Endangered	No Status	Threatened	This species could potentially be associated with Hydro Marsh which is outside the development footprint and will be maintained post-development.
Butternut *Juglans cinerea*	Endangered	Endangered Schedule 1	Endangered	Seasonal studies have confirmed this species is not present.
Little Brown Myotis *Myotis lucifugus*	Endangered	Endangered Schedule 1	Endangered	There is no suitable nursery habitat for this species on the subject property.
Northern Myotis *Myotis septentrionalis*	Endangered	Endangered Schedule 1	Endangered	There is no suitable nursery habitat for this species on the subject property.
Eastern Small-footed Myotis *Myotis*	Endangered	No Status	No Status	There is no suitable nursery habitat for this species on the subject property.
Tri-colored Bat *Perimyotis subflavus*	Endangered	Endangered Schedule 1	Endangered	There is no suitable nursery habitat for this species on the subject property.
Bank Swallow *Riparia riparia*	Threatened	No Status	Threatened	There is no suitable nesting habitat for this species on the subject property. Seasonal studies have confirmed the species is not present.
Barn Swallow *Hirundo rustica*	Threatened	No Status	Threatened	Species nests on the subject property (see Section 4.3.1).
Blanding's Turtle *Emydoidea blandingii*	Threatened	Endangered Schedule 1	Endangered	This species could potentially be associated with the PSW. The PSW will be maintained post-development and is being provided with a buffer.
Chimney Swift *Chaetura pelagica*	Threatened	Threatened	Threatened Schedule 1	There is no suitable nesting habitat for this species on the subject property.
Lake Sturgeon *Acipenser fulvescens*	Threatened	No Status	Threatened	This species could potentially be associated with Hydro Marsh which will be maintained post-development.
Least Bittern *Ixobrychus exilis*	Threatened	Threatened Schedule 1	Threatened	Species is breeding within the wetland portion of the subject property (see Section 4.3.2).

1- ESA – Endangered Species Act
2- SARA – Species at Risk Act
3- COSEWIC – Committee on the Status of Endangered Wildlife in Canada

4.3.1 Barn Swallow

Barn Swallow are threatened both provincially and federally. These birds are aerial insectivores and typically occur in close association with human habitation. These birds construct mud-based nest cups on vertical anthropogenic surfaces including barns or under bridges. Nesting activity was identified under a large concrete overhang in the reservoir on the south side of the marina office, however it was not possible to visually confirm the presence of nests as the area was not safely accessible. Approximately two to three pairs were determined to be breeding based on the number of adults present and repeatedly returning to this structure. Compensation for the impacts to this species will be provided in accordance with the requirements of Section 23.5 of the ESA.

4.3.2 Least Bittern

Least Bittern are threatened both provincially and federally. A single Least Bittern was recorded during both breeding bird surveys on the fringes or outside of the property boundaries within the PSW. It is likely the majority of the bird's territory fall outside of the property boundaries as only a small portion of marsh extends onto the subject property. This species would not be using the proposed development area (currently a boat storage area) as it does not provide suitable habitat.

4.4 Other Wildlife

Based on the existing habitat conditions on the property the potential for wildlife habitat was assessed, however no other specific wildlife surveys were conducted. There is evidence of American Beaver (*Castor canadensis*) activity in the Willow Mineral Thicket Swamp (SWT2-2), with numerous willow stumps and the presence of a lodge (**Photograph 7**).

Photograph 7. Beaver Lodge

Additionally, the property likely provides habitat for a limited number of common disturbance-tolerant wildlife species. Some mammals common to southern Ontario are also likely present in limited numbers. For example, Gray Squirrel (*Sciurus carolinensis*), Racoon (*Procyon lotor*), Striped Skunk (*Mephitis mephitis*), Eastern Cottontail (*Sylvilagus floridanus*), Red Fox (*Vulpes vulpes*), Woodchuck (*Marmota monax*) and several other common species are likely to occur.

MNRF correspondence identified the potential for a number of species of special concern to be present on or adjacent to the property. A habitat assessment was conducted to determine if suitable habitat was present for any special concern species (**Table 4**).

Table 4. Special Concern Species Which May Occur on Subject Property

Species	ESA[1] Status	SARA[2] Status	COSEWIC[3] Status	Habitat Present on the Subject Property
Black Tern *Chlidonias niger*	Special Concern	No Status	No Status	Former breeder in the PSW however, seasonal studies have confirmed this species is not currently present in the PSW immediately adjacent to the subject property.
Northern Map Turtle *Graptemys geographica*	Special Concern	Special Concern Schedule 1	Special Concern	This species could potentially be associated with the PSW. The PSW will be maintained post-development and is being provided with a buffer.
Peregrine Falcon *Falco peregrinus*	Special Concern	Special Concern Schedule 1	No Status	There is no suitable habitat for this species on the subject property and the species was not recorded during breeding surveys, breeds nearby.
Snapping turtle *Chelydra serpentina*	Special Concern	Special Concern Schedule 1	Special Concern	This species is likely associated with the PSW, no evidence of nesting on the subject property recorded during field investigations.
Monarch *Danaus plexippus*	Special Concern	Special Concern Schedule 1	Endangered	There is no suitable stopover habitat (i.e. conifer cover) for this species in the marsh areas on the subject property and low abundance of preferred nectar plants, such as goldenrods and asters and Common Milkweed anywhere on the subject property.

4.5 Significant Wildlife Habitat

Significant Wildlife Habitat designation is the responsibility of the planning authority and determination of it on a site by site basis is generally not an appropriate manner in which to determine this constraint given that it is necessary to understand the context of the habitat within the local environment. In this case, the City has not identified significant wildlife habitat within their jurisdiction. There is guidance provided in two provincial documents: the Significant Wildlife Technical Guide (OMNR 2000) and the Natural Heritage Reference Manual (MNRF 2010).

The MNRF has developed criteria for the assessment of significant wildlife habitat for Ecoregion 6E in which the subject lands are found (MNRF 2015). Significant Wildlife Habitat is generally divided into four broad categories including: seasonal concentration areas, rare vegetation communities and specialized habitats for wildlife, habitats of species of conservation concern, excluding habitats of threatened and endangered species, and animal movement corridors. An assessment of significant wildlife habitat for the subject lands is provided in **Table 5**.

Table 5. Assessment of Significant Wildlife Habitat for the Subject Property

Wildlife Habitat Category	Presence or Absence on Subject Lands Based on MNRF Criteria for Ecoregion 6E	
	Absent	**Potential Presence**
Seasonal Concentration Areas for Wildlife Species		
Waterfowl Stopover and Staging Areas (Terrestrial)	The subject property does have a small CUT1 along the Hydro Marsh shoreline but this community does not experience spring flooding from melt water or run-off.	
Waterfowl Stopover and Staging Areas (Aquatic)		Hydro Marsh may provide suitable habitat.
Shorebird Migratory Stopover Area		Hydro Marsh may provide suitable habitat.
Raptor Wintering Area	X	
Bat Hibernacula	X	
Bat Maternity Colonies	X	
Bat Migratory Stopover Area	X	
Turtle Wintering Areas	X	Hydro Marsh may provide suitable habitat.
Reptile Hibernaculum	X	
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	X	
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs)	X	
Colonially-Nesting Bird Breeding Habitat (Ground)	Not on subject property.	Hydro Marsh off property provides suitable habitat (Common Tern).
Migratory Butterfly Stopover Areas	The subject property is on the Lake Ontario shoreline but is less than 10 ha in area and does not contain forest or field habitat. The subject property is primarily anthropogenic with a low abundance of preferred nectar plants, such as goldenrods and asters and Common Milkweed (*Asclepias syriaca*) limited to the narrow fringe of upland vegetation along the Hydro Marsh shoreline. Hydro Marsh does not provide suitable habitat.	
Land bird Migratory Stopover Areas	While the subject property is on the lakeshore, its small size and absence of natural vegetation	Hydro Marsh and associated woody upland vegetation provides suitable habitat.

Wildlife Habitat Category	Presence or Absence on Subject Lands Based on MNRF Criteria for Ecoregion 6E	
	Absent	**Potential Presence**
	precludes it from providing this function.	
Deer Yarding Areas	X	
Deer Winter Congregation Areas	X	
Rare Vegetation Communities		
Cliffs and Talus Slopes	X	
Sand Barren	X	
Sand Barren	X	
Alvar	X	
Old Growth Forest	X	
Tallgrass Prairie	X	
Savannah	X	
Provincially Rare S1, S2 and S3 vegetation communities	X	
Regionally or Locally Rare vegetation communities	X	
Specialized Habitats of Wildlife		
Waterfowl Nesting Area	The upland habitat is a narrow fringe along the Hydro Marsh shoreline and does not meet the criteria as it is a maximum width of less than 20 m. Breeding bird surveys confirmed waterfowl were not nesting on the subject property.	May occur elsewhere around Hydro Marsh.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	There are no mature trees within the subject property that would support perching and foraging opportunities are not present within the developable area.	Bald Eagle and Osprey could perch in Hydro Marsh outside of subject property in mature trees, but are not nesting.
Woodland Raptor Nesting Habitat	X	
Turtle Nesting Areas	X	
Seeps and Springs	X	
Amphibian Breeding Habitat (Woodland)	X	
Amphibian Breeding Habitat (Wetlands)	PSW on the subject property does not support two species of frogs with the required densities to meet the criteria.	Hydro Marsh may provide suitable habitat.
Woodland Area-Sensitive Bird Breeding Habitat	X	
Habitats of Species of Conservation Concern considered SWH		
Marsh Bird Breeding Habitat	One Marsh Wren recorded during breeding bird surveys in Hydro Marsh on the subject property.	Hydro Marsh provides suitable habitat and could be considered SWH based on the recommended criteria.
Open Country Bird Breeding Habitat	X	
Shrub/Early Successional Bird Breeding Habitat	X	

Wildlife Habitat Category	Presence or Absence on Subject Lands Based on MNRF Criteria for Ecoregion 6E	
	Absent	**Potential Presence**
Terrestrial Crayfish	X	
Special Concern and Rare Wildlife Species	X	Hydro Marsh provides suitable habitat and could be considered SWH based on the recommended criteria.
Animal Movement Corridors		
Amphibian Movement Corridors	X	
Deer Movement Corridors	X	

The wetland itself is Provincially Significant and supports elements that would also qualify as Significant Wildlife Habitat depending on whether or not the recommended thresholds suggested by the MNRF were adopted by the municipality. However, there is nothing within the developable portion of the subject property that would warrant identification as Significant Wildlife Habitat.

4.6 Landscape Connectivity

Landscape connectivity is recognized as an important component of natural heritage planning. 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 altered through past and present anthropogenic use and is highly urbanized. From a wildlife perspective, the property is situated directly adjacent to existing urban land uses to the north and west. Frenchman's Bay Provincially Significant Coastal Wetland Complex and the Lake Ontario shoreline located on the southern and eastern portions of the property forms part of both a terrestrial and aquatic corridor within the local landscape. This corridor provides numerous ecological functions including wildlife habitat, shoreline protection, connecting core natural areas, and facilitating seed dispersal and exchange of genetic material.

This linkage for movement will be maintained post development.

5. Assessment of Natural Heritage Features

The findings of the background review and field investigations have been relied upon to confirm whether the subject property supports any of the natural heritage components recognized under the PPS, and the City policies. The Natural Heritage Reference Manual (MNRF 2010) was consulted to provide additional technical guidance where required.

Frenchman's Bay Provincially Significant Coastal Wetland Complex and Hydro Marsh is located on the eastern and southern portions of the subject property. These features also form part of the candidate Frenchman's Bay Coast Marsh Candidate Life Science ANSI.

Seasonal field investigations were conducted in June 2017 to confirm the presence of threatened or endangered avian species. Barn Swallow was recorded as breeding on the subject property and will be addressed with the MECP. Least Bittern was recorded within the PSW on the subject property and its habitat will be protected with a buffer. No other threatened or endangered species have been recorded on the subject property.

There are no significant woodland or valleyland features on the subject property. This has been confirmed in the field and through consultation with staff from TRCA.

The Planning Authority has not identified Significant Wildlife Habitat on the subject property or within its planning boundaries. However, based on Beacon's review in Section 4.5, the only portion of the subject property that has the potential to provide Significant Wildlife Habitat is the (already significant) wetland. As described in subsequent sections, development is not proposed within these features and naturalized buffers and mitigation measures (i.e. design and lighting) are recommended to protect their function.

6. Proposed Development Plan

The proposed development consists of two fifteen storey, multi-use (commercial and residential) buildings with underground parking (**Figure 3**). Site access will be provided from a private road on the north side of the site from Liverpool Road. An Open Space Block separates the proposed buildings from the Frenchman's Bay Provincially Significant Coastal Wetland Complex and Hydro Marsh.

6.1 Site Servicing

A Functional Servicing Report (FSR) has been prepared by Sabourin Kimble & Associates Ltd. (March 2020). A summary of the FSR with respect to stormwater and servicing is detailed below.

6.1.1 Stormwater Management

Stormwater will be collected in an internal storm sewer and discharged to the Open Space Block on the south side of the subject property via a proposed headwall. A bioswale is proposed immediately downstream of the headwall to provide a treatment train approach to achieve 80% TSS.

Quality control will be provided through an Oil and Grit Separator (OGS) system and low impact development (LID) measures including a green roof. The existing headwall at Krosno Creek and existing stormwater pipes downstream of the proposed headwall will be decommissioned and removed.

Proposed Development

Figure 3

591 Liverpool Road, Pickering
Pickering Harbour Company Ltd.

Legend

- Subject Property
- Proposed Development
- Proposed Development Limit
- Proposed Bio-Swale
- ELC Communities
- Provincially Significant Wetland (MNRF 2017)
- Provincially Significant Wetland + 20 m
- Provincially Significant Wetland + 30 m
- Dripline & Top of Bank (TRCA 2017)
- Dripline & Top of Bank + 10 m
- Floodine and High-Water Mark (SKA 2020)
- Floodline and High-Water Mark + 10 m

ELC Code	ELC Community
Wetland Communities	
SWT2-2	Willow Mineral Thicket Swamp
MAM2-10	Forb Mineral Meadow Marsh
MAS3-1	Cattail Organic Shallow Marsh
SAF1-1	Water Lily Floating-leaved Shallow Aquatic
Cultural Communities	
CUT1-1	Sumac Cultural Thicket
HE	Hedgerow
ANT	Anthropogenic

UTM Zone 17 N, NAD 83

First Base Solutions
Web Mapping Service 2019

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Project 216450
March 2020

BEACON ENVIRONMENTAL

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6.1.2 Sanitary Servicing

A 900 mm diameter trunk sewer is located within the western portion of the site and conveys flows north to the pumping station. Sanitary drainage for the proposed buildings will be provided internally and connected to the existing 900 mm trunk sewer via a single sanitary stub proposed at an existing manhole. Region of Durham staff have indicated that there is sufficient capacity with the existing 900mm diameter sewer for the subject lands.

6.1.3 Watermains

A 200 mm PVC watermain is located adjacent to the subject lands on the east side of Liverpool Road. An internal watermain system is proposed to be connected to the existing 200 mm watermain.

7. Impact Assessment

Background review and field investigations identified that the subject property is primarily comprised of an active marina storage yard and associated office building. The eastern and southern portions of the property form part of the Frenchman's Bay Provincially Significant Coastal Wetland Complex.

Potential effects of the proposed development of the property on the adjacent natural heritage features and functions could include:

7.1 Alteration in Surface Water Conveyance to the PSW

There is potential for the proposed development to alter surface water flows post-development which may result in flows being directed to existing stormwater systems. As the PSW is a coastal wetland, it is more sensitive to fluctuations in the Lake Ontario water levels. Surface water and groundwater inputs from the subject property to the PSW are expected to be minimal.

7.2 Shadow Effects

A Sun/Shadow Analysis was completed for the proposed development and included shadowing impacts during the spring equinox, summer solstice and winter solstice (TBG 2020). To assess potential impacts on the PSW and its functions, the following results were considered:

- The shadow cast by the proposed buildings is limited to the afternoon hours after 3 pm during the spring and summer months and only the portion of the PSW located east of the proposed development falls under shadow;
- During the spring equinox there will not be any shadow cast over the PSW until mid-afternoon (after 3 pm); and
- During the summer solstice (i.e. the growing season), there will not be any shadow cast over the PSW until later afternoon (after 5 pm).

The Sun/Shadow Analysis shows that during the growing season, the PSW will continue to receive sun in the morning and early afternoon when the sun's rays are the strongest. Shadow casting will be limited to those periods of lower light intensity and it is anticipated that light reflection from other surfaces surrounding the PSW will reduce potential effects.

As the wetland is situated to the east of the building, potential shadow effects of the building are minimized as the wetland remains unaffected by shadows to the north.

Birds will not be affected by shadow from the proposed buildings as the amount of shadow is minimal and the existing community of birds is primarily urban-tolerant as the existing matrix of this PSW is urban. Birds such as Common Tern (*Sterna hirundo*) are nesting on the other side of the wetland and mainly forage over the open water away from the proposed development area.

7.2.1 Amphibians and Reptiles

To assess the potential negative effects of shading on amphibians and reptiles breeding and nesting in the PSW it is necessary to determine how the predicted spring and summer shadows overlap spatially and temporally with amphibian breeding and reptile nesting. With regard to amphibian breeding it should be noted that the spatial extent of the shadows cast on the PSW in the spring and summer is very small relative to the size of the available breeding habitat for amphibians in the PSW. Additionally, as indicated in the sun/shadow analysis the shading of the PSW will not occur in the spring until after 3 pm and in the summer not until after 5 pm. As such, the thermal effects on breeding amphibians or their eggs within the shadow is expected to be negligible. With respect to the potential effects of PSW shading on reptile breeding, specifically turtles, it is unlikely that breeding in the spring would be affected by the shading that would occur after 3 pm. As indicated previously, the spatial extent that will be shaded is very small relative to the size of the PSW and there are no physical barriers that would prevent turtles from shifting their mating activities outside of the shaded zone after 3 pm.

Regarding the assessment of effects on nesting turtles or nests, the key sun/shadow results are from June when the PSW and adjacent terrestrial area will not be under shadow until late afternoon. It is recognized that turtles choose nest sites that have high solar exposure to maximize the heat units available to developing embryos. As such, an increase in shading of a site in the late afternoon could decrease the likelihood that a turtle would nest in that area. However, in this location, no terrestrial areas with a high likelihood of nesting by turtles were documented within the area of predicted shadowing. Based on the assessment provided above, negative effects on breeding amphibians and reptiles as a result of shading are not anticipated.

7.3 Effects on Migratory and Overwintering Bird Habitat

The proposed development of the subject property will not result in the loss of migratory bird habitat as there are no natural vegetation communities within the area proposed for development on subject property. Several individual trees will be removed, but a larger naturalized area will be created in the buffer that will result in a net increase to naturalized upland habitat, thus over time as the trees and shrubs mature, they will potentially contribute to migratory bird habitat.

Post-development, there will be no change to the overwintering function of the wetland. On the subject property, the creation of a naturalized buffer may result in a slight increase in overwintering habitat for common wintering birds.

7.4 Stormwater Infrastructure within Open Space Block

A new headwall and bioswale is proposed within the Open Space Block. The proposed headwall is located 20 m from the PSW and the bioswale extends from the proposed headwall to the existing headwall (**Figure 3**). In order to match the existing grade, a minor encroachment (18 m^2) of the bioswale into the staked dripline and below the top of bank is required. This area is entirely within the footprint that will be disturbed by the removal of the existing headwall and storm sewer as discussed in Section 8.5.1. Following construction, this area will be fully vegetated with native species.

7.5 Bird-Building Collisions

The north shore of Lake Ontario is located along a spring and fall migration route for birds, specifically migratory songbirds. The subject property is located within an important migratory zone, which encompasses both the Atlantic and Mississippi flyways. Frenchman's Bay provides important habitat for songbird and shorebirds, and waterfowl and birds of prey are also common migrants (TRCA 2009).

Bird mortality as a result of building collision during migration is now well documented (FLAP Canada). Two factors increase the potential for birds to collide with a building: (1) attraction to the light emitted from the building during night migration movements and (2) birds cannot perceive images reflected in glass as reflections during daylight hours and will fly into windows that appear to be trees or sky.

FLAP Canada data indicates songbirds are the most numerous group of birds killed as a result of striking obstacles such as buildings.

While also located along a raptor migration path, there is no real concern for the migrating raptors as these birds migrate by day, fly in good weather conditions and will be at much higher altitudes on migration, and they generally fly around obstacles such as tall buildings.

7.6 In-Water Works

The proposed development does not include any in-water works as all development is setback from the high-water mark a minimum of 21.5 m. In order to help mitigate the impacts of the proposed development, in-water works have been identified as enhancement opportunities for Hydro Marsh and are discussed below in Section 8.5.1.

7.7 Light Effects on Wildlife

The introduction of two residential towers to the waterfront, adjacent to the PSW, have the potential to increase light adjacent to the wetland which could have effects on wildlife using the area. Further, the

noise associated with the construction phase of the project has potential to cause the displacement of wildlife resulting from site preparation and disturbance during construction.

7.8 Dewatering for Underground Parking

The impacts related to the dewatering for the underground parking garage will be confirmed through detailed design.

7.9 Tree Removal

The proposed development will require the removal of 12 trees within the proposed development area and injury to 19 trees adjacent the proposed development, details of tree removal and impact are included in the companion report titled, *Arborist Report for 591 Liverpool Road* (D.A. White Tree Care, 2019).

7.10 Erosion and Sedimentation During Construction

As the proposed development is an existing parking and storage area, it currently abuts the PSW and shoreline vegetation. Without proper mitigation there is potential for soil mobilization during site grading and stockpiling of material into the adjacent wetland and waterbody.

8. Recommended Mitigation Measures

In order to mitigate the potential effects of the proposed development on the adjacent natural features, the following design and construction mitigation measures are recommended.

8.1 Buffer to Natural Heritage Features

The limits of the natural features present on site have been staked with MNRF and TRCA. Natural feature limits include PSW, dripline and top of bank on the subject property. A landscape concept plan has been developed by Marton Smith Landscape Architects (**Appendix E**) for the buffer area. The buffer will be naturalized and enhanced from the current existing conditions (i.e. hardened surfaces). The concept plan incorporates herbaceous ground covers, shrubs and trees to provide a tiered vegetation community and will enhance the habitat function and diversity of the natural features. Species selected for the plantings will be native to the eco-region, well-adapted to site conditions, and complimentary to those present in the existing natural features. The naturalization and restoration of this buffer area results in the conversion of existing hard surfaces (0.43 ha) to natural area, expanding on the natural heritage system. A small portion of the PSW buffer (85 m^2), primarily boat storage area but including the minor encroachment into the upland contiguous vegetation, will be comprised of a

headwall and bioswale for stormwater management. The bioswale will be completely vegetated with native species post grading.

8.1.1 Frenchman's Bay Provincially Significant Coastal Wetland Complex

A variable vegetated buffer of 24.1 m to 38.0 m is proposed from the PSW with an overall buffer area of 0.53 ha. This buffer area is marginally smaller, 137 m^2 (0.01 ha), than the area of 0.54 ha that would be provided by a continuous 30 m buffer (**Figure 4**), however, the increased function within the buffer will mitigate this deficit. Currently the majority of the proposed buffer (0.43 ha) is comprised of a gravel storage yard. The naturalization of this area will create a new area upland habitat between the proposed development and the PSW that may also provide stopover habitat for migratory songbirds and breeding habitat for the urban-tolerant species that occur in the area.

8.1.2 Hydro Marsh Shoreline

A variable vegetated buffer of 21.5 m to 35.8 m is proposed from the high-water mark/floodline and contiguous vegetation dripline. Wildlife movement along the shoreline is currently limited by the existing, heavy anthropogenic use and physical barriers (i.e. chain link fence). The proposed variable buffer will enhance the shoreline corridor by increasing native plant cover and diversity, habitat function and connectivity which will provide an overall benefit compared to existing conditions.

The proposed development is also setback greater than 10 m from the floodline and highwater mark (SKA 2020).

8.1.3 Woody Vegetation Dripline and Top of Bank

A variable vegetated buffer of 18.9 m to 34.0 m is proposed from the dripline and top of bank as agreed upon with the TRCA, which exceeds the minimum buffer requirement of 10 m and is of a sufficient width to protect the dripline from the proposed development. This buffer will prevent the encroachment of the proposed development into the root zones of any trees located along the shoreline. The proposed minimum buffer of 18.9 m will provide a setback from the feature which does not currently exist.

The small area of encroachment (18 m^2) for the removal of the existing infrastructure and bioswale grading below the top of bank will be completely restored and planted with native vegetation post grading.

8.2 Water Balance

Currently there are two existing catch basins in the boat storage yard that collect overland drainage and outlet south to a headwall that discharges into Hydro Marsh and a portion of the storage yard (0.55 ha) sheet drains towards the PSW. Post-development, surface water from the proposed buffer area will overflow to the wetland, will be very similar to the existing condition with an area of 0.56 ha of drainage being maintained. It is not anticipated that small increase in overland flow area (0.01 ha) will impact the feature as the Frenchman's Bay PSW is not overly sensitive to changes in surface water flow but is more sensitive to fluctuations in the Lake Ontario water levels (SKA 2020).

Stormwater from the proposed development footprint is proposed to outlet to new headwall and bioswale which will overflow into the PSW and Hydro Marsh.

8.3 Low Impact Development Techniques (LIDs)

In order to minimize the impact of development on the future water balance for the site, infiltration mitigation measures will be promoted and incorporated within the proposed development (SKA 2020). As noted in the FSR, due to the proximity of the subject property to Lake Ontario, it is anticipated that the water table will be too high to allow for infiltration galleries. Green roofs are proposed on both buildings for the 12th and 15th floors.

8.4 Regulated Avian Species

8.4.1 Barn Swallow

Barn Swallow nests can be removed outside of the breeding season, however, prior to removal, the MECP Registry process must be followed. Compensation structures can be built after a nesting structure is removed, but must be built before the next nesting season, so that no breeding season is missed. Section 23.5 of *Ontario Regulation 242/08* provides direction on this process. A Mitigation and Restoration record will be created and the structures must be monitored for three years.

8.4.2 Least Bittern

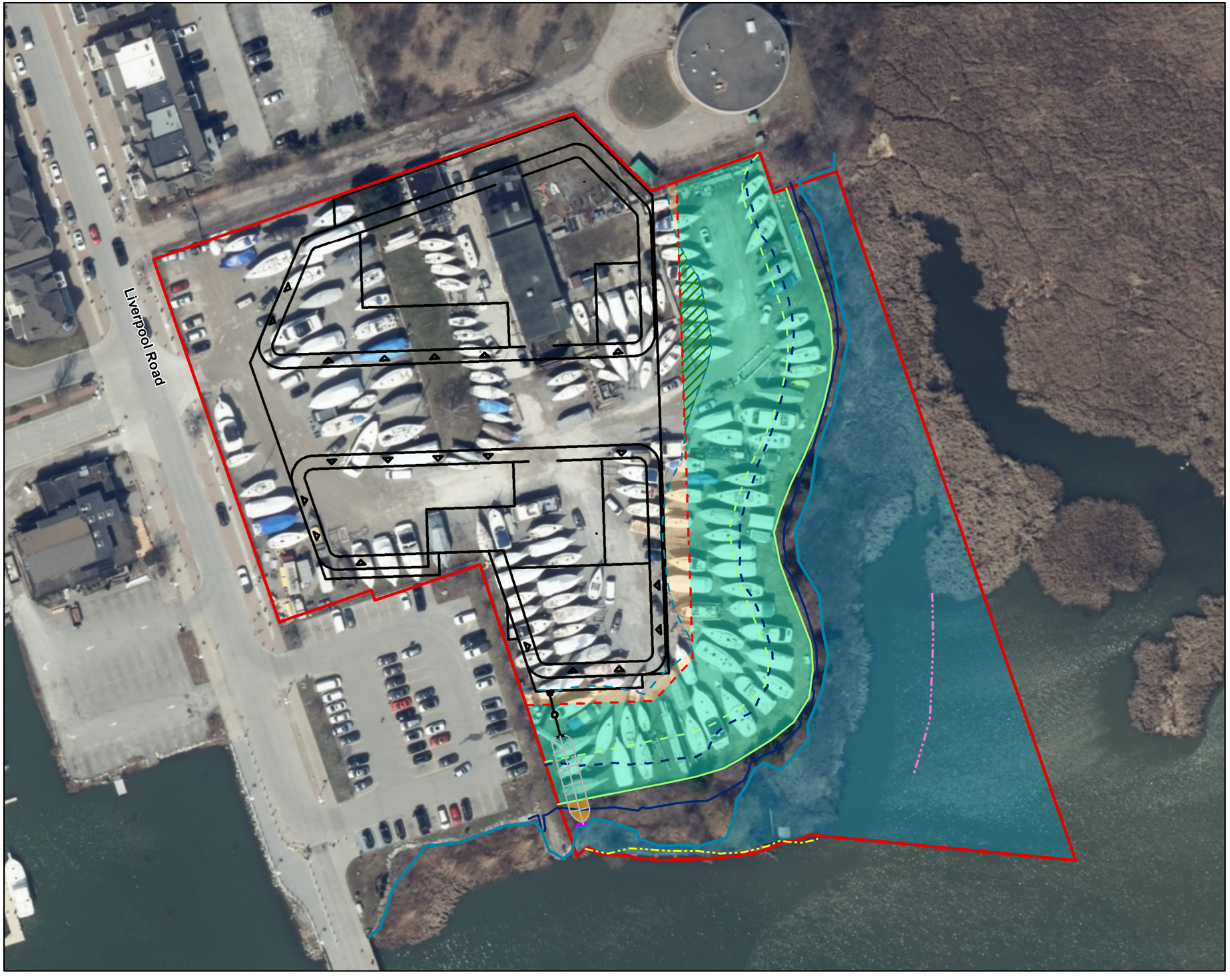
Impacts to suitable habitat are being mitigated by design as the development envelope is confined to the existing hardscape and no encroachment into the PSW is proposed. Additional protection to the habitat is provided from the variable buffer to the PSW (i.e. 24.1 m to 38.0 m).

The species shows some resiliency to urban development at this site as it has persisted in the area, despite the surrounding land use for many years. With the implementation of the mitigation recommendations, no additional impact to Least Bittern habitat are anticipated from the proposed development.

8.4.3 Bird Strike Risk Reduction

While there are no guidelines specific to the City of Pickering, the Toronto Green Standard (2014) and the Bird Friendly Development Guidelines (2007), prepared by the City of Toronto, have been referenced with regards to Bird Strike Mitigation Measures in the context of the proposed development.

The guidelines should be implemented and include architectural design measures that specifically address glass type, reflectiveness, and the lighting of buildings. Efforts to reduce large, unbroken, reflective surfaces or see-through glass will be reviewed and incorporated into the building design to mitigate potential impacts to migratory birds. The Bird Friendly Development Guidelines are recommended for assessment and implementation for incorporation into building design by the project architect.



Proposed Buffer Encroachment and Enhancement Areas

Figure 4

591 Liverpool Road, Pickering
Pickering Harbour Company Ltd.

Legend

- Subject Property
- Proposed Development Limit
- Proposed Development
- Proposed Bio-Swale
- Provincially Significant Wetland (MNRF 2017)
- Provincially Significant Wetland + 30 m
- Dripline & Top of Bank (TRCA 2017)
- Dripline & Top of Bank + 10 m
- Floodline and High-Water Mark (SKA 2020)
- Floodline and High-Water Mark + 10 m
- Provincially Significant Wetland 30 m Buffer Encroachment (0.03 ha)
- Provincially Significant Wetland > 30 m Buffer (0.02 ha)
- Proposed Buffer Enhancement (0.43 ha)
- Feature Encroachment for Bioswale (18.40 m^2)

Feature Enhancement Opportunities

- Existing Headwall to be Removed
- Steel Wire Fence (On The Shoreline)
- Filter Cloth Fence (20 m From Shore; Submerged)

UTM Zone 17 N, NAD 83

First Base Solutions
Web Mapping Service 2019

N W E S

0 5 10 20 Metres

1:900

Project 216450
March 2020

BEACON ENVIRONMENTAL

C:\Dropbox\Dropbox (Beacon)\All GIS Projects\2016\216450\MXD\2019-01-30_Figure04_ProposedBufferEncroachmentandEnhancementAreas_216450.mxd

8.5 Aquatic Habitat Enhancement Opportunities

Three opportunities for improvement of the aquatic habitat and function of Hydro Marsh are recommended that could provide enhancement to the PSW and fish habitat along the shoreline (**Figure 4**). They are as follows:

- Removal of the existing headwall located along the Hydro Marsh shoreline and restoration from the shoreline to top of bank;
- An old steel wire fence is present along the shoreline west of the access pad near ASL-1. The fence is partially collapsed and in the water at ASL-2. The removal of this structure and fence and revegetating the area is an opportunity to improve the aquatic habitat along the shoreline within the PSW; and
- There is an old submerged filter cloth fence attached to steel posts present approximately 20 m from the shoreline at ASL-4. The fence is in poor condition and its current function is not clear. Removing this filter cloth fence is an opportunity to improve the nearshore aquatic habitat.

In Ontario, the MNRF has the responsibility for setting timing window guidelines. Any in water works (i.e. below the high water level), including the headwall removal and proposed enhancement measures shall respect the prescribed fisheries timing window. Restricted activity timing windows are applied to protect fish from impacts of works or undertakings in and around water during spawning migrations and other critical life history stages. A restricted activity timing window is recommended for the protection of spring spawning species between March 15 and July 15 based on the fish community documented in Hydro Marsh and the guidelines on the Fisheries and Oceans Canada (DFO) website.

A DFO Project Notification Form will be completed and submitted to DFO for the removal of the headwall and proposed enhancement works.

These works will be conducted in consultation with TRCA as they are within a regulated area and a permit may be required. Detailed restoration plans will be prepared for the area of shoreline where the existing headwall is located.

8.6 General Mitigation Measures

8.6.1 Tree Preservation Plan

A companion Tree Inventory and Preservation Plan has been prepared by D.A. White Tree Care (January 2019) and has been submitted under a separate cover.

Tree protection measures detailed in the report should be in place on the property prior to construction and should be inspected as prescribed. Trees removed should be replanted on the subject property post construction.

8.6.2 Timing of Vegetation Removal

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. It is recommended that during the peak period of bird nesting (i.e., between mid-April and mid-July), no vegetation clearing or disturbance to nesting bird habitat should occur. Vegetation includes grasses and shrubs as well as trees.

In the 'shoulder' seasons of April 1 to April 15, and July 16 to August 31, vegetation clearing could occur, but only after an ecologist with appropriate avian knowledge has surveyed the area to confirm lack of nesting. For any proposed clearing of vegetation within the breeding bird season an ecologist should undertake detailed nest searches immediately prior (within two days) to site alteration to ensure that no active nests are present.

If nesting is found, then vegetation clearing in an area around the nest, the size of which depends on the specific circumstances, has to wait until nesting has concluded. The likelihood of nesting birds being present in the 'shoulder' seasons also depends on the habitat type.

From September 1 through to March 31, vegetation clearing can occur without nest surveys, but the need to ensure nest protection still applies (i.e., if an active nest is known to be present it must be protected).

8.6.3 Minimizing Light Effects

The objective will be to reduce light effects on the adjacent wetland and to minimize the effects of lighting on migratory songbirds through the elimination/reduction of direct upward lighting, reduction of spill lighting (i.e. lighting that spills beyond areas that are required to be lit) and optimization of useful light.

Efficient external lighting should be used only to illuminate the surrounding site of a building providing enough illumination to effectively make the site safe and secure at night. Light fixtures should project light downward to minimize direct upward light, spill light, glare and artificial sky glow. Examples of lighting fixtures that effectively project light downwards, minimizing direct upward light, spill light, glare and artificial sky glow are provided in the Bird Friendly Guidelines and it is recommended that they be incorporated into the building design. Use of these types of lighting fixtures is encouraged for external site lighting.

Aesthetic or vanity lighting put on the external areas of buildings, should be eliminated at best or projected downwards.

With respect to internal lighting in residential buildings, building managers and owners can assist in raising awareness of helpful individual practices including turning off lights, motion detected lights and closing blinds at night by notifying and reminding their tenants of these 'best practices' throughout the migratory seasons. This information will be compiled in a brochure and distributed to residents upon sale of units.

8.6.4 Erosion and Sediment Control

Construction works such as grading, grubbing and excavation can cause the movement of sediment into the wetland or adjacent shoreline. An erosion and sediment control plan will be prepared prior to construction works. Silt fencing should be installed at the limit of development (i.e. outside feature and proposed buffer) to minimize sediment leaving the construction area 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.

8.7 Summary of Mitigation Measures and Recommendations

A number of design considerations, mitigation measures and enhancement opportunities have been recommended to protect the ecological form and function of the Frenchman's Bay PSW and Hydro Marsh adjacent to the proposed development and are summarized below in **Table 6**.

Table 6. Potential Effects and Recommendations

Potential Effect	Recommended Mitigation Measure
Development Adjacent to Natural Features	• Provide and restore a naturalized buffer to Natural Heritage Features (PSW, Hydro Marsh, Woody Vegetation, Top of Bank) • Naturalization of existing hard surfaces (0.43 ha) will provide a vegetated buffer from the proposed development and expand on the natural heritage system. • Restoration plan will include herbaceous ground covers, shrubs and trees to provide a tiered vegetation community and will enhance the habitat function and diversity of the natural features
Change in Delivery of Water to Wetland	• The proposed area draining to the wetland and Krosno Creek is very similar to the existing drainage area (0.56 ha vs, 0.55 ha) and the small increase is not expected to effect the PSW. • Maintain stormwater discharge from the subject property to the PSW and Hydro Marsh.
Hardened Surfaces, Reduced Infiltration	• Incorporate Low Impact Development Techniques (LIDS) including a green roof on the12th and 15th floor), a bio-swale within the buffer lands. • The 5 mm on-site infiltration will be maintained.
Bird Collisions with Buildings	• Incorporating recommendations from the Bird Friendly Development Guidelines to the extent feasible will reduce the number of songbird collisions with the buildings. • Implement architectural design measures that specifically address glass type, reflectiveness, and the lighting of buildings.
Aquatic Habitat Restoration and Enhancement	• Remove the existing headwall located along the Hydro Marsh shoreline and restore the shoreline to top of bank. • Remove old access pad, steel wire fence, old submerged filter cloth fence and revegetate the areas to improve the nearshore aquatic habitat.

Effects on Trees	• Preserve trees located within the natural features and protected from impacts to their root zones through the erection of tree protection fencing. • Trees removed should be replanted on the subject property post construction.
Effects on Vegetation	• During the peak period of bird nesting (i.e., between mid-April and mid-July), no vegetation clearing or disturbance to nesting bird habitat should occur. Vegetation includes grasses and shrubs as well as trees. • In the 'shoulder' seasons of April 1 to April 15, and July 16 to August 31, vegetation clearing could occur, but only after an ecologist with appropriate avian knowledge has surveyed the area to confirm lack of nesting.
Light Effects on Wildlife	• Apply Bird Friendly Guidelines to the exterior design of the buildings. • Design should reduce light effects on the adjacent wetland and to minimize the effects of lighting on migratory songbirds through the elimination/reduction of direct upward lighting, reduction of spill lighting (i.e. lighting that spills beyond areas that are required to be lit) and optimization of useful light. • Prepare a brochure and distributed to residents upon sale of units to raise awareness of light effects on wildlife and best practices for unit owners to minimize effects.
Movement of Sediment or Erosion into Adjacent Natural Features	• Develop and implement an Erosion and Sediment Control Plan

9. Policy Conformity

9.1 Provincial Policy Statement

The area of proposed development area on the subject property is almost entirely anthropogenic and is outside the limits of all natural features. The proposed development footprint does not contain significant wetlands, significant woodlands, significant valleylands, or significant areas of natural and scientific interest.

The Planning Authority has not identified Significant Wildlife Habitat on the subject property or criteria for its identification. Frenchman's Bay Provincially Significant Coastal Wetland Complex which includes Hydro Marsh on the eastern and southern portions of the subject property been designated significant features at the provincial level and will be protected and buffered, regardless of whether or not they also reach the test of significant wildlife habitat. The proposed development of the subject lands will not result in the removal of any portion of the wetland and a restored and naturalized buffer is proposed that will protect the natural features and their functions.

Barn Swallow and Least Bittern have been recorded on the property through seasonal field investigations. Section 8.4 discusses how these species will be addressed in the context of the regulations of the ESA to ensure the requirements of the legislation are met.

The area of proposed development on the subject property is entirely outside of fish habitat (i.e. above the high water level and floodline). The proposed buffer is sufficient to protect the adjacent warm water fish habitat. Measures are proposed to provide enhancements to fish habitat in the nearshore area, including the removal of a headwall and fencing within the water. A DFO Project Notification Form will be prepared and no harmful alteration or disruption to fish habitat will occur.

9.2 Regional Municipality of Durham Official Plan

The proposed developable land is outside of the limits of the natural features on the property as staked by MNRF and TRCA in 2017. The buffer will be naturalized and restored resulting in the conversion of hard surface to an area that will form part of the natural heritage system.

This EIS identifies and delineates Key Natural Features and Key Hydrologic Features on and adjacent to the property and recommends buffers (Section 9.3) to protect the features and outlines mitigation measures to limit the potential impacts on the adjacent natural features during and post -development.

9.3 City of Pickering Official Plan

The limits of the natural features present on the subject property were confirmed and the proposed developable land is outside of the limits of the natural features as staked by MNRF and TRCA in 2017.

A minimum 21.5 m buffer is proposed from the Hydro Marsh shoreline (high-water mark) and a minimum buffer of 18.9 m is proposed from the woody vegetation dripline and top of bank. A variable buffer of 24.1 to 38.0 m is provided to the PSW. As the subject property is within the South Pickering urban area, minimum vegetation protection zones smaller than those specified in the Official Plan can be considered.

This EIS recommends buffers to protect the features and outlines mitigation measures to limit the potential impacts on the adjacent natural features during development. While the recommended buffer to the PSW does not maintain the contiguous 30 m minimum vegetation protection zones specified in the Official Plan, the area deficit is 137 m^2 (0.01 ha). The variable buffer proposed is sufficient to protect the natural features present on the subject property given the increase in function that will be provided in this newly created, naturalized buffer area adjacent to the feature. A small portion of the buffer (85 m^2) will be comprised of a headwall and bioswale for stormwater management. The bioswale will be completely vegetated with native species post grading. The proposed development will not result in an increase in risk to property or impact to the control of flooding or pollution from the existing land use.

The entire buffer will be naturalized with herbaceous ground covers, shrubs and trees to provide a tiered vegetation community and will enhance the habitat function and diversity of the natural features. Species selected for the plantings will be native to the eco-region, well-adapted to site conditions, and complimentary to those present in the existing natural features. This naturalization will enhance the natural heritage features by converting 0.43 ha gravel storage yard and expand and increase the form and function of the Hydro Marsh shoreline.

9.4 Toronto Region Conservation Authority Regulations and Policies

Frenchman's Bay PSW and Hydro Marsh are regulated by the TRCA and a permit will be required for development adjacent to these features. The dripline of the shoreline vegetation and top of bank was confirmed in the field with TRCA in 2017. The limits of the PSW were staked in the field with MNRF and TRCA in 2017.

The proposed development is located outside of all natural features present on the subject property. A buffer ranging from 18.9 m to 34.0 m is proposed from the woody vegetation dripline and top of bank, which exceeds the minimum 10 m buffer prescribed by TRCA. The proposed development is also located greater than 20 m from the flood line.

A variable buffer is proposed from the PSW with an overall buffer area of 0.53 ha, which is a 137 m^2 (0.01 ha) deficit of the area that would be provided by a contiguous 30 m buffer width. The entire buffer will be naturalized. Currently the majority of the proposed buffer area is comprised of a gravel storage yard. This naturalization will expand and increase the form and function of the Hydro Marsh shoreline. A small portion of the buffer (85 m^2) will be comprised of a headwall and bioswale for stormwater management. The bioswale will be completely vegetated with native species post grading.

Mitigation measures as detailed in Section 8 are proposed to offset the potential impacts of the proposed development and include the removal of debilitated fencing from Hydro Marsh, low impact development techniques, naturalization of the buffer area, erosion and sediment control, vegetation removal timing windows, implementation of bird friendly design guidelines, and directing lighting away from the natural features.

9.5 Federal *Fisheries Act*

The area of proposed development on the subject property is entirely outside of fish habitat (i.e. above the high water level). A DFO Project Notification Form will be completed for the removal of the existing headwall as it is located along the shoreline of Hydro Marsh, this will provide opportunity for shoreline restoration in this location. Proposed enhancement work involving the removal of old fences in the nearshore area will also be included in the notification.

Any in water works to be undertaken as part of the proposed enhancement opportunities shall respect the fisheries timing window. Restricted activity timing windows are applied to protect fish from impacts of works or undertakings in and around water during spawning migrations and other critical life history stages. A restricted activity timing window is recommended for the protection of spring spawning species between March 15 and July 15 based on the fish community documented in Hydro Marsh and the guidelines on the Fisheries and Oceans Canada (DFO) website.

9.6 *Endangered Species Act*

Barn Swallow and Least Bittern have been recorded on the property through seasonal field investigations. Section 8.4 discusses how this will be addressed in the context of the regulations of the ESA to ensure the requirements of the Act are met.

No other threatened or endangered species were recorded.

10. Summary

Beacon has conducted a background review and field investigations in order to prepare this Environmental Impact Study for the proposed development of the subject property. The proposed plan has been developed to achieve conformity with applicable natural heritage policies as set out in the PPS, Region of Durham Official Plan and City of Pickering Official Plan.

The subject property is comprised of an existing storage area on a gravel base and a small area of wetland which extends off-site to the south and east. The limits of the natural features (PSW, Hydro Marsh) that are located on the eastern and southern portions of the subject property have been staked with the MNRF and TRCA. The subject property has been subject to a range of seasonally appropriate field investigations. Development is not proposed within the natural features and an appropriate buffer has been applied to protect the features and their ecological function.

With the implementation of mitigation measures and through design considerations, the re-development of the subject property will not alter the ecological function of the adjacent PSW, which has been surrounded by urban development for decades. Recommended mitigation measures include natural feature protection through buffering, low impact development techniques, bird-friendly building design and lighting, seasonal timing windows, and erosion and sediment controls during construction.

The TRCA regulates the wetlands, shorelines, waterbodies and adjacent lands on the subject property. Therefore, proposed development or site alteration of the subject property will need a permit pursuant to Ontario Regulation 166/06 under the *Conservation Authorities Act*.

The proposed re-development of the subject property with the implementation of mitigation measures, is in conformity and meets the intent of provincial, regional and municipal policies.

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Appendix A

Terms of Reference

January 10, 2019 BEL 216450

Elyssa Elton
Senior Planning Ecologist, Planning and Development
Toronto and Region Conservation Authority
101 Exchange Avenue
Vaughan, ON L4K 5R6

Re: Terms of Reference for an Environmental Impact Study– 591 Liverpool Road, City of Pickering, Regional Municipality of Durham, Ontario

Dear Ms. Elton:

Beacon Environmental Limited (Beacon) has been retained by Pickering Harbour Company Ltd. to prepare an Environmental Impact Study (EIS) for the proposed residential development for the property located at 591 Liverpool Road in the City of Pickering, Durham Region (herein referred to as subject property). The subject property is located on the east side of Liverpool Road at the south terminus. As part of the Environmental Impact Study (EIS), Beacon has prepared this Terms of Reference (ToR) to outline the field investigations to be undertaken, and the content of the EIS report, to support the proposed development.

The following represents our proposed ToR to undertake the EIS as discussed in the field on September 13, 2017.

Background Review

The subject property is approximately 2.4 ha (6.0 acres) and is currently operating as Frenchman's Bay Marina and municipal parking. The subject property is designated as Natural Area and Marina Area in the City of Pickering's Official Plan (2017). The property fronts onto a bay known as 'Hydro Marsh' which is connected to Frenchman's Bay and Frenchman's Bay Provincially Significant Coastal Wetland Complex (PSW) is located to the east and south.

The EIS will include review of documentation for the subwatershed and summarize for context.

Field Investigations

Based on the known conditions on the subject property the following field investigations were completed to identify existing natural heritage features on the subject property in the 2017 field season (April-October).

Amphibian Surveys (April to June)
Breeding amphibian surveys were completed according to Environment Canada's Marsh Monitoring Program protocol and consisted of three auditory surveys undertaken during the prime breeding period to record calling males that are present.

Breeding Birds (June)
These surveys consisted of three early morning visits that were conducted in June, a minimum of seven days apart, during suitable weather.

Flora and Vegetation Communities (May – August)
Vegetation units on the subject property were described and mapped on current, colour ortho-photography of the lands using the Ecological Land Classification system for southern Ontario (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.

Aquatic Habitat Assessment (October)
The nearshore aquatic habitat was assessed using a canoe. Characteristics of the nearshore habitat were documented form the shoreline to a maximum depth of approximately 1 m. Observations were made in regards to the substrate, depth, presence of aquatic macrophytes, shoreline vegetation, signs of recent erosion, presence of man made structures or other anthropogenic influences.

Species at Risk (May – August)
A general habitat assessment for species at risk, identified as potentially occurring on the site during desktop review and SAR screening through MNRF, was undertaken during the field investigations outlined above.

Feature Staking (September)
Feature staking was conducted with staff from the Ministry of Natural Resources and Forestry (Steve Varga) and Toronto Region Conservation Authority (Elyssa Elton and Gretel Green) for the limits of the PSW and top of bank on September 13, 2017. Members of the consulting team were also present as well as a land surveyor. The limit of the top of bank was not staked in the field but agreed by all parties to be concurrent with the existing chain link fence.

Incidental Wildlife Observations
Any species seen on the site during field investigations will be recorded as an incidental observation for the purposes of EIS.

Reporting

Environmental Impact Study Report
An EIS report will be produced following completion of field investigations and once a final development plan has been produced. Preparation of the report will be an iterative process that will resolve issues related to vegetation removal and mitigation requirements.

The EIS report will identify:

- Existing site conditions;
- An impact assessment relative to the proposed development;
- Identification of opportunities and mitigation measures for the proposed development;
- Bird strike mitigation measures;
- A discussion of net impacts on the existing natural heritage features on and adjacent to the site; and
- Relevant policy as it pertains to this proposed development.

I trust that this ToR satisfies the TRCA's requirements with regards to the EIS in support of the proposed development on subject property. Should you have any questions or points for discussion, please do not hesitate to contact me at (705) 243-7251 ext. 402.

Prepared by:
Beacon Environmental

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Ecologist

Reviewed by:
Beacon Environmental

Kristi L. Quinn, B.E.S
Senior Planning Ecologist

cc. Ms. Melinda Holland, The Biglieri Group
Mr. Harold Hough, Pickering Harbour Company Limited

From: Elyssa Elton
To: Jesse Harnden
Cc: Kristi Quinn; "Melinda Holland"; Steve Heuchert
Subject: RE: 591 Liverpool Road - Terms of Reference for EIS
Date: January 10, 2019 2:22:11 PM

Email confirmation is sufficient for me.

Elyssa Elton, B.Sc. MES
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From: Jesse Harnden <jharnden@beaconenviro.com>
To: "'Elyssa Elton'" <eelton@trca.on.ca>
Cc: Kristi Quinn <kquinn@beaconenviro.com>, "'Melinda Holland'" <mholland@thebiglierigroup.com>, Steve Heuchert <sheuchert@trca.on.ca>
Date: 01/10/2019 02:16 PM
Subject: RE: 591 Liverpool Road - Terms of Reference for EIS

Hi Elyssa,

Thank you very much for your prompt response! The items you added below will be included in the EIS. Do you need the Terms of Reference revised and re-submitted or is email confirmation sufficient?

Sincerely,

Jesse Harnden, B.Sc., ISA / Ecologist
BEACON Environmental
305 Reid Street, Peterborough, ON K9J 3R2
T) 705.243.7251 x402 C) 905.375.9514
www.beaconenviro.com

From: Elyssa Elton <eelton@trca.on.ca>
Sent: January 10, 2019 2:14 PM
To: Jesse Harnden <jharnden@beaconenviro.com>
Cc: Kristi Quinn <kquinn@beaconenviro.com>; 'Melinda Holland' <mholland@thebiglierigroup.com>; Steve Heuchert <sheuchert@trca.on.ca>
Subject: Re: 591 Liverpool Road - Terms of Reference for EIS

Hi Jesse,
I would just make sure you explicitly add that natural feature buffers will be discussed in the report and that figures will be provided showing the staked lines (and any other applicable natural feature limit) and the extent of the buffers.

Thanks!
Elyssa

Elyssa Elton, B.Sc. MES
Senior Ecologist, Planning
Planning and Policy | Planning and Development

T: 416.661.6600 ext. 5701
E: eelton@trca.on.ca
A: 101 Exchange Avenue, Vaughan

Toronto and Region Conservation Authority (TRCA) | trca.ca

From: Jesse Harnden <jharnden@beaconenviro.com>
To: "'Elyssa Elton'" <eelton@trca.on.ca>
Cc: Kristi Quinn <kquinn@beaconenviro.com>, "'Melinda Holland'" <mholland@thebiglierigroup.com>
Date: 01/10/2019 10:12 AM
Subject: 591 Liverpool Road - Terms of Reference for EIS

Hi Elyssa,

We are preparing an Environmental Impact Study (EIS) for the property located at 591 Liverpool Road, in the City of Pickering. Please find attached the Terms of Reference for completion of the EIS. I know a bit of time has passed since we last discussed this project, but if you could please review the attached and confirm your acceptance it would be greatly appreciated.

Sincerely,

Jesse Harnden, B.Sc., ISA / Ecologist
BEACON Environmental
305 Reid Street, Peterborough, ON K9J 3R2
T) 705.243.7251 x402 C) 905.375.9514
www.beaconenviro.com

[attachment "2019-01-10_ToR 591 Liverpool Rd 216450_FINAL.pdf" deleted by Elyssa Elton/TRCA]

Appendix B

MNRF Correspondence

Ministry of
Natural Resources
and Forestry
Aurora District Office
50 Bloomington Road
Aurora, Ontario L4G 0L8

Ministère des
Richesses naturelles
et des Forets

Telephone: (905) 713-7400
Facsimile: (905) 713-7361

Ontario

November 22, 2017

Jesse Harnden
Beacon Environmental Limited
705-243-7251
jharnden@beaconenviro.com

Re: Request for Information for 591 Liverpool Road,
City of Pickering, Regional Municipality of Durham

Dear Jesse,

In your email dated July 31, 2017 you requested information on Species at Risk occurring on or adjacent to the above mentioned location. There are Species at Risk recorded on or adjacent to your study area. As of the date of this letter, MNRF has records of:

- AMERICAN EEL (Endangered)
- BUTTERNUT (Endangered)
- BANK SWALLOW (Threatened)
- BARN SWALLOW (Threatened)
- BLANDING'S TURTLE (Threatened)
- CHIMNEY SWIFT (Threatened)
- LAKE STURGEON (Threatened)
- LEAST BITTERN (Threatened)
- BLACK TERN (Special Concern)
- NORTHERN MAP TURTLE (Special Concern)
- PEREGRINE FALCON (Special Concern)
- SNAPPING TURTLE (Special Concern)

Additionally, the species listed below have the potential to occur in your study area and may require further assessment or field studies to determine presence:

- EASTERN SMALL-FOOTED MYOTIS (Endangered)
- LITTLE BROWN MYOTIS (Endangered)
- NORTHERN MYOTIS (Endangered)
- TRI-COLOURED BAT (Endangered)

The species listed above may receive protection under the *Endangered Species Act, 2007* (ESA) and thus, an approval from MNRF may be required if the work you are proposing could cause harm to these species or their habitats. If the Species at Risk in Ontario List is amended, additional species may be listed and protected under the ESA or the status and protection levels of currently listed species may change.

We require more detailed information on the proposed project in order to assess the impacts of the works on Species at Risk. *When project details have been determined*, please fill out an Information Gathering Form (IGF) for any *threatened* or *endangered* species listed in the provided letter and submit it to our office (to ESA.Aurora@ontario.ca). The IGF can be found here (along with its associated guide). Please include detailed descriptions of the undertakings such as proposed timing and phasing of the project and details on what is required at each phase.

All sections and tables should be filled out in their entirety – incomplete forms will be returned and may delay the review process. Any applicable supplemental information that will assist with the review process should also be submitted with the IGF (e.g. field survey results, site plan/drawings, ELC mapping, etc.). Please note that forms are reviewed in the order in which they are received by MNRF and we will contact you with our response once the review is complete.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. For these reasons, the MNRF cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Ontario.

This Species at Risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any Species at Risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca .

Sincerely,

Tessa Molina
Wildlife Technician
Ontario Ministry of Natural Resources and Forestry | Aurora District

Appendix C

Breeding Birds

Appendix C

Breeding Birds

Common Name	Scientific Name	Status						Breeding Pairs/ Territories
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK [b]	TRCA Status d	Regional Status	Area-sensitive (OMNR)c	
Least Bittern	*Ixobrychus exilis*	THR	THR	S4	L2		A	1
Mourning Dove	*Zenaida macroura*			S5	L5			1
Belted Kingfisher	*Ceryle alcyon*			S4	L4			1
Willow Flycatcher	*Empidonax traillii*			S5	L4			1
N. Rough-winged Swallow	*Stelgidopteryx serripennis*			S4	L4			1
Barn Swallow	*Hirundo rustica*	THR	THR	S4	L4			2
Marsh Wren	*Cistothorus palustris*			S4	L3			1
American Robin	*Turdus migratorius*			S5	L5			1
European Starling	*Sturnus vulgaris*			SE	L+			2
Yellow Warbler	*Setophaga petechia*			S5	L5			1
Song Sparrow	*Melospiza melodia*			S5	L5			3
Swamp Sparrow	*Melospiza georgiana*			S5	L4			1
Red-winged Blackbird	*Agelaius phoeniceus*			S4	L5			4
Common Grackle	*Quiscalus quiscula*			S5	L5			1
House Finch	*Haemorhous mexicanus*			SNA	L+			1
House Sparrow	*Passer domesticus*			SNA	L+			2

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.

d Toronto and Region Conservation Authority L rank (Dec 2010):
L1 to L3 Regional species of concern from highest to lowest; L4 Urban concern; L5 Secure through region; L+ Non-native

Appendix D

Plant List

Appendix D

Plant List

New Scientific Name (FOIBIS 2008)	Common Name (FOIBIS)	Origin	COSEWIC (Sep 2007)	COSSARO (Sep 2009)	S-RANK (200_)	DURHAM (Varga 2005)	TRCA RANKS (20__)
Acer saccharum var. saccharum	Sugar Maple	N			S5		L5
Acer x freemanii	Freeman's Maple	N			S5		L4
Alisma plantago-aquatica	Broad-leaved Water-plantain	I			S5		L5
Rhus hirta	Staghorn Sumac	N			S5		L5
Cicuta bulbifera	Bulb-bearing Water-hemlock	N			S5		L4
Daucus carota	Queen Anne's Lace	I			SNA		L+
Asclepias syriaca	Common Milkweed	N			S5		L5
Cynanchum rossicum	European Swallow-wort	I			SNA		L+
Ambrosia artemisiifolia	Annual Ragweed	N			S5		L5
Arctium minus	Lesser Burdock	I			SNA		L+
Bidens frondosa	Devil's Beggar's Ticks	N			S5		L5
Cichorium intybus	Chicory	I			SNA		L+
Cirsium arvense	Creeping Thistle	I			SNA		L+
Euthamia graminifolia	Grass-leaved Goldenrod	N			S5		L5
Solidago canadensis var. scabra	Tall Goldenrod	N			S5		L5
Sonchus arvensis ssp. arvensis	Field Sowthistle	I			SNA		L+
Symphyotrichum lanceolatum ssp. lanceolatum	Panicled Aster	N			S5		L5
Symphyotrichum novae-angliae	New England Aster	N			S5		L5
Tussilago farfara	Colt's Foot	I			SNA		L+
Impatiens capensis	Spotted Jewel-weed	N			S5		L5
Alnus glutinosa	European Black Alder	I			SNA		L+
Alliaria petiolata	Garlic Mustard	I			SNA		L+
Lonicera tatarica	Tartarian Honeysuckle	I			SNA		L+

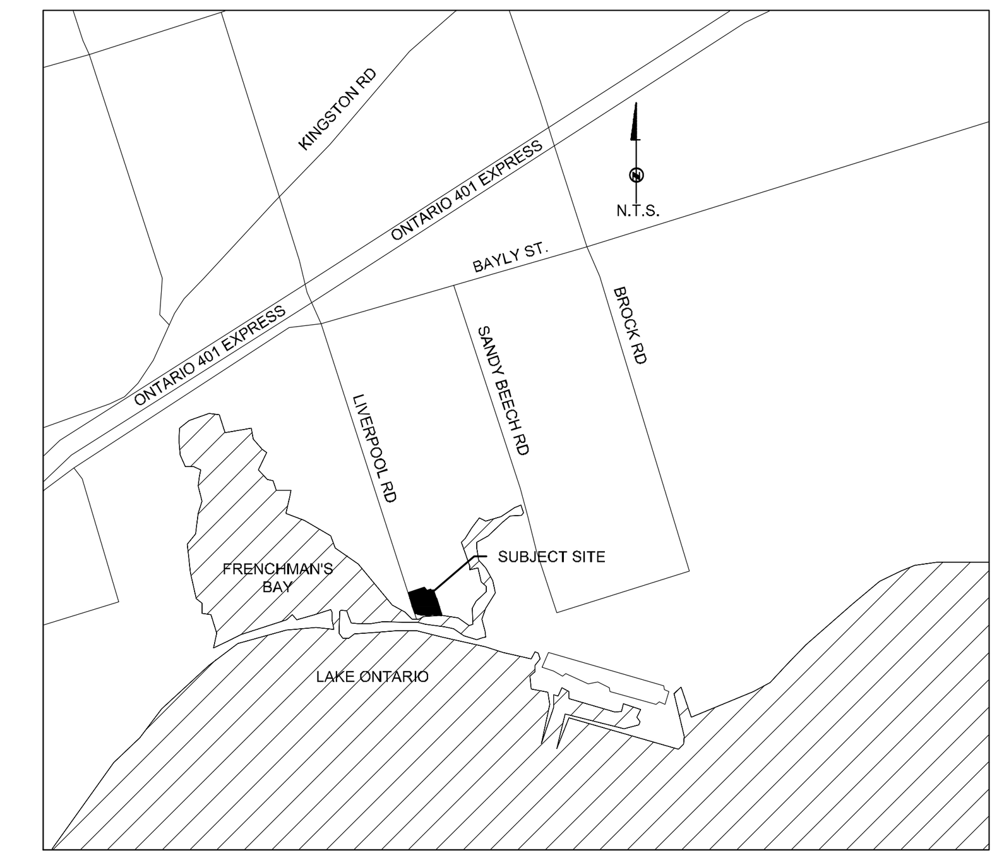
New Scientific Name (FOIBIS 2008)	Common Name (FOIBIS)	Origin	COSEWIC (Sep 2007)	COSSARO (Sep 2009)	S-RANK (200_)	DURHAM (Varga 2005)	TRCA RANKS (20__)
Sambucus nigra ssp. canadensis	Common Elderberry	N			S5		L5
Hypericum perforatum	St. John's-wort	I			SNA		L+
Calystegia sp.	Bindweed Species						
Cornus sericea ssp. sericea	Red-osier Dogwood	N			S5		L5
Hippophae rhamnoides	Sea Buckthorn	N/A					L+
Lotus corniculatus	Bird's-foot Trefoil	I			SNA		L+
Melilotus alba	White Sweet Clover	I			SNA		L+
Vicia cracca	Tufted Vetch	I			SNA		L+
Quercus macrocarpa	Bur Oak	N			S5	U	L4
Quercus rubra	Northern Red Oak	N			S5		L4
Myriophyllum sp.	Water-milfoil Species						
Hydrocharis morsus-ranae	Common Frogbit	I			SNA		L+
Iris pseudacorus	Yellow Iris	I			SNA		L+
Lycopus americanus	American Bugleweed	N			S5		L4
Mentha arvensis	Corn Mint	N			S5		L5
Lemna minor	Lesser Duckweed	N			S5		L5
Lemna sp.	Duckweed Species						
Lythrum salicaria	Slender-spike Loosestrife	I			SNA		L+
Nymphaea odorata ssp. odorata	Fragrant White Water-lily	N			S5		L2
Fraxinus pennsylvanica	Green Ash	N			S5		L5
Picea abies	Norway Spruce	I			SNA		L+
Picea pungens	Colorado Spruce				SNA		L+
Pinus strobus	Eastern White Pine	N			S5		L4
Plantago major	Nipple-seed Plantain	I			SNA		L+
Phragmites australis ssp. australis	European Common Reed	I			SNA		L+
Persicaria amphibia	Water Smartweed	N			S5		L4
Polygonum persicaria	Lady's Thumb	I			SNA		L+
Rumex crispus	Curly Dock	I			SNA		L+
Rhamnus cathartica	Buckthorn	I			SNA		L+
Geum sp.	Avens Species						

New Scientific Name (FOIBIS 2008)	Common Name (FOIBIS)	Origin	COSEWIC (Sep 2007)	COSSARO (Sep 2009)	S-RANK (200_)	DURHAM (Varga 2005)	TRCA RANKS (20__)
Potentilla recta	Sulphur Cinquefoil	I			SNA		L+
Prunus virginiana var. virginiana	Choke Cherry	N			S5		L5
Rosa multiflora	Rambler Rose	I			SNA		L+
Rubus idaeus ssp. idaeus	Red Raspberry	I			SNA		
Galium palustre	Marsh Bedstraw	N			S5		L5
Salix discolor	Pussy Willow	N			S5		L4
Salix exigua	Sandbar Willow	N			S5		L5
Salix fragilis	Crack Willow	I			SNA		L+
Linaria vulgaris	Butter-and-eggs	I			SNA		L+
Solanum dulcamara	Climbing Nightshade	I			SNA		L+
Sparganium eurycarpum	Large Bur-reed	N			S5	U	L3
Typha angustifolia	Narrow-leaved Cattail	N			S5		L+
Typha latifolia	Broad-leaf Cattail	N			S5		L4
Typha x glauca	Blue Cattail	N			S4?		L+
Verbena hastata	Blue Vervain	N			S5		L5
Vitis riparia	Riverbank Grape	N			S5		L5

Appendix E

Landscape Master Plan


PRIVATE LANE (REGION OF DURHAM)
ACCESS ROAD
EXISTING PUMPING STATION
SUGGESTED ART INSTALLATION OR WATER FEATURE
DEC. TREES PROPOSED ALONG STREETSCAPE WITHIN TREE GRATES
FEATURE SEATING OPPORTUNITIES ALONG STREETSCAPE
FEATURE PAVING
LIVERPOOL RD.
RAISED PLANTER WITH FEATURE SEATING OPPORTUNITIES
TIERED PLANTER TO PROVIDE TERRACED SEATING OPPORTUNITIES
METAL BOLLARDS TO SEPARATE PEDESTRIAN WALKWAY FROM DRIVE-AISLE
FEATURE SEATWALL
UNIT PAVING WALKWAY CONNECTION (BENEATH BUILDING CANOPY)
COMMERCIAL 700m²
INDOOR BOAT STORAGE
PARKING/LOADING
SUGGESTED ART INSTALLATION OR WATER FEATURE
TREES IN TREE GRATES WITH BENCH SEATING BETWEEN
METAL BOLLARDS TO SEPARATE PEDESTRIAN REALM FROM DRIVE-AISLE
COVERED PAVILION STRUCTURE
BOARDWALK WITH RAILING
RAISED PLANTER WITH SEATING TYP.
RAISED PLANTER WITH TIERED SEATING TYP.
RES. LOBBY
CENTRE GREEN
PEDESTRIAN PROMENADE
FEATURE PAVING
SYNTHETIC TURF CENTRAL GATHERING SPACE
RAISED PLANTER WITH SEATING TYP.
COMMERCIAL 700m²
FEATURE SEATWALL MATERIAL T.B.D.
FEATURE UNIT PAVING
TREES IN TREE GRATES WITH BENCH SEATING BETWEEN
PEDESTRIAN LIGHTING AND SEATING OPPORTUNITIES
BOARDWALK WITH RAILING
BENCH SEATING
PARKING/LOADING
LIMIT OF UNDERGROUND PARKING
EDGE RESTORATION AREA (COMPRISED OF NATIVE TREES, SHRUBS AND SEEDMIX TO MATCH ADJACENT WATERFRONT SPECIES)
NHS SETBACK
BUFFER AREA
PSW LIMIT AS STAKED ON SEPTEMBER 13, 2017
EXISTING WATER BODY
EXISTING RIPARIAN VEGETATION TO REMAIN
LANDS OWNED BY CITY OF PICKERING
FEATURE SEATWALL MATERIAL T.B.D.
ASSEMBLY HALL 625m²
MODULAR SEATING GATHERING AREA
PROPOSED LIMIT OF DEVELOPMENT
EDGE RESTORATION AREA (COMPRISED OF NATIVE TREES, SHRUBS AND SEEDMIX TO MATCH ADJACENT WATERFRONT SPECIES)
NATURAL AREAS
(LANDS OWNED BY ONTARIO POWER GENERATION)
HYDRO MARSH
EXISTING RIPARIAN VEGETATION TO REMAIN
PSW LIMIT AS STAKED ON



Key Map

Legend

- Proposed Deciduous Tree
- Proposed Coniferous Tree
- Property Line
- Prop. Sodded Area Typ.
- Prop. Unit Paving Type 1
- Prop. Unit Paving Type 2
- Proposed Planting Area
- Proposed Boardwalk

msla
MARTON SMITH LANDSCAPE ARCHITECTS
170 The Donway W Suite 206,
Toronto, Ontario, Canada, M3C 2G3
tel. 416.492.9966 | email. info@msla.ca

Planner:

THE BIGLIERI GROUP LTD.
Planning | Development | Project Management

Client/Owner:

Notes:

No.	Revision	Date
07	Issued for Review	03/06/20
06	Revised per Site Plan	03/05/20
05	Issued for Review	04/08/19
04	Revised per Site Plan	04/03/19
03	Revised per Site Plan	02/26/19
02	Issued for Review	08/18/17
01	Issued for Coordination	06/23/17

North:

Stamp: ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS — LUCIEN J. MARTON — OALA — MEMBER

Project:

Proposed Mixed Use Development
591 Liverpool Road
Pickering, Ontario

Scale: **1:300** Date: **June 2017**

Drawn By: **D.R.** Checked By: **L.M.**

Drawing Title:

Landscape Master Plan

Project No. **17118** Sheet No. **L1-01**

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