Environmental Impact Study-
Harbour Drive

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Executive Summary

An Environmental Impact Study (EIS) has been completed for a ~14-ha Property at 423003 Harbour Drive, Municipality of Meaford. The Property owner intends to develop an ecological retreat facility, consisting of multiple small scale (single family) accommodation units, a centralized clubhouse with staff accommodation, associated service infrastructure, and various minor amenities (e.g. walk-ways, picnic areas, gazebos). The current plan also calls for the creation of five recreational resource based residential lots in the northeast portion of the Property.

The EIS has been completed in support of the pending development application. The EIS scope was developed in consultation with the Grey Sauble Conservation Authority (GSCA). The study has focused on several key natural heritage features, including:

- Significant Woodlands that occupy most of the Property and adjacent lands,
- three separate wetland features located in the core of the Property,
- the possible presence of Species at Risk (SAR) and Significant Wildlife Habitat (SWH) within and around the Property, and
- the nearby presence Johnson's Creek and Georgian Bay and the fish habitat they provide.

To assess the potential environmental implications of the proposed development on the key natural heritage features and their functions, the EIS has included the following field investigations:

- direct assessment of the wetlands, including their hydrological characteristics and functions, and biological communities (flora and fauna),
- direct assessment of the woodlands, including tree species assemblages, canopy structure, tree size, and soil characteristics,
- direct assessment of aquatic habitats and hydrological influences,
- focused breeding bird surveillance,
- focused amphibian surveillance,
- full botanical inventory, and
- general surveillance of all other fauna (mammals, reptiles, invertebrates).

Additional information from other sources (NHIC, OBBA. OARA) has been compiled and reviewed in the overall characterization and assessment of the Harbour Drive Property.

In regard to the natural features within or adjacent to the Property, the general study findings are as follows:

- There are records or direct evidence of 15 species of some conservation concern present within or near the Harbour Drive Property, with only five species with formal regulatory protection as a Species at Risk (SAR). The defined development envelope is not considered primary habitat for any of these species.
- Other than the noted species of conservation concern, flora and fauna which are on record as either on or near the Harbour Drive Property are regionally common and from relatively secure populations.
- The woodlands occupying the Property are composed of a mix of relatively young specimens of common tree species. The available information indicates that the woodlands are of relatively low ecological, economic and social value.
- The wetlands are small (<1 ha each) and consist primarily of deciduous swamp communities. The wetlands do support one priority species (Black Ash) and one element of SWH (terrestrial crayfish habitat). Otherwise, they provide only limited natural habitat function and limited hydrological function, and have no appreciable socio-economic value.
- The hydrological balance of the wetlands relies primarily on surface runoff and shallow groundwater originating off-property, away from any potential influence of the proposed development.

The proposed development will necessitate the loss of a limited area of existing woodland, but this is not expected to significantly affect the function or value of the larger block of Significant Woodland that occupies the Property and the area around Johnson's Harbour.

Overall, the ecological features and functions within and around the Property are not considered sensitive, nor do they warrant high conservation priority. The functional relationship between the proposed development and the features of interest (wetland, woodlands, Priority Species, SWH) is also very limited. Accordingly, there is no expectation that proposed development would have significant effects on environmental features or functions within or adjacent to the Property.

Regardless of the limited overall risk, there are several recommendations offered in terms of minimizing risk potential or achieving ecological enhancement. Mitigation recommendations reflect four core concepts:

1. considerations in the design and layout of the eco-retreat to reduce the potential for direct and indirect effects on natural features (wetlands, woodlands), with particular emphasis on tree preservation,
2. maintenance of hydrological balance, primarily through a stormwater management plan, to ensure protection of the wetlands and their functions,

3. creation of a set-back to mitigate potential effects of development (during both initial construction and on-going facility operation) on the adjacent wetlands, and
4. management of construction and operational activities within the development envelope to reduce the risk of indirect effects on adjacent features.

The proposed development offers a few minor opportunities for enhancement of the natural environment, including invasive species removal, water quality improvement, and education and awareness opportunities.

The sole recommendation regarding ongoing monitoring involves routine measurement of certain indicators of the hydrological status of the wetlands.

Overall, the proposed development can be undertaken as planned in keeping with relevant policy and without significant adverse effects on the natural features present within and adjacent to the Harbour Drive Property, including the Significant Woodlands, the wetland features, fish habitat, Priority Species and SWH.

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Acronyms and Abbreviations

AVS	Amphibian Vocalization Survey
BBS	Breeding Bird Survey
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
DBH	Diameter (of a tree) at breast height
DFO	Department of Fisheries and Oceans
EIS	Environmental Impact Study
ELC	Ecological Land Classification
ESA	Endangered Species Act (Ontario)
ESC	Erosion and Sediment Control
GSCA	Grey Sauble Conservation Authority
HADD	Harmful Alteration, Disruption and Destruction (of fish habitat)
masl	meters above sea level
mbgs	meters below ground surface
MECP	Ministry of Environment Conservation and Parks
MMP	Marsh Monitoring Program
MNRF	Ministry (Ontario) of Natural Resources and Forestry
NHIC	Natural Heritage Information Centre
OARA	Ontario Amphibian and Reptile Atlas
OBBA	Ontario Breeding Bird Atlas
OP	Official Plan
NHIC	Natural Heritage Information Centre
SAR	Species at Risk
SARA	Species at Risk Act (Canada)
SOCC	Species of Conservation Concern
TPP	Tree Preservation Plan
SWM	Stormwater Management

1.0 INTRODUCTION

1.1 Background

1.1.1 Property Description

This EIS has been prepared for two contiguous properties located at the terminus of Harbour Drive just to the east of Johnson Harbour. The properties are legally referred to as Part of Lot 3, Broken Front Concession, Municipality of Meaford (geographic Township of Sydenham) and Parts 1 and 2 of Registered Plan (RP) 16R9207. For the purpose of this EIS, the two properties are treated as a single parcel of land. The combined properties of are referred to herein as the "Harbour Drive Property", or simply the "Property". The location of the combined Property is depicted in Figure 1.

The combined Property has an area of about 13.9 hectares (ha), which includes approximately 2 ha along the northern edge which is intermittently below the water level of Georgian Bay. The permanent inland portion of the Property measures about 12 ha.

The Harbour Drive Property is bordered by Georgian Bay to the North, the Department of National Defence (DND) Meaford Training Range to the east, and largely undeveloped rural or rural recreational properties on the remainder of its perimeter. The Property is designated as 'Rural' and 'Hazard Lands' in the Official Plan (OP) of Grey County. The Property is designated as 'Rural' and 'Environmental Protection' in the Meaford OP, and is zoned as 'Shoreline Residential' and 'Environmental Protection' under the municipal Zoning By-law.

In its present state, the Property is vacant and there are no permanent structures present. Aside from the relatively small footprint of a series of laneways traversing the Property, the Property has not been altered or developed in recent decades and remains largely wooded.

1.1.2 Environmental Constraints

The current understanding of potential environmental constraints of relevance to the Property is based in part on mapping of formal delineations available from several sources, including:

- the Municipality of Meaford and Grey County OPs and supporting on-line mapping resources,
- Natural Heritage mapping available from the Ministry of Natural Resources and Forestry (MNRF) or Land Information Ontario (LIO), and
- mapping available from the Grey Sauble Conservation Authority (GSCA).

Copies of relevant constraint maps are provided in Appendix A of this report. For several key natural heritage features, the existing mapping reveals the following:

- The nearest Area of Natural and Scientific Interest (ANSI) is the Sucker Creek - Cape Rich Life-Science ANSI, located almost entirely within the DND Training Range to the east of the Property. At the closest point, the ANSI is separated from the Property by about 1.7 km. The Property does not encroach on the designated adjacent lands (i.e., within 120 m) of the ANSI.
- There are no Provincially Significant Wetlands (PSW), as mapped by the MNRF or in the County and Municipal OP, within 10 km of the Property.
- The nearest Natural Heritage System (NHS) core area or corridor is located about 7 km to the south of the Property, as indicated in Appendix C of the County OP.
- The are no Significant Wildlife Areas (SWA), as identified in current OPs or in LIO or MNRF mapping, within or adjacent to the Harbour Drive Property. The nearest SWA is a deer wintering yard to the east that is about 1 km from the Property at the closest point.

In summary, the Property is not subject to constraints related to SWAs, PSWs, ANSIs, or NHS features, and such features are not subject to focused analysis in this EIS. Otherwise, there are several mapped features within or near the Property which should be considered as the basis for developing the EIS scope. These are;

- the presence of Significant Woodlands throughout most of the Property, as mapped by both the County and the Municipality of Meaford,
- the presence of an unevaluated wetland, as mapped by the MNRF, within the core of the Property,
- the presence of small un-named watercourses along the western and eastern perimeters of the Property,
- the presence of Fish Habitat associated with the waters of Georgian Bay along the northern perimeter of the Property, and
- the presence of Hazard land (as per county and municipal OPs) occupying about 65% of the Property.

Any proposed development that extends within these features or is within their respective adjacent lands would be subject to the requirement for an EIS. In addition, an EIS could be requested in support of GSCA's permitting process in regard to Regulated Area that is associated with the noted watercourses, wetland area, Georgian Bay shoreline and the slope on the southern perimeter of the Property. The GSCA Regulated area effectively corresponds with the Hazard land as mapped in the County and Meaford OPs (refer to Appendix A).

In regard to Significant Wildlife Habitat (SWH) or critical habitat for Species at Risk (SAR), comprehensive mapping of these features has not been compiled, but their presence is a possibility to consider at any site at the outset of an EIS.

1.1.3 Development Proposal

The current intentions of the Property owner are to develop an ecological retreat (eco-retreat) facility, consisting of multiple one or two-bedroom accommodation huts and a central clubhouse facility, with various outdoor amenities (e.g. walk-ways, picnic and sitting areas, docks, gazebos). The eco-retreat facility will be located primarily on the west parcel (RP 16R0207 Part 1). The development proposal also calls for the creation of 5 lots within the east parcel (Part 2) under a plan of condominium. These lots will each accommodate a detached single-family residence. The residences and the eco-retreat will be jointly serviced by a main access road from Harbour Drive and a common septic system located near the residential lots. The various built features and supporting infrastructure, including septic and undeveloped portions of the residential lots, will have a combined footprint of about 2.6 ha. About 9.3 ha, or 78% of the Property, will remains as wetland (1.7 ha) or open space (7.6 ha).

The most recent version of the site plan that has been developed for the Harbour Drive Property is attached as Appendix B.

1.1.4 EIS Rationale and Objectives

The proposed development will occur primarily in the relatively level plateau at the north end of the Property, set-back from the Georgian Bay shore. The vast majority of development will occur within the area of Significant Woodlands that occupies most of the Property. Development will remain set-back from the wetland features that have been delineated within the Property, but some aspects of development will encroach within 30 m.

This EIS has been undertaken with the overall objective of determining whether the proposed development can occur without adverse impacts on the Significant Woodlands and wetlands, or any other element of the natural heritage of system that could be affected (e.g. Species at Risk, Significant Wildlife Habitat). The findings and recommendations of this EIS are provided as a basis for modifications to current development plans if such modifications are warranted to mitigate potential adverse effects on natural heritage features. The main findings of this EIS were made available during development of the preliminary site plan to allow for high level of *a priori* mitigation through layout and design.

1.2 Scope of Work

The scope and content of this EIS are site-specific and have been developed to be consistent with the general requirements specified in Section 7.11 of the Grey County OP (2019) and Section C6 of the Meaford OP (2014).

The scoping and implementation of this EIS have occurred over two phases. An EIS was undertaken in 2016 in support of initial stages of planning for an eco-retreat on the west Parcel (Parcel 1). The scope of work of the 2016 EIS was developed following on-site consultation with GSCA staff in early April 2016. A formal Terms of Reference (ToR) was prepared and submitted to GSCA on 20 June, in direct response to a letter from the GSCA dated 03 June 2016. The ToR and GSCA letter are both provided in Appendix C.

The 2016 EIS was scoped to address the potential impacts of any proposed site alteration or development on key natural heritage features and functions associated with the Harbour Drive Property, including;

- potential impacts that site development might have on Significant Woodlands within the parcel,
- potential impacts that site development might have on the wetland feature in the centre of the parcel,
- potential impacts on species at risk (SAR), or otherwise significant wildlife, that might be present, and
- potential impacts on fish habitat associated with the near-shore environment of Georgian Bay along the Property's shoreline.

Overall, the features and functions of focus in the 2016 EIS are consistent with those of relevance to the current EIS. Accordingly, the 2016 ToR have served as the basis for developing the scope of the current EIS. The scoping of the current EIS is also informed by a pre-consultation meeting at the Meaford Municipal office in December 2019. A summary of pre-consultation comments from that meeting is also provided in Appendix C.

In keeping with the ToR and agency input, this EIS has been undertaken as a full-scope study, as typically required for development of the scale proposed for the Harbour Drive Property.

The coverage and level of detail of on-site surveillance that has been undertaken are intended to allow adequate description of the general natural environment, and also allow detailed assessment of potential effects on site features and functions of focused concern Accordingly, core efforts for the Harbour Drive Property have included the following:

- General characterization of the physical and ecological features and functions within and immediately adjacent to the Property,

- Focused characterization of the wooded areas throughout and adjacent to the Property,
- Detailed characterization of the wetland areas within and adjacent to the Property, and
- Presence and status of wildlife (woody and non-woody vegetation, amphibians, reptiles, mammals, and birds) on and near the Property.

The characterization of the Harbour Drive Property and relevant features is based primarily on direct field-level surveillance. To effectively address the identified EIS requirements, this field surveillance has included:

- Direct examination of slope/topography, conveyance features (ditches, swales, streams), and overburden characteristics within and adjacent to the Property, to understand hydrological processes and connectivity between the Property and associated aquatic features (i.e., the wetland, Georgian Bay).
- Direct assessment of the identified wetland area, including hydrological characteristics, plant community composition, and potential habitat function for aquatic and terrestrial biota.
- Direct assessment of the physical and biological attributes of the shoreline area of the Property.
- Detailed inventories of plant and animal communities with a focus on identification of SAR or SWH that may be present. This includes a botanical survey, a breeding bird survey (BBS), and an amphibian vocalization survey (AVS).
- In addition to the focused wildlife monitoring noted above, general surveillance of animal and plant communities throughout the entire Property.

All elements of on-site surveillance were conducted in 2016 and again in 2020. The information acquired through the site-specific surveillance has been combined with previously compiled information for the local area to complete the required site characterization. Further details of site-specific monitoring methods are provided in Section 2.

The current development proposal does not include any major in-land works within a 15-m shoreline set-back, and there are minor works proposed for the existing man-made harbour in the northwest corner of the Property. These circumstances significantly reduce the potential for any direct adverse effects on the ecological features and functions associated with the shoreline environment. The monitoring conducted as part of this EIS encompasses the shoreline area to ensure a complete natural heritage characterization of the Property. In regard to any harbour improvements or other in-water works that may eventually be undertaken, such works will be subject to focused consultation with the Department of Fisheries and Oceans (DFO) and the Ontario Ministry of Natural Resources and Forestry (MNRF) when they are formally proposed. This EIS provides a

preliminary assessment of the potential implications of such work on fish and fish habitat with the understanding that more focused assessment will be required at later stages of development permitting and approval.

2.0 METHODLOGY

The work undertaken to allow the preparation of this EIS Report has included two main components;

1. a desktop review of previously recorded information (documents and data) regarding the characteristics within or in close proximity to the Property, and
2. focused field monitoring of the Harbour Drive Property and immediately adjacent lands.

The assessment herein collectively considers the findings of the desktop review and the on-site monitoring in a weight-of-evidence manner, with primary emphasis on site-specific data.

The following sections describe the methods employed in conducting the various components of environmental monitoring for the purposes of this EIS. In summary, the methodology adopted for the monitoring documented herein was developed to provide results appropriate to the stated objectives, and is based on standard accepted protocol where such protocol have been established.

A handheld GPS unit (Garmin model "GPSmap 76") was used to delineate key features, to measure areas of features, and to provide the geographic coordinates of monitoring locations or key natural heritage features of relevance. All coordinates have been obtained and reported using the Universal Transverse Mercator (UTM) coordinate system and NAD83 datum.

2.1 Review of Existing Information

A review of existing information of relevance to the Harbour Drive Property was completed prior to completion of direct field assessment. Several sources of information were consulted for this purpose, including:

- Grey County's web-based interactive GIS mapping tool,
- the Natural Heritage Information Centre (NHIC) natural heritage mapping and on-line database,
- on-line natural feature mapping available from Land Information Ontario (LIO),
- the Ontario Breeding Bird Atlas (OBBA) (Cadman et al, 2007) and associated database (Bird Studies Canada (BSC) *et al*., 2021),
- the Soil Survey of Grey County (Richards and Gillespie, 1954),
- the Grey County Natural Heritage System Study (NRSI, 2017), and

- the Ontario Amphibian and Reptile Atlas (OARA) on-line database.

2.2 On-Site Monitoring

On-site surveillance was conducted over two distinct periods. In 2016, the west parcel was subject to monitoring during a total of nine site visits conducted from April to September. In 2020, the combined parcels were subject to surveillance during seven site visits from April to October.

Elements of the monitoring program were focused on the priority endpoints, including the woodlands, wetlands and the possible presence of species at risk (SAR) or significant wildlife habitat (SWH) within or near the Property. Monitoring also targeted various endpoints to allow for a more general functional characterization of the Property. The timing of site visits was intended to allow for appropriate coverage for the various specific monitoring endpoints with seasonal variability or correlations (e.g. breeding birds, wetland hydrology, vascular plants).

2.2.1 Avian Monitoring

A focused survey of birds was completed at the Harbour Drive Property during the breeding season. The Breeding Bird Survey (BBS) used a combination of two methods; 1) the point-count method, and 2) incidental surveillance. The point-count method was implemented following protocol consistent with that employed for the Ontario Breeding Bird Atlas (OBBA) (Cadman et al., 2007) and the Marsh Monitoring Program (MMP) (BSC, 2003).

For breeding bird point-count surveys, each individual bird heard or seen within a 100 meter radius (3.142 ha) of a fixed location was recorded over two successive five-minute periods (10 continuous minutes per survey episode). The distance from the observation point was approximated for each individual bird occurrence. Breeding evidence for each bird species was documented using OBBA Evidence Codes.

Following OBBA protocol, the preferred station separation distance is 250 m for wooded areas and 500 m for open areas. The Harbour Drive Property is almost entirely wooded with dimensions of approximately 250 m by 450 m. In 2016, point count stations were established at two locations within the west parcel, spaced about 150 m apart, owing to the limited dimensions of that parcel. This spacing resulted in some station overlap, but ensured full coverage of all major habitat types within the Property. In 2020, three new point-count stations were established in the east parcel, with a standard separation of about 250 m. The location of the five BBS point-count stations is depicted in Figure 2, and station characteristics are summarized in Table 3. Point-count monitoring was conducted on 31 May and 20 June in 2016 (Stations PC-1 and PC-2 only) and 20 June and 05 July in 2020 (Stations PC-2 to PC-5). Point-count monitoring was conducted within 2-3 hr of sunrise. Incidental surveillance was completed on all dates on which the

Property was visited (16 dates in total over the period of April to October, 2016 and 2020).

In both 2016 and 2020, incidental surveillance was also conducted, noting all individual bird occurrences and breeding evidence while traversing the Harbour Drive Property throughout day and evening hours. Incidental surveillance was used to augment the temporal and spatial coverage of point-count monitoring and to provide a more complete assessment of avian diversity. The habitat and location of each bird observed during transect surveys was noted, along with notes regarding activity (foraging, in flight, singing, etc.). In addition, the full extent of the Property was visually surveyed for the presence of stick nests (raptors, herons) in April and early May when deciduous foliage was absent.

Avian monitoring efforts gave focused attention to any indications of the possible presence of Species at Risk (SAR) or Species of Conservation Concern (SOCC), as determined through review of records from the OBBA and from the Natural Heritage Information Centre (NHIC) (see Section 4.9).

2.2.2 Amphibian Monitoring

In 2016, a single amphibian point-count monitoring station was established within the west parcel of Harbour Drive Property (see Figure 2). The associated 100-m radius encompassed a significant portion of Wetland 1, including the small ephemeral pond feature on the northwest edge of this wetland area. No other areas of persistent standing water were present in the west parcel.

In 2020, one additional amphibian point-count station was established in the east parcel, adjacent to the west end of Wetland 3. Initial reconnaissance of the east side of the Property indicated that this was the only area where there was a meaningful presence of standing water that could function as amphibian breeding habitat.

The amphibian vocalization survey (AVS) protocol established for the MMP (BSC, 2003) was employed. All amphibian species that were heard or seen during the point-count periods were recorded, indicating a Call Level Code and the general abundance of individuals calling, where possible. Monitoring in this manner was conducted at least 30 minutes after sunset. The specific dates of point-count monitoring were selected in consideration of the general timing windows identified in the MMP. Monitoring dates were also selected in consideration of weather conditions and observations of the general regional onset and succession of breeding activity of various amphibian species. In 2016, point-count monitoring was conducted in each of the months of April, May and June, following the general timing recommended in the MMP. In 2020, AVS point-count monitoring was conducted in mid-April and at the beginning of June, accounting for broader trends in weather and amphibian activity. A third session of point-count monitoring was not completed, owing to the fact that all sites were devoid of any standing water by mid-June.

In addition to the point-count AVS efforts, instances of any amphibian seen or heard at any location or time were recorded throughout the full period of study. Areas with standing water were also subject to focused visual surveillance on several occasions to check for the presence of amphibian egg masses or larvae.

2.2.3 Mammal Surveillance

During all site visits, all observations of mammals on or near the Harbour Drive Property were recorded, along with all instances of direct evidence of mammal presence (e.g. foot prints, scat, browsing marks).

In addition, specific attention was paid to the possible presence of bats in flight around the Property during evening visits in May and June of 2016 and June of 2020.

2.2.4 Reptile Surveillance

During all site visits, any observations of reptiles or evidence thereof (e.g. snake skin casts, turtle nests) were recorded. Areas of standing water within the Property were subject to focused visual surveillance for the presence of turtles.

2.2.5 Botanical Inventory

Surveillance of terrestrial vascular plant species was completed following a basic "wandering transect" approach to determine the presence and general distribution of plant species within the Harbour Drive Property. The pattern of surveillance was established to ensure coverage of all vegetation community types within the Property (see Section 4.2 and Figure 4). Botanical surveillance was conducted during the spring, summer and early fall.

2.2.6 Ecological Land Classification

The Harbour Drive Property has been assessed following the general principles of the Ecological Land Classification (ELC) system for southern Ontario (Lee et al., 1998). This approach generates classification and mapping of ecological communities down to a size of approximately 0.5 hectares or less, and allows much more detailed classification of communities than broad scale Landsat imagery. ELC of the Property was completed through the following general task sequence:

- Initial site reconnaissance to ascertain major community types, topography, and soil characteristics,

- Subsequent delineation of community distribution using satellite imagery and aerial photos for a first approximation of ELC.
- Further detailed site monitoring to refine initial ELC approximation. Each distinct community was examined to determine soil characteristics and to determine the major woody and non-woody plant species present.

To facilitate characterizations of soil conditions (texture, moisture regimes) vertical soil profiles were completed in multiple locations within each distinct ecological unit. Soil profiles were completed to a depth of approximately 0.5 to 1 m below ground surface (bgs) using a hand-auger.

The detailed site monitoring included examination of physiographic attributes such as topography/slope, surface soil profiles, and the possible presence of elevated water table. Within each identified unit, the following information regarding vegetation cover was recorded:

- Relative species composition and percent cover of trees and shrubs, where present
- Caliper and height range of trees in wooded units, and
- General under-storey characteristics and non-woody species composition.

Through other specific monitoring efforts, the habitat function of each unit was also assessed and recorded.

2.2.7 Wetland Characterization

The wetland features located within the Property were examined in regard to core attributes of hydrology and ecology (both floral and faunal). The wetland boundaries were also subject to field delineation. The wetland boundary was determined following the principles described in the OWES manual (MNR, 2010). The wetland features within the Harbour Drive Property transition fairly rapidly to upland forest. In such cases, the primary factor used to determine the boundary is the species composition of the plant community. The "50% wetland vegetation rule" was applied, in conjunction with consideration of soil characteristics, fine scale topography, and the spatial and temporal extent of surface saturation or standing water.

Hydrological characterization included the identification of any discernable sources of hydrological input, observations of relative flow volume, observations of indicators of water presence (e.g. high water marks on trees), and examination of drainage characteristics of the overburden within the wetlands and surrounding lands. Soil profiling to a depth of approximately 1 m bgs was conducted throughout the wetlands and the rest of the Property to help determine drainage characteristics.

The ecological attributes of the wetlands were ascertained in part through the biological monitoring efforts conducted throughout the Property. All monitoring efforts (plant, bird, mammal, amphibian and reptile surveys) were conducted with focused attention on the wetland areas. In addition, other aspects of wetland vegetation were assessed and recorded, including;

- Degree of cover of woody vegetation,
- tree size classes, primarily as diameter-at-breast-height (DBH),
- species composition of forest strata (canopy, sub-canopy, under-storey), and
- ground cover density and species composition.

This information served in part to identify the specific wetland ELC community types (e.g.., swamp, marsh, pond) present within the Property.

2.2.8 Aquatic Features

For the drainage conveyance features, characterization was based on direct visual assessment of habitat variables (substrate type, cover, channel morphology), and measures of water temperature. The near-shore waters of Georgian Bay on the north perimeter of the Property were similarly assessed for basic habitat variables (water depth, substrate types). All aquatic features were subject to simple visual assessment for the presence of aquatic or semi-aquatic biota (macrophytes, invertebrates, amphibians, fish).

For the purposes of this EIS, the hydrology of the site has been examined with particular attention paid to the hydrological connectivity between the Property and aquatic features of interest (Johnson's Creek, Georgian Bay). Hydrological characterization included the identification of any discernable sources of hydrological input/output, observations of flow volume, and measures of water temperature (when available).

3.0 PHYSICAL CHARACTERISTICS

3.1 Topography

The Habour Drive Property exhibits significant variability in elevation. At its southern perimeter, the Property straddles a prominent ancient lake ridge, with an elevation of approximately 205 meters above sea level (masl) at the point of entry to the Property from Harbour Drive. At the northern perimeter of the Property, the elevation at shoreline is just under 180 masl. A significant portion of the total 25-m drop in elevation is associated with a steep slope face that extends across the southern perimeter of the Property. This slope exhibits gradients in the range of about 35% to 45%, with gradient generally most pronounced on the upper half of the slope face. On the west side of the Property, the slope exhibits a small terrace at its approximate mid-point which appears to be of anthropogenic origin.

From the base of the slope northward, the Property exhibits relatively low relief to the water's edge. The wetland features in the central part of the Property are largely defined by slight topographical depressions. Between the wetland and the shoreline there is an old subtle beach ridge that results in a rise of about 1-m in elevation across the width of the Property. Aside from the stark north-south relief, there is a slight decline in elevation moving from the core of the Property outward to the east and west margins. The direction of water movement through the wetland features in the low core of the Property generally follows these slight lateral gradients.

3.2 Surficial Geology

The Habour Drive Property is characterized by the presence of course-textured and well-sorted lacustrine deposits over relatively shallow bedrock. A sub-surface investigation of the Property in 2017 (Burnside, 2017) revealed the presence of relatively impermeable shale within the west half of the Property at depths of 1 to 2 m bgs.

According to the Grey County soil survey (Gillespie and Richards, 1954), the Harbour Drive Property lies within an area of Vincent silty clay loam. This is a fine-textured soil type derived from limestone till. The typical profile consists of layers of clay loam with an intervening clay layer encountered at around 25 cm below ground surface. This soil type is reported to exhibit generally good drainage.

Soil profiling completed on-site in 2016 and 2020 confirms this general soil description through most of the Harbour Drive Property. In some locations there is a notable presence of large rock and boulder within the upper soil profile, mostly in association with steep slope features. The soil profiles observed within and near the wetland area are more consistent with those described for Kemble Silty Clay loam or Brookston Clay loam. These are similar to the Vincent silty clay loam, but they are reported to exhibit

relatively poor drainage. There was no obvious organic matter presence in the wetland areas except in the small ephemeral pond on the northwest perimeter of Wetland 1, and in the area of relatively deep and persistent standing water at the west end of Wetland 3. In these location, there is a slight surface accumulation (up to 10 cm bgs) of slightly fibrous organic matter, transitioning abruptly to an underlying layer of silt/clay. The depth of organic material in these locations is such that a designation of "organic" in ELC context is NOT warranted. For this EIS, all soils throughout the Property are characterized as mineral soils in the ELC context.

3.3 Hydrology

Several key factors have been examined in order to generate an understanding of the hydrological dynamics of the Harbour Drive Property. This includes physiographic factors (surficial geology, topography) discussed above. Also, on-site monitoring of the Property included examination of the presence and movement of water throughout the study period. The hydrological features of interest within or near the Property include:

- a drainage ditch along the east side of Harbour Drive, discharging directly into the Property at the main access point at the terminus of Harbour Drive,
- a small un-named watercourse originating near the eastern boundary of the Property and flowing through the adjacent DND lands and discharging to Georgian Bay,
- three separate wetland areas distributed laterally across the low central core of the Property, and
- Johnson's Creek, located ~150-200 m to the immediate west of the Property and discharging to Georgian Bay.

Figure 3 illustrates these hydrological features and approximate flow schematic for the Harbour Drive Property. The hydrological dynamics and connectivity of these features is discussed below.

3.3.1 Hydrological Inputs

Based on available information, the hydrological inputs to the Harbour Drive Property include the following:

- surface drainage conveyed by ditch and culvert along Harbour Drive, and discharged directly onto the Property in channelized form near the main entrance,
- more localized and diffuse drainage (surface and shallow subsurface) flowing from the south side of the Property, originating partly within the Property and also in part from adjacent lands to the south, and

- precipitation falling within the Property boundary.

Available information indicates that the drainage ditch along Harbour Drive is the most substantial hydrological source that affects the Property. This conclusion in part reflects the relative size of the respective drainage areas of potentially contributing sources. The total area of the Property is approximately 5 ha, whereas the estimated drainage area contributing to the ditch flow along Harbour Drive is in the range of 100 to 200 ha (C. Capes, pers. comm., 07 Dec. 2016).

Site surveillance did also reveal the presence of groundwater seeps in several locations along the base of the slope along the southern perimeter of the Property (see Figures 3 and 5). These groundwater inputs are considered to be secondary components in the hydrological balance of the down-gradient wetland features. They are also recognized as potential elements of Significant Wildlife Habitat (SWH), as discussed in Section 4.10.

3.3.2 Drainage Ditch

Significant and persistent discharge from the Harbour Drive drainage ditch was observed entering the Property during the spring runoff period (April, early May). On these occasions, the flow was initially conveyed down the first slope face on the Property within a channelized flow path that is well scoured and deep, with very coarse substrate. The path of flow is initially within the confines of the road extension allowance for Harbour Drive. During spring surveillance there was also significant spill-over into the Property resulting in the presence of diffuse sheet flow over part of the upper terraces on the west edge of the Property. Where diffuse flow was observed on the upper terraces, there were some wide deposits of silty material, and also sand and gravel in some spots. This suggests a relatively high volume and velocity of sheet flow at times.

By mid-May, the flow emanating from the road-side drainage ditch had declined to just a trickle, and was confined entirely to the channelized flow path. There was no diffuse spill-over at this time. Over the remaining visits to the Property from June to October, there was generally no inflow observed at this location. Trickle flow was observed entering the Property at this location on one occasion (October 2020) following a significant precipitation event.

The initial path of flow down the road allowance dissipates before reaching the bottom of the slope. The surface flow initially entering from Harbour Drive, including occasional spill-over, is ultimately conveyed to the base of the slope via one or more of several existing scours. Shortly down-gradient of the slope, the bulk of flow is directed into the long lateral depression which is occupied by a wetland feature (Wetland 1).

3.3.3 Un-named Watercourse

The un-named watercourse on the eastern perimeter of the Property is a first order feature that is characterized by event-base intermittent flow. The flow appears to originate in

part from a relatively large (~2 ha) ponded wetland feature about 100 m south of the Property. There are discernable channels leading from this pond toward the top of slope along the southern edge of the Property. However, there is no discernable channel leading from the pond feature, or elsewhere on the upper plateau, into the Property and down the slope, as indicated in GSCA mapping (see Appendix A). It appears that any drainage entering the Property in this location is either diffuse or is in the form of shallow groundwater. Near the base of the slope, there are several small but relatively persistent seepage sources that lead to generally diffuse inflow to Wetland 3. At the northeast corner of Wetland 3, there is a discernable channel that then leads eastward into the DND property before veering northward toward Georgian Bay. At the downstream end of this watercourse, the discharge to the Bay is diffuse, with no obvious channel that would connect the Bay to the upstream portions of the watercourse. Figure 3 depicts the approximate location of the discernable channel based on site surveillance.

Only very low levels of flow were observed in this watercourse in the early spring (April) and early fall (October), with a complete absence of flow for the duration of the monitoring period. There are no obvious scours or materials consistent with stream substrates (e.g. sand, gravel, cobble) that would suggest any persistent flow in this watercourse.

3.3.4 Wetlands

Each of the three wetlands within Property lies within a shallow depression that laterally traverses the core of the Property. The hydrological balance of each of these wetlands is sustained by either surface or shallow subsurface discharge that appears to originate largely from the elevated land base to the south of the Property. Based on observations during soil profiling, and also from reported water table elevations (Burnside, 2017) it does not appear that deep groundwater is a significant factor in the presence of these wetlands.

In the overall hydrological balance of all three wetlands, the inputs noted below are countered by losses through surface flow, infiltration and evapotranspiration. Based on on-site observations of soil profiles, water movement and the general drainage characteristics of the Property, it appears that surface flow is the major hydrological output from the wetlands and the Property as a whole. The soil and associated drainage characteristics of the wetland features suggest that infiltration is not a significant component of their hydrological balance. Evapotranspiration could be a seasonally significant component of the overall hydrological balance of the wetland features, especially as temperature increases in the summer months and as the deciduous tree cover (swamp community) comes into leaf. However, a very large majority of the full annual volume of water entering the Property and the wetlands appears to be lost through surface flow.

Wetland 1:

As noted in Section 3.3.2, site observations indicate that drainage conveyance into the Property from the roadside ditch along Harbour Drive is a primary input to Wetland 1. There is also flow entering into Wetland 1 from the east (Wetland 2) that contributes to the vernal presence of standing water throughout most of this wetland feature. Observations during the spring runoff period suggest that this input component represents a significant majority (estimated 80% or more) of the total input to the Property. Surface and shallow subsurface flow originating from the east is estimated to represents a minority component (i.e., less than 20%) of the total surface inflow to Wetland 1.

During peak spring runoff periods, it appears that a significant portion the water originating from the Harbour Drive ditch backs up eastward to contribute to the presence of standing water within Wetland 1. The flow originating from Wetland 2 to the east also contributes to the presence of standing water in Wetland 1. The typical presence of water in Wetland 1 is evidenced at the base of trees within the swamp community. It appears that there is typically a seasonal peak of standing water in the wetland feature in the order of 30 cm deep. There is a small (<100 m^2) pool feature on the northwest edge of Wetland 1 exhibiting a typical seasonal maximum depth in the range of ~40-50 cm.

Wetland 1 drains to the west, following a very slight grade. At the down-gradient end of the wetland, there is a ditch that conveys water northward into the pool that is situated in the northwest corner. The ditch is very straight and uniform in its morphology, and appears to have been excavated some time in the past specifically to facilitate drainage within the Property. It appears that a significant portion of the vernal standing water within Wetland 1 flows into the a small pool via the low-gradient channel. The pond itself is drained by a similar channel which flows westward through the neighbouring property, eventually discharging via culvert to Johnson's Creek. In 2016, water movement through this channel had ceased by the end of June.

Wetland 2:

Surface runoff originating largely off-property to the south is the primary input that contributes the overall balance of Wetland 2. This includes some channeled flow conveyed by ditch along an existing laneway from the top of the Property near the entrance on Harbour Drive. This intermittent ditch flow is conveyed under the laneway by culvert and then continues as relatively diffuse flow into Wetland 2. Further to the east, there is a second culvert that conveys a shorter stretch of ditch flow under the laneway and then into Wetland 2. The ditch flow is comprised in part of discharge from a relatively large seepage feature on the south slope. Other than flows through the two noted culverts, there are no discernable surface inputs into Wetland 2.

About 25% of the Wetland 2 exhibits standing water for a limited duration in early spring, most concentrated at the west end. The maximum depth is about 20 cm.

The raised laneways that surround Wetland 2 function as hydrological barriers to some extent. The only discernable outlet from Wetland 2 is a small culvert crossing the central north-south laneway, which conveys seasonal overflow from Wetland 2 into Wetland 1.

Wetland 3:

The inputs to Wetland 3 appear to consist of more diffuse runoff from the plateau to the south of the Property, which encompasses the larger ponded wetland feature It appears that any surface flow is relatively diffuse and is ultimately combined with discharge of shallow groundwater at the base of the slope as the bulk of input to Wetland 3. Wetland 3 does not receive any discharge from Wetland 2 or from other discernable surface sources.

The presence of standing water in Wetland 3 is most pronounced at the west end where there is a relatively deep area of vernal ponding measuring about 500 m^2. Peak depth of standing water in this location is about 30 cm. The majority of Wetland 3 exhibits only a shallow (<5 cm) and patchy presence of standing water.

Wetland 3 is also partly bordered by raised laneways, which appear to contribute to an absence of any discernable hydrological connectivity with Wetland 2. At least some portion of Wetland 3 discharges seasonally to the small watercourse that flows through the DND property to the east.

3.3.5 Johnson's Creek

There is intermittent but direct hydrological connectivity between the Property and Johnson's Creek. As noted above, it appears that Wetland 1, which receives flow from Wetland 2, is drained by a channel which conveys intermittent flow to Johnson's Creek. In both 2016 and 2020, water movement through this channel had ceased by June. During the spring peak period, the flow leaving the Property was estimated to be subject to dilution in the range of 1 to 2 orders of magnitude upon entering Johnson's Creek. Overall, the discharge from the Property, which appears to originate largely from the drainage ditch along Harbour Drive, does not appear to constitute a significant percentage of the flow in Johnson's Creek.

4.0 ECOLOGICAL CHARACTERISTICS

The following sections describe the ecological characteristics of the Harbour Drive Property. A description of the regional ecology is provided for context. Ecological monitoring results are summarized in Tables 1 through 5, and detailed monitoring results are provided in Appendix D.

4.1 Regional and Local Ecology

The Harbour Drive Property is situated within the Mixedwood Plains *Ecozone*, and more specifically it is within the Manitoulin – Lake Simcoe *Ecoregion*, equivalent to Site Region 6E under Provincial classification. This Ecoregion is characterized by warm summers, mild winters, and relatively abundant precipitation (700 to 1000 mm/a) that is evenly distributed throughout the year. The dominant land cover is cropped land with significant areas of mixed forest. Climax vegetation is characterized by mixed hardwoods, including Sugar Maple, American Beech, Eastern Hemlock, Red Oak, and Basswood. Pioneer species include White Pine, Paper Birch, and Trembling Aspen. Yellow Birch, White and Slippery Elm, Red Maple, Black Ash and White Cedar are typical forest cover species in depressions and moist areas. Wetlands account for only about 3.5% of the total land area within this Ecoregion.

On a more local scale, the general characteristics of natural cover within 5-10 km of the Property are largely shaped by topographic influences and also land management. Along the outer perimeter of much of the Meaford Peninsula, the face of the Nipissing Ridge and closely adjoining lands are generally excluded from development and remain forested, creating a substantial overall forest presence in the area. Furtherer inland from the ridge, the area is sparsely populated and occupied in part by farmland, often in the form of pasture of forage fields. Much of the area to the immediate east of the Property lies within the Meaford Military Training Range, where much of the landscape is subject to restricted access and has been generally retained under natural forest cover. The majority of forest cover in the area of the Property is deciduous, with scattered secondary conifer presence mainly associated with the face of the Nipissing Ridge or low wet areas. Sugar Maple is a dominant component of the local forest canopy. Wetland presence in the area is quite limited, confined primarily to relatively small isolated features on the terrace above the ridge.

4.2 Vegetation Communities

4.2.1 Overall Characteristics

In context of the ELC system of Lee *et al.* (1998), the Harbour Drive Property in its current state is occupied almost entirely by forest communities. The minor exception is a very small (~0.05 ha) open patch in the far northwest corner of the Property. This area appears to be maintained as an extension of the yard of the neighbouring property. Under

the ELC system, this would be described as a Cultural Meadow (CUM) community. This patch is identified in Figure 4, but is not discussed further due to its limited size and function.

The forest cover within the Property is comprised primarily of deciduous species, with Sugar Maple being the most abundant and widely distributed canopy constituent. There are portions of the Property where conifers exhibit a significant presence, with Eastern White Cedar and Balsam Fir being the most abundant species. This includes a couple of small areas where conifers dominate, but mostly areas with mixed forest cover where the conifers are less abundant than deciduous trees. The specific composition of forest throughout the Property is variable, largely reflecting topography and drainage. The majority of forest cover is upland, but forested wetlands (i.e., swamps) are also present in the low-lying core of the property.

For the purpose of this EIS, the variable forest cover within the Harbour Drive Property has been divided into blocks that represent relatively homogenous units of forest cover that are sufficiently distinct from each other in major respects (e.g. tree species composition, tree size, canopy configuration, topography). The forest community delineation presented herein also considers the nature and distribution of proposed development (as indicted in the Site Plan - Appendix B) as well as the observed functionality of forest cover within the Property (as understood through direct monitoring of flora and fauna). Ultimately, the delineation and characterization of forest units within the Property are intended to allow effective assessment of possible impacts of proposed development on forest presence and function within the Property. In this context, the Property contains upland forests and forested wetlands with characteristics that are generally consistent with the following ELC communities:

- Dry-Fresh Deciduous Forest (FOD4)
- Dry-Fresh Sugar Maple Deciduous Forest (FOD5)
- Dry-Fresh White Cedar Mixed Forest (FOM4)
- Fresh-Moist White Cedar Mixed Forest (FOM7)
- Fresh-Moist White Cedar Coniferous Forest (FOC4)
- Mineral Deciduous Swamp (SWD2)

The forest communities defined for this EIS are depicted in Figure 4, and major characteristics are summarized in Table 1. More detailed descriptions are provided below.

4.2.2 Deciduous Forest Communities

There are two primary deciduous forest communities that occupy the Property. These communities are largely associated with the well-drained slope that extends into the southern half of the Property.

Dry-Fresh White Ash Deciduous Forest (FOD4-2)

On the west parcel, the top section of the slope and the plateau encountered about midway down the slope are occupied by a primarily deciduous mix of relatively young trees. The canopy is patchy and about 75-80% closed on average, dominated by White and Red Ash with Aspen (Trembling and Largetooth) also a notable component. White Elm, Sugar Maple, White Birch, Ironwood and Basswood are also present in a scattered and secondary manner. Many of the Ash and Elm are in poor or declining health. Conifers are absent with the exception of a few scattered Eastern White Cedar and Balsam Fir, mostly near the perimeter of this block. The large majority of trees are <30 cm diameter at breast height (DBH), but a there are a few isolated specimens of White Ash that exceed 30 cm DBH. The subcanopy is not well-developed in this area, and the shrub layer is patchy. Ash saplings and seedlings, a few hawthorn, and numerous buckthorn are present in the under-storey, along with *Ribes* shrubs, wild grape and other vines. Ground cover is variable, with an overall cover of about 60% with localized patches of relatively high density of herbaceous plant growth. This includes typical deciduous forest plants in more shady locations (e.g. dense patches of Trout Lily, scattered Jack-in-the-pulpit, Canada Mayflower, Herb Robert, wood ferns) and a mix of plants typical of more open habitats (e.g. goldenrods, nightshade, thistles, knapweeds, fleabane) in areas with more light exposure. There are small wet patches associated with overflow from the drainage channel where ground cover consists partly of hydrophilic species (e.g. sensitive fern, horsetails, sedges). There is relatively low tree cover in these spots, primarily consisting of White Elm, many of which are in poor condition.

Dry-Fresh Sugar Maple Deciduous Forest (FOD5)

The majority of the slope face across the east parcel is occupied by relatively mature forest cover that is dominated by the presence of Sugar Maple in both the canopy and sub-canopy. The Maple are accompanied by variable secondary presence of White Ash, Beech, Ironwood, and Basswood. White Birch are also present, mainly near the top of slope. Conifers are largely absent except for clusters of Eastern Hemlock on lower slopes and in association with seepage areas. The forest cover exhibits moderately mixed age but is generally lacking in large mature trees. The majority of canopy specimens are 30 cm DBH or less, with scattered pockets where specimens in the range of 40 - 45 cm are encountered, particularly near the top of the slope. On the east parcel, there are a few specimens of Birch in the range of 50 to 60 cm DBH. These are the largest trees encountered within the Property.

The canopy is generally continuous and closed, and consequently there is a limited presence of shrubs and ground cover is low (~25%) and patchy. The shrub layer includes Alternate-leaved Dogwood, Choke Cherry, Ash saplings and also European Buckthorn near exposed forest edges. Ground cover includes scattered specimens of species common to undisturbed deciduous forest (Red and White trillium, Trout Lily, Blue Cohosh, Sarsaparilla) and also species most often found in disturbed environments (e.g. dandelion, scotch thistle). The presence of the latter is most prominent in closer

proximity to the old laneways that laterally bisect this wooded patch. In proximity to groundwater seeps, the ground cover is relatively dense and includes some hydrophilic species (e.g. Jack-in-the-Pulpit, clusters of Ostrich Fern).

In close proximity to the wetland areas, Sugar Maple is still abundant, but there is generally a greater presence of Red Ash, Hemlock, Eastern White Cedar, Aspen and Elm than elsewhere in this forest community. Ground cover is also relatively dense and more inclusive of hydrophilic species. In some areas, the zones of transition to wetland could be considered to represent inclusions of Fresh-Moist Lowland Deciduous Forest (FOD7) or Fresh Moist Sugar Maple Deciduous Forest (FOD6) communities. The extent to which these communities are present is not considered to be meaningful in the context of this EIS.

The Sugar Maple community is largely associated with the southern slope, which is Hazard Land and outside the area where development is proposed. There is a small portion that extends into the north half of the east parcel where development is proposed.

4.2.3 Mixed Forest Communities

The portion of the Property that is north of the wetlands, extending up to about 100 m in from the shoreline, is occupied by a relatively large swath of mixed forest that is on average about 70% deciduous and 30% coniferous. This block exhibits a higher diversity of tree species and variability in community composition relative to the other blocks, with the diversity being highest in closer proximity to the beach area. The species composition of the canopy varies spatially, but generally the most common canopy species within the block are Red and White ash, Trembling Aspen, Sugar Maple, Eastern White cedar and Balsam Fir. Overall, the degree of canopy closure within this block is about 90% on average. The majority of trees in this block are <30 cm DBH, but there are scattered larger specimens of Maple, Basswood, Aspen, Cedar and Oak ranging up to 45 cm DBH.

The sub-canopy is reasonably well established and comprised of less mature specimens of deciduous trees (primarily Ash and Aspen). The shrub layer is patchy but also reasonably well established overall. The shrub layer is composed of saplings of the common deciduous trees, along with scattered shrubs, including dogwoods (alternate-leaved and round-leaved), elderberry, and numerous buckthorn. Ground cover is variable but relatively sparse overall (<20%) and most limited in areas with denser conifer coverage. Ground cover includes a variety of common species, both native and non-native (e.g. Herb Robert, Dog Violet, Common Dandelion, Common Strawberry, False Solomon's-seal, Woodland Agrimony).

In close proximity to the Georgian Bay shore, numerous specimens of Red Oak are present, along with some White Pine and Balsam Poplar. Some shrub alder are present in the under-story in this area. This likely reflects a transition in soil texture and drainage, and also the fact that the beach provides relatively open habitat where wind- and water-dispersed tree seeds could become established.

In context of the ELC system, the area is a variable mosaic of two similar community types; 1) Dry-Fresh White Cedar Mixed Forest Ecosite (FOM4), and 2) Fresh Moist White Cedar Mixed Forest Ecosite (FOM7). The former is more widely encountered and the latter tends to be present in proximity to wetland areas. For the purpose of this EIS, there is no notable functional difference between these communities and the area is referred to simply as Mixed Forest (FOM). This forest community occupies the majority of the area where development is proposed.

4.2.4 Coniferous Forest Communities

There are two relatively small and sharply defined areas in the north part of the Property where there is concentrated presence of conifers that exceeds 75% of the total tree cover. In these areas, tightly spaced Eastern White Cedar dominate the canopy, with a secondary presence of Balsam Fir. Scattered specimens of White Birch, White Ash, Trembling Aspen and Basswood are also present within this stand, comprising no more than 10% of the canopy in total. A limited number of cedar specimens exceed 30 cm DBH, with a few scattered specimens in the range of 40 to 45 cm DBH. The canopy is almost completely closed (>95%) in these blocks, resulting in a sparse under-storey. Ground cover is also generally sparse (<20%) and includes typical forest species such as White Trillium, Canada Mayflower, and various wood violets.

4.2.5 Forest Functions

There is no significant differentiation in the ecological function of the various upland forest community types within the Property. The forested wetland community does exhibit a number of functions of note not shared by the upland communities. Wetland community functions are discussed below in Section 4.2.7.

Overall, the results of on-site monitoring indicate the following about the upland forest cover within the Property:

- the identified forest communities are not considered rare or sensitive,
- forest cover is relatively young or mid-aged,
- there is an absence of advanced forest structure,
- associated faunal communities exhibit low to moderate diversity and abundance, and
- Priority Species and Significant Wildlife Habitat (SWH) are generally absent.

The forest cover within the Harbour Drive Property does encompass an area that meets the standard criterion for interior forest (i.e., forest that is >100 m from open edges). This generally corresponds with the area occupied by forested wetland and the Sugar Maple forest community (FOD5) along the south slope. While a few bird species with a forest interior association were observed in this area, the community as a whole is comprised largely of non-interior species and includes several species that are generally

indicative of fragmented conditions (e.g. Robin, Blue jay, Crow) The biota encountered throughout the Property are largely indicative of non-interior conditions. The observed presence of raccoons is also typical for fragmented forest conditions. Invasive plant species are also commonly encountered throughout much of the Property, even within the most dense forest cover and the core of the Property, again indicative of non-interior conditions.

In terms of wildlife habitat, the nature of the forest (relatively young, limited interior habitat) is such that the faunal communities consist primarily of species that are common to areas already at least partly influenced by anthropogenic factors. As discussed in Section 4.9, the Priority Species that have been identified at or near the Property are primarily associated with the wetland areas. The exceptions consist of two woodland bird species (Eastern Wood-pewee, Wood Thrush) which could be present in limited abundance in any of the forest communities within the Property, but most likely the Sugar Maple (FOD5) community.

4.2.6 Wetland Communities

There are three separate wetland areas that have been delineated within the Property (see Figures 3 and 4). These wetlands all occupy the same topographical position within the Property and exhibit a general consistency in the predominant plant communities that are present.

All three wetlands are dominated by a primarily deciduous swamp community - Ash Mineral Deciduous Swamp (SWD2). Red Ash and Black Ash are the dominant canopy species, with Trembling Aspen and White Elm also notably present. There are numerous standing dead elm and ash, and also a number that are exhibiting evidence of decline. There are some conifers present, including scattered specimens of Eastern White Cedar and also a few Balsam Fir. The presence of conifers is most pronounced in Wetland 2. There are a few specimens (mainly Ash and Aspen) that exceed 30 cm DBH, but the large majority of trees are <30 cm DBH. Structural layering is generally quite limited.

The density of tree cover is variable between the three areas. In Wetland 1, cover decreases from east to west. Towards the western boundary of the Property, there are inclusions of Mineral Thicket Swamp (SWT2) and Mineral Meadow Marsh (MAM2). This includes a small ephemeral pond, measuring <100 m^2, that supports mainly emergent plant species along with a limited presence of submergent plants. Canopy cover is in the range of 70 to 75% in the eastern half of Wetland 1, and decreases gradually to about 30-40% near the western Property boundary. Shrub cover becomes more prevalent towards the western property boundary (willow shrubs, Red-osier Dogwood). A few scattered Red Maple specimens are also present in the western half of Wetland 1. Wetland 2 exhibits tree cover that is relatively uniform and constitutes about 75% cover on average overall. Wetland 3 is more varied in terms of tree cover, with a greater density at the east end than at the west end where there is a relatively persistent

pocket of standing water. The overall average tree cover for Wetland 3 is estimated as about 65%.

Ground cover is well established throughout all three wetland areas, and dominated by sedges (e.g. Crested, Bladder, Awl-fruited) and ferns (e.g. Sensitive, wood ferns). The wetlands are generally hummocky, with trees generally often centred on hummocks. Herbaceous ground cover on the raised hummocks includes numerous species that are typical of upland deciduous forest (e.g. Sarsaparilla, Herb-Robert, Gall-of-the-earth, Canada Mayflower, Poison Ivy).

4.2.7 Wetland Functions

The flora and fauna of the wetlands generally consist of species that are relatively common. The vascular plant species found in the wetlands do include a number of obligate wetland species, but do not include any that are considered to be of conservation concern. In terms of fauna, none of the birds or mammals on record as within or near the Property are considered as obligate wetland species. This is likely attributable at least in part to the limited area and spatial dimensions of the wetland features. There was a reasonably high *diversity* of amphibians recorded at the Property, at least partly in association with the wetlands. This includes the Western Chorus Frog, which is considered to be provincially significant. However, the monitoring results suggest that the absolute *abundance* of the various amphibian species observed is relatively low, and that reproductive intensity is also low.

In terms of overall function and value, the wetlands are assessed herein in context of the evaluation criteria and principles embodied in the Ontario Wetland Evaluation System (OWES, 2013). This system provides a framework for the evaluation of several key attributes of wetlands in southern Ontario, including hydrological functions, biological features and functions, and social functions.

The hydrological functions of interest and their relevance to the wetlands within the Harbour Drive Property are as follows :

1. flood attenuation - the wetland features offer limited flood attenuation value owing to relatively small size and the flow-through nature of the wetlands.
2. water quality improvements (e.g. nutrient attenuation) - there is some water quality improvement capacity, but it is generally expected to be limited owing to absence of significant organic soil layer and also the relatively small size of the wetlands.
3. carbon sequestration - this is expected to be limited, owing to wetland size and a lack of significant organic soil processes.
4. shoreline erosion control - the wetland are *palustrine* wetlands and do not contribute to shoreline erosion control

5. groundwater recharge - the wetlands offer low groundwater recharge value owing to the surficial geology (i.e., with significant impermeable clay layers over relatively shallow shale) and their position low in the drainage basin.

Monitoring within and around the wetlands has revealed two species (Western Chorus Frog, Black Ash) that have been identified as conservation concerns but are not considered rare. The reported status of both species in Ontario is *Apparently Secure* (S4), and both are considered locally common throughout southern Ontario.

There are no known special features of functions (e.g. deer wintering, waterfowl nesting or staging, colonial bird nesting, raptor wintering or roosting) associated with the wetlands (see Section 4.10). They do not provide any fish habitat, owing to the fact that standing water is intermittent and also effectively isolated from other nearby waters that provide fish habitat (Johnson's Creek, Georgian Bay). The presence of a vernal pool on the perimeter of Wetland 1 is indicative of potential habitat value, particularly in regard to amphibian reproduction. The habitat value is constrained simply owing to the small size of the pool (<100 m^2).

Overall, the information obtained from the monitoring of the Harbour Drive Property, when interpreted in context of OWES evaluation process, leads to the following general conclusions regarding the wetland areas;

- they are expected to support relatively high productivity, owing to the clay/loam soils and climate variables of the region,
- they are small in size, and relatively isolated,
- they offer only limited hydrological function and natural habitat function,
- they do not support any social functions at present, although such function will be realized as a result of the proposed eco-retreat development, and
- they have no appreciable value in context of economic benefits, landscape aesthetics, public education, aboriginal or cultural heritage values.

4.2.8 Shoreline Area

An irregularly shaped beach front stretches across the full northern perimeter of the Property, with a total shoreline length of approximately 550 m and an area of about 1.9 ha. The beach width varies as the water level of Georgian Bay fluctuates from year to year. In 2016, the distance between water's edge and the forest edge ranged from only about 10 m on the eastern half of the Property to about 60 m in the western half. In 2020, the majority of the beach front was under water, with only 1 - 2 m of separation between forest edge and water's edge. The description below reflects the period of low water levels.

The beach substrate across the Property's waterfront is primarily fragmented weathered shale, although there are small isolated pockets of finer sediments (sand and gravel) in some spots. Vegetation has become well established in pockets, especially in the western half, and includes a significant presence of woody species. Young specimens of numerous tree species (White Birch, Eastern White Cedar, Trembling Aspen, Red Ash) up to 5 m tall are scattered over the beach area, interspersed with various shrubs (Red-osier Dogwood, Willow species, and a few Sumac).

Herbaceous vegetation is patchy with an overall average ground cover in the range of 30 to 40%. This includes a number of species that are not generally found throughout the rest of the Property (e.g. Silverweed, Coltsfoot, Blue-eyed Grass, Columbine, Mouse-ear Hawkweed). Many of the plant species present on the beach are species that are typically present in disturbed areas (e.g. Birdfoot Trefoil, Forget-me-not).

In regard to fauna, monitoring efforts indicate that the beach area does not serve as habitat for any mammals, birds, amphibians or reptiles that have a unique association with this habitat, or that are species of conservation concern.

The lack of significant vegetative ground cover otherwise limits potential for nesting of birds with an aquatic habitat association. The relative absence of fine sediments limits the value of the shoreline area for shore-bird foraging.

In regard to aquatic fauna, focused surveillance of fish was not undertaken as part of this EIS. However, small fish (individuals and schools) were observed on separate occasions in the shallow littoral zone waters, especially in areas protected from the more open waters. The fish that were observed appeared to include young-of-year, suggesting a nursery habitat function for the inshore waters. In some areas, the water was shallow, warm and still, and there was a relative abundance of algae. These conditions would generally be characteristic of good nursery habitat.

Overall, the beach and adjacent littoral zone area along the northern perimeter of the Harbour Drive Property appear to most likely provide the following ecological functions:

- habitat for fish, particularly nursery habitat,
- habitat for aquatic invertebrates (including zebra mussels), and
- foraging habitat for birds with an aquatic habitat association (ducks, cormorants, terns, gulls, kingfishers, herons).

4.3 Terrestrial Plant Species

A detailed list of the plant species observed at the Harbour Drive Property is provided in Table 2. This inventory reflects observations through the months of April-October, covering the period of early spring to early fall.

A total of 198 vascular plant species were identified during surveillance of the Harbour Drive Property. A total of 46 (23%) of the species on record are non-native, and 23 of these are considered by various sources to be invasive. Non-native species are present throughout Property, but are relatively concentrated in openings (laneways) and near edges. European Buckthorn is the most widely distributed of the non-native invasive species, encountered at varying density in most woodland community types within the Property.

For those species native to Ontario, all are ranked as "Secure" (S5) or "Apparently Secure" (S4) in Ontario. Black Ash (*Fraxinus nigra*) only species that has been subject to assessment by COSEWIC or COSSARO as possible Species at Risk (SAR). In November 2018, COSEWIC released their assessment of Black Ash and recommended a status of *Threatened* for this still relatively common tree species. Black Ash has not yet been added to Schedule 1 of the Federal Species at Risk Act (SARA). An assessment by COSSARO was recently completed, and Black Ash has been added as *Endangered* to Schedule 2 of Ontario Regulation 230/08 as of 26 January 2022. However, the Ontario Government has also announced a 2-year postponement of the onset of regulatory prohibitions under the Endangered Species Act (ESA) and regulations made under the act. The Provincial Ranking of this relatively common species is "Apparently Secure" (S4). The presence of this tree as a *Priority Species* is discussed further in Section 4.9.

About 30% of the vascular plant species encountered within the Property are species which grow primarily in wet conditions (i.e., coefficient of wetness is -3 or lower). These plants are generally limited in distribution, associated primarily with the three wetland features in the core of the Property. There are a few hydrophilic species which are more widely distributed within the Property, including Eastern White Cedar and Green Ash. These species are known for their ability to grow under a variety of conditions.

There are also several plant species that were observed exclusively in the shoreline area (e.g. Blue-eyed Grass, Mouse-eared Hawkweed, Red Oak). Otherwise, the majority of the plant species observed exhibited some degree of non-uniformity in their distribution, but are generally found throughout most of the Property outside of the wetland and beach areas.

Only 12 of the plant species recorded within the Property have a Coefficient of Conservatism of 7 or higher. These species were encountered mostly within the relatively mature deciduous forest on the sloped area on the south end of the Property. None of these species were abundant or widespread. The implications are that the Property is generally occupied by plant species that are not typical of long-standing communities. Even within the most mature forest cover, most species are not indicative of communities that are long-standing or reflective of later stages of succession.

4.4 Birds and Bird Habitat

A breeding bird survey (BBS) has been undertaken for the Harbour Drive Property. This has included a focused point-count census in June and July and more general surveillance throughout the full monitoring period (April – October). The Property was also surveyed early in the spring, prior to the emergence of foliage, to determine if any stick nests were present. No stick nests were observed within or near to the Property.

These monitoring efforts provide a reasonably reliable indication of the status of the Property in terms of avian presence and the provision of avian habitat for breeding and non-breeding purposes (e.g. foraging, staging). The locations of the point-count stations are depicted in Figure 2. Detailed results of the point-count monitoring program are provided in Appendix D. Table 3 summarizes main attributes and species counts for the point-count stations, and the full list of species observed during the study period at the Harbour Drive Property is provided in Table 4.

The Harbour Drive Property lies close to the boundary between Ontario Breeding Bird Atlas (OBBA) squares 17NK15 and 17NK25 which encompass lands relatively close to the shore of Georgian Bay to both the east and west of the Property. The Property is also within 1 km of squares 17NK14 and 17NK24 which are further inland to the south. Data have been obtained for each of the noted squares and considered as regional context in the assessment of the Harbour Drive Property. Note that no data were collected in Square 17NK15 in the most recent Atlas period. OBBA status of the species that have been observed at the Harbour Drive Property is included in Table 4.

A total of 62 species have been observed at or near the Harbour Drive Property over the combined monitoring period. All but nine of these species are on record for the relevant OBBA squares, suggesting an established breeding presence of these species in the area. Forty-two of the species listed in Table 4 were observed at the Property in both 2016 and 2020, also suggesting an established presence. Six of the listed species were confirmed as breeding within the Property, while another 19 were deemed to have "probable" breeding status. The OBBA reports a local breeding status of "confirmed" or "probable" for 45 of the 62 listed species.

Fourteen of the species observed at the Harbour Drive Property are considered to be habitat generalists, while 17 are considered to be forest birds. Only five of the species recorded at the Harbour Drive Property are considered to be primarily associated with forest interior habitat (i.e., Ovenbird, Black and White Warbler, Black-throated Green Warbler, Winter Wren, and Veery). Twelve of the species observed are birds with an aquatic habitat preference. These species (gulls, terns, waterfowl, kingfisher) were observed almost exclusively in association with the aquatic habitat of Georgian Bay. No birds with an aquatic or wetland habitat association were observed within or near the wetland features in the centre of the Property. There was no evidence of breeding within the Harbour Drive Property for any of these species of aquatic association.

The majority of species observed at the Property are considered regionally and provincially common and are not of any conservation concern. The Provincial status of all of the species observed at the Harbour Drive Property is either *secure* (S4) or *apparently secure* (S5). There are only three priority conservation species that have been observed at the Property; 1) the Common Nighthawk, 2) the Eastern Wood-pewee, and 3) the Wood Thrush. Each of these species as designated as *Special Concern* under Ontario's Endangered Species Act (ESA). These species are discussed further as Priority Species in Section 4.9.

Overall, the Harbour Drive Property directly supports a reasonable abundance and diversity of relatively common bird species, apparently more for foraging or staging purposes than for breeding. The birds found within the Property consist of habitat generalists and forest birds, including a small number species with an association with forest interior habitat. There are also species associated with aquatic habitat of Georgian Bay that use the area offshore of the Harbour Drive Property for various purposes, but there is no evidence of nesting within or in close proximity to the Property.

4.5 Amphibians

During focused amphibian monitoring and wandering surveillance of the Harbour Drive Property, a total of eight species of amphibian were recorded. A listing of these species is provided in Table 5. All species except the Spotted Salamander were observed in both 2016 and 2020.

All of the amphibian species on record for the Harbour Drive Property are relatively common and widespread in southern and central Ontario. Six of these species are rated as secure (S5) and two are ranked as apparently secure (S4). The only species that is considered as a conservation concern is the Western Chorus Frog (*Pseudacris triseriata*). The presence and implications of this species are discussed further in Section 4.9.

The Harbour Drive Property offers the preferred breeding habitat for five of the eight species that have been observed within or near the Property, including the Chorus Frog. Potential amphibian breeding habitat includes the single pool feature on the perimeter of Wetland 1 and about a third of Wetland 3 where standing water of reasonable depth (>10 cm) was observed to persist at least partly into the amphibian breeding season. Shallower standing water that is seasonally present within much of Wetlands 1 and 3 may also serve as breeding habitat for some of the amphibians that have been recorded on or near the Harbour Drive Property. Three of the species on record (i.e., Gray Treefrog, Green Frog and Northern Leopard Frog) all prefer more permanent water bodies for breeding purposes, and are considered to have a lower likelihood of breeding within the Property.

The areas of most persistent standing water were focal points for amphibian monitoring efforts and were revisited throughout the study period. The occurrence of amphibian breeding vocalizations was quite limited in intensity, and no other evidence of breeding was observed (e.g. eggs or egg masses, tadpoles) except for the presence of a few young-

of-year American Toads near Wetland 3 in late summer of 2020. The focused AVS point-count monitoring yielded low rates of mating-related vocalizations of only two species (see Appendix D), suggesting a relatively low rate of amphibian breeding within the Property during the period of monitoring.

There was a single observation of a Spotted Salamander. This consisted of a dead specimen found in early April along the access lane. It is likely that this specimen was caught in a late freeze-up during early spring migration to breeding sites. Other common woodland salamanders were not directly observed within the Harbour Drive Property, but there is a reasonable likelihood that these species could be present to some extent. This could include the eft stage of the Red-spotted Newt (*Notophthalmus viridescens*) or the Eastern Red-backed Salamander (*Plethodon cinereus*). These species have been reported in, the Ontario Amphibian and Reptile Atlas (OARA) within 10 km of the Property, as have all but one species (i.e. Western Chorus frog) observed during surveillance of the Property. Table 6 summarizes the species reported in the OARA in locations close to the Property.

The shallow waters of Georgian Bay adjacent to the Property are considered to have limited capacity as amphibian breeding habitat owing to a relative absence of aquatic vegetation, the presence of fish that would prey on all amphibian life stages, and the relatively high level of hydrological perturbation associated with waves and currents of the open waters of Georgian Bay. The small existing man-made harbour sites may offer slightly more protection than elsewhere along the shoreline, and may be occupied by adult amphibians from time to time. No amphibians were observed in direct association with these features throughout the period of study.

4.6 Mammals

Monitoring of the Harbour Drive Property revealed evidence of at least occasional presence of seven species of mammals, as follows:

- White-tailed Deer (*Odocoileus virginianus*) - evidence of regular presence in certain parts of the Property, including established trail near top of ridge on southern perimeter of Property
- Red Squirrel (*Tamiasciurus hudsonicus*) - several scattered observations, with a likelihood of regular presence throughout the Property
- Eastern Chipmunk (*Tamias striatus*) - several observations of foraging adults throughout Property
- Beaver (*Castor canadensis*) - observed adult specimen at shoreline in two occasions in 2020, with evidence of ongoing foraging. There is a reasonable likelihood of ongoing occurrence in limited numbers along wooded shoreline
- Raccoon (*Procyon lotor*) - observed adults specimens on 2 occasions within core of property, and tracks on several occasions around wetlands 1 and 3.

- Meadow Vole (*Microtus pennsylvanicus*) - a single observation of an adult specimen in 2020. Expect regular presence in portions of Property with more open habitat.
- Grey Squirrel (*Sciurus carolinensis*) - a few occurrences associated primarily with deciduous forest on the south slope.

These are all relatively common and widespread species throughout southern and central Ontario and within Grey County. All species are ranked as "secure"(S5) in the province of Ontario. Other regionally common species of mammal (e.g. Eastern Cottontail, Striped Skunk, Porcupine) that were not directly evidenced during monitoring are likely to be at least occasionally present at the Harbour Drive Property.

In regard to bats ,there are several species which are regionally present and which include a number of SAR. There were no observations of bat activity in or around the Harbour Drive Property during on-site surveillance, which included surveillance in the period around dusk when bat activity tends to be observed. The vegetation communities found within the Property are relatively young, and there is an absence of larger dead or dying trees that might contain hollows, cavities, large bark flakes and crevices that could function as roosting or hibernation sites. Rock outcrops, caves or other sites that could serve as hibernation sites are not found on or near the Property. The potential presence of bats is discussed further in context of Priority Species (Section 4.9) and as a possible element of SWH (Section 4.10).

Overall, the likelihood of presence within the Property of mammal species that are of conversation concern is considered to be very low, and not likely to be meaningful to the viability of the local or regional populations.

4.7 Reptiles

No evidence of the presence of reptiles was observed during direct monitoring of the Harbour Drive Property. The interior of the Property does not provide habitat features (e.g. permanent standing water) that would support the presence of turtle species that are found in the region. The small pool on the perimeter of Wetland 1 is very small in size (<100 m^2), shallow in depth (40-50 cm at peak), and completely dries up during the summer months. The consistency of overburden throughout the interior of the Property is not consistent with the requirements of Ontario's turtle species for egg laying. It is possible that the Snapping Turtle (*Chelydra serpentina*) could be found on occasion with the shallow waters of Georgian Bay along the north edge of the Property, as this species does at times occur in Great Lakes waters. The OARA contains a single record of Snapping Turtle presence within a few km of the Property. However, the beach front is occupied by large fragmented shale which effectively precludes the possibility of egg laying by any turtle in this beach area.

No snake species were observed during surveillance of the Harbour Drive Property. The OARA contains records of several snake species within relatively close proximity to the

Property (see Table 6). Of these, the Property offers conditions that could support the presence of several relatively common species, including Dekay's Brownsnake, Eastern Gartersnake, and Northern Ring-necked Snake. None of these species would likely be present in significant number or would rely on the Property for completion of critical life cycle stages.

Overall, it is not expected that the Property would be critical habitat for the local populations of any of any reptile species, particularly any of those listed in the OARA that are considered to be Priority Species.

4.8 Invertebrates

Visual surveillance of the Property did not reveal any evidence of the presence of invertebrates generally associated with wetlands (e.g. Odonata, Daphnia) in or near the wetland features identified within the Property.

No significant presence of butterflies or moths was observed during the period of on-site monitoring. A single specimen of Monarch Butterfly (*Danaus plexippus*), which is currently classed as *Special Concern* in Ontario, was observed along the edge of an existing laneway. Because the Property is almost entirely wooded, there is no expectation of a meaningful presence of Monarchs at the Property.

Multiple chimneys of terrestrial crayfish were observed on the outer margins of Wetlands 1 and 3. The presence of terrestrial crayfish is discussed as a potential element of Significant Wildlife Habitat (SWH) in Section 4.10.

4.9 Priority Species

For the purpose of this EIS, the term "Priority Species" includes:

1. any species with a provincial (sub-national) conservation status rank (SRank) of S1, S2, S3 or SH, or otherwise considered rare in Ontario, and
2. any species that has been designated as either *Endangered*, *Threatened*, or *Special Concern* by either the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or the Committee on the Status of Species at Risk in Ontario (COSSARO).

The term "Species at Risk" (SAR) is applied to those included in regulatory listings (ESA, SARA) as *Threatened* or *Endangered*, and thus subject to certain regulatory prohibitions. The term "Species of Conservation Concern" (SOCC) is generally applied to species other than those legally designated as *Threatened* and *Endangered.* Species that are designated as *Threatened* and *Endangered* federally (COSEWIC) but not in

Ontario (COSSARO) are generally considered as SOCC. Species of any of the noted designations are all tracked by the Natural Heritage Information Centre (NHIC).

The potential presence of SAR within or near the Property has been examined in a manner consistent with guidance prepared by the Ministry of Environment, Conservation and Parks (MECP, 2019). Several sources of existing information were consulted to identify SAR that are on record for the area within a few km of the Property. This includes:

- the NHIC Element Occurrences (EO) for the area within 3 km of the Property, as summarized in Table 7,
- the most recent results of the Ontario Breeding Bird Atlas (OBBA) for three 10-km x 10-km Squares that surround the Property, as summarized in Table 8, and
- the results of the Ontario Amphibian and Reptile Atlas (OARA) for four 10-km x 10-km Squares that surround the Property, as previously summarized in Table 6.

The likelihood of occurrence of identified Priority Species within or in very close proximity to the Property has been assessed in consideration of the specific habitat requirements of each species. Direct surveillance of the Property was also conducted with focused attention on the possible presence of the Priority Species known to be present in the general area of the Property.

The NHIC Element Occurrence (EO) records include any species that are considered herein as Priority Species. NHIC EO records were obtained for 1-km grid segments overlapping or within 3-4 km of the Harbour Drive Property (24 squares in total). A summary of the EO listings for these squares is provided in Table 7. A total of only three species are listed, none of which were observed during surveillance of the Property. This includes the Meadowlark and Bobolink which are both grassland bird species requiring relatively large expanses of open habitat that are not found within or near the Property. The Lake Sturgeon (*Acipenser fulvescens*) is the only species that has some likelihood of being present near the Property. The NHIC EO records indicate occurrences of this species in the waters of Georgian Bay adjacent to the Property. The Provincial Status of the Great Lakes - Upper St. Lawrence population of Lake Sturgeon is *imperiled* (S2), and it is listed as *Threatened* both federally and provincially.

Data from the OARA (Table 7) indicate only two Priority Species of reptile in the area of the Harbour Drive Property. The Property is devoid of conditions consistent with the preferred habitat these species, and neither species was observed during on-site surveillance. The potential for the presence Milksnake is considered possible. Milksnake could be encountered on the Property periphery, but is not expected to be encountered with any frequency within the woodland habitat that dominates the Property and where development is proposed.

As discussed in Section 4.4, data from the OBBA for Squares 17NK14, 17NK24 and 17NK25 have been obtained and reviewed as local context regarding breeding bird presence. The OBBA data indicate the presence of a total of seven Priority Species in the area of the Property. This includes two species also reported in the NHIC EO records for the area. For the eight Priority Species identified in the OBBA, the habitat requirements are such that only the Eastern Wood-pewee and Wood Thrush have some reasonable potential to be meaningfully present within the Property, at least on occasion. During surveillance, both species were observed within or immediately adjacent to the Property. In general, the habitat available within the Property is considered no more than marginal for the other six species listed in Table 6.

Direct monitoring of the Property has revealed the presence of several Priority Species within or immediately adjacent to the Harbour Drive Property that are not identified in the existing databases This includes:

- Common Nighthawk (*Chordeiles minor*) - isolated occurrences of aerial breeding display in close proximity to the east end of the Property were recorded in 2016 and 2020.
- Monarch Butterfly (*Danaus plexippus*) - one specimen was observed in late summer, foraging along the edge of the existing laneway that traverses the Property.
- Black Ash (*Fraxinus nigra*) - multiple specimens of this tree species are present in each of the three wetland areas within the Property.
- Western Chorus Frog (*Pseudacris triseriata*) - observed in Wetlands 1 and 3 with some evidence of breeding (low level vocalizations), but breeding not confirmed.

Other than the species identified above, all flora and fauna which are on record as being within or near the Harbour Drive Property are from relatively secure populations and do not warrant any formal consideration as conservation concerns.

In summary, there are a total of 15 Priority Species (*i.e.*, SOCC or SAR) on recent record within or near the Harbour Drive Property. Table 9 summarizes these species and their anticipated presence within the Property. The Property generally does not exhibit the characteristics or specific habitat elements that would support local populations of most of the Priority Species that have been observed in the area. When considering habitat limitations and the findings of direct surveillance of the Property, there are five species which may be encountered within or near the Property in the future and which warrant further consideration in the assessment of potential impacts of proposed development. These are as follows:

1. Lake Sturgeon - potentially present in the open waters of Georgian Bay near the Property,
2. Western Chorus frog - exhibiting evidence of low-level breeding presence in Wetlands 1 and 3,

3. Eastern Wood-pewee - potentially nesting in forest communities throughout the Property,
4. Wood Thrush - potentially nesting within the Property, most likely on the southern slope, and
5. Black Ash - encountered fairly regularly in all wetland areas within the Property.

The potential impacts of proposed development on these species are assessed in Section 5.1.

4.10 Significant Wildlife Habitat

For planning purposes in Ontario, Significant Wildlife Habitat (SWH) is defined as habitat that is "*ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System*".

The findings of on-site surveillance been reviewed in specific consideration of the potential presence and implications of SWH within the Harbour Drive Property. The analysis of potential SWH presence and impacts is based on guidance provided by the MNRF (MNR 2000, MNRF 2015). There are several categories and specific types of designated SWH, which are addressed below. These various categories have generally recognized associations with a number of the ELC community types that have been identified within the Property. The presence of these communities does not necessarily equate to the presence of SWH. The determination of SWH habitat is ultimately based on direct evidence of presence of the class of wildlife in question.

The various forest community types that occupy almost the entirety of the Harbour Drive Property (FOD, FOC, FOM and SWD - see Section 4.2) can generally support a number of SWH functions, as follows:

- *Seasonal Concentration Areas* (six categories of possible relevance),
- *Rare Vegetation Communities* (one category of possible relevance - i.e., *old growth forest*),
- *Specialized Habitat for Wildlife* (seven categories of possible relevance),
- *Habitat for SOCC* (two categories of possible relevance), and
- *Animal Movement Corridors* (one category of possible relevance).

The characteristics (age, tree species types, canopy configuration, etc.) of the forest communities and the wildlife species that have been recorded within the Property have been reviewed in context of the specifications for each of these SWH functions. In consideration of this information and various defining criteria, the Harbour Drive Property has the potential to support five specific SWH functions, including;

1. area-sensitive bird breeding habitat,
2. habitat for Special Concern and rare wildlife species,
3. terrestrial crayfish habitat,
4. seeps and springs, and
5. deer movement corridors

Each of these candidate SWH functions is discussed below, and Figure 5 illustrates their location within the Property. Section 5.2 provides further discussion of these potential SWH functions and potential implications of proposed development.

Area-Sensitive Bird Breeding Habitat:

The dimensions of the Property are such that they do not meaningfully provide suitable forest interior habitat (i.e., >200 m from forest edges) within the Property. Only a small area (~ 1 ha) in the southeast corner of the Property meets this criterion. The forest communities within the Property are also generally not fully mature, which is typically a characteristics of interior forest habitat. During breeding bird surveillance of the Property, the presence of seven of the species listed as indicator species was evidenced. This included evidence of Confirmed breeding of one species (Yellow-bellied Sapsucker) and Probable breeding for one other species (Black-throated Green Warbler). The other indicator species were all assigned Possible breeding status within the Property. The criterion for this form of SWH is the confirmed nesting presence of three of the indicator species. The combined body of information available indicates that this form of SWH is not present within the Property. To be conservative, this SWH element is given consideration in the assessment of effects of development (see Section 5.2).

Special Concern and Rare Wildlife Species

As discussed in Section 4.9, there are four species Provincially designated as *Special Concern* and/or with a Provincial Rank of S3 that are confirmed as being present within the Harbour Drive Property.

The Eastern Wood-pewee (Special Concern) was observed in association with the deciduous forest community (FOD5) on the southern perimeter of the Property. This species was present in very low abundance and there was no evidence to confirm nesting activity within the Property.

The Wood Thrush (Special Concern) was observed on isolated occasions on the western perimeter of the Property in the month of May in 2016. There was no evidence of persistent presence or breeding within the Property, and the preferred breeding habitat conditions are generally absent from the Property.

Male courtship behaviour of the Common Nighthawk (Special Concern) was encountered on two occasions in locations immediately adjacent to the Property. There was no

evidence of nesting within Property, and the preferred habitat is essentially absent from the Property.

An isolated specimen of Monarch (Special Concern) was observed in the community in the Property's core, and there is no evidence to indicate that the Property serves as significant habitat in supporting any part of the life cycle of this species. .

Overall, none of the noted species is considered to be present within the Property such that consideration of this specific category of SWH might be warranted. Section 5.2 provides further discussion of this potential SWH function.

Terrestrial Crayfish Habitat

The Property does contain swamp (SWD) communities that are identified as candidate Ecosites for terrestrial crayfish habitat. As noted in Section 4.8, surveillance of the Property did reveal the presence of chimneys of terrestrial crayfish in association with Wetlands 1 and 3. Based on reported species ranges, these chimneys were assumed to belong to Digger Crayfish (*Fallicambarus fodiens*), which has a Provincial Rank of S4 (Apparently Secure). The Digger Crayfish is one of the two noted indicator species for this habitat type. The presence of burrowing crayfish in association with the swamp areas in question should be considered as potential SWH.

Seeps and Springs:

Several small groundwater seeps were observed within the FOD5 forest community near the base of the slope (refer to Figures 3 and 5). Evidence of the noted indictor species (White-tailed deer, Wild Turkey, Ruffed Grouse) was also observed during surveillance of the Property, including deer tracks around the larger seeps. Further discussion of potential impacts and mitigation measures are provided in Sections 5.2 and 6.2.5.

Deer Movement Corridors:

Areas of continuous and appropriate vegetation cover may serve as corridors that facilitate movement of deer to and from wintering yards may constitute SWH. LIO/MNRF mapping indicate the presence of a large Deer Wintering Yard (Stratum 2) approximately 1 km to the east of the Property at the closest point.

In general, the absence of a well-developed shrub layer makes the forest cover within the Property less attractive for movement corridor function. However, it is possible that deer may move to/from the deer wintering yard following the ridge along the southern perimeter of the Property. Deer trails were observed near the top of ridge during surveillance in the spring and summer period. As a conservative measure, this EIS considers the potential presence of a deer movement corridor in this location in the assessment of potential impacts of proposed development. Figure 5 depicts the approximate location of the presumed movement corridor.

5.0 ANALYSIS OF POTENTIAL IMPACTS

The following analysis addresses each of the specific natural features of concern (i.e. woodlands, wetlands, fish habitat, Priority Species, Significant Wildlife Habitat). For each feature, the risks of adverse effects due to the proposed development are qualitatively assessed. The assessed potential for adverse effects is based in part on the characteristics of the features themselves, with a focus on the valued aspects and functions identified for the woodland and wetland features. The assessment is also based on key aspects of the proposed development, including the extent of anticipated construction activity, the placement and footprint of all buildings and infrastructure, and the various activities expected to occur within the Property in the post-construction phase.

Conclusions and recommendations drawn from this analysis, including mitigation and monitoring recommendations, are provided in Section 6.

5.1 Priority Species

There are a no species that have received regulatory designation as Species at Risk (i.e., formal listing under ESA or SARA as *Threatened* or *Endangered* status) that are known to exist within the confines of the Property. The Western Chorus Frog (*Pseudacris triseriata*) has been recorded within the property. It is listed as *Threatened* federally, but COSSARO has determined that it is *Not at Risk* in Ontario. The habitat requirements of this species are largely associated with the wetland features (mainly Wetlands 1 and 3), although adjacent upland forest may also support adult life stages of this and other amphibians. There is some risk of loss of adult Chorus Frogs during the construction phase, and some non-breeding habitat loss or interference when development is complete. On-site monitoring indicates a relatively low abundance of this and other amphibians within the Harbour Drive Property, and thus a relatively low likelihood of their presence in the development area. With the retention of the wetlands with a minimum 15-m setback, and an absence of indirect effects on wetland hydrology (see Section 5.3, the risk of direct impacts on this species is considered to be very low.

Black Ash (*Fraxinus nigra*) is the only other species confirmed as present within the Property that has been assessed and recommended for SAR listing. This relatively common tree species has been formally listed as *Endangered* in Ontario, but the onset of regulatory prohibitions under the *ESA* has been delayed. Black Ash is a hydrophilic tree species, and its presence within the Property is confined to the three wetland features and their immediate margins. With the retention of the wetlands with a minimum 15-m setback, and an absence of indirect effects on wetland hydrology, the risk of direct or indirect impacts on this species is considered to be very low.

The Lake Sturgeon (*Acipenser fulvescens*) is designated both federally and provincially as *Threatened*, and is reported as present in the area of Johnson's Harbour. Shallow inshore waters along this stretch of Georgian Bay provide conditions that could serve as either spawning or nursery habitat. The current development proposal includes minor works (docks) in water or along the water's edge, and thus there is a theoretical risk of direct or indirect impacts on this species. The completion of any in-water or near-water works would be subject to assessment of Harmful Alteration, Disruption and Destruction (HADD) of fish habitat in order to receive approval from the federal Department of Fisheries and Oceans (DFO). The HADD assessment will identify and ultimately mitigate any risk of adverse effects on all fish species and their habitat.

There are three other Priority Species that have been confirmed as present within or near the Property which could be affected by proposed development (see Table 9). This includes the Wood Thrush, Eastern Wood-pewee, and the Common Nighthawk. Each of these relatively common bird species has a provincial rank of S4 (Apparently Secure) and is designated as *Special Concern* in Ontario. The observed presence of each of these species within the Property was quite limited (single specimens on one or two occasions), and there is no available evidence to confirm nesting within the Property. The habitat requirements of the Eastern Wood -pewee are not very strict or unusual, and this woodland species could potentially nest in various portions of the Property. The Wood Thrush generally prefers forest conditions that are not common within the Property (relatively mature forest with a dense shrub layer), and they are most likely to be found in the forested area at the south end of the Property, outside of the primary area of proposed development. The breeding habitat requirements for the Common Nighthawk might be satisfied on the exposed shoreline area at times of low water levels, but there is very low likelihood of significant nesting presence of this species within the forested portions of the Property. Overall, there a very low risk of impacts to individuals or nests of either the Wood Thrush or the Common Nighthawk, and a slightly greater risk of such impacts to the Eastern Wood-pewee. The number of potentially affected individuals or nests of any of these species is not expected to be meaningful from a regional or local population perspective.

Overall, ,the risk that the proposed development would directly or indirectly affect any of the noted Priority Species is very low, and any such effects would not lead to measurable impact on their local populations.

5.2 Significant Wildlife Habitat

Surveillance of the Property for potential SWH (see Section 4.10), indicates that there are five elements within three SWH categories that are, or could reasonably be, supported to some extent within the Property;

- Habitat for Species of Conservation Concern (SOCC) (two specific SWH elements),
- Specialized Habitat for Wildlife (two possible SWH elements), and

- Animal Movement Corridor (one possible SWH element).

The habitat for SOCC relates in part to the limited presence of three bird species, as discussed in Section 5.1. The risk to these species is considered low and is subject to mitigation. No further consideration of SWH implications is required.

The Habitat for SOCC function within the Property also relates to the presence of terrestrial crayfish habitat. Multiple chimneys of terrestrial crayfish were present within Wetland 1 and Wetland 3. The chimneys were most prevalent on the outer edges of these wetlands and also outside the wetland boundary in some areas, out to about 5 m. The retention of the wetlands with a minimum 15-m setback, and an absence of indirect effects on wetland hydrology, results in a very low risk of any impacts on the crayfish and this SWH element.

The Specialized Habitat for Wildlife relates to the presence of groundwater seeps at the base of the slope within the FOD5 forest community (see Figures 3 and 5). As proposed, development will occur well outside of this area, and the seeps will not be directly disturbed. The development envelope is hydrologically down-gradient of the seeps and there is no potential to interfere with the source of groundwater that feeds the seeps. Overall, there is no meaningful risk of interference or impairment of the seeps within the south end of the Property.

It has also been conservatively assumed that a very limited portion of the Property might function as Area-Sensitive Breeding Bird Habitat. An area of about 1 ha in the southeast corner of the Property has been conservatively assumed to support this SWH function to a limited extent. This area is well removed from the development envelope and there is no expectation of direct or indirect effects on any area-sensitive birds that might be present.

The only other potential SWH function under consideration for the Property is a deer movement corridor. There has been no confirmation of the presence of such a corridor, but it is conservatively assumed that there may be some seasonal movement of deer along the ridge at the southern edge of the Property (see Figure 5). This area is well removed from the development envelope, and any corridor function that might be associated with the Property is expected to persist after development.

5.3 Wetlands

In terms of <u>direct</u> impacts, the three wetland features within the Property boundary are to be retained with a setback of 15 to 30 m. The rationale for the effectiveness of a set-back of this width is provided in Section 6.2.3. With this set-back in place, there will be no direct incursion or loss of wetlands.

<u>Indirect</u> effects on the wetlands can occur if any key factor in the wetlands' hydrological balance is significantly altered. As discussed in Section 3.3, the hydrological dynamics of the wetlands within the Property are driven primarily by seasonal surface or shallow

groundwater sources originating off-site, with peak flow during the spring runoff period. Effects on wetland hydrology as a result of changes within the development envelope are effectively limited by the fact that the development envelope is largely down-gradient of the wetlands. Any runoff or seepage from the development envelope that might migrate into the wetlands is not expected to constitute a meaningful fraction of total input to any of the wetlands. The location of the development envelop is such that it would not interfere with hydrological *output* from the wetland.

In terms of water *quality*, there is a risk of transport of contaminants from the development envelope to the wetlands during construction activities and, to a much lesser extent, during operation of the completed facilities. This risk is inherently limited due to the fact that the runoff that might flow from the area of development into the wetland would be very minor in volume and duration. The capacity to convey any substances of possible concern (e.g. sediments, fertilizers, pesticides) is generally proportional to runoff flow. Stormwater movement and quality is also highly controllable when using standard mitigation techniques (see Section 6.2). In addition, the establishment of a vegetated set-back of at least 15 m also serves to mitigate potential conveyance of deleterious substances into the wetlands.

Adverse effects on the wetland are also possible during and after construction as a result of direct human incursion into the wetland. The plant and animal communities within the wetland generally exclude species that are rare or sensitive, which serves to limit the potential significance of any such impacts. Also, activities during the operation of the proposed eco-retreat are likely to exclude behaviours such as dumping or trampling that can be a concern in developed areas.

Potential impact on the wetlands within the Property is primarily associated with any effect the proposed development may have on the flow of surface runoff that enters the Property via municipal drain at the end of Harbour Drive. This seasonal runoff source appears to be a significant hydrological input for Wetland 1. It should be noted that the drain discharge is an anthropogenic input, and the current state of the wetland partly reflect this non-natural source. There are also other apparent man-made drainage channels that convey overflow from the wetland toward Johnson's Creek. Accordingly, the residence time of the drainage discharge within the wetland may be relatively short. Management of the municipal drain discharge entering the Property could still result in episodic changes in the volume and/or residence time of water within the wetland feature. Substantial and prolonged changes in the amount or duration of water, especially during spring peaks, could lead to a change (decrease or increase) in wetland area, and also changes in the nature of wetland plant communities. The municipal drain outlet is outside of the Property boundary and not direct subject to plans for the Property. However, spill-over from the drain does enter the Property and may be subject to eventual stormwater management (SWM) planning for the Property.

The significance of potential impacts on any aspect of the wetland is inherently constrained by the generally limited function and overall value of the wetlands. As discussed in Section 4.2.6 and 4.2.7, the wetlands within the Property are not significant

in terms of their size, and they offer only limited hydrological function and natural habitat function. The ecological and socio-economic functions of the wetlands found within the Harbour Drive Property are relatively limited, so the implications of any wetland loss or impairment are similarly limited.

5.4 Significant Woodlands

The Provincial Policy Statement (PPS) defines significant woodland as "an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history". Regional assessments are undertaken by various agencies using criteria derived from this general definition to identify woodland areas for initial designation as "significant". The Natural Heritage Reference Manual (MNR, 2010) provides detailed recommendations for criteria and standards to be used in the assessment of woodland significance.

The Harbour Drive Property is almost entirely designated as Significant Woodlands through the Grey County Official Plan (OP). The County's assessment of woodland significance is based on a desktop review using data provided by the MNRF. According to the OP, the main criteria used in the County's assessment are size and proximity to special features (PSW, ANSI). It is acknowledge that the assessment in the OP is not based on ground-level surveillance, and any site-specific consideration of woodland significance is best served by more detailed ground-level assessment.

The current assessment of potential impacts on the woodlands found within and immediately adjacent to the Harbour Drive Property is conducted in consideration of several core categories identified in the Natural Heritage Reference Manual. This includes woodland size, forest cover characteristics, the presence of species of conservation concern, ecological functions and linkages, and water protection functions.

5.4.1 Woodland Size

The inland portion of the Harbour Drive Property is ~12 ha in area and almost entirely occupied by natural forest cover at present. The wooded portion of the Property is part of a band of a continuous block of Significant Woodland that extends around much of the Meaford peninsula. This swath of woodland is generally within a few 100 meters of the Georgian Bay shoreline, occupying relatively undeveloped land (agriculture, minor residential or recreational development). On the basis of size, this extensive band of forested land that overlaps the Property measures several thousand hectares and certainly meets the criterion for significance.

The forest cover within the Harbour Drive Property traverses about 2/3 the full width of the Significant Forest band where it stretches across the area of Johnson Harbour. The

bulk of proposed development will occur within a relatively confined area at the north end of the Property. The combined area that is not within the development envelope and designated as open space (including wetlands) is about 9.2 ha, or 78% of the inland forested portion of the Property. The total footprint of built features (~0.3 ha), roads/trails/parking areas (~1.5 ha), the five residential lots (~0.5 ha) and the common septic system (~0.3 ha) is almost 2.8 ha. For trails and roads, the majority of what is proposed follows the existing network of lanes within the Property, and it is anticipated that the need for clearance of forest for these features will be minimal. In allowing for this, the combined built area that would result in the displacement of forest is expected to be 2 ha or less, or about 17% of the existing forest cover within the confines of the Property.

The actual amount of tree loss can be mitigated through efforts at all stages of development (design, construction, post-construction) to optimize the long-term presence of trees (see discussion in Section 6.2). This could include provisions to maximize retention of existing trees within the five residential lots. With such measures, actual loss of forest cover within the Property is expected to be in the order of 10% or less. Even assuming 100% clearance within the development envelope (i.e., <3 ha of existing forest cover within the Property) the lost forest cover represents a fraction of a percent of the larger woodland block that occupies the Johnson's Harbour area and beyond. The larger block would still be considered significant based on size-related considerations. The confinement of the bulk of development to the forest area within ~100 m of the shoreline also results in retention of a substantial portion of the lateral band of forest within the Property and across the Johnson Harbour area. As a result, the proposed development des not result in any fragmentation of the existing block of Significant Woodlands.

5.4.2 Forest Characteristics

The Property is occupied largely by tree species assemblages that are typical of the region. The forest communities within the Property are relatively young and composed of common tree species. This includes a limited presence of non-native tree/shrub species (i.e., European Buckthorn). It does not appear that the community exhibits any unique or unusual attributes except for the presence of seeps near the base of the slope at the south end of the Property (i.e., outside the development envelope). Overall, the available information does not indicate any uncommon characteristics of the forest communities associated with the area of Proposed development.

In the post-development condition, the Property will lose a portion of the relatively young and common forest community types that exist at present. All forest community types found pre-development will still be present within the Property after development.

5.4.3 Species of Conservation Concern

Land clearing and other construction activity poses some risk of direct harm to the wildlife associated with the forest habitat currently present within the Harbour Drive Property. Development will also lead to alteration or loss of the some portion of the current forest cover within the Property, which would reduce or impair woodland habitat functions. Post-construction conditions within the development envelope could also result in disturbance of forest-associated wildlife in adjacent woodland habitat due to light, noise, and direct human incursion.

The available information does not indicate a high likelihood of the presence of regulated Species at Risk (SAR) or other species of conservation concern (SOCC) within the Property (see Section 5.1). Almost all of the species of plants and animals that have been observed within and around the forest communities at the Harbour Drive Property are relatively common to the region and the Province, and many are typical of forests influenced by some level of human disturbance. The few Priority Species that have been confirmed as present within Property exclude any regulated SAR. The possible occurrence of these species in the area of proposed development is not expected to be abundant or widespread.

Overall, the general absence of species of conservation concern limits any of the risks the development might pose to such species. The risk is also limited by the exclusion of development activities from the large majority (>75%) of the existing woodland area within the Property.

5.4.4 Habitat and Linkage Function

Habitat and linkage functions are evaluated on the basis of the characteristics of the woodland communities and the surrounding landscape, and also the types of fauna present in the surrounding area.

The dimensions of the wooded area within the Harbour Drive Property are such that it provides a limited amount of habitat that could be considered as *forest interior*. The faunal community that has been observed at the Property is generally not a forest interior community. Only about 1 ha of the Property encompasses forest cover that meets the technical definition of forest interior (i.e., >200 m from forest edge). This forest area is outside of the area of proposed development.

Other than the extended block of Significant Woodland outside of the Property, there are no significant natural heritage features (i.e., PSW, ANSI) in close proximity to the Property, and no specific habitat features/functions (e.g. deer wintering areas) have been identified within or adjacent to the Property. The nearest features consist of a deer wintering yard approximately 1 km east of the Property at the closest point, and the Sucker Creek Valley - Cape Rich ES (Earth Life Science ANSI) which is about 2 km to

the east, largely overlapping with the deer yard. It is likely that there is some level of ecological connectivity between the Property and these features, but there is no expectation that this connectivity would have significant influence on the features or their functions.

Even in absence of any surrounding features with significant habitat functions, the forested area within the Property still provides some ecological linkage within the local landscape. The immediate surrounding landscape has either been subject to some modification for human residential and recreational use or is occupied by forest cover very similar to that found within the Harbour Drive Property. The faunal community of this area is most likely adapted to such a landscape. This is evidenced by the nature of animals observed during surveillance of the Property (i.e., common species, species adapted to human influences). The potential impacts of any disruption of ecological linkage would be confined to this faunal assemblage, which shows no indication of rarity or sensitivity.

Owing to the placement of the development envelope, forest cover will be maintained across the majority of the Property, largely preserving habitat continuity and linkage between adjacent properties and within the larger forest block in the Johnson Harbour area. Development could result in some loss or interference of that linkage, but it will remain largely intact. No significant features, habitat types or species will be significantly affected, owing to the limited spatial extent of development and the general absence of significant features or species in the surrounding area.

5.4.5 Water Protection

Forest cover generally leads to improved quality of runoff (e.g. reduced erosion and sediment loads, reduced thermal loading), which can have a beneficial effect on down-gradient features. The extent to which forest cover will provide attenuation of runoff traveling through the Property is not known at this time. However, the flow of water through the Property at present is largely channelized which circumvents attenuation that might occur in forested areas. In addition, the runoff flow through the Property is volumetrically dominated by drainage water originating upstream of the Property. Only a very minor fraction of the total runoff discharging from within the Property is expected to originate or have any meaningful residence time within the area of development. Loss of forest cover within the development area is not expected to have any measurable effect on either the quality or quantity of runoff leaving the Property. The retention of the forested wetland features also preserves the bulk of any attenuation function attributable to the Property. The risk of water quality impacts is reduced even further due to level of dilution that occurs in the downstream receiving waters (i.e., Johnson's Creek, the near-shore waters of Georgian Bay). Overall, there is no expectation that the proposed development would result in any diminishment of water protection function associated with the woodlands within the Property.

5.5 Fish Habitat

Aquatic features potentially influenced by the proposed development include Johnson's Creek and the nearshore waters of Georgian Bay, both of which function as fish habitat. There is no direct hydrological connectivity between the Property and Georgian Bay, but some fraction of surface runoff is directed by drainage channel toward Johnson's Creek, which in turn discharges to Georgian Bay.

Stormwater management within the Property could have an impact on the quality or quantity of water that ultimately discharges to Johnson's Creek, just west of the Property. This is a coldwater stream that provides habitat for various aquatic biota, including fish. Water quality/quantity impacts could have localized effects on aquatic biota near the point of discharge, and possibly further downstream at the outlet to Georgian Bay.

The potential for impacts related to water quality is dependent on the relative magnitude of contaminant or thermal loads delivered to surface waters from within the development envelope. That load is proportional to the flow from the development envelope, which is expected to be an extremely small fraction of the total flow through the Property. That flow appears to be volumetrically dominated by sources originating up-gradient of the Property, particularly discharge from the municipal drain at the end of Harbour Drive. That drainage is unattenuated runoff, and likely has relatively high loads of typical stormwater contaminants (e.g. suspended solids, nutrients). Overall, the quality and quantity of water flowing through the Property and ultimately discharging to Johnson's Creek and then Georgian Bay is almost exclusively a function of processes occurring in the drainage basin lying up-gradient of the Property. Management of the stormwater inflow could be designed to maintain or even improve the quality of the water flowing through the noted water features.

Overall, there is no indication that any aspect of the development would result in meaningful deterioration of the quality or quantity of water flowing through the Property and ultimately to Johnson's Creek and Georgian Bay. Effective stormwater management planning can ensure that there is no appreciable risk of adverse effects related to water quality and quantity. Stormwater management is discussed further in Section 6.2.2.

The near-shore waters of Georgian Bay could also be subject to effects resulting from any on-shore or in-water works that disturb beach substrates or aquatic sediments, or result in removal of aquatic vegetation. This area functions as fish habitat, likely including nursery habitat for some species. Disturbances in the near-shore area could have some degree of impact on this habitat function. The most significant risks are associated with siltation and direct incursion into potential fish spawning or nursery habitat. The development proposal considered in this EIS does include minor works at or near water's edge. This work will be subject to consultation with the Department of Fisheries and Oceans to ensure that fish habitat is not adversely affected.

Existing databases indicate the possible presence of Lake Sturgeon, which is Species at Risk (SAR), in the waters of Georgian Bay in proximity to the Property. There are no

characteristics of the near-shore waters adjacent to the Property which would be indicative of desirable habitat for any aspect of the Sturgeon's life cycle, particularly spawning. Accordingly, the risk to this specific species is deemed to be low.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The analysis of potential environmental impacts has identified a number of risks posed by the proposed development at the Harbour Drive Property. Table 10 summarizes the identified risks pertaining to woodlands, wetlands, fish habitat, priority species (SAR/SOCC), and SWH. Further discussion is provided below, and recommendations developed in light of the risk findings are provided in Sections 6.2 to 6.4.

Overall, the proposed development can be undertaken as planned without significant adverse effects on the natural features present within and adjacent to the Harbour Drive Property. The recommendations herein are offered as additional precautions to reduce the already low levels of risk.

6.1.1 Priority Species

There is a limited presence of Priority Species within the Harbour Drive Property. Available information indicates the possible presence of several species, including two regulated SAR, on or near the Property, but there is very low or no likelihood of meaningful presence of these species within the development envelope. The likelihood of harm to significant numbers of any of these species during construction is considered to be very low. The likelihood of direct harm or habitat interference during the post-construction period is also considered to be very low, and also subject to mitigation through design and operational considerations.

6.1.2 Significant Wildlife Habitat

There are five specific forms of SWH which have been identified or conservatively assumed to be present within the Property. These SWH functions are associated with the wetland areas or the forest cover along the southern edge of the Property. There are no SWH functions immediately within the development envelope or in areas that would be affected by the proposed development. The risk to SWH is considered to be very low.

6.1.3 Significant Woodlands

The loss of a portion of the existing Significant Woodland area within the Property during construction is the only impact that is not wholly avoidable, but there are mitigation measures than can reduce the degree of impact. Even in absence of mitigation, the woodlands in question are of relatively low ecological, economic and social value, and the loss of a limited portion of those woodlands is not considered to be a significant

loss. There is insignificant risk of impairment of overall woodland function in the Johnson's Harbour area.

6.1.4 Wetlands

The development envelope lies outside of the wetland boundaries, and thus direct loss of wetlands or wetland function will not occur. The greatest risk of impact on wetland functions is related to possible alteration of inflow from the drainage ditch discharging at the end of Harbour Drive. Stormwater management can be designed to effectively mitigate any such changes (see Section 6.2.2).

There is low risk of impairment of water quality or habitat functions in the wetlands due to construction activity, and also operational activities to a much lesser extent. There are mitigation measures recommended to further limit the likelihood and/or significance of any such adverse effects.

6.1.5 Fish Habitat

The risks posed to the fish habitat associated with the Harbour Drive Property are driven primarily by the quality and quantity of water flowing through the Property. The waters of Johnson's Creek and Georgian Bay both serve as fish habitat, and thus any changes in water quality/quantity could have relatively significant implications.

Activity and changes within the development envelope will effectively have no measurable effect on the quality or quantity of water that ultimately discharges to Johnson's Creek. Management plans for the stormwater originating off-property and flowing through to Johnson's Creek can be developed to preclude any measurable changes in water quality and quantity.

6.2 Mitigation Measures

Not withstanding the overall conclusion that the risk of meaningful environmental impact is very low, there are a several recommendations that can still serve to mitigate the occurrence, extent or significance of any possible effects on natural heritage features and associated functions.

In the case of the Harbour Drive Property, mitigation recommendations reflect four core concepts:

1. Considerations in the design and layout of the eco-retreat to reduce the potential for direct and indirect effects on natural features (wetlands, woodlands), with particular emphasis on tree preservation.

2. Maintenance of hydrological balance, primarily through a stormwater management plan, primarily to ensure protection of the wetlands and their functions.
3. Creation of set-back or buffer areas to mitigate potential effects of development (during both initial construction and on-going facility operation) on the adjacent wetlands.
4. Management of construction and operational activities within the development envelope to reduce the risk of indirect effects on adjacent features.

6.2.1 Design Considerations

Tree Preservation

The removal of trees within the development envelope likely constitutes the greatest environmental risk associated with the proposed development. Although the environmental implications of such tree loss are not considered to be significant, any reasonable measures that can serve to limit the loss of individual trees within the development envelope should be taken. Efforts to optimize the post-construction and long-term presence of trees are likely to be beneficial to a variety of endpoints. The presence of trees around facilities and infrastructure will provide hydrological benefits, attenuation of light and sound, habitat function for wildlife (e.g. nesting, foraging or migrating birds), and also aesthetic and functional benefits to the eco-retreat facility and private residences.

Optimization of the long-term presence of trees can be achieved through site plan considerations, by implementation of protective measures during construction, and by replanting efforts following construction. Tree preservation recommendations for the construction and post-construction phases are discussed in Sections 6.2.4 and 6.2.5.

The site plan should be developed to minimize loss of tree cover, where feasible, with priority given to larger trees (i.e., > 30 cm DBH). Space outside of the built footprint should remain treed to the extent possible.

Trees located between the wetlands and planned development should be prioritized for retention. Conifers should be prioritized in this location since they are well-suited to various functions of a vegetated set-back (see Section 6.2.3).

For all trees adjacent to the development envelope and trees to be retained within the envelope, placement of impermeable surface (e.g. paved driveways, parking areas) within and around the root zone should be avoided where feasible.

The presence of various species of ash warrants special consideration in tree preservation planning. Tree preservation efforts need to account for anticipated decline of ash species,

which are relatively abundant on the Harbour Drive Property. Emerald Ash Borer (EAB) has been spreading steadily through Ontario, including Grey County. It is highly likely that existing specimens of ash at the Harbour Drive Property will experience EAB infestation and rapid decline within the next decade. Due to Dutch elm disease, there is a similar prognosis of decline for specimens of elm, also relatively common in parts of the Property. In general, neither ash nor elm specimens should be prioritized for preservation. Where relevant and feasible, buildings and infrastructure should be directed to areas where ash and elm are relatively abundant.

Minor Amenities

The placement of minor amenities (walkways, small viewing platforms, interpretive signage) should be planned so that removal of trees minimized or eliminated, especially trees > 30 cm DH. Walkways and other amenities that might be installed near the wetlands should be raised, where feasible, to avoid any interference with water movement and also to avoid interference with movement of amphibians and small mammals.

Public Access

The routes of access and entry to eco-retreat facilities and exterior use components (decks, balconies) should generally be situated and oriented away from the wetlands and woodlands to the extent practical.

In instances where access to natural features is intended to facilitate nature appreciation, access routes should be closer to areas where there is already some level of landscape modification (e.g. near the roadway). Access infrastructure should be designed to discourage visitors from straying away from designated paths (e.g. install railings on walkways).

Lighting

To reduce the potential for wildlife disturbance effects, the style and placement of outdoor lighting should be such as to minimize light intrusion into natural habitats. Light standards should be placed and directed away from natural features to extent possible. Lights should be shielded on sides oriented towards natural areas. Lights should be downcast and placed relatively low to ground wherever possible.

6.2.2 Stormwater Management

The current analysis indicates that stormwater runoff originating within the Property, and specifically within the development envelope, will be relatively minor in volume and will not pose significant environmental risks. Mitigation of any risk associated with stormwater contamination transport can be achieved through standard erosion and sedimentation control measures (e.g. silt fencing, avoidance of work in wet weather)

implemented during the construction phase. Risk mitigation can also be achieved by constraining any alterations to the existing site grade, minimizing the area of built or paved surface, use of permeable pavers, and by the use of buried downspouts. These measures serve to minimize any potential deterioration in the quality of hydrological input to the wetland as a result of the proposed development.

The most significant risks potentially associated with the proposed development relate to stormwater that originates outside of the Property. The drainage ditch discharge entering the Property at the end of Harbour Drive, pooling into Wetland 1, and ultimately flowing into Johnson's Creek, is associated with potential impacts on wetland hydrological balance and also on the quality of water in downstream waters that function as fish habitat. In absence of any management of this flow source, construction activities or post-construction operation of the eco-retreat facility would not cause meaningful change in the quality of water flowing through the Property. For purposes of managing flood and erosion potential, the management of this stormwater flow is likely warranted. In addressing this primary need, the stormwater management plan should, to the extent feasible, give consideration to maintaining the pre-development hydrological balance in terms of the general volume and temporal pattern of water flow into the wetland feature. It is important to acknowledge that the existing hydrological balance is at least partly a function of anthropogenic flow sources that very likely differ from hydrological inputs that would be encountered under completely natural conditions. The premise of this EIS is that the existing hydrological dynamics represent the baseline condition and the target condition for the future.

In terms of water quality, the drainage discharge from Harbour Drive is likely to convey sediments and possibly other contaminants (e.g. nutrients) from a relatively large drainage basin that encompasses various land uses. The stormwater management plan should be developed in part to improve the quality of runoff entering the Property, primarily through various standard measures to attenuate sediment loads, if feasible.

6.2.3 Wetland Set-back

The establishment of a set-back can be a primary means to protect and preserve a wetland feature and its functions. A set-back is a vegetated buffer area surrounding the feature of interest, and of form and size adequate to protect the feature and its functions from the impacts of proposed activities or changes in adjacent areas. The general intent includes the protection of the wetland itself, and associated hydrological or ecological functions. The delineation of a set-back should also include consideration of adjacent uplands and the critical functions of the wetland that may be supported by those uplands.

Defining a set-back for a wetland feature is generally intended to provide protection from a number of possible anthropogenic stressors potentially associated with development activity. This may include, but is not necessarily limited to, the following:

- alteration of the *quantity* of water entering the wetland, as a result of development-related changes in the dynamics of either surface or groundwater movement,
- impairment of the *quality* of water, as a result of introduced contaminants (fertilizer, pesticides, suspended sediments) or a change in water temperature,
- disturbance of fauna as a result of increases in levels of noise, light or activity in proximity to sensitive biota,
- disturbance due to direct human incursion (trampling, dumping), and
- spread of invasive plants.

Prescriptive guidance as to the nature and dimensions of a set-back required to achieve effective protection from any or all of these stressors is generally not available. However, common practice in determining appropriate set-back width for the wetland feature should consider the proposed adjacent land use and associated stressors, and also the nature of ecological features and functions to be protected.

In the case of the wetland features at the Harbour Drive Property, the available information indicates a relatively low natural heritage value (i.e., relatively common plant and animal communities, limited habitat and hydrological function, and limited socio-economic value). The ecological functions of the wetlands are summarize as follows:

- there is no fish habitat within the wetlands,
- there is no evidence that the wetland functions as turtle habitat,
- there is no evidence of wildlife that is known to be sensitive to disturbance (e.g. certain wetland or woodland nesting birds),
- there is a reasonable diversity of amphibians, but the available information indicates a low breeding intensity, most likely associated with confined areas of standing water in Wetlands 1 and 3,
- there is a relatively common species assemblage of both wetland and upland plants, and
- there is no evidence that the wetlands provide breeding habitat for bird or mammal species with specific wetland habitat requirements.

For ecological endpoints, the need for the protective benefits achievable through a set-back is relatively low, simply owing to the nature of the plant and animal communities that are present.

Hydrologically, the input side of the hydrological balance of the wetland appears to be dominated by surface runoff or shallow groundwater originating off-property. Under the current conditions, the hydrological balance of the wetland is not significantly affected by local runoff or seepage originating within the Property, and even less so by hydrological

inputs originating from within the proposed development envelope. The set-back is only effective for the latter inputs, and thus it is inherently limited in terms of the overall protective benefit that can be achieved.

The nature of the proposed development is also an important consideration in determining the required functions and attributes of the set-back. There are a number of aspects of the proposed development that reduce the potential for adverse effects on the adjacent wetlands, as follows:

- It will include only five private residences, which reduces the potential for issues typically associated with larger-scale residential development (excessive landscape management by home-owners, dumping, house cat introduction, etc.).
- The volume, frequency and speed of traffic are all expected to be low relative to a typical residential development, leading to a relatively low potential for road-kill impacts and for disturbance due to traffic noise.
- The presence of impermeable surface is not extensive, and therefore there is a relatively low potential for meaningful changes in water quality (e.g. thermal effects, road salt effects) and quantity (e.g. increased runoff, decreased infiltration) that are typically associated with the presence of impermeable paved surfaces in developed areas.
- It is expected that the eco-retreat facility will be maintained and managed in a relatively natural state, reducing potential impacts typically associated with residential landscape practices (e.g. effects of fertilizers, pesticides, non-native species encroachment).

Considered collectively, the characteristics of the proposed eco-retreat facility are such that the likelihood and potential significance of adverse effects on the adjacent wetland are relatively low. Consequently, there is a relatively limited protective benefit associated with a set-back. The characteristics of the wetland itself (i.e., limited ecological function, hydrological function, and socio-economic value) also limit the potential protective function of a set-back. Overall, the potential benefits of a set-back and the cumulative need for it are both limited.

In the case of the wetland at the Harbour Drive Property, a set-back can still provide protective function in the following ways:

- as a physical barrier against direct intrusion into the wetland by construction or maintenance equipment,
- as a barrier to reduce the potential for wildlife disturbance potentially caused by light or activity associated with the proposed development (both during construction and operational phases),
- to protect the root zone of trees along the perimeter of the wetland, and

- to protect against potential transport of contaminants associated with stormwater runoff into the wetland, although the potential for this impact is considered to be very low.

The effectiveness of a set-back is partly a function of the distance (width) created between the potential stressor and the natural feature of interest. It is also partly a function of the nature of the landscape within the set-back. The effective width and vegetation characteristics of the set-back should be defined in regard to the specific functions that it will serve, and their relative importance. Given the nature of the wetland and the nature of the development, the requirements of the set-back are minimal, particularly when considered in tandem with other recommended mitigation measures. A set-back of minimal width (10 m) would serve to protect the root zone of trees immediately along the perimeter of the wetland, and will also function as an exclusion zone to prevent direct incursion into the wetland by construction or maintenance equipment. The placement of erosion controls along the perimeter of the set-back (see Section 6.2.4) will provide for integrated mitigation of any stormwater-related impacts, and also bolster the barrier/exclusion function of the set-back during construction. The optimization of the presence of coniferous trees and shrubs within the set-back will enhance its function from the perspective of buffering of possible disturbance of wildlife, both during and after construction.

Overall, a set-back of 10 m or more with retained or replanted natural cover is expected to provide reasonable protection of the wetland features within the Property. Increased set-back width generally offers increased protection, and establishment of a set-back width up to 30 m should be considered.

6.2.4 Construction Phase Measures

Sediment and Erosion Control

The development and implementation of an erosion and sediment control (ESC) plan will serve as a primary means to mitigate environmental risk during the construction phase, including the risk of water quality impact and direct incursion into the wetland. The ESC should be developed following standard principles and guidance to minimize the potential for transport of runoff and suspended sediments into the wetland. The ESC should include perimeter controls (e.g. silt fence, temporary flow diversion swales), placed at the dripline of the outer extent of the set-back to help protect the integrity and exclusion function of the set-back.

Soil Management

To prevent compaction and associated effects on soil function (infiltration, root zone support) operation of heavy machinery should be prohibited during wet conditions. Topsoil should be stripped and stockpiled prior to construction, and replaced after

construction. Soil stockpiles should not be stored in close proximity to trees designated for retention.

Tree Protection

Subject to the site plan, loss of some tree cover will be unavoidable in the construction phase. There are measures that can be taken to reduce the potential for loss or harm of trees that are not intended for removal. This includes the following;

- Establish routes of entry and designated travel space for construction equipment to minimize incursion near wooded areas or individual trees designated for retention.
- Place protective wrap or fencing around trees in proximity to work space that have been identified for preservation to avoid accidental damage during the operation of heavy machinery.
- Avoid passage of construction vehicles over the root zone (i.e., within the dripline, at minimum) of retainable trees to reduce potential for compaction within the root zone, especially during conditions which are conducive to compaction.

Minor Amenities

Minor amenities (walkways, small viewing platforms, interpretive signage) within natural areas should be constructed in the late summer or fall when conditions will be relatively dry, minimizing disturbance of the soil profile. This timing will also effectively avoid the reproduction period of amphibians and birds and mitigate the potential for direct harm or disturbance.

6.2.5 Post-Construction Measures

Following the completion of construction, the presence and maintenance of buildings, infrastructure and amenities is associated with some risk of certain environmental impacts. The impacts in question relate primarily to disturbance of wildlife and incursion into the wetlands. The likelihood and potential significance of such impacts are deemed to be quite low. Regardless, there are measures recommended to minimize these risks.

Landscaping

Landscape planning and management should include several measures that will limit the potential for inducement of various stressors on natural areas. The main concern relates to possible contamination (pesticides and excess nutrients) and non-native species introductions.

As a priority, alteration or management of existing plant communities should not be practiced in natural areas outside the development envelope, unless for the purpose of hazard control (e.g. removal of dead trees) or invasive species removal (e.g. Buckthorn). Such practices within the development envelope should also be minimal, and areas external to building and infrastructure footprints should remain in a natural state to the extent feasible. Non-native plant species should be excluded from landscaping plans, particularly those which are known to have invasive tendencies (e.g. periwinkle).

In instances where vegetation control is warranted (poison ivy control, overgrowth of roadside vegetation) indiscriminate use of pesticides, especially those that are broad spectrum, should be avoided. An Integrated Pest Management (IPM) approach is recommended, with priority given to non-chemical control measures.

Tree Replacement

Where construction requirements preclude the retention of desirable trees, or where existing trees are of low desirability for retention (e.g. ash or elm), planting of trees following construction may be the most suitable method of ensuring the long-term presence of trees.

Species of preference for any replanting efforts are those associated with the existing native forest community. In general, the list of tree species recommended for planting within the established development envelope includes Red Oak, Basswood, Trembling Aspen, Red Maple (wet areas), Sugar Maple, Eastern White Cedar, and Balsam Fir. Recommended shrub species include native Dogwood species and Staghorn Sumac (at woodland edges).

Wildlife Access

The Property encompasses groundwater seeps (see Figure 5) that can function as a vital winter resource to wildlife species in the area. There is also a potential deer movement corridor along the top of the ridge on the Property's southern perimeter. These features will persist into the post-construction period. To ensure continued wildlife benefits, fencing should not be installed that prevents access from adjacent lands.

6.3 Monitoring

The most notable risk associated with the proposed development comes from possible alteration of the current hydrological balance of Wetland 1. That balance appears to be dependent on stormwater runoff that originates off property and is largely anthropogenic. The drainage discharge in question is likely to require the development and implementation of a stormwater management (SWM) plan as part of the overall development plan. It has been recommended that the SWM plan be developed with the intent of maintaining the pre-development hydrological balance of the wetland. To achieve this objective, it may be necessary to implement an adaptive management approach, with contingencies for possible future adjustments in stormwater management

procedures in response to observed changes in the wetland. To support such an approach, measures of certain indicators of the hydrological status of the wetland would be required. This would generally include the depth and temporal duration of standing water, along with precipitation data. The installation of permanent staff gauges in key locations and regular recording of water levels would serve this purpose.

6.4 Enhancement Opportunities

The proposed development also affords some opportunity for ecological enhancement. There are several recommendations to foster restoration and/or reconnection of natural features and their associated functions, as follows:

- Implement a program for removal of invasive species, with the removal of buckthorn in wooded areas as one priority.
- Manage herbaceous vegetation in open areas (e.g., adjacent to laneways) to favour native plant species that will support pollinator insects, and also the Monarch butterfly (i.e., include native milkweed in seeding mix).
- Develop a plan for the management of dead or dying trees (especially ash and elm) that includes provisions for the retention of dead trees as elements of habitat.
- Develop an education and interpretation program to foster awareness among visitors to the eco-retreat.
- Install and maintain wildlife supporting features (e.g. bird nest boxes, bat boxes) within the Property.

As discussed in Section 6.2.1, there is an opportunity to improve the existing quality of drainage discharge that is directed through the Property. Any aspect the SWM plan that reduces the existing loads of suspended solids and other associated contaminants will be beneficial to downstream features, including Wetland 1 and Johnson's Creek.

7.0 REFERENCES

Bird Studies Canada (BSC), Environment Canada's Canadian Wildlife Service, Ontario Nature, Ontario Field Ornithologists and Ontario Ministry of Natural Resources. 2016. Ontario Breeding Bird Atlas Database. Data accessed from NatureCounts, a node of the Avian Knowledge Network, Bird Studies Canada. Available at: http://www.naturecounts.ca. Last accessed 12 September 2016.

Bird Studies Canada (BSC). 2003. The Marsh Monitoring Program Training Kit and Instructions for Surveying Marsh Birds, Amphibians, and Their Habitats. Revised 2003.

R.J. Burnside and Associates Limited. (Burnside) 2017. Water Supply and Onsite Sewage System Assessment - EcoRetreat Development. Prepared for Aqorpions Inc.. Burnside File Reference 300038915.0000. June 2017.

Cadman, M.D., D.A. Sutherland, G.G Beck, D. Lepage, and A.R. Couturier (eds.). 2007. Atlas of the Breeding Birds of Ontario, 2001 - 2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. Toronto, ON.

County of Grey. 2019. Grey County Official Plan. Effective Date June 7, 2019

County of Grey Geographic Information Systems (GIS) website (http://gis.greycounty.ca). Last accessed 15 Nov 2021.

Environment Canada. 2016. Recovery Strategy for the Common Nighthawk (*Chordeiles minor*) in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. vii + 49 pp.

Gillespie, J.E. and N.R. Richards. 1954. Soil Survey of Grey County. Report No. 17 of the Ontario Soil Survey.

Golder Associates Ltd. 2011. Recovery Strategy for Lake Sturgeon (*Acipenser fulvescens*) – Northwestern Ontario, Great Lakes-Upper St. Lawrence River and Southern Hudson Bay-James Bay populations in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources, Peterborough, Ontario.

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

Natural Heritage Information Centre (NHIC). 2015. Online Element Occurrence Database at http://nhic.mnr.gov.on.ca/nhic_.cfm. Last accessed 17 June 2016.

Oldham, M.J., W.D. Bakowsky and D.A. Sutherland. 1995. Floristic Quality Assessment System for Southern Ontario. Ontario Ministry of Natural Resources, Natural Heritage Information Centre. 69 pp.

Ontario Ministry of Environment, Conservation and Parks (MECP). 2019. Client's Guide to Preliminary Screening for Species at Risk. MECP Species at Risk Branch, Permissions and Compliance. DRAFT. May 2019.

Ontario Ministry of Natural Resources (MNR). 2000. Significant wildlife habitat technical guide. Queen's Printer for Ontario. 151p.

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

Ontario Ministry of Natural Resources and Forestry (MNRF). 2014a. Ontario Wetland Evaluation System (OWES) - Southern Manual. 3rd Edition, Version 3.3. Queen's Printer for Ontario. August 2014.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2014b. Significant Wildlife Habitat Mitigation Support Tool. Version 2014. Queen's Printer for Ontario. July 2015.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Queen's Printer for Ontario. 38 pp. January 2015.

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TABLES

Table 1: Summary of ELC Community Characteristics

Community Type[1]	Approx. Area (ha)	Woody Vegetation Characteristics			Tree Size (DBH) Distribution[4]			Summary of Functions[5]
		Woody Cover[2]	Composition[3]	Age and Structure	<15 cm	15 to 30 cm	>30 cm	
Cultural Meadow (CUM)	<0.1	0%	NA	NA	0%	0%	0%	Typical open residential landscape. No ecological function of note.
White Ash Deciduous Forest (FOD4)	0.6	80%	White Ash>>Red Ash>Aspen	Relatively young and even aged. Limited layering	60%	35%	5%	Limited diversity and abundance of common fauna. No evidence of Priority Species or SWH.
Sugar Maple Deciduous Forest (FOD5)	4.0	95%	Sugar Maple>>White Ash>Beech	Intermediate age, mixed age. Moderate layering evident.	35%	50%	10%	Moderate diversity and abundance of common fauna. Minor presence of Priority Species (Eastern Wood-pewee). Limited occurrence of Priority Species (Black Ash) in close proximity to wetlands. Otherwise, no Priority Species or SWH function.
Mixed Forest (FOM)	4.3	90%	Cedar>Ash=Maple=Aspen	Intermediate age, mixed age. Moderate layering evident.	40%	50%	10%	Moderate diversity and abundance of common fauna. Limited occurrence of Priority Species (Black Ash) in close proximity to wetlands. Otherwise, no Priority Species or SWH function.
White Cedar Coniferous Forest (FOC4)	1.0	>95%	Cedar>>Fir>Birch	Relatively young and even aged. Limited layering	50%	45%	5%	Low diversity and abundance of common fauna. No evidence of Priority Species or SWH.
Ash Mineral Deciduous Swamp (SWD2)	2.0	80%	Red Ash>Black Ash>Elm	Relatively young and even aged. Limited layering	60%	35%	5%	Moderate diversity and abundance of common fauna. Minor amphibian breeding habitat. Notable presence of Priority Species (Black Ash). Candidate area for SWH (Terrestrial Crayfish). Moderate water protection function.

1 - Community type as per ELC (Lee et al., 1998). See Figure 4.
2 - estimate of average absolute cover of upper layer, as per Lee et al. 1998
3 - estimate of relative abundance of woody species, as per Lee et al., 1998
4 - estimated percentage of trees in the noted range of diameter at breast height (DBH)
5 - SWH = Significant Wildlife Habitat

Table 2: Plant Species Observed at the Harbour Drive Property

Common Name	Scientific Name	Provincial Status (S-RANK)[1]	COSEWIC Status	COSSARO Status	Native vs Non-Native Status	Coefficient of Conservatism[2]	Wetness Coefficient[2]
Alternate-leaved Dogwood	*Cornus alternafolia*	S5	-	-	Native	6	3
American Basswood	*Tilia americana*	S5	-	-	Native	4	3
American Beech	*Fagus grandifolia*	S4	-	-	Native	6	3
American Water-horehound	*Lycopus americanus*	S5	-	-	Native	4	-5
Awl-fruited Sedge	*Carex stipata*	S5	-	-	Native	3	-5
Balsam Fir	*Abies balsamea*	S5	-	-	Native	5	-3
Balsam Poplar	*Populus balsamifera*	S5	-	-	Native	4	-3
Bebb's Sedge	*Carex bebbii*	S5	-	-	Native	3	-5
Birdfoot Trefoil	*Lotus corniculatus*	NA	-	-	Non-native	NA	3
Black Ash	*Fraxinus nigra*	S4	THR	END	Native	7	-3
Black Cherry	*Prunus serotina*	S5	-	-	Native	3	3
Black Knapweed	*Centaurea nigra*	NA	-	-	Non-native	NA	5
Black Medic	*Medicago lupulina*	NA	-	-	Non-native	NA	3
Black Nightshade	*Solanum emulans*	S5	-	-	Native	1	3
Black Raspberry	*Rubus occidentalis*	S5	-	-	Native	2	5
Black Walnut	*Juglans nigra*	S4	-	-	Native	5	3
Black Willow	*Salix nigra*	S4	-	-	Native	6	-5
Black-eyed Susan*	*Rudbeckia hirta*	S5	-	-	Native	0	3
Bladder Campion	*Silene cucubalus*	NA	-	-	Non-native	NA	5
Bladder Sedge	*Carex intumescens*	S5	-	-	Native	6	-3
Blue Cohosh	*Caulophyllum thalictroides*	S5	-	-	Native	5	5
Blue-eyed Grass	*Sisyrinchium montanum*	S4/S5	-	-	Native	4	0
Boneset	*Eupatorium perfoliatum*	S5	-	-	Native	2	-3
Bracken Fern	*Pteridium aquilinum*	S5	-	-	Native	2	3
Bristly Sarsaparilla	*Aralia hispida*	S5	-	-	Native	8	5
Brown Knapweed*	*Centaurea jacea*	NA	-	-	Non-native	NA	5
Bulbous Buttercup	*Ranunculus bulbosus*	NA	-	-	Non-native	NA	3
Calico Aster	*Symphyotrichum lateriflorum*	S5	-	-	Native	3	0
Canada Anemone	*Aneomone canadensis*	S5	-	-	Native	3	-3
Canada Bluejoint	*Calamagrostis canadensis*	S5	-	-	Native	4	-5
Canada Goldenrod	*Solidago canadensis*	S5	-	-	Native	1	3
Canada Hawkweed	*Hieracium umbellatum*	S5	-	-	Native	6	5
Canada Mayflower	*Maianthemum canadense*	S5	-	-	Native	5	0
Canada Violet	*Viola canadensis*	S5	-	-	Native	6	3
Chicory	*Chicorium intybus*	NA	-	-	Non-native	NA	5
Choke Cherry	*Prunus virginiana*	S5	-	-	Native	2	3
Climbing Nightshade	*Solanum dulcamara*	NA	-	-	Non-native	NA	0
Coffee Tinker's-weed	*Triosteum aurantiacum*	S5	-	-	Native	7	5
Coltsfoot*	*Tussilago farfara*	NA	-	-	Non-native	NA	3
Columbine	*Aquilegia canadensis*	S5	-	-	Native	5	3
Common Burdock*	*Arctium minus*	NA	-	-	Non-native	NA	3
Common Buttercup*	*Ranunculus acris*	NA	-	-	Non-native	NA	0
Common Dandelion*	*Taraxacum officinale*	NA	-	-	Non-native	NA	3
Common Elderberry	*Sambucus nigra*	S5	-	-	Native	5	-3
Common Milkweed	*Asclepias syriaca*	S5	-	-	Native	0	5
Common Mullein*	*Verbascum thapsis*	NA	-	-	Non-native	NA	5
Common Plantain	*Plantago major*	NA	-	-	Non-native	NA	3
Common Ragweed	*Ambrosia artemisiifolia*	S5	-	-	Native	0	3
Common St. Johnswort	*Hypericum perforatum*	NA	-	-	Non-native	NA	5
Common Strawberry	*Fragaria virginiana*	S5	-	-	Native	2	3
Common Timothy	*Phleum pratense*	NA	-	-	Non-native	NA	3
Crested Sedge	*Carex cristatella*	S5	-	-	Native	3	-3
Curly Dock	*Rumex crispus*	NA	-	-	Non-native	NA	0
Cyperus-like Sedge	*Carex pseudocyperus*	S5	-	-	Native	6	-5
Daisy Fleabane	*Erigeron annuus*	S5	-	-	Native	0	3
Dame's Rocket*	*Hesperis matronalis*	NA	-	-	Non-native	NA	3
Dewberry (Dwarf Raspberry)	*Rubus pubescens*	S5	-	-	Native	4	-3
Dog Violet	*Viola conspersa*	S5	-	-	Native	3	0
Domestic Apple	*Malus pumila*	NA	-	-	Non-native	NA	5
Early Goldenrod	*Solidago juncea*	S5	-	-	Native	3	5
Early Meadow-rue	*Thalictrum dioicum*	S5	-	-	Native	6	3
Eastern Hemlock	*Tsuga canadensis*	S5	-	-	Native	7	3
Eastern White Cedar	*Thuja occidentalis*	S5	-	-	Native	4	-3
Eastern White Pine	*Pinus strobus*	S5	-	-	Native	4	3
Elecampane Flower*	*Inula helenium*	NA	-	-	Non-native	NA	3
Enchanter's Nightshade	*Circaea lutetiana ssp. canadensis*	S5	-	-	Native	2	3
English Plantain	*Plantago lanceolata*	NA	-	-	Non-native	NA	3
European Buckthorn*	*Rhamnus cathartica*	NA	-	-	Non-native	NA	0
False Nettle	*Boehmeria cylindrica*	S5	-	-	Native	4	-5
False Solomon's-seal	*Maianthemum racemosum*	S5	-	-	Native	4	3

Table 2: Plant Species Observed at the Harbour Drive Property

Common Name	Scientific Name	Provincial Status (S-RANK)[1]	COSEWIC Status	COSSARO Status	Native vs Non-Native Status	Coefficient of Conservatism[2]	Wetness Coefficient[2]
Field Horsetail	*Equisetum arvense*	S5	-	-	Native	0	0
Field Pussytoes	*Antennaria neglecta*	S5	-	-	Native	3	5
Field Sow-thistle	*Sonchus arvensis*	NA	-	-	Non-native	NA	3
Fireweed	*Chamaenerion angustifolium*	S5	-	-	Native	3	0
Flat-topped White Aster	*Doellingeria umbellata*	S5	-	-	Native	6	-3
Foam Flower	*Tiarella cordifolia*	S5	-	-	Native	6	3
Forget-me-not*	*Myosotis scorpioides*	NA	-	-	Non-native	na	-5
Fowl Mannagrass	*Glyceria striata*	S5	-	-	Native	3	-5
Fringed Sedge	*Carex crinita*	S5	-	-	Native	6	-5
Garlic Mustard*	*Alliaria petiolata*	NA	-	-	Non-native	NA	0
Gooseberry	*Ribes oxyacanthoides*	S5	-	-	Native	NA	3
Graceful Sedge	*Carex gracillima*	S5	-	-	Native	4	3
Green Ash	*Fraxinus pennsylvanica*	S4	-	-	Native	3	-3
Greenish Sedge	*Carex viridula*	S5	-	-	Native	5	-5
Hairy Wood Sedge	*Carex hirtifolia*	S5	-	-	Native	5	5
Harlequin Blue Flag	*Iris versicolor*	S5	-	-	Native	5	-5
Heart-leaved Aster	*Symphyotrichum cordifolium*	S5	-	-	Native	5	5
Helleborine	*Epipactis helleborine*	NA	-	-	Non-native	NA	3
Herb-Robert	*Geranium robertianum*	S5	-	-	Native	2	3
Highbush Cranberry	*Viburnum trilobum*	S5	-	-	Native	5	-3
Hog-Peanut	*Amphicarpaea bracteata*	S5	-	-	Native	4	0
Hop Sedge	*Carex lupulina*	S5	-	-	Native	6	-5
Indian Pipe	*Monotropa uniflora*	S5	-	-	Native	6	3
Intermediate Woodfern	*Dryopteris intermedia*	S5	-	-	Native	5	0
Ironwood	*Ostrya virginiana*	S5	-	-	Native	4	3
Jack-in-the-pulpit	*Arisaema triphyllum*	S5	-	-	Native	5	-3
King Devil	*Pilosella piloselloides*	NA	-	-	Non-native	NA	5
Knotted Rush	*Juncus nodosus*	S5	-	-	Native	5	-5
Lady's Thumb	*Persicaria maculosa*	NA	-	-	Non-native	NA	-3
Large-tooth Aspen	*Populus grandidentata*	S5	-	-	Native	5	5
Leafy Spurge	*Euphorbia esula*	NA	-	-	Non-native	NA	5
Long-stalk Sedge	*Carex pedunculata*	S5	-	-	Native	5	3
Lupine	*Lupinus polyphyllus*	NA	-	-	Non-native	NA	5
Male Fern	*Dryopteris filix-mas*	S4	-	-	Native	9	5
Manitoba Maple*	*Acer negundo*	S5	-	-	Native	0	0
Marsh Bedstraw	*Galium palustre*	S5	-	-	Native	5	-5
Marsh Marigold	*Caltha palustris*	S5	-	-	Native	5	-5
Meadow Horsetail	*Equisetum pratense*	S5	-	-	Native	8	-3
Mouse-ear Hawkweed	*Hieracium pilosella*	NA	-	-	Non-native	NA	5
Musk Mallow	*Malva moschata*	NA	-	-	Non-native	NA	5
Narrow-leaved Blue-eyed-grass	*Sisyrinchium angustifolium*	S4	-	-	Native	6	0
Narrow-leaved Cattail*	*Typha angustifolia*	NA	-	-	Native	NA	-5
New England Aster	*Symphyotrichum novae-angliae*	S5	-	-	Native	2	-3
Northern Bedstraw	*Galium boreale*	S5	-	-	Native	7	0
Northern Water Plantain	*Alisma triviale*	S5	-	-	Native	1	-5
Ostrich Fern	*Matteuccia struthiopteris*	S5	-	-	Native	5	0
Oxeye Daisy*	*Leucanthemum vulgare*	NA	-	-	Non-native	NA	5
Panicled Aster	*Symphyotrichum lanceolatum*	S5	-	-	Native	3	-3
Philadelphia Fleabane	*Erigeron philadelphicus*	S5	-	-	Native	1	-3
Plantain-leaved Sedge	*Carex plantaginea*	S5	-	-	Native	7	5
Poison Ivy	*Toxicodendron radicans*	S5	-	-	Native	2	0
Porcupine Sedge	*Carex hystericina*	S5	-	-	Native	5	-5
Prickly Lettuce	*Lactuca scariola*	NA	-	-	Non-native	NA	3
Pussy Willow	*Salix discolor*	S5	-	-	Native	3	-3
Red Baneberry	*Actaea rubra*	S5	-	-	Native	NA	3
Red Clover*	*Trifolium pratense*	NA	-	-	Non-native	NA	3
Red Maple	*Acer rubrum*	S5	-	-	Native	4	0
Red Oak	*Quercus rubra*	S5	-	-	Native	6	3
Red Raspberry	*Rubus idaeus*	S5	-	-	Native	2	3
Red Trillium	*Trillium erectum*	S5	-	-	Native	6	3
Red-osier Dogwood	*Cornus sericea*	S5	-	-	Native	2	-3
Reed Canary Grass	*Phalaris arundinacea*	S5	-	-	Native	0	-3
Robin's Plantain Fleabane	*Erigeron pulchellus*	S5	-	-	Native	7	3
Rough Avens	*Geum laciniatum*	S4	-	-	Native	4	-3
Rough Bedstraw	*Galium asprellum*	S5	-	-	Native	6	-5
Rough Cinquefoil	*Potentilla norvegica*	S5	-	-	Native	0	0
Rough-fruited Cinquefoil*	*Potentilla recta*	NA	-	-	Non-native	0	5
Round-leaved Dogwood	*Cornus rugosa*	S5	-	-	Native	6	5
Round-lobed Hepatica	*Hepatica americana*	S5	-	-	Native	6	5
Sarsaparilla	*Aralia nudicaulis*	S5	-	-	Native	4	3

Table 2: Plant Species Observed at the Harbour Drive Property

Common Name	Scientific Name	Provincial Status (S-RANK)[1]	COSEWIC Status	COSSARO Status	Native vs Non-Native Status	Coefficient of Conservatism[2]	Wetness Coefficient[2]
Scotch Thistle	*Onopordum acanthium*	NA	-	-	Non-native	NA	5
Self-heal	*Prunella vulgaris*	NA	-	-	Non-native	NA	0
Sensitive Fern	*Onoclea sensibilis*	S5	-	-	Native	4	-3
Serviceberry	*Amelanchier arborea*	S5	-	-	Native	5	3
Sharp-lobed Hepatica	*Hepatica nobilis var. acuta*	S5	-	-	Native	8	5
Silver Maple	*Acer saccharuinum*	S5	-	-	Native	5	-3
Silverweed	*Argentina anserina*	S5	-	-	Native	5	-3
Small White Aster	*Symphyotrichum lateriflorum*	S5	-	-	Native	NA	-3
Smooth Blackberry	*Rubus canadensis*	S5	-	-	Native	2	5
Smooth Goldenrod	*Solidago gigantea*	S5	-	-	Native	4	-3
Smooth Yellow Violet	*Viola pubescens var. scabriuscula*	S5	-	-	Native	5	3
Soft Rush	*Juncus effusus*	S5	-	-	Native	4	-5
Speckled Alder	*Alnus incana*	S5	-	-	Native	6	-3
Spinulose Wood Fern	*Dryopteris carthusiana*	S5	-	-	Native	5	-3
Spotted Jewelweed	*Impatiens capensis*	S5	-	-	Native	4	-3
Spotted Joe-pye Weed	*Eupatorium maculatum*	S5	-	-	Native	3	-5
Spotted Knapweed	*Centaurea biebersteinii*	NA	-	-	Non-native	NA	5
Staghorn Sumac	*Rhus typhina*	S5	-	-	Native	1	3
Starry False Solomon's-seal	*Maianthemum stellatum*	S5	-	-	Native	6	0
Sugar Maple	*Acer saccharum*	S5	-	-	Native	4	3
Swamp Red Currant	*Ribes triste*	NA	-	-	Native	6	-5
Sweet Pea	*Lathyrus latifolius*	NA	-	-	Non-native	NA	5
Tall Rattlesnakeroot	*Nabalus altissimus*	S5	-	-	Native	5	3
Teasel	*Dipsacus fullonum*	NA	-	-	Non-native	NA	3
Trembling Aspen	*Populus tremuloides*	S5	-	-	Native	2	0
Trout-lily	*Erythronium americanum*	S5	-	-	Native	5	5
Tufted Vetch*	*Vicia cracca*	NA	-	-	Non-native	NA	5
Viper's Bugloss	*Echium vulgare*	NA	-	-	Non-native	NA	5
Virginia Creeper	*Parthenocissus quinquefolia*	S4	-	-	Native	6	3
Virginia Waterleaf	*Hydrophyllum virginianum*	S5	-	-	Native	6	0
Water Dock	*Rumex orbiculatus*	S4/S5	-	-	Native	6	-5
Water Parsnip	*Sium suave*	S5	-	-	Native	4	-5
White Ash	*Fraxinus americana*	S4	-	-	Native	4	3
White Avens	*Geum canadense*	S5	-	-	Native	3	0
White Baneberry	*Actaea pachypoda*	S5	-	-	Native	6	5
White Birch	*Betula papyrifera*	S5	-	-	Native	2	3
White Clover*	*Trifolium repens*	NA	-	-	Non-native	NA	3
White Elm	*Ulmus americana*	S5	-	-	Native	3	-3
White Oak	*Quercus alba*	S5	-	-	Native	6	3
White Rattlesnake-root	*Nabalus albus*	S5	-	-	Native	6	3
White Spruce	*Picea glauca*	S5	-	-	Native	6	3
White Sweet Clover	*Melilotus albus*	NA	-	-	Non-native	NA	3
White Trillium	*Trillium grandiflorum*	S5	-	-	Native	5	3
Wild Bean	*Phaseolus polystachios*	S4	-	-	Native	NA	3
Wild Blue Phlox	*Phlox divaricata*	S4	-	-	Native	7	3
Wild Carrot*	*Daucus carota*	NA	-	-	Non-native	NA	5
Wild Grape	*Vitis riparia*	S5	-	-	Native	0	0
Wild Leek	*Allium tricoccum*	S5	-	-	Native	7	3
Wild Madder	*Galium mollugo*	NA	-	-	Non-native	NA	5
Wild Mint	*Mentha arvensis*	S5	-	-	Native	3	-3
Woodland Agrimony	*Agrimonia striata*	S4	-	-	Native	3	3
Woodland Strawberry	*Fragaria vesca*	S5	-	-	Native	4	3
Wool Grass	*Scirpus cyperinus*	S5	-	-	Native	4	-5
Yellow Avens	*Geum aleppicum*	S5	-	-	Native	2	0
Yellow Birch	*Betula alleghaniensis*	S5	-	-	Native	6	0
Yellow Iris	*Iris pseudacorus*	NA	-	-	Non-native	NA	-5
Yellow Wood-sorrel	*Oxalis europaea*	NA	-	-	Non-native	NA	3
Zigzag Goldenrod	*Solidago flexicaulis*	S5	-	-	Native	6	3

* - species marked with an asterisk are considered by various sources to be invasive in Ontario

1. Provincial Rank: S4 - Apparently Secure, S5 - Secure, NA = not applicable (non-native species)

2. Coefficients as reported by Oldham et al., 1995

Table 3: BBS Point-Count Station Characteristics

Station ID	UTM Coordinates (Centroid)[1]		Main Habitat/Cover Type	Number of Species Observed
	Easting	Northing		
PC-1	518145	4950888	Mixed Forest	9
PC-2	518105	4951015	Mixed Forest, Deciduous Swamp	14
PC-3	518270	4950945	Deciduous Forest	10
PC-4	518455	4950960	Deciduous Forest, Deciduous Swamp	8
PC-5	518320	4951085	Coniferous Forest	10

1 - coordinates obtained using handheld GPS, NAD83 datum. Reported to the nearest 5 m.

Table 4: Bird Species Recorded at the Harbour Drive Property

Species		Breeding Status		Conservation Status			Breeding Habitat Preference[6]
Common name	Scientific name	Site[1]	OBBA[2]	SRANK[3]	COSEWIC[4]	COSSARO[5]	
American Crow	*Corvus brachyrhynchos*	Possible	Confirmed	S5	-	-	general
American Goldfinch	*Carduelis tristis*	Probable	Confirmed	S5	-	-	general
American Redstart	*Setophaga ruticilla*	Probable	Probable	S5	-	-	early succession
American Robin	*Turdus migratorius*	Confirmed	Confirmed	S5	-	-	general
Belted Kingfisher	*Ceryle alcyon*	Possible	Confirmed	S4	-	-	wetland
Black-and-White Warbler	*Mniotilta varia*	Probable	Probable	S5	-	-	forest (interior)
Black-billed Cuckoo	*Coccyzus erythropthalmus*	Possible	Probable	S5	-	-	early succession
Black-capped Chickadee	*Poecile atricapillus*	Confirmed	Confirmed	S5	-	-	general
Black-throated Green Warbler	*Setophaga virens*	Probable	Probable	S5	-	-	forest (interior)
Blue Jay	*Cyanocitta cristata*	Probable	Confirmed	S5	-	-	forest
Brown-headed Cowbird	*Molothrus ater*	Probable	Confirmed	S4	-	-	general
Canada Goose	*Branta canadensis*	Possible	Confirmed	S5	-	-	wetland
Cedar Waxwing	*Bombycilla cedrorum*	Possible	Confirmed	S5	-	-	general
Chipping Sparrow	*Spizella passerina*	Probable	Confirmed	S5	-	-	general
Common (Wilson's) Snipe	*Gallinago delicata*	Possible	Probable	S5	-	-	wetlands
Common Grackle	*Quiscalus quiscula*	Confirmed	Confirmed	S5	-	-	general
Common Loon	*Gavia immer*	Possible	Probable	S5	NAR	NAR	wetlands
Common Merganser	*Mergus merganser*	Possible	Probable	S5	-	-	wetlands
Common Nighthawk	*Chordeiles minor*	Possible	Not reported	S4	THR	SC	open habitat
Common Raven	*Corvus corax*	Possible	Probable	S5	-	-	forest
Common Tern	*Sterna hirundo*	Observed	Not reported	S4	NAR	NAR	wetlands
Common Yellowthroat	*Geothlypis trichas*	Possible	Probable	S5	-	-	early succession or wetland
Dark-eyed Junco	*Junco hyemalis*	Observed	Possible	S5	-	-	forest
Double-crested Cormorant	*Phalacrocorax auritus*	Observed	Not reported	S5	-	-	wetlands
Downy Woodpecker	*Picoides pubescens*	Possible	Confirmed	S5	-	-	forest
Eastern Phoebe	*Sayornis phoebe*	Possible	Confirmed	S5	-	-	general
Eastern Wood-pewee	*Contopus virens*	Probable	Probable	S4	SC	SC	forest
Golden-crowned Kinglet	*Regulus satrapa*	Observed	Not reported	S5	-	-	forest
Great Crested Flycatcher	*Myiarchus crinitus*	Probable	Probable	S5	-	-	forest
Greater Scaup	*Aythya marila*	Observed	Not reported	S4	-	-	wetland
Hairy Woodpecker	*Picoides villosus*	Possible	Probable	S5	-	-	forest
Herring Gull	*Larus argentatus*	Observed	Possible	S5	-	-	wetland
House Wren	*Troglodytes aedon*	Probable	Confirmed	S5	-	-	general
Killdeer	*Charadrius vociferus*	Possible	Confirmed	S5	-	-	open habitat
Mallard	*Anas platyrhynchos*	Possible	Confirmed	S5	-	-	wetland
Merlin	*Falco columbarius*	Possible	Not reported	S5	NAR	NAR	forest
Mourning Dove	*Zenaida macroura*	Probable	Probable	S5	-	-	general
Northern Cardinal	*Cardinalis cardinalis*	Probable	Confirmed	S5	-	-	early succession
Northern Flicker	*Colaptes auratus*	Probable	Confirmed	S4	-	-	general
Northern Oriole	*Icterus galbula*	Probable	Probable	S5	-	-	general
Ovenbird	*Seiurus aurocapilla*	Possible	Probable	S4	-	-	forest (interior)
Pileated Woodpecker	*Dryocopus pileatus*	Probable	Possible	S5	-	-	forest
Pine Siskin	*Spinus pinus*	Observed	Not reported	S4			forest
Purple Finch	*Haemorhous purpureus*	Possible	Probable	S4	-	-	forest
Red-breasted Merganser	*Mergus serrator*	Confirmed	Confirmed	S4	-	-	wetland
Red-breasted Nuthatch	*Sitta canadensis*	Possible	Possible	S5	-	-	forest (interior)
Red-eyed Vireo	*Vireo olivaceus*	Probable	Probable	S5	-	-	forest
Ring-billed Gull	*Larus delawarensis*	Observed	Possible	S5	-	-	wetland
Ruby-throated Hummingbird	*Archilochus colubris*	Probable	Confirmed	S5	-	-	early succession
Ruffed Grouse	*Bonasa umbellus*	Possible	Possible	S4	-	-	forest
Scarlet Tanager	*Piranga olivacea*	Possible	Not reported	S4	-	-	forest
Song Sparrow	*Melospiza melodia*	Confirmed	Confirmed	S5	-	-	general
Turkey Vulture	*Cathartes aura*	Observed	Probable	S5	-	-	unassigned
Veery	*Catharus fuscescens*	Possible	Probable	S4	-	-	forest
Warbling Vireo	*Vireo gilvus*	Probable	Possible	S5	-	-	early succession
White-breasted Nuthatch	*Sitta carolinensis*	Possible	Confirmed	S5	-	-	forest
White-throated Sparrow	*Zonotrichia albicollis*	Possible	Probable	S5	-	-	forest
Wild Turkey	*Meleagris gallopavo*	Possible	Probable	S5	-	-	forest
Winter Wren	*Troglodytes hiemalis*	Possible	Probable	S5			forest (interior)
Wood Thrush	*Hylocichla mustelina*	Possible	Possible	S4	THR	SC	forest
Yellow-bellied sapsucker	*Sphyrapicus varius*	Confirmed	Probable	S5	-	-	forest (interior)
Yellow-billed Cuckoo	*Coccyzus americanus*	Possible	Not reported	S4	-	-	early succession

1. includes adjacent lands within ~100 m of property perimeter
2. the highest breeding status reported in the OBBA for Squares 17NK14, 17NK24 or 17NK25
3. Provincial Rank: S4 - Apparently Secure, S5 - Secure
4. Federal Status: THR = Threatened, SC = Special Concern, NAR = Not at Risk
5. Provincial Status: THR = Threatened, SC = Special Concern, NAR = Not at Risk
6. based on the Ontario Breeding Bird Atlas (OBBA)

Table 5: Amphibians Species Observed at the Harbour Drive Property

Species		"S" Rank	COSEWIC Status[2]	COSSARO Status[3]	Preferred Breeding Habitat	Local Presence
Common Name	**Scientific Name**					
American Toad	*Anaxyrus americanus*	S5	-	-	Variety of warm, shallow waters	Sacttered low level vocalizations near lakeshore in 2016. No vacalizations in 2020. Isolated adults and young-of-year observed in uplands near Wetland 3
Gray Treefrog	*Hyla versicolor*	S5	-	-	Various plant communities near permanent water	Scattered low-level breeding vocalizations in forest areas. No obvious association with wetlands
Green Frog	*Lithobates clamitans*	S5	-	-	Shallow permanent waterbodies	Isolated vocalizations weakly associated with Wetlands 1 and 3. Adult specimens observed in standing water in Wetlands 1 and 3.
Northern Leopard Frog	*Lithobates pipiens*	S5	NAR	NAR	Relatively permanent ponds without fish	Observed single adult specimens in upland habitats in 2016 and 2020.
Spotted Salamander	*Ambystoma maculatum*	S4	-	-	Shallow, temporary fish-free wetlands within forest surroundings	One dead specimen found in laneway in 2016. No salameder egg masses observed in wetland features
Spring Peeper	*Pseudacris crucifer*	S5	-	-	Temporary woodland ponds, or swamps	Low level vocalizations within or near property, not in obvious association with wetlands. Adults observed near Wetlands 1 and 3 on several occasions.
Western Chorus Frog	*Pseudacris triseriata*	S4	THR	NAR	Fishless ponds with ≥10 cm of water	Level 1 vocalizations in association with well-defined pool area in Wetland 1 and area of standing water within Wetland 3
Wood Frog	*Lithobates sylvaticus*	S5	-	-	Vernal woodland pools	Low level vocalizations in 2016, not in obvious association with wetlands. Isloated adult specimens observed in 2020 near Wetlands 1 and 3 on several occasions.

1. Provincial Rank: S4 = Apparently Secure, S5 = Secure
2. Federal Status: NAR = not at risk, THR = Threatened
3. Provincial Status: NAR = not at risk

Table 6: Reptile and Amphibian Species Reported in OARA[1]

Species		SRank[2]	ESA Status[3]	SARA Status[4]	Primary Habitat Association[5]
Common Name	**Scientific Name**				
Midland Painted Turtle	*Chrysemys picta marginata*	S4	-	-[6]	Ponds, marshes, lakes, or slow moving creeks with soft substrates and basking sites
Dekay's Brownsnake	*Storeria dekayi*	S5	NAR	NAR	Diverse habitats in forested areas
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*	S5	-	-	A generalist, occupying wide variety of habitats
Eastern Milksnake	*Lampropeltis triangulum*	S4	NAR	SC	Open habitats - rocky outcrops, fields and forest edge
Northern Watersnake	*Nerodia sipedon sipedon*	S5	NAR	NAR	In or near permanent bodies fresh water (lakes, rivers and wetlands)
Red-bellied Snake	*Storeria occipitomaculata*	S5	-	-	Forest edge and fields with abundant ground cover (logs, rocks, scrap piles and building foundations)
Northern Ring-necked Snake	*Diadophis punctatus*	S4	-	-	Forested areas, most common in areas with shallow soil and surface bedrock
Green Frog	*Lithobates clamitans*	S5	-	-	Shallow permanent waterbodies
Northern Leopard Frog	*Lithobates pipiens*	S5	NAR	NAR	Relatively permanent ponds without fish
Spring Peeper	*Pseudacris crucifer*	S5	-	-	Temporary woodland ponds, or swamps
American Toad	*Anaxyrus americanus*	S5	-	-	Variety of warm, shallow waters
Wood Frog	*Lithobates sylvaticus*	S5	-	-	Vernal woodland pools
Red-spotted Newt	*Notophthalmus viridescens*	S5	-	-	Ponds and lakes, and surrounding damp woodlands
Eastern Red-backed Salamander	*Plethodon cinereus*	S5	-	-	Mature forests with abundant woody debris
Spotted Salamander	*Ambystoma maculatum*	S4	-	-	Forests associated with temporary fish-free wetlands

1 - Includes species with more than 1 record of occurrence in OARA Squares 17NK14, 17NK15, 17NK24 and 17NK25
2 - Provincial Rank - S3 = Vulnerable, S4 = Apparently Secure, S5 = Secure
3 - Enadnegred Species Act (Ontario) - NAR = Not at Risk, SC = Special Concern, THR = Threatened
4 - Species at Risk Act (Canada) - SC = Special Concern, THR = Threatened
5 - as reported in the Ontario Amphibian and Reptile Atlas
6 - recently recommended as Special Concern by COSEWIC, but not yet listed under SARA

Table 7: NHIC Element Occurrences (EO) near the Harbour Drive Property

Common Name	Scientific Name	SRank[1]	SARO Status[2]	SARA Status[3]	Primary Habitat
Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	*Acipenser fulvescens*	S2	THR	THR	freshwater lakes and larger rivers
Eastern Meadowlark	*Sturnella magna*	S4	THR	THR	grasslands, hayfields (usually > 5 ha)
Bobolink	*Dolichonyx oryzivorus*	S4	THR	THR	grasslands, hayfields (usually > 5 ha)

1 - Provincial Rank - S2 = Imperiled, S4 = Apparently Secure
2 - Species at Risk in Ontario - THR = Threatened
3 - Species at Risk Act (Canada) - THR = Threatened
EO records obtained for 24 NHIC 1-km squares within 3-4 km of the Property.

Table 8: Priority Bird Species Reported in the OBBA[1]

Species		SRank[1]	SARO Status[2]	SARA Status[3]	Primary Habitat Association[4]
Common Name	**Scientific Name**				
Bald Eagle	*Haliaeetus leucocephalus*	S2/S4	THR[5]	SC	mature forests near large water bodies
Bank Swallow	*Riparia riparia*	S4	THR	THR	shoreline banks, sand and gravel pits
Barn Swallow	*Hirundo rustica*	S4	THR	THR	man-made structures
Bobolink	*Dolichonyx oryzivorus*	S4	THR	THR	grasslands, hayfields (usually > 5 ha)
Eastern Meadowlark	*Sturnella magna*	S4	THR	THR	grasslands, hayfields (usually > 5 ha)
Eastern Wood-pewee	*Contopus virens*	S4	SC	SC	deciduous and mixed forest
Grasshopper Sparrow	*Ammodramus savannarum*	S4	SC	SC	sparse grasslands (>30 ha)
Wood Thrush	*Hylocichla mustelina*	S4	SC	THR	decidous and mixed forests with dense understorey

1. reported as occurrig in one or more of OBBA Squares 17NK14, 17NK24 or 17NK25
2 - Provincial Rank - S2 = Imperiled, S3 = Vulnerable, S4 = Apparently Secure
3 - Species at Risk in Ontario - SC = Special Concern, THR = Threatened
4 - Species at Risk Act (Canada) - SC = Special Concern THR = Threatened
5 - as reported in the Ontario Breeding Bird Atlas (OBBA)
6 - applicable to southern Ontario population

Table 9: Summary of Priority Species Status at the Harbour Drive Property

Candidate Species[1]		Status in Ontario		Status within/near Property		
Common Name	Scientific Name	SRank[2]	ESA Status[3]	Habitat Available[4]	Presence Confirmed[5]	Notes
Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	*Acipenser fulvescens*	S2	END	Yes	No	Limited functional connectivity between Property and potential habitat (open waters of Georgian Bay). Limited in-water work proposed.
Western Chorus Frog	*Pseudacris triseriata*	S4	NAR	Yes	Yes	Some evidence of breeding in Wetland 1 and Wetland 3.
Midland Painted Turtle	*Chrysemys picta marginata*	S4	NA	No	No	No permanent standing water within Property to support turtle species
Eastern Milksnake	*Lampropeltis triangulum*	S4	NAR	No	No	Suitable open habitat not present to any meaningful extent within Property
Bald Eagle	*Haliaeetus leucocephalus*	S2/S4	SC	No	No	Woodlands within Property devoid of trees large enough to support nesting
Bank Swallow	*Riparia riparia*	S4	THR	No	No	No suitable nesting habitat within Property
Barn Swallow	*Hirundo rustica*	S4	THR	No	No	No suitable nesting habitat within property
Bobolink	*Dolichonyx oryzivorus*	S4	THR	No	No	Adequately sized patches of grassland habitat not available within property
Eastern Meadowlark	*Sturnella magna*	S4	THR	No	No	Adequately sized patches of grassland habitat not available within property
Eastern Wood-pewee	*Contopus virens*	S4	SC	Yes	Yes	General nesting habitat available, but only isolated occurrences within the Property. Breeding within Property not confirmed.
Grasshopper Sparrow	*Ammodramus savannarum*	S4	SC	No	No	Adequately sized patches of grassland habitat not available within property
Wood Thrush	*Hylocichla mustelina*	S4	SC	Yes	Yes	Limited presence of preferred habitat within Property. Isolated occurrences on west edge of Property in May of 2016. Not observed in 2020.
Common Nighthawk	*Chordeiles minor*	S4	SC	No	Yes	Preferred nesting habitat generally absent within Property. Limited evidence of possible breeding in area around Property in 2016 and 2020.
Monarch Butterfly	*Danaus plexippus*	S2/S4	SC	No	Yes	Only a few small patches of habitat within Property that could support Monarchs. Very limited presence of milkweed.
Black Ash[6]	*Fraxinus Nigra*	S4	NA	Yes	Yes	Numerous specimens of Black Ash within Property, associated with wetlands within designated *Hazard* area.

1 - Species has been identified in exsiting databses (NHIC, OBBA, OARA) or through direct site surveillance as present within a few km of the Property
2 - Provincial Status (S-Rank) - S2 = Imperiled, S3 = Vulnerable, S4 = Apparently Secure
3 - END = Endangered, THR = Threatened, SC = Special Concern, NA = Not Assessed
4 - sufficient quantity of preferred habitat is present within Property or in adjacent areas potentially affected by development
5 - species has been observed during monitoring of the Property and adjacent lands
6 - Black Ash has recently been formally listed as *Endangered* under the ESA, but regulatory prohibitions have been delayed.

Table 10: Overview of Environmental Risks Associated with Development

Affected Feature	Potential Impact	Likelihood	Potential Significance	Limiting and Mitigating Factors
Woodlands	Loss of forest cover	High	Low	Max. loss of ~20% of total cover within Property. Forest communities are common and have limited ecological or social value. Mitigation achievable through site design and Tree Preservation measures
	Habitat Loss/Impairment	High	Low	Plant and animal communities are not rare or sensitive. No meaningful presence of Priority Species or SWH in development envelope. Mitigation through construction timing, and site design considerations
	Loss/impairment of socio-economic function	Low	Low	Woodlands currently have very limited socio-economic function
	Impaired Hydrological Function	Low	Low	Limited by inherent characteristics of woodlands, and minimal influence of development envelope on hydrological processes.
Wetlands	Direct destruction of wetlands	Low	Low	Wetlands are outside of development envelope with minimum set-back of 15 m. Minor encroachment within 15 m associated with road embankment. No direct loss expected.
	Hydrological impairment	Low	Low	No evidence of meaningful hydrological connectivity between development envelope and wetlands. Possible changes to drainage discharge into Property may affect Wetland 1. Mitigation through stormwater management planning
	Habitat Loss/Impairment	Low	Low	Plant and animal communities are generally not rare or sensitive. One Priority Species (Black Ash) and one SWH function (terrestrial crayfish habitat) associated with wetlands. Mitigation through set-back and stormwater management planning
Species at Risk	Direct harm or impairment of habitat	Low	High	No known SAR presence within Property, especially within development envelope. Lake Sturgeon present in Georgian Bay. Potential risk associated with in-water works. Mitigation through construction timing, site design considerations, and DFO HADD assessment.
Other Priority Species	Direct harm	Low	Low	Limited presence within and adjacent to the Property, especially within development envelope. Mitigation through construction timing, site design considerations.
	Loss or interference of Habitat	Low	Low	Potential habitat limited, and largely not within development envelope. Much of potential habitat to be retained. Additional mitigation achieved through site design and operational management procedures.
Significant Wildlfie Habitat	Loss or impairment of habitat function	Low	Low	Identified SWH elements not within development envelope. No functional connectivity between development and areas with potential SWH function (*i.e.* wetlands and forested slope)

FIGURES

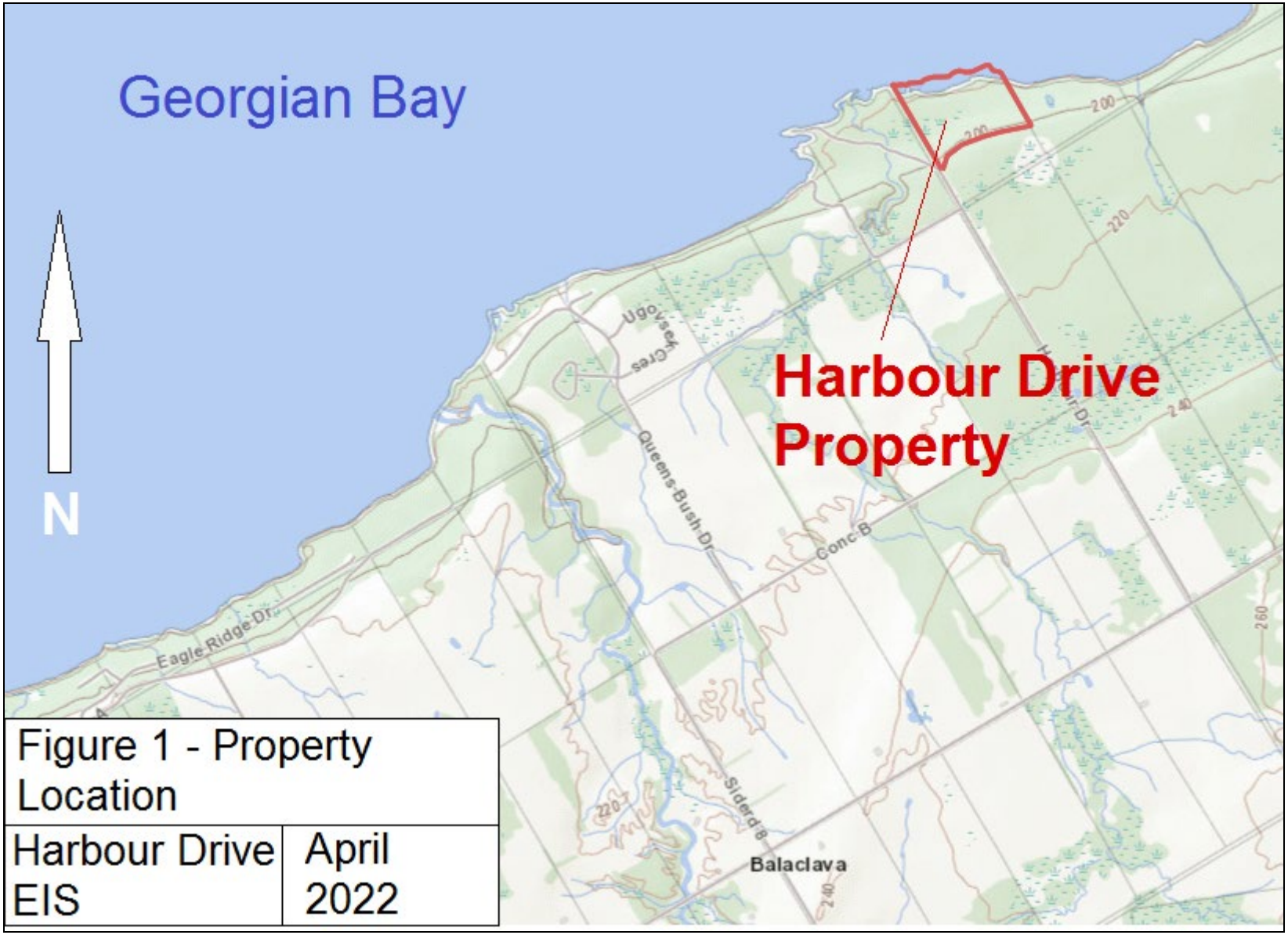


Figure 1 - Property Location	
Harbour Drive EIS	April 2022

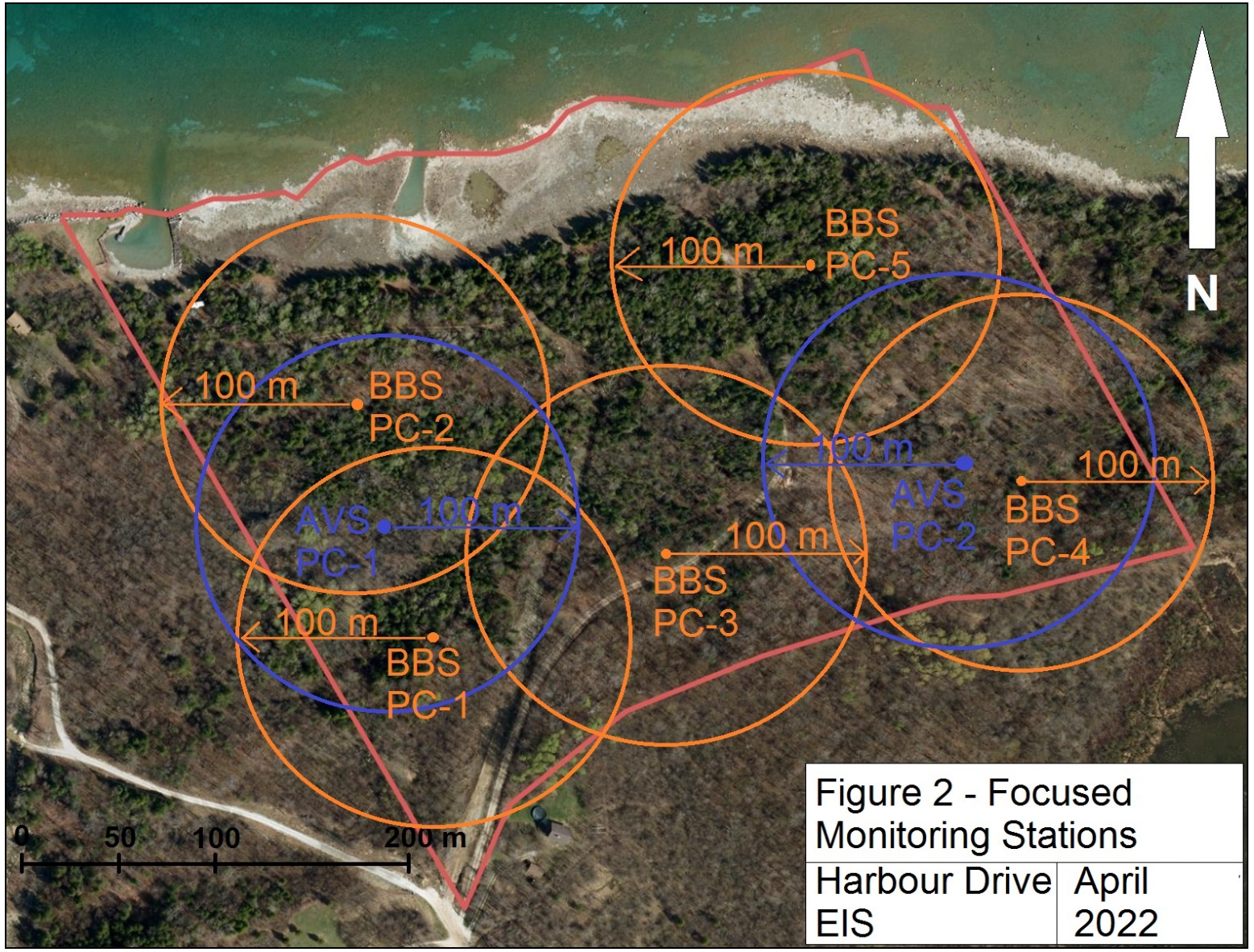


Figure 2 - Focused Monitoring Stations

Harbour Drive EIS	April 2022

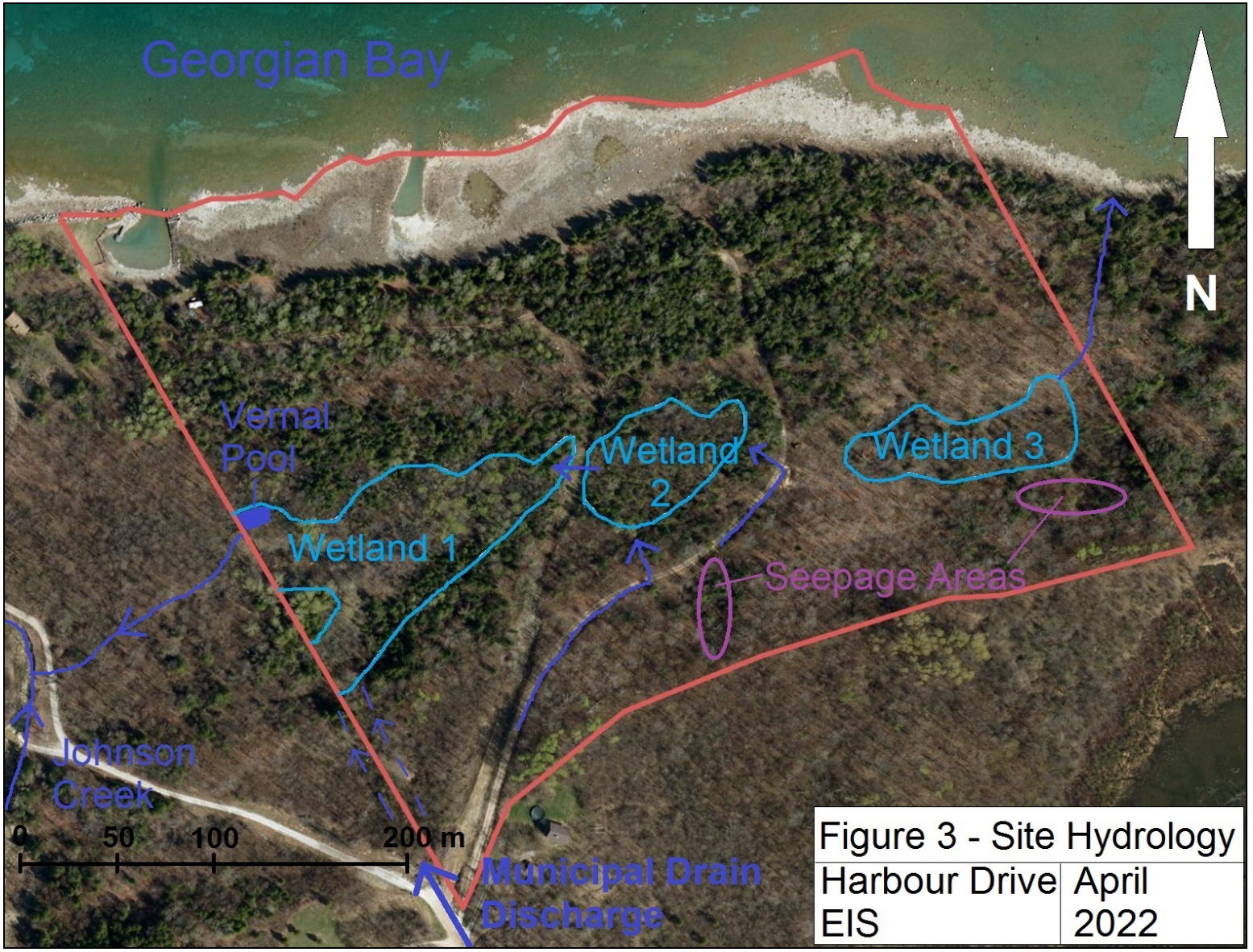


Figure 3 - Site Hydrology

Harbour Drive EIS	April 2022

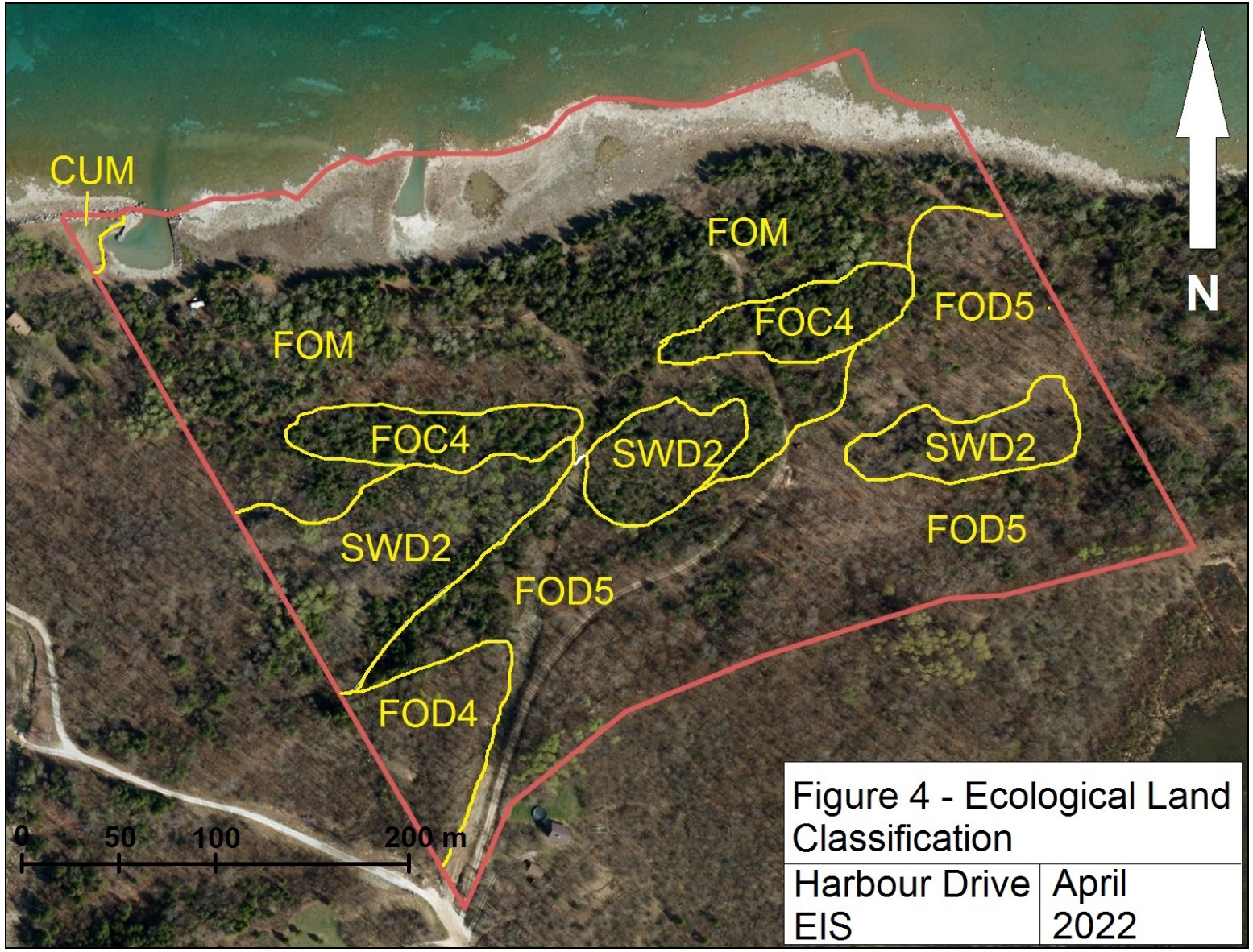


Figure 4 - Ecological Land Classification

Harbour Drive EIS	April 2022

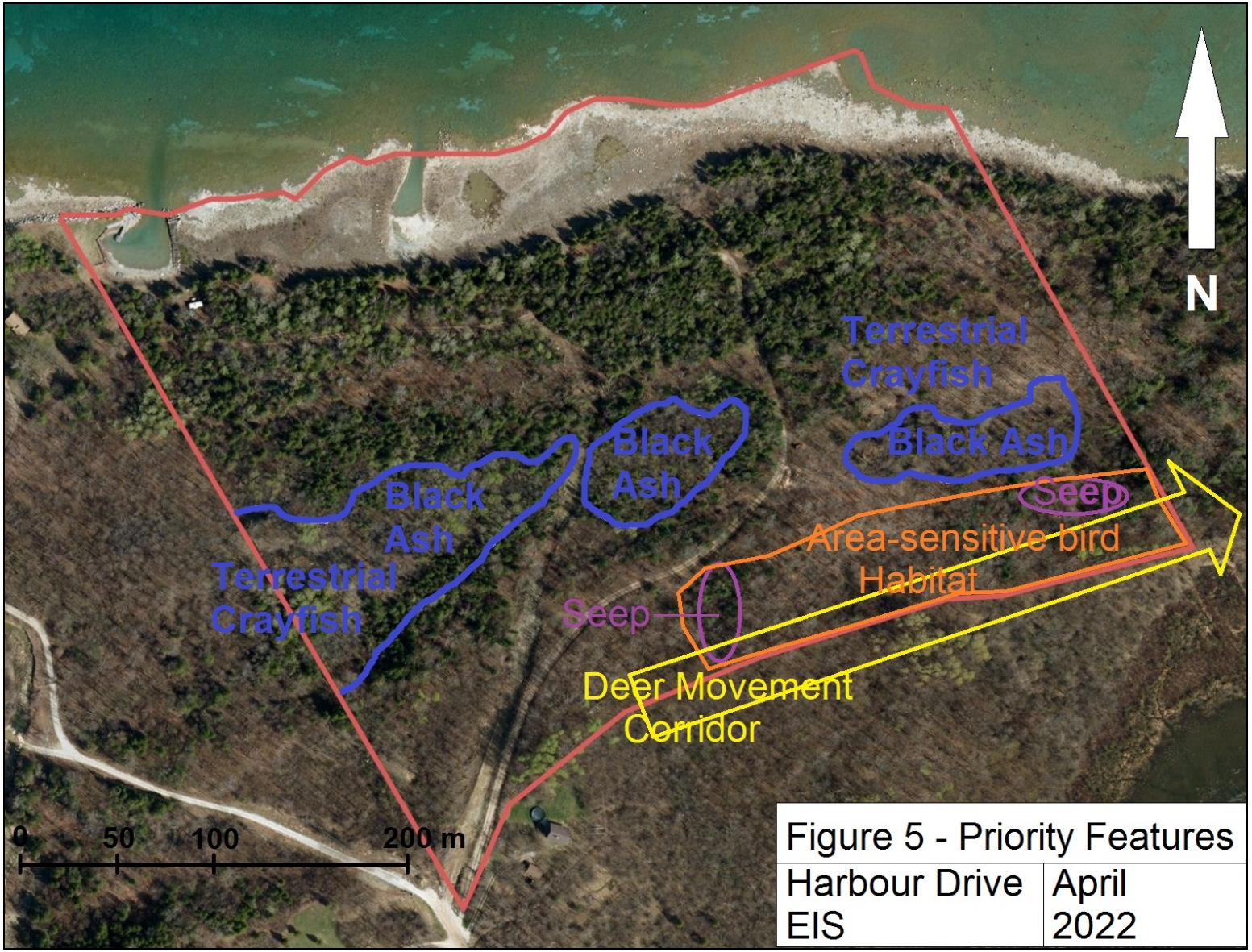


Figure 5 - Priority Features	
Harbour Drive EIS	April 2022

APPENDICES

Appendix A – Existing Constraint Maps

Grey County - Appendix B Features

Legend

- ANSI
  - ANSI, Earth Life Science
  - ANSI, Earth Science
  - ANSI, Life Science
- Other Wetlands
- Significant Valleylands
- Significant Woodlands
- Large Scale Roads
  - Provincial Highway
  - County Road
  - Township Road
  - Seasonal Road
- Parcels - Current

Notes

444 0 222 444 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Printed November 15, 2021 THIS MAP IS NOT TO BE USED FOR NAVIGATION

Grey County Land Use Designation

Legend

Land use

- Primary Settlement Area
- Secondary Settlement Area
- Agricultural
- Escarpment Recreation Area
- Hazard Lands
- Escarpment Natural Area
- Inland Lakes & Shoreline
- Niagara Escarpment Plan Area
- Rural
- Space Extensive Industrial and Commerci
- Sunset Strip Area
- Industrial Business Park
- Special Agriculture
- Provincially Significant Wetlands
- Recreation Resort Area

Large Scale Roads

- Provincial Highway
- County Road
- Township Road
- Seasonal Road

Parcels - Current

Notes

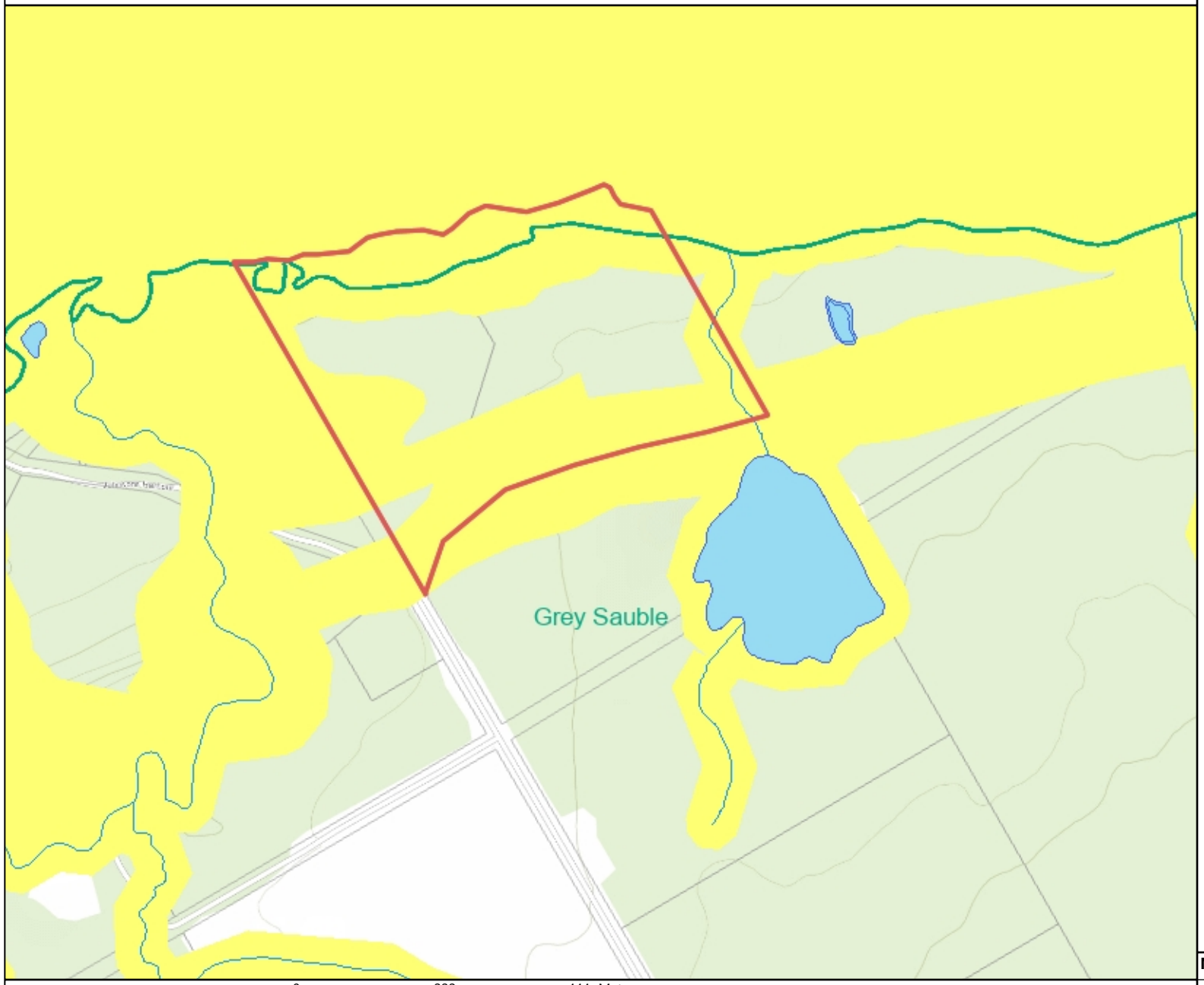
444 0 222 444 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Printed November 15, 2021 THIS MAP IS NOT TO BE USED FOR NAVIGATION

GSCA Features and Regulated Area



Legend

- CA Boundaries
- Wet Areas - GSCA
- Wet Areas - GRCA
- Water Features
- Watercourses
- Floodplains - NVCA
- Floodplains - GRCA
- Approximate Regulated and Screen SVCA
  - Approximate Regulated Area
  - Approximate Screening Area
- Regulations - GSCA
- Regulations - NVCA
- Parcels - Current

Notes

444 0 222 444 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

Printed November 15, 2021 THIS MAP IS NOT TO BE USED FOR NAVIGATION

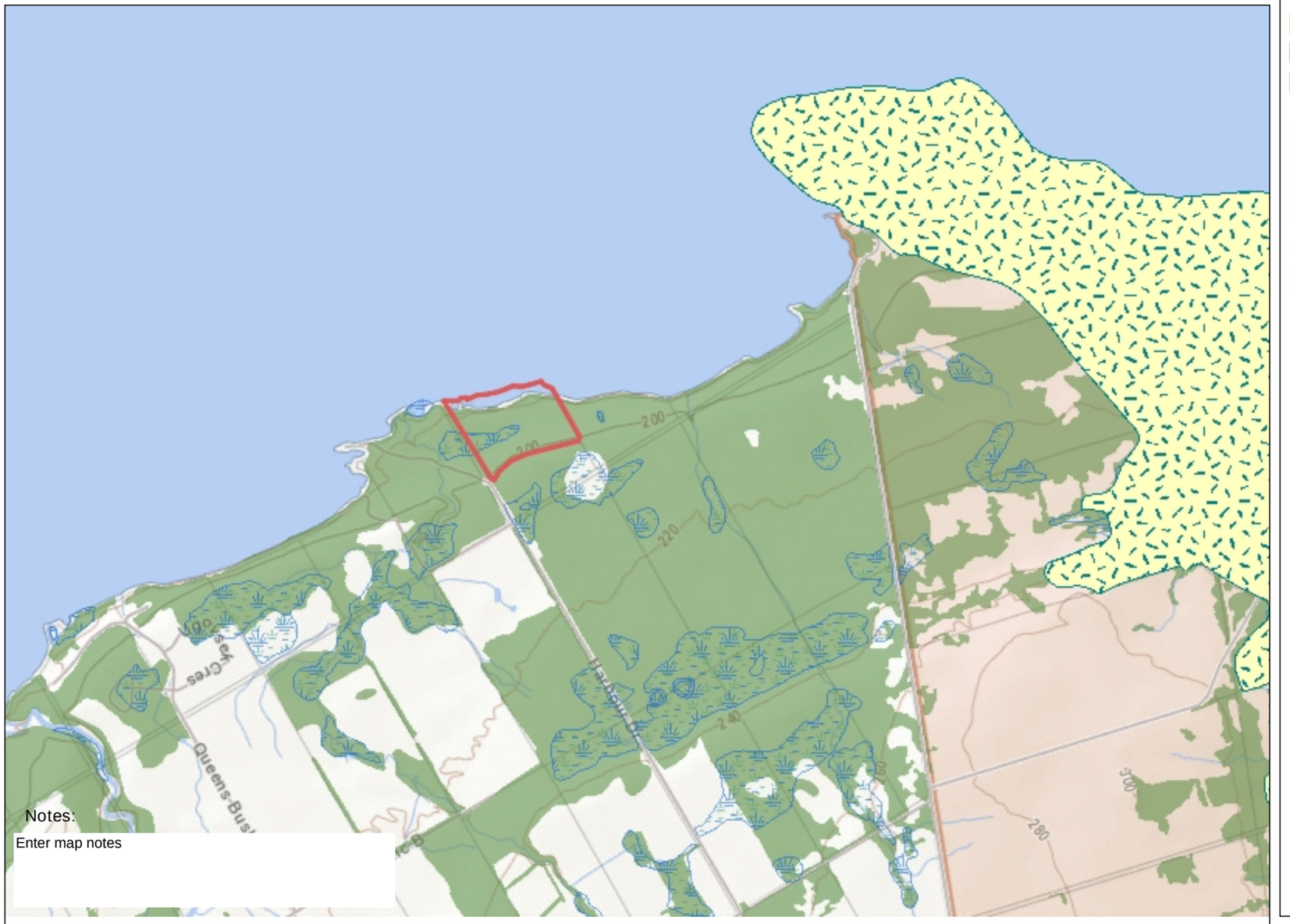
Ontario

Ministry of Natural Resources and Forestry

Make-a-Map: Natural Heritage Areas

MNRF Mapped Features

Map created:11/25/2021



Legend

ANSI

Earth Science Provincially Significant/sciences de la terre d'importance provinciale

Earth Science Regionally Significant/sciences de la terre d'importance régionale

Life Science Provincially Significant/sciences de la vie d'importance provinciale

Life Science Regionally Significant/sciences de la vie d'importance régionale

Evaluated Wetland

Provincially Significant/considérée d'importance provinciale

Non-Provincially Significant/non considérée d'importance provinciale

Unevaluated Wetland

Woodland

Conservation Reserve

Provincial Park

Natural Heritage System

Notes:

Enter map notes

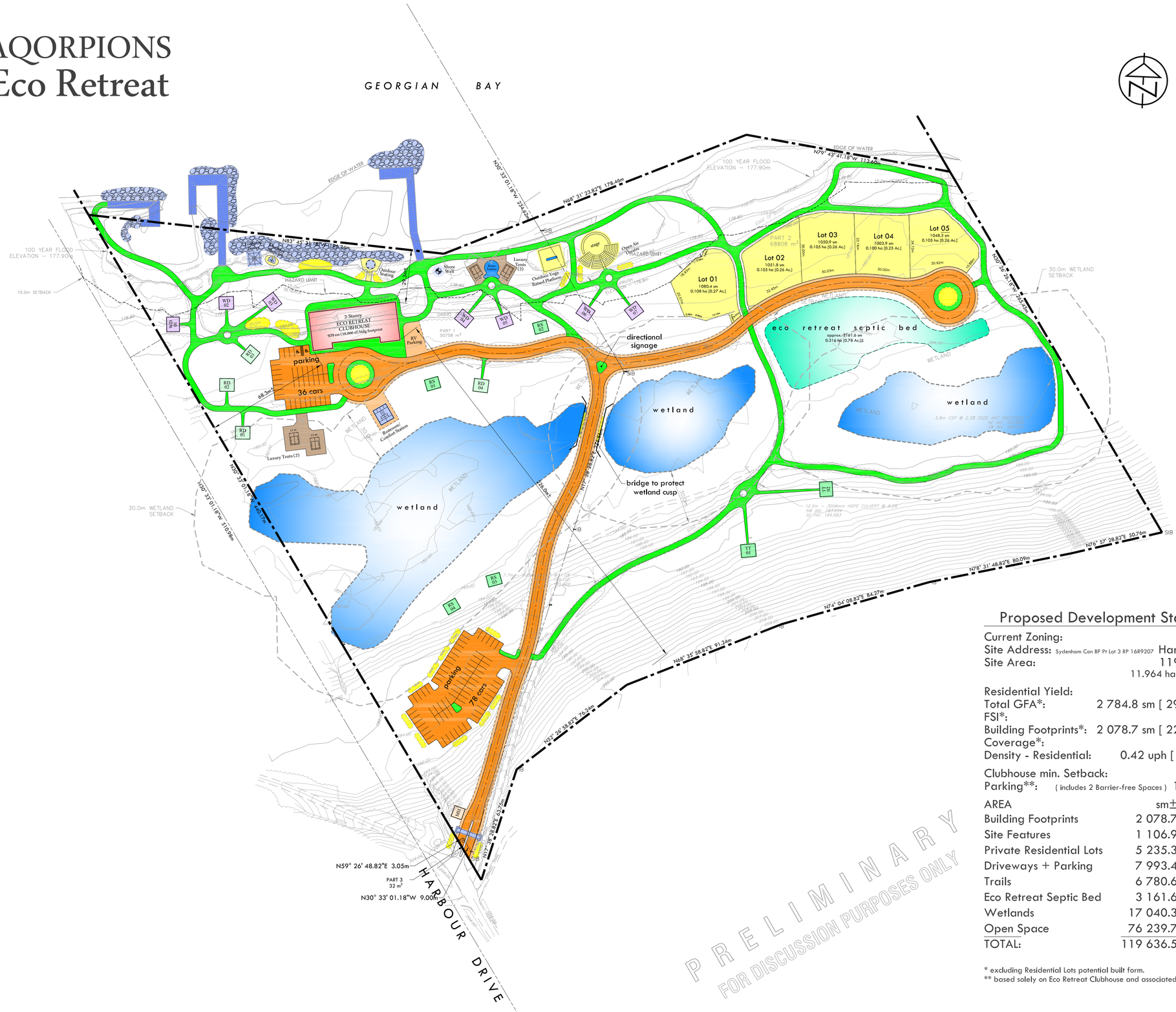
1.3 0 0.65 1.3 Kilometres

Absence of a feature in the map does not mean they do not exist in this area.

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

Appendix B – Site Plan

AQORPIONS
Eco Retreat



Proposed Development Statistics

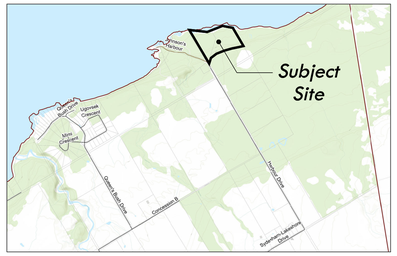
Current Zoning:	SR and EP
Site Address: Sydenham Con BF Pt Lot 3 RP 16R9207	Harbour Drive
Site Area:	119 636.5 sm
	11.964 ha [29.56 Ac.]
Residential Yield:	5 Lots
Total GFA*:	2 784.8 sm [29,975 sf]±
FSI*:	0.02
Building Footprints*:	2 078.7 sm [22,375 sf]±
Coverage*:	1.74 %
Density - Residential:	0.42 uph [0.17 upa]
Clubhouse min. Setback:	29.3 m±
Parking**: (includes 2 Barrier-free Spaces)	114 spaces

AREA	sm±	%
Building Footprints	2 078.7	1.7
Site Features	1 106.9	0.9
Private Residential Lots	5 235.3	4.4
Driveways + Parking	7 993.4	6.7
Trails	6 780.6	5.7
Eco Retreat Septic Bed	3 161.6	2.6
Wetlands	17 040.3	14.3
Open Space	76 239.7	63.7
TOTAL:	119 636.5	100.0

* excluding Residential Lots potential built form.
** based solely on Eco Retreat Clubhouse and associated Lodging.

DRAWING **Site Plan**

Eco Retreat AQORPIONS



Key Plan n. t. s.

Building/Features Legend + Stats

PROPERTY BOUNDARY		119 636.5 sm 11.964 ha [29.56 Ac.]
ECO RETREAT CLUBHOUSE		Footprint = 10 000 sf GFA = 15 000 sf
2 BR WATERFRONT HUTS	@ 7 u	Footprint = 600 sf GFA = 800 sf
2 BR RAVINE SIDE HUTS	@ 4 u	Footprint = 600 sf GFA = 800 sf
1 BR RAVINE SIDE HUTS	@ 4 u	Footprint = 500 sf GFA = 500 sf
TREETOP HUTS	@ 2 u	Footprint = 600 sf GFA = 800 sf
LUXURY TENTS	@ 4 u	Footprint = 350 sf GFA = 350 sf
MANAGER'S HUT	@ 1 u	Footprint = 400 sf GFA = 400 sf
COMFORT STATION	@ 1 u	Footprint = 775 sf GFA = 775 sf
LOTLINES - 5 LOTS	@ 5 lots	approx. 30m x 30m min. 900 sm/lot
AMPHITHEATRE / YOGA / OUTDOOR SEATING		
LOOKOUT TOWER		
SHORE WELL		
ENTRY ARCHWAY		
PERMANENT STEEL DOCK		
BRIDGE TO PROTECT WETLAND CUSP		
SHORELINE BOULDERS		
LANDSCAPE FEATURES		
MAIN DRIVEWAY		6.0 m wide
GRAVEL SHOULDERS		1.5 m wide per side
TRAILS + WALKWAYS		
ECO RETREAT SEPTIC BED		0.316 ha [0.78 Ac.] ±
WETLANDS		1.724 ha [4.26 Ac.] ±
30.0m WETLAND SETBACK		
HAZARD LIMIT	15.0m Setback from 100-YR Floodline - 177.90	

SOURCES

Base information comprised of Boundary, Topography, and Features from "Existing Features Plan", by Tatham Engineering, File 120218, Dwg EF-1, Dated Nov 2020, Revised Jun/17/21.
Aerial Photography comprised of Grey County Orthophoto Mapping 20cm 500m Spring 2010, purchased from First Base Solutions - Mapwarehouse.

PRELIMINARY SITE PLAN

SYDENHAM CON BF PT LOT 3 RP 16R9207;
PARTS 1, 2, and 3
MUNICIPALITY OF MEAFORD
COUNTY OF GREY

0 25 50m
1 : 1000

seal prepared for north

AQORPIONS

miCAD inc.
359 Park Avenue
Newmarket, ON L3Y 1V4
437-996-4223
437-99-MiCAD
www.micadinc.com

PROJECT	SCALE
21101	1:1000
DESIGN	DATE
miCAD	2022-04-19
DRAWN	DRAWING
mvs	02f
CHECKED	
RS	

Appendix C – Correspondence Re Terms of Reference

237897 Inglis Falls Road, R.R.#4, Owen Sound, ON N4K 5N6
Telephone: 519.376.3076 Fax: 519.371.0437
www.greysauble.on.ca

June 3, 2016

Mr. Rajesh Sood
2 Sylvid Court
Loretto, ON
L0G 1L0

Dear Mr. Sood:

RE: Pre-Consultation on Proposed Commercial Development
Applicant: Aqorpions (c/o: Mr. Rajesh Sood)
Part Lot 3, Broken Front Concession; Roll Number: 42-10-510-004-002-50-0000
Municipality of Meaford, formerly Sydenham Township
Our File: P12058

Subject Proposal
It is our understanding that you are purchasing this property for the purposes of establishing an ecological retreat. It is our understanding that the retreat would consist of access roads, parking areas, rental dwelling units, and site amenities. No specific details or plans have been provided at this time.

The Grey Sauble Conservation Authority (GSCA) has reviewed this general proposal and the property in accordance with our mandate and policies for natural hazards, for natural heritage issues as per our Memorandum of Agreement with the Municipality of Meaford and relative to our policies for the implementation of Ontario Regulation 151/06. We offer the following preliminary comments.

Site Description
The subject property is located near the northern extent of Harbour Drive in the former Sydenham Township. The property is bound to the east, west, and south by largely undeveloped rural properties. Georgian Bay occurs to the north of the property. The property is characterized by two steep slope features separated by a small plateau. A drainage feature commences in the roadside ditch and enters the property at its southern extent. The watercourse traverses the first slope feature though a well-defined gully, sheet flows across the plateau, and redefines itself before flowing over the second slope. A small wetland feature occurs at the base of the second slope feature. A historic beach ridge separates the wetland feature from the shoreline to the north. An existing harbour feature currently exists in the northwest corner of the site.

GSCA Regulations
Portions of the property are regulated under Ontario Regulation 151/06: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. The regulated areas are associated with the shoreline of Georgian Bay, the Nipissing Ridge, and an area of wetland and flood hazard. These areas are generally shown on the attached mapping.

Under this regulation, a permit is required from this office prior to the construction of buildings or structures, the temporary or permanent placement of fill within the designated area, interference with a

wetland, and/or the straightening, changing, diverting or in any way interfering with an existing channel of a river, lake, creek, stream or watercourse.

Provincial Policy Statement
3.1 Natural Hazards
Natural hazards identified on the property include the shoreline of Georgian Bay, the Nipissing Ridge, a flood prone wetland feature, and a watercourse/drainage feature.

The shoreline of Georgian Bay flood and erosion hazard is defined as the aggregate of the 100-year flood lake level of 177.9 metres Geodetic Survey of Canada (m GSC) plus a 15 metre inland setback for wave uprush and other water related hazards. Development is generally not permitted within this area.

The Nipissing Ridge slope is mapped as natural hazard due to its over steepened nature. The extent of the hazard is a theoretical three to one (3H:1V) slope feature measure back from the toe of the slope. Additionally, a setback of six metres has been included outward from the toe of the slope to minimize the risk of undercutting and slope failure. Development is generally not permitted within this area.

The flood prone wetland feature appears to be, in a large part, fed by the drainage feature entering the property in the southern corner. Based on site observations, water traverses the first slope feature in a highly eroded gully channel before dispersing broadly across the first plateau. The drainage feature then concentrates again to flow over the second slope and into the noted wetland feature. From a natural hazard perspective, this area is unsuitable for development due to the inherent risk of flooding.

These areas have generally been defined on the attached mapping utilizing the best available data. Given the scale of the proposed development these, areas will need to be more precisely defined through a site specific topographical survey, and grading and drainage plan.

2.1 Natural Heritage
Natural heritage values that occur on site include significant woodlands, fish habitat, habitat of a threatened species, a small unevaluated wetland feature and the adjacent lands to fish habitat.

The entire property occurs within the mapped significant woodland feature as identified in the County of Grey Official Plan. Under Section 2.1.5(b) of the Provincial Policy Statement (PPS), development and site alteration shall not be permitted in significant woodlands unless it has been demonstrated that there will be no negative impacts to the natural features or their ecological function.

The wetland feature occurring on site is not of provincial significance. It is anticipated that this wetland feature will serve a part of the significant woodland's ecological function.

Georgian Bay provides fish habitat. Review of the Natural Heritage Information Centres (NHIC) data indicates that this section of shoreline is habitat for Lake Sturgeon, a threatened species. Under sections 2.1.6 and 2.1.7 of the PPS, development and site alteration shall not be permitted in fish habitat, or habitat of threatened species, except in accordance with provincial and federal requirements.

The lands within 30 metres of the bay are identified in the County Official Plan as the adjacent lands to fish habitat. Under Section 2.1.8 of the PPS, development and site alteration shall not be permitted on adjacent lands to fish habitat unless the ecological function of the adjacent lands has been evaluated

and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological function.

At this point no information has been provided which reviews the ecological functions of the site. During a recent site inspection this information was discussed with you and your ecological consultant. It is our understanding that such a report is forthcoming.

Additional Comments and Recommendations
Based on a preliminary review of the site and a cursory understanding of the proposal, we have prepared a map which generally illustrates the hazard areas, the regulated areas, and a preliminary development envelope.

The hazard areas will need to be refined through the completion of a topographical survey to further define the top and toe of the slope features, the exact location of the watercourse feature, and the exact location of the 177.9m GSC contour line. Once we have this information, we can provide a more detailed review of the hazard areas.

As noted above, several natural heritage features are identified on site. These will have to be assessed through an Environmental Impact Study. It is our understanding that this study may have already commenced. However, as soon as possible, a Terms of Reference should be provided by your chosen consultant for review and acceptance to ensure that the final product provides the required information.

Once we have received this additional information, we will be able to better define an acceptable development envelope.

If any questions should arise, please contact our office.

Regards,

Tim Lanthier
Watershed Planner

enclosure

cc via email: Mr. Harley Greenfield, Authority Director, Municipality of Meaford
Mr. Jaden Calvert, Authority Director, Municipality of Meaford
Ms. Liz Buckton, Senior Planner, Municipality of Meaford
Mr. Scott Taylor, Senior Planner, County of Grey

GSCA: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (Ontario Regulation 151/06)

Subject Property (approx.)
Other Parcels (approx)
Preliminary Development Area
Watercourse
Hazard Land
O.Reg. 151/06

N

Scale: 1:2500
0 50 m

Lot 3, Broken Front Concession
Municipality of Meaford
(Sydenham)
Our File No. P12058

June-03-16

NEIL MORRIS
Consulting Ecologist

2480 Olde Baseline Rd., Caledon
Ontario, Canada. L7C 0J3
tel: (905) 838-1485
e-mail: neilpmorris@msn.com

20 June 2016

Mr. Tim Lanthier, Watershed Planner
Grey Sauble Conservation Authority
237897 Inglis Falls Road
R.R. #4
Owen Sound, ON
N4K 5N6

By E-mail

Mr. Lanthier,

Re: EIS Terms of Reference – 423003 Harbour Drive

This letter is submitted in regard to the Property at 423003 Harbour Drive, known as Part Lot 3, Broken Front Concession, Town of Meaford. The purpose of this letter is to provide for your consideration a brief Terms of Reference (TOR) for an Environmental Impact Study (EIS) to be undertaken at this property. The TOR presented herein reflect discussions with you during a site meeting with the proponent (Mr. Rajesh Sood) on 14 April 2016. The TOR are also based on the pre-consultation comments you have made in regard to Natural Heritage in a letter to the proponent dated 03 June (GSCA file P12058).

Based on information available at this time, the issues consist of the following:

- The fact that the entire property occurs within Significant Woodlands, as mapped under the Grey County Official Plan (OP),
- The presence of a wetland feature (<u>not</u> provincially or locally significant) within the Property
- The presence of habitat for Lake Sturgeon (Provincial Status - Threatened) along the section of shoreline occupied by the Property, and
- The possible presence of any other Species at Risk (SAR) within or adjacent to the Property.

The EIS is being undertaken to address, at a minimum, the relevant Natural Heritage issues identified to date. In regard to fish habitat, the EIS is being completed in keeping with the intention of the proponent to exclude development along or within 30 m of the shoreline from the pending development application. The EIS excludes efforts specific to assessment of habitat for Lake Sturgeon. However, all surveillance activities identified herein will encompass lands within 30 m of the shoreline.

Reference: EIS TOR – 423003 Harbour Drive

Work Scope:

In keeping with the expectations and specifications of the OP for the Town and County, the EIS will include the following:

(i) a description of the natural environment, including both physical form and ecological function;
(ii) summary of the development proposal;
(iii) prediction of potential direct, indirect and cumulative effects of development compared with overall environmental goals;
(iv) identification and evaluation of options to avoid impacts;
(v) identification and evaluation of options for mitigation or rehabilitation, including setbacks;
(vi) an implementation plan, and
(vii) evaluation of the need for a monitoring program.

The scope of work described herein is intended to allow for an EIS that allows for each of these components. The content of the final EIS Report will cover each of these elements.

The primary basis of analysis will be the findings of on-site surveillance targeting the features of interest. The coverage and level of detail of on-site surveillance that is proposed herein are intended to allow adequate description of the general natural environment, and also allow detailed assessment of effects on site features and functions of focused concern (i.e., Significant Woodlands, wetlands). To effectively address the identified EIS requirements, this field reconnaissance would include:

- General characterization of the physical and ecological features and functions within and immediately adjacent to the Property.
- Focused characterization of all wooded portions of the Property, including tree species composition, canopy configuration, ecological function (habitat, ecological connectivity).
- Delineation of the wetland area, and direct assessment of its hydrology and habitat characteristics and ecological functions.
- Direct examination of slope/topography, conveyance features (swales, seeps), and overburden characteristics within and adjacent to the Property, to understand hydrological processes and connectivity between the Property and the wetland.
- Detailed plant and animal inventories with a focus on identification of possible SAR that may be present. This will include;
    - a botanical survey, conducted throughout the spring and summer following a transect approach,
    - a breeding bird survey (BBS) – 3 sessions conducted from May to early July following the standard point-count approach of the Ontario

Reference: EIS TOR – 423003 Harbour Drive

Breeding Bird Atlas, and also wandering surveillance through the full period of study, and

- a herpetofaunal survey – 3 sessions conducted from April to June following the protocol of the Marsh Monitoring Program, and also wandering surveillance during the full period of study.

The on-site efforts identified above are believed to be largely adequate to allow effective assessment of the noted environmental features. On-site monitoring of vegetation, amphibians and birds has already been initiated (see attachment for sketch of monitoring locations).

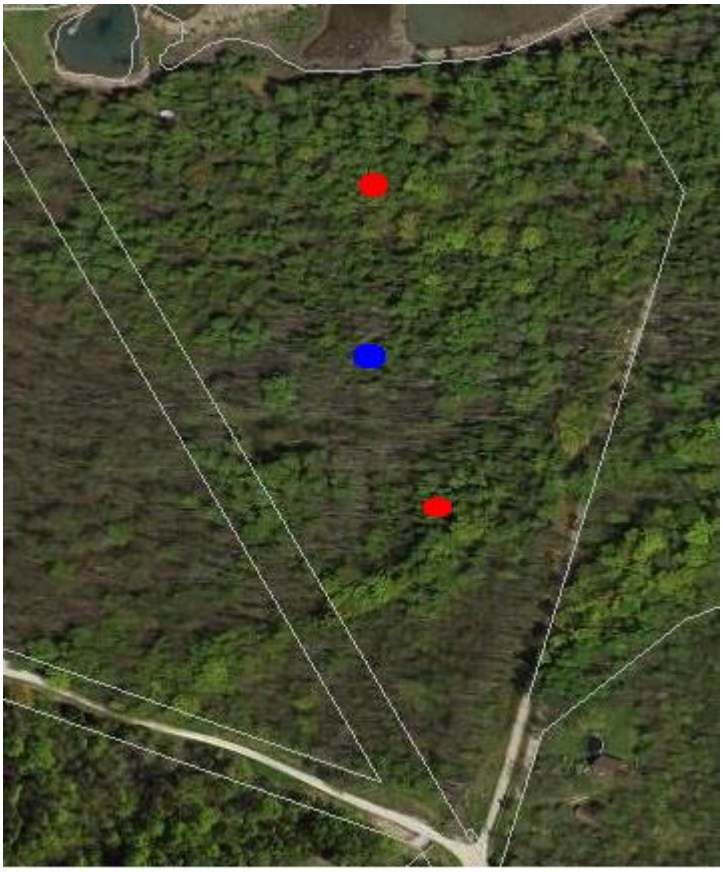
If you or other parties have any questions or concerns regarding the scope of work discussed herein, please do not hesitate to contact me at your convenience.

Sincerely,

Neil Morris, Consulting Ecologist
2480 Olde Baseline Rd.
Caledon, Ontario
L7C 0J3

cc via e-mail: Mr. Rajesh Sood (Aqorpions)

Bird and Amphibian Point Count Station Locations



BBS station
Amphibain station

Municipality of Meaford

December 17th, 2019

Miriam Vasni, Via Email

RE: Eco-Retreat and Lot Creation at Part Lot 3, CON BF – Preliminary Consultation

Ms. Vasni,

This correspondence is in response to our preliminary consultation meeting on December 9th, 2019. The following comments reflect input from Development Services Staff of the Municipality of Meaford as well as comments provided by Scott Taylor of the County of Grey.

This letter is intended to provide a summary of our conversation on December 9th and to provide a record of what the County and Municipality would need to see addressed as part of future potential development applications, including possible Official Plan Amendment, Zoning By-law Amendment, Plan of Condominium and Development Review/Site Plan applications.

As noted when we met, Staff have previously provided comment regarding the potential development of Part 1, 16R-9207 as an 'eco-retreat', proposed as a rental cabin/tourist establishment to be integrated with natural recreational resources and natural heritage features on-site. We understand that the applicant now also owns Part 2, 16R-9207(in common control but separate ownership) and is now investigating the feasibility of low density residential development/lot creation on this parcel, intended to complement the eco-retreat to be proposed on Parcel 1 and to be accessed by a condominium road from the publically maintained year-round 'Harbour Drive'.

As discussed, the properties are designated as 'Rural' and 'Hazard Lands' by the County of Grey Official Plan and as 'Rural' and 'Environmental Protection' by the Municipality of Meaford Official Plan. The properties are zoned Shoreline Residential and Environmental Protection by the Municipality of Meaford's comprehensive Zoning By-law. The majority of the lands have been mapped as 'Significant Woodlands' under the County and Local Official Plans. The lands are also adjacent to Georgian Bay and subject to a 30 meter setback for new development based on the policies of the Official Plans.

We understand that it is your intention to pursue applications for both parcels together, with phasing to be determined. Staff would note that a County and Local Official Plan Amendment would not be required for the eco-retreat proposal on its own, however the development of additional residential lots/units would require such amendments.

Staff note that Section 5.4.2 (9), (10) and (11) of the County Official Plan relating to 'Resource Based Recreational Uses' and residential lot creation associated with such uses, perhaps provides an avenue/approach for consideration relating to the additional residential lots/units proposed in excess of the policy permissions of the Rural Designation of the Plan. We would direct your attention to Section 9.3 of the County Official Plan and

519-538-1060 21 Trowbridge St. W. Meaford N4L 1A1 www.meaford.ca

Section E4 of the Municipality of Meaford Official Plan regarding Official Plan Amendments, generally. Further, Section 9.13 of the County Plan speaks to Plans of Subdivision and Condominium and related justification.

Staff have identified the following materials as being required as part of the applications for the subject parcels/development:

1. Planning Justification Report addressing the *Planning Act*, Provincial Policy Statement and County/Meaford Official Plans;

2. Environmental Impact Study for both parcels. Staff recommend consultation and the development of a Terms of Reference with the Grey Sauble Conservation Authority, prior to the commencement of this work;

3. Archaeological Assessment (at minimum a Stage 1 needs to be submitted and further stages if recommend by the Stage 1);

4. Storm Water Management Report;

5. Servicing Report demonstrating that the subject lands can supply adequate potable water and accommodate sewage disposal in accordance with the Ministry of Environment, Conservation and Parks D-5 Series Guidelines;

6. Traffic Opinion/Brief to quantify anticipated levels of traffic generation and any anticipated off-site impacts, to be completed in consultation with the Municipality of Meaford (Transportation Services);

7. County and Local Official Plan Amendment applications (for lot creation, not eco-retreat) and required fees and deposits;

8. County Condominium application and required fees and deposits (for lot creation, not eco-retreat);

9. Zoning By-law amendment application to the Municipality, including all required application fees/deposits; and,

10. Site Plan application to the Municipality, including all required application fees/deposits.

Staff generally recommend and encourage that proponents engage representatives of the First Nations and Metis communities in early consultation, even in advance of formal *Planning Act* circulation, which is part of the development application process. Contact information for First Nations and Metis, can be provided to you should you require this information.

Further, Staff would note that the lands are subject to the County of Grey's Forest Management By-law, which can be found online at: https://www.grey.ca/forests-trails .

Staff recommend that you 'Call Before You Cut' and highlight that permits may apply to tree removals even where required specifically to facilitate on-site investigations relating to the above noted studies.

Finally, Staff recommend consultation with the Department of Fisheries and Oceans (DFO), as well as the Ontario Ministry of Natural Resources and Forestry (MNRF) with respect to any harbor improvements or in-water works. As discussed when we met, Staff would encourage consideration of site/parcel configurations, particularly along the waterfront, which will support tree preservation and other natural heritage features/functions identified via the EIS. One such parcel configuration could include the retention of waterfront lands as a common element within the Plan of Condominium, placing maintenance and mitigation activities within the control of the Condo Board which may limit the gradual/progressive shoreline alteration that Staff have observed with residential development in nearby shoreline residential areas.

The Municipality and the County reserve the right to ask for more information or clarification at a later date based on further review, agency comments, or public concerns.

Please do not hesitate to contact us if you have any further questions or concerns.

Sincerely,

Liz Buckton, MCIP, RPP
Manager, Development Services
Municipality of Meaford
21 Trowbridge Street West, Meaford
519 538-1060 ext. 1120 | lbuckton@meaford.ca

cc. (via Email Only) Raj Sood, Owner/Applicant

Scott Taylor, County of Grey

Jacob Kloeze, GSCA

Appendix D – Detailed Results of Ecological Monitoring

D1 – Detailed BBS Point-Count Results

31 May 2016

Project:	Harbour Drive EIS
Station:	PC-1
Date:	31-May-16
Start Time:	6:30
Wind (Beaufort):	1
Sky:	overcast
Observer:	Neil Morris

Species		First 5 minutes			Second 5 minutes			
Common name	**Scientific name**	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Robin	*Turdus migratorius*						2	2
American Crow	*Corvus brachyrhynchos*	1		1		1		3
Black-and-White Warbler	*Mniotilta varia*	1			1			
Blue Jay	*Cyanocitta cristata*	1					1	2
Common Grackle	*Quiscalus quiscula*	1						1
Common Yellowthroat	*Geothlypis trichas*		1				1	
Great Crested Flycatcher	*Myiarchus crinitus*			1			1	2
Red-eyed Vireo	*Vireo olivaceus*		1	1			1	3
Yellow-billed Cuckoo	*Coccyzus americanus*						1	1

Notes: All species occurrences except Common Grackle were instances of song

Project:	Harbour Drive EIS
Station:	PC-2
Date:	31-May-16
Start Time:	7:05
Wind (Beaufort):	1
Sky:	overcast
Observer:	Neil Morris

Species		First 5 minutes			Second 5 minutes			
Common name	**Scientific name**	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Robin	*Turdus migratorius*	1			1			2
American Crow	*Corvus brachyrhynchos*						2	2
Black-capped Chickadee	*Poecile atricapillus*					1		1
Blue Jay	*Cyanocitta cristata*	2			5			7
Canada Goose	*Branta canadensis*			1				1
Common Grackle	*Quiscalus quiscula*				1			1
Northern Flicker	*Colaptes auratus*	1						1
Red-eyed Vireo	*Vireo olivaceus*	1			1			2
Song Sparrow	*Melospiza melodia*				1			1

Notes: Canada goose occurrence consisted of a single bird calling off shore

20 June 2016

Project:	Harbour Drive EIS
Station:	PC-1
Date:	20-Jun-16
Start Time:	6:10
Wind (Beaufort):	1
Sky:	clear
Observer:	Neil Morris

Species		First 5 minutes			Second 5 minutes			
Common name	**Scientific name**	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Robin	*Turdus migratorius*						1	1
American Crow	*Corvus brachyrhynchos*			2				2
Blue Jay	*Cyanocitta cristata*				2			2
Great Crested Flycatcher	*Myiarchus crinitus*	1			1			2
Mourning Dove	*Zenaida macroura*		1			1		2
Ovenbird	*Seiurus aurocapillus*			1			1	2
Northern Cardinal	*Cardinalis cardinalis*		1			1		2

Notes:

Project:	Harbour Drive EIS
Station:	PC-2
Date:	20-Jun-16
Start Time:	6:35
Wind (Beaufort):	1 - 2
Sky:	clear
Observer:	Neil Morris

Species		First 5 minutes			Second 5 minutes			
Common name	**Scientific name**	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Robin	*Turdus migratorius*						1	1
American Crow	*Corvus brachyrhynchos*					1	1	2
Belted Kingfisher	*Ceryle alcyon*		1					1
Blue Jay	*Cyanocitta cristata*	1	2			1	1	5
Brown-headed Cowbird	*Molothrus ater*	1						1
Canada Goose	*Branta canadensis*		2					2
Common Loon	*Gavia immer*			1				1
Song Sparrow	*Melospiza melodia*					1		1

Notes:

Common Loon, Belted Kingfisher, and Canada Goose occurrences were all in association with off-shore habitat

20 June 2020

Project:	Harbour Drive EIS
Station:	PC-1
Date:	20-Jun
Start Time:	6:25
Wind (Beaufort):	0
Sky:	clear

Species	First 5 minutes			Second 5 minutes			
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Crow			1			1	2
American Robin					1		1
Eastern Wood-pewee	1	1		1			3
Ovenbird			1				1
Red-eyed Vireo	1	1			2	1	5

Eastern Wood-pewee - a single singing male, reloacted during count

Project:	Harbour Drive EIS
Station:	PC-2
Date:	20-Jun
Start Time:	6:43
Wind (Beaufort):	0
Sky:	clear

Species	First 5 minutes			Second 5 minutes			
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
House Wren	1			1			2
Red-eyed Vireo	1	1		1	1		4
Ring-billed Gull						1	1
Yellow-billed Cuckoo					1		1

gull - overflight

wren very vocal and loud - difficult to hear other birds

Project:	Harbour Drive EIS
Station:	PC-3
Date:	20-Jun
Start Time:	7:04
Wind (Beaufort):	0
Sky:	clear

Species	First 5 minutes			Second 5 minutes			
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Crow		2			2		4
American Robin	1						1
Black-capped Chickadee				2			2
Great Crested Flycatcher						1	1
Ovenbird		1			1		2
Red-eyed Vireo			1		1	1	3

Project:	Harbour Drive EIS
Station:	PC-4
Date:	21-Jun
Start Time:	7:43
Wind (Beaufort):	0
Sky:	clear

Species	First 5 minutes			Second 5 minutes			
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Robin	1						1
Black-capped Chickadee		1					1
Blue Jay			1				1
Eastern Wood-pewee		1					1
Great Crested Flycatcher					1		1
House Wren						1	1
Northern Cardinal						1	1
Northern Flicker			1			1	2
Red-eyed Vireo	1		1	1	1	1	5

red-eyed vireo - 2 singing males (one relocated during count)

05 July 2020

Project:	Harbour Drive EIS
Station:	PC-1
Date:	5-Jul
Start Time:	6:15
Wind (Beaufort):	0 - 1
Sky:	clear

Species	First 5 minutes			Second 5 minutes			
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Crow						2	2
Black-billed Cuckoo		1				1	2
House Wren		1			1		2
Red-eyed Vireo		1	1		1	1	4
Scarlet Tanager					1		1
Yellow-bellied sapsucker			1				1

sapsucker - drumming

Project:	Harbour Drive EIS
Station:	PC-2
Date:	5-Jul
Start Time:	6:30
Wind (Beaufort):	0 - 1
Sky:	clear

Species	First 5 minutes			Second 5 minutes			
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Crow		1			1	1	3
Black-billed Cuckoo		1					1
Downy Woodpecker					1		1
Great Crested Flycatcher		1					1
House Wren		1	1		1		3
Mourning Dove						1	1
Red-eyed Vireo		1	1		1	1	4
White-breasted Nuthatch				1			1

Project:	Harbour Drive EIS
Station:	PC-3
Date:	5-Jul
Start Time:	6:52
Wind (Beaufort):	0 - 1
Sky:	clear

Species	First 5 minutes			Second 5 minutes			
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Crow			1			1	2
American Goldfinch				1			1
Black-throated Green Warbler					1		1
Great Crested Flycatcher						1	1
House Wren			1			1	2
Ovenbird						1	1
Red-eyed Vireo			1		1	1	3

all birds singing (except crow)

Project:	Harbour Drive EIS
Station:	PC-4
Date:	5-Jul
Start Time:	7:35
Wind (Beaufort):	0 - 1
Sky:	clear

Species	First 5 minutes			Second 5 minutes			
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m	Total
American Crow		1				2	3
Black-billed Cuckoo			1				1
Northern Flicker						1	1
Ovenbird					1		1
Red-eyed Vireo	1		1	1		1	4
Song Sparrow	1			1			2
Yellow-bellied sapsucker		1			1		2

sapsucker drumming

D2 – Detailed Amphibian Point-Count Results

April - June 2016

Amphibian Monitoring Datasheet

Site: 423003 Harbour Drive

Date: 16-Apr-16

Station ID: PC1

Time: 20:50

Air temp: 8 C

Wind: 0 (Beaufort)

Species	Code 1	Code 2	Code 3
Spring Peeper	1		
Chorus Frog		2	

Notes:

Amphibian Monitoring Datasheet

Site: 423003 Harbour Drive

Date: 25-May-16

Station ID: PC1

Time: 9:50

Air temp: 13 C

Wind: 0 (Beaufort)

Species	Code 1	Code 2	Code 3
Spring Peeper	1		
Green Frog	1		

Notes:

American Toads heard calling outside station radius -
off Property at Lake edge

Amphibian Monitoring Datasheet

Site: 423003 Harbour Drive

Date: 19-Jun-16

Station ID: PC1

Time: 9:55

Air temp: 21 C

Wind: 0 (Beaufort)

Species	Code 1	Code 2	Code 3
Green Frog	1		

Notes:

Observed several frogs jumping in or near pond, but no vocalizations

Pond has dried up considerably. Still some standing water

April - May 2020

Amphibian Monitoring Datasheet

Site: 423003 Harbour Drive

Date: 21-Apr-20

Station ID: PC1

Time: 21:20

Air temp: 8 C

Wind: 0 (Beaufort)

Species	Code 1	Code 2	Code 3
Chorus Frog	2		

Notes:

original station from 2016

Amphibian Monitoring Datasheet

Site: 423003 Harbour Drive

Date: 21-Apr-20

Station ID: PC2

Time: 20:50

Air temp: 9 C

Wind: 0 (Beaufort)

Species	Code 1	Code 2	Code 3
Chorus Frog	2		

Notes:

Spring Peepers heard calling outside station radius (off property)

Amphibian Monitoring Datasheet

Site: 423003 Harbour Drive

Date: 31-May-20

Station ID: PC1

Time: 21:35

Air temp: 15 C

Wind: 0 (Beaufort)

Species	Code 1	Code 2	Code 3

Notes:

No amphibian vocalizations heard at this station

Amphibian Monitoring Datasheet

Site: 423003 Harbour Drive

Date: 31-May-20

Station ID: PC2

Time: 21:35

Air temp: 15 C

Wind: 0 (Beaufort)

Species	Code 1	Code 2	Code 3
Green Frog	1		

Notes:

Spring Peepers heard calling off property