

Environmental Impact Study - 140 Lockhart Road, Barrie, ON



2021-01-28

Prepared for:
2640085 Ontario Inc.

Cambium Reference No.: 10957-001

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1.0 Introduction

Cambium Inc. (Cambium) was retained by 2640085 Ontario Inc. to conduct an Environmental Impact Study for the property located at 140 Lockhart Road, in the City of Barrie, Ontario (the Site; Figure 1). We understand that the proposed development includes an industrial development which will require a Zoning By-law Amendment, Official Plan Amendment, and Draft Plan of Subdivision applications.

An Environmental Impact Study (EIS) is required to address potential impacts to natural heritage features identified during the preliminary planning review process, as required by the Provincial Policy Statement, 2020 (PPS), Growth Plan for the Greater Golden Horseshoe, 2020 (GPGGH), Lake Simcoe Protection Plan (LSPP), and City of Barrie Official Plan. The mapped natural features on the Site include a watercourse (tributary of Lovers Creek), provincially significant wetlands (Lovers Creek Swamp PSW), and woodlands. The Site is also located within the jurisdiction of Lake Simcoe Region Conservation Authority (LSRCA) and is partially occupied by regulated areas subject to O.Reg. 179/06 under the Conservation Authorities Act (1990).

Cambium has prepared the following EIS to provide an evaluation of reasonably anticipated ecological impacts, positive or negative, that may arise as a result of this proposed development. Conformity with applicable natural heritage policy and regulation is addressed, to guide the municipal development approvals and LSRCA permitting review processes. The subject study includes a screening for species at risk (SAR) to assess compliance with applicable regulation under the provincial Endangered Species Act, 2007 and the federal Species at Risk Act.

1.1 Terms of Reference

The Lake Simcoe Region Conservation Authority (LSRCA) and the City of Barrie were contacted directly to confirm the Terms of Reference for the subject study. A record of Cambium's correspondence with City staff (Celeste Kitsemetry, Senior Planner) and LSRCA staff (Kate Lillie, Natural Heritage Ecologist) is included in Appendix A.



1.2 Existing Site Conditions

The subject lands are approximately 90 ac in size and located in an existing commercial/industrial area of the City. They are currently occupied by a residential dwelling and associated structures, agricultural fields, a watercourse, wetlands, and treed areas. Existing commercial/industrial developments are located along the western, northern, and eastern boundaries of the Site. Lockhart Road forms the southern boundary of the Site while Welham Road currently terminates at the northeast lot corner.

1.3 Proposed Development and Conceptual Site Plan

The proposed development consists of a commercial/industrial subdivision and extension of Welham Road, with a new connection at Lockhart Road. The proposed road extension will include a new crossing at Lovers Creek. The current Draft Plan is provided in Appendix B.

2.0 Applicable Natural Heritage Policy and Regulation

At the provincial level, the Site is affected by the *Planning Act* R.S.O. 1990, as amended, and the associated Provincial Policy Statement, 2020 (PPS) as well as the *Places to Grow Act*, 2005 and the associated Growth Plan for the Greater Golden Horseshoe, 2020 (GPGGH). Although the PPS provides overall policy direction for the province related to land use and development, the GPGGH prevails where there is a conflict, with only two exceptions: natural environment and human health. In these cases, the policy that provides more protection prevails. However, given that the subject site is located in a Settlement Area, the natural heritage policies of the PPS apply. The Lake Simcoe Protection Plan also provides exemptions to natural heritage policies for proposed development in designated Settlement Areas. As such, this report seeks to address the policy tests of the PPS.

2.1 Provincial Policy Statement, 2020

Section 2.1 of the Provincial Policy Statement (PPS) (Ministry of Municipal Affairs and Housing, 2020) protects the form and function of natural heritage features as defined by the PPS. Natural heritage features included in the PPS are provincially significant wetlands (PSW), significant coastal wetlands, significant woodlands, significant valleylands, significant wildlife habitat (SWH), significant areas of natural and scientific interest (ANSI), fish habitat, and the habitat of endangered and threatened species. Given their significance, development is prohibited within PSWs in Ecoregions 5E, 6E, and 7E and within significant coastal wetlands. Development in fish habitat and the habitat of endangered and threatened species shall only be permitted in accordance with provincial and federal requirements. Development within other natural heritage features and on lands adjacent to all natural heritage features are permitted only if demonstrated that there will be no negative impacts on the feature or their ecological function. Development includes the creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under the *Planning Act*.

2.2 Growth Plan for the Greater Golden Horseshoe, 2020

The Greater Golden Horseshoe is one of the most dynamic and fast-growing regions in North America. To address the challenges of increased development within the area, the Growth Plan for the Greater Golden Horseshoe, 2020 (GPGGH) builds on the PPS *“to establish a unique land use planning framework for the Greater Golden Horseshoe that supports achievement of complete communities, a thriving economy, a clean and healthy environment, and social equity”* (Ministry of Municipal Affairs and Housing, 2019). In general, the GPGGH seeks to preserve agricultural lands, water resources, and natural areas by directing growth to settlement areas as defined in municipal Official Plans. The GPGGH contains policies regarding a provincial Natural Heritage System (NHS), key hydrologic features (KHF), key hydrologic areas (KHAs), and key natural heritage features (KNHFs) (Table 1). Policies that reference the provincial NHS apply once the municipal Official Plan has incorporated the provincial NHS into their schedules; until that time, the policies that reference the NHS will apply outside settlement areas to the natural heritage systems identified in Official Plans that were approved and in effect as of July 1, 2017. Section 4.2.3 of the GPGGH states that, outside of settlement areas, development or site alteration is generally not permitted in KNHFs that are part of the NHS or in KHF. Section 4.2.4 states that, outside of settlement areas, a proposal for new development or site alteration within 120 metres of a KNHF within the NHS or a KHF will require a natural heritage evaluation or hydrologic evaluation that identifies a suitable vegetation protection zone (i.e., a development setback). For KHF, fish habitat, and significant woodlands the vegetation protection zone can be no less than 30 m measured from the outside boundary of the feature.

Table 1 Protected Features of the GPGGH

Key Hydrologic Features		Key Natural Heritage Features
Permanent Streams	Habitat of Endangered and Threatened Species	Significant Wildlife Habitat
Intermittent Streams	Fish Habitat	Sand Barrens
Inland Lakes and their Littoral Zones	Wetlands	Savannahs
Seepage Areas and Springs	Life Science Areas of Natural and Scientific Interest (ANSI)	Tallgrass Prairies

Wetlands	Significant Valleylands	Alvars
	Significant Woodlands	

The Site is located within the City's settlement area; as such, the more restrictive natural heritage policies in the GPGGH do not apply; however, natural features must be protected in a manner that is consistent with the PPS.

2.3 Lake Simcoe Protection Plan

In response to a decline in the ecological integrity of Lake Simcoe, the Lake Simcoe Protection Act was passed in 2008 and the Lake Simcoe Protection Plan (LSPP) was established in 2009 (Ministry of Environment and Climate Change, 2016). The LSPP applies to the Lake Simcoe watershed and focuses on issues such as aquatic life, water quality and quantity, ecosystem health at the watershed scale, invasive species, climate change, and recreational activities. The LSPP includes policies with respect to the Lake Simcoe shoreline, key natural heritage features (KNHF), and key hydrologic features (KHF). KNHF include wetlands, significant woodlands, significant valleylands, and natural areas abutting Lake Simcoe. KHF include wetlands, permanent and intermittent streams, and lakes other than Simcoe.

With respect to development and site alteration proposals, policies 6.1 – 6.3, 6.5, 6.11 and 6.20 – 6.29 of the LSPP provide enhanced protections for KNHF and KHF; however, policies 6.32 - 6.34 apply to existing settlement areas and provide exemptions to the above policies, as follows:

6.32-dp *Policies 6.32 - 6.34 apply to existing settlement areas and areas of Lake Simcoe adjacent to these lands, including the littoral zone, and these areas are not subject to policies 6.1 – 6.3, 6.5, 6.11 and policies 6.20 - 6.29.*

6.33-dp *An application for development or site alteration shall, where applicable:*

- a. increase or improve fish habitat in streams, lakes and wetlands, and any adjacent riparian areas;*

- b. include landscaping and habitat restoration that increase the ability of native plants and animals to use valleylands or riparian areas as wildlife habitat and movement corridors;*
- c. seek to avoid, minimize and/or mitigate impacts associated with the quality and quantity of urban run-off into receiving streams, lakes and wetlands; and*
- d. establish or increase the extent and width of a vegetation protection zone adjacent to Lake Simcoe to a minimum of 30 metres where feasible.*

6.34-dp *Where, through an application for development or site alteration, a buffer is required to be established as a result of the application of the PPS, the buffer shall be composed of and maintained as natural self-sustaining vegetation.*

The Site is located within the City's Settlement Area and a watercourse and wetlands are present on the subject property.

2.4 City of Barrie Official Plan

According to the City of Barrie Official Plan, Schedule A, Land Use, the Site is designated as 'General Industrial' and 'Environmental Protection Area'. Schedule H (Appendix C), identifies the Site as containing areas with the following Natural Heritage Resource classifications (definitions are provided below), Level 1, Level 1 with Existing Development Designation Subject to 3.5.2.4 (d), Level 2, and Level 3.

Level 1

Level 1 resources are critical components of the Natural Heritage Resource network. No development shall be permitted within these areas:

- Provincially Significant Wetlands;
- Non-provincially significant wetlands greater than 0.5 hectares;
- Significant woodlands greater than 10 hectares;
- Significant habitat of endangered and threatened species;

- Watercourses, minimum vegetation protection zones and connectivity linkages;
- Lands through the site specific planning and development process identified as Environmental Protection

Section 3.5.2.4 (a) i) of the City of Barrie Official Plan also states:

- Environmental Protection Area policy (4.7.2.2) would apply to all Level 1 resources;
- The City will strive to designate all properties identified as having Level 1 Natural Heritage Resources as Environmental Protection;
- An EIS will be required for any development or site alteration within 120 metres of an area identified as Level 1 on Schedule H.

Section 3.5.2.4 (d) of the City of Barrie Official Plan states that, notwithstanding the land use limitations applicable to properties identified as Level 1 in Section 3.5.2.4 (a) i), where an existing designation permits other forms of development, such development may proceed subject to the policies of Level 2 in Section 3.5.2.4 (a) ii) and the appropriate planning application process.

Level 2

Level 2 resources represent significant components of the Natural Heritage Resource network. The features and function of these areas should be retained, however, there is potential for development if no negative impact can be demonstrated. Level 2 resources include:

- Significant valleylands;
- Provincially significant life science ANSI;
- Significant wildlife habitat, including but not limited to core winter deer yards, colonial water-bird nesting sites, rare vegetation communities (i.e. tall grass prairies), and significant areas of vernal pools;
- Watercourses, minimum vegetation protections zones, and connectivity linkages;
- Woodlands greater than 4 hectares and less than 10 hectares.

Section 3.5.2.4 a(ii) of the City of Barrie Official Plan also states that an EIS will be required to be completed for any development or site alteration in or within 120 metres of an area identified as Level 2 on Schedule H.

Level 3

Level 3 resources represent significant and supporting components of the Natural Heritage Resource network. There is opportunity for development if the proposal ensures the protection and buffering of the significant features and/or retains the supporting function of the feature.

Level 3 resources include:

- Regionally significant life science ANSI;
- Woodlands greater than 0.5 hectares and less than 4 hectares;
- Woodlands within 30 m of a Level 1 or 2 features;
- Cultural thicket or cultural meadow communities contiguous with woodland or wetland patches;
- Connectivity linkages.

Section 3.5.2.4 a(iii) of the City of Barrie Official Plan also states that an EIS will be required to be completed for any development or site alteration in or within 30 metres of an area identified as Level 3 on Schedule H.

2.5 Zoning By-law 2009-141

According to Zoning By-law 2009-141 South (City of Barrie, 2009) the lands are zoned 'General Industrial' (GI) and 'Environmental Protection Area' (EP). Zoning of surrounding properties includes 'General Industrial' (G1) and 'Restrictive Industrial' (RI).

2.6 Conservation Authority Regulation (O.Reg. 179/06)

As per Ontario Regulation 179/06, development is not permitted in or adjacent to the shoreline of the Great Lakes-St. Lawrence River System, inland lakes that may be affected by flooding, erosion and dynamic beach hazards, the 100 year flood level (plus an allowance for wave up

rush and other water hazards), the predicted long term stable slope, hazardous lands and stream or river valleys (even if no watercourse is present). The LSRCA can grant permission to develop in the above areas if the control of flooding, erosion, dynamic beaches, pollution and conservation of lands is not affected. Regulation 179/06 further states no person shall straighten, change, divert or interfere in any way with the existing channel of a river, creek, stream or watercourse or change or interfere in any way with a wetland unless permission is granted by LSRCA.

The subject property is located in the jurisdiction of LSRCA and mapping indicates that the Site is partially regulated under O.Reg. 179/06 due to the presence of a watercourse and wetland.

2.7 Endangered Species Act, 2007

Species listed as endangered or threatened on the Species at Risk in Ontario (SARO) list are protected under the provincial *Endangered Species Act, 2007* (ESA) (Government of Ontario, 2007). Section 9(1) of the ESA prohibits a person from killing, harming, harassing, capturing or taking a member of a species listed as endangered, threatened, or extirpated. Section 10(1) of the ESA prohibits the damage or destruction of habitat of species listed as endangered or threatened. Protection of special concern species is provided through designation of their habitat as significant wildlife habitat, a provincially protected natural heritage feature.

2.8 Species at Risk Act

The federal *Species at Risk Act* (SARA) was adopted in 2002 to prevent endangered or threatened species from becoming extinct or extirpated, to help in the recovery of endangered, threatened and extirpated species, and to manage species of special concern to help prevent them from becoming endangered or threatened. Habitat which is deemed necessary for the survival/recovery of a listed wildlife species, referred to as Critical Habitat, is protected under Section 56 of the SARA. The SARA applies to all federal lands in Canada; however, at-risk aquatic and migratory bird species located on private property in Ontario also receive protection under the Act.

2.9 Fisheries Act

Works within and adjacent to lakes, watercourses, and other bodies of water containing fish have the potential to impact fish and/or fish habitat. As a result of amendments to the federal *Fisheries Act* in 2015 and 2019, a proponent-led self-assessment is required for any project near water that could potentially impact fish or fish habitat. The purpose of the self-assessment is to determine whether the harmful alteration, disruption, or destruction (HADD) of fish habitat, as defined by the Act, can be avoided. The Fisheries and Oceans Canada (DFO) Fisheries Protection Program provides a Decision Framework and guidance material for conducting these self-assessments (available on-line at www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html). If it is determined that “HADD” may be unavoidable, the project should be submitted to DFO for review and determination of project approach and conditions of approval.

3.0 Technical Approach and Data Collection Methods

3.1 Background Information Review

Existing background information pertaining to the Site and surrounding landscape was compiled and reviewed, as part of a comprehensive desktop exercise, to better understand local biophysical conditions. In southern Ontario, readily available data includes aerial orthophotography, topographic base mapping, and geological records. Natural environment and land use schedules prepared in support of the City of Barrie Official Plan were reviewed to acquire municipal data. Natural area records and species occurrences were obtained from digital resources and reference materials. The comprehensive desktop review for this Site included the following resources:

- Natural Heritage Areas: Make-a-map and Natural Heritage Information Centre NHIC Database Records (Ministry of Natural Resources and Forestry, 2018); Accessed September 22, 2020
- Aquatic Species at Risk Maps - Ontario (Fisheries and Oceans Canada, 2018); Accessed September 22, 2020
- Aquatic Resource Area Summary Data (Government of Ontario, 2015); Accessed September 22, 2020
- Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature, 2018); Accessed September 22, 2020
- Ontario Breeding Birds Atlas (OBBA) (2001-2005) (Bird Studies Canada, 2005); Accessed September 22, 2020
- Lake Simcoe Region Conservation Authority regulated area mapping
- City of Barrie Official Plan
- Zoning By-law 2009-141

Figure 2 shows the mapped natural heritage features present in the general area of the Site.

3.1.1 Ministry Consultation

In early 2019, the Government of Ontario made changes to the regulating authority on matters related to SAR in the Province. The Ministry of Environment, Conservation and Parks (MECP) is now responsible for administering the ESA and providing direction on potential compliance issues. MECP has prepared a guidance document titled 'Client's Guide to Preliminary Screening for Species at Risk' to "help clients better understand their obligation to gather information and complete a preliminary screening for Species at Risk before contacting the Ministry". This document was used to guide the SAR habitat-based screening for the subject study.

3.2 Field Investigations

Information gathered through the background information review was used to guide the development of the fieldwork program. The purpose of the site visit(s) was to verify information acquired through existing documentation and to gather additional site-specific information. The following field-based activities were carried out on the Site and are summarized in Table 2. Locations of specific surveys are shown on Figure 3.

Table 2 Summary of Field Investigations

Date	Time On Site	Weather Conditions	Observer	Activities
2020-05-22	2130-2200	19°C, Cloud Cover: 0%, Wind: 1, Noise:1	D. Langlois	Amphibian Breeding Survey
2020-05-25	0900-1300	19°C, Cloud Cover: 0%, Wind: 1, Noise:1	D. Langlois	Bat Maternity Roost Survey
2020-06-08	0750-0950	8-12°C, Cloud Cover: 0%, Wind: 0, Noise:2	A. Veldhoen	Breeding Bird Survey #1 & Grassland Bird Survey #1
2020-06-08	2210-2230	17°C, Cloud Cover: 0%, Wind: 1, Noise:2	D. Langlois	Amphibian Breeding Survey
2020-06-11	0900-1430	15-20°C, Cloud Cover: 70%, Wind: 3	D. Langlois	Ecological Land Classification and Vegetation Inventory

			T. Jamieson	Wetland Boundary Delineation Aquatic Habitat Assessment
2020-06-15	0615-0805	8-13°C, Cloud Cover: 0%, Wind: 1, Noise:2	A. Veldhoen	Breeding Bird Survey #2 & Grassland Bird Survey #2
2020-06-25	2130-2150	17°C, Cloud Cover: 10%, Wind: 2, Noise:2	D. Langlois	Amphibian Breeding Survey
2020-06-26	00700-0815	17°C, Cloud Cover: 50%, Wind: 1, Noise:2	A. Veldhoen	Grassland Bird Survey #3
2020-08-12	0930-1630	16-31°C, Cloud Cover: 0%, Wind: 0	E. Silhanek	Woodland Boundary Delineation LSRCA Site Meeting

Notes:

Wind speed is reported as a Beaufort Wind Scale value (0 = 0-2 kph, 1 = 3-5 kph, 2 = 6-11 kph, 3 = 12-19 kph, 4 = 20-30 kph, 5 = 31-39 kph, 6 = 40-50 kph)

Noise is reported based on background noise levels: Index 0 – no appreciable effect, 1 – slightly affecting sampling, 2 – moderately affecting sampling, 3 – seriously affecting sampling, 4 – profoundly affecting sampling.

3.2.1 Ecological Land Classification and Vegetation Inventory

The Ecological Land Classification (ELC) System for Southern Ontario (Lee, 1998) was used to classify vegetation communities on the Site. Definitions of vegetation types are derived from the ELC for Southern Ontario First Approximation Field Guide (Lee, 1998) and the revised 2008 tables. ELC units were initially identified by orthophoto interpretation during the desktop review. Field investigations served to confirm the type and extent of communities through vegetation inventory; where necessary, soil assessment is used to confirm wetland communities.

A woodland assessment was conducted by Cambium and submitted under separate cover (Cambium Inc., 2020).

3.2.2 Wetland Boundary Delineation

The presence of wetlands on the Site was confirmed through field investigations during the growing season. Wetland boundaries were determined using the 50% wetland vegetation rule,

as specified by the Ontario Wetland Evaluation System (OWES) for Southern Ontario, 3rd Edition (Ministry of Natural Resources, 2013). Wetland boundaries are marked with a hand-held GPS unit and staked in the field.

3.2.3 Surface Water and Drainage Feature Mapping

Presence, location, boundary, and direction of flow were confirmed for all surface water features on and adjacent to the Site through visual investigation. Where feasible, the substrate type and cover features of surface water features were also noted. Indicators of surface drainage, including erosion of soils, gullies, and sediment deposition areas were noted and traced to identify sources of erosion. All watercourse or drainage feature crossings were noted and GPS marked in the field, including bridges, culverts, and bed-level crossings.

3.2.4 Aquatic Habitat Assessment

Presence, location, extent, and direction of flow was confirmed for all surface water features on and adjacent to the Site through visual investigation. Where accessible, substrates, in-stream cover, channel structure, and flow measurements of surface water features were also documented. Any unstable soils, erosion scars, and/or sediment deposits were noted and investigated to identify surface drainage flow paths. All watercourse and drainage feature crossings were noted and georeferenced in the field using a GPS, including bridges, culverts, and bed-level crossings.

3.2.5 Breeding Bird Surveys

Two (2) breeding bird surveys were carried out during the peak breeding season in May and June. Point counts were complete using components of the Ontario Breeding Bird Atlas (OBBA) Guide for Participants (Ontario Breeding Bird Atlas, 2001) and the Forest Bird Monitoring Program (Cadman, Dewar, & Welsh, 1998) based on habitat characteristics. As outlined in the OBBA protocol, point counts are to be done between dawn and five (5) hours after dawn, when wind speed is low (<19 km/h) and in the absence of rain or thick fog. All species observations (visual and auditory) were recorded during a five (5) minute period. Each

species observed was classified (Confirmed, Probable, Possible or Observed) and assigned a code based on the highest level of breeding evidence, as defined by the OBBA protocol.

3.2.6 Amphibian Surveys

The presence of frog and toad breeding habitat was determined using auditory surveys following the Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada, 2008). According to the protocol, three (3) amphibian surveys should be conducted between April and July, at least 15 days apart, in order to span the breeding seasons of all species that may be present in an area. Air temperature is the primary factor in determining survey dates, as different species call when air and water temperatures reach certain levels; therefore, nighttime air temperature should be greater than 5°C for the first survey, greater than 10°C for the second survey and greater than 17°C for the third survey. Other weather conditions are also taken into consideration. Conditions are considered appropriate when wind speed is low (<19 km/h; Beaufort Wind Scale of 3 or lower) and there is light or no precipitation occurring (high humidity is ideal but heavier rain can impact ability to hear and differentiate calls). Sample points are established during the first survey, and re-visited during following surveys. At each sample point, calls from all species are aurally surveyed for 5 minutes and noted to the greatest extent possible, on a 100 m semi-circular area in front of the sampling station using call intensity codes established by the protocol:

- Code 0: No calls heard
- Code 1: Calls can be counted individually (calls do not overlap)
- Code 2: Calls overlap, but numbers of individuals can be estimated
- Code 3: Calls overlap and are continuous (full chorus); therefore, a count estimate is unreliable

Recommended monitoring windows for the Site (located between the 43rd and 47th parallels) are 15-30 of April, 15-30 of May, and 15-30th of June.

3.2.7 Habitat-Based Wildlife Surveys

Given the scale of the proposed development, a habitat-based approach was used to assess potential impacts to wildlife, consistent with standard practice. General habitat information gathered through the field investigations was used to assess the connectivity of the Site with the surrounding landscape and evaluate the ecological significance of the local area.

Cambium staff actively searched for features that may provide specialized habitat for wildlife. These searches included inspecting tree cavities, overturning logs, rocks and debris, and scanning for scat, browse, sheds, fur, etc. Any evidence of breeding, forage, shelter, or nesting was noted. Species and habitat observations were documented and photographed.

3.2.8 Targeted Species at Risk Surveys

3.2.8.1 Grassland Bird Surveys

Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) are SAR listed as threatened on the SARO list. These species prefer natural grasslands and agricultural fields, including pasture, hayfields and abandoned fields (CUM vegetation type under ELC), for breeding and nesting sites. One or both of these species have been recorded in the vicinity of the Site within recent years. Bobolink is an area sensitive species that requires a minimum area of 5 ha to support breeding habitat, with larger areas generally providing additional habitat benefits (Ministry of Natural Resources and Forestry, 2018). Eastern Meadowlark are not as strongly area sensitive; however, a minimum area of 5 ha is also required to support preferred breeding habitat (Ministry of Natural Resources and Forestry, 2018).

In order to determine if the Site is being used as nesting habitat by Bobolink or Eastern Meadowlark, avian surveys were conducted following the approved MNR protocol for Eastern Meadowlark (Ontario Ministry of Natural Resources, 2013). This protocol is suitable for use with both of these species. This method involves recording Bobolink and Eastern Meadowlark observations via both point count location(s) and traveling transects between points. The protocol requires that the Site be visited three times between May 21 and July 3 (the nesting season for both of these species) with survey dates being evenly distributed within this period

and conducted within 7-10 days of each other. Surveys are conducted between sunrise and four hours after sunrise when wind speed is low (<19 km/h; Beaufort Wind Scale of 3 or lower) and with light or no precipitation.

3.2.8.2 Bat Maternity Roost Habitat Surveys

Bats present in Ontario typically require a snag or cavity tree for maternity roosting habitat. A snag or cavity tree is defined as a standing live or dead tree ≥ 25 cm diameter at breast height (DBH), with cracks, crevices, hollows, cavities and/or loose or naturally exfoliating bark appropriate for bat roosting. High quality or significant wildlife habitat (SWH) is defined as woodlands with greater than 10 roost trees per hectare. To determine if suitable habitat for bats existed on/or adjacent to the Site, Cambium staff conducted a bat maternity roost survey using the methods detailed in the *Bat and Bat Habitats: Guidelines for Wind Power Projects* (Ontario Ministry of Natural Resources, 2011). The protocol requires that for sites with ≤ 10 ha of treed forest or swamp ELC community types, a minimum of 10 randomly selected plots are to be surveyed, with an additional plot added per hectare, to a maximum of 35 plots for the project area. At each plot, the number of snag/cavity trees ≥ 25 cm DBH within a 12.6 m radius (0.05 ha) is to be recorded. A calculation is then made to determine the snag density and if the number of cavity trees found meets the criteria for maternity surveys.

4.0 Characterization of Natural Features and Functions

4.1 Landscape Position and Topography

The Site is within the Mixedwood Plains Ecozone: Lake Simcoe Rideau Ecoregion 6E, which extends southward from a line connecting Lake Huron in the west to the Ottawa River in the east, including Ottawa, Kingston, Peterborough, Barrie, Tobermory, Kitchener, and Toronto. This ecoregion is characterized by a mixed geology that includes both shallow soil areas such as alvar and bedrock plains, as well as deep soil areas such as the Oak Ridges Moraine. It falls within the Great-Lakes St. Lawrence Forest Region, including deciduous and mixed forests; however, over 50% of the landscape in this Ecoregion is currently in use as agricultural land (Lee, 1998). The Site is within Ecoregion 6E-6 of Ontario (Crins, Gray, Uhlig, & Wester, 2009).

The Site is situated in the Lake Simcoe watershed, and more specifically the Lovers Creek subwatershed. The watercourse on the Site is an unnamed tributary of Lovers Creek. The Site slopes gradually to the southeast, towards the wetland and watercourse.

4.2 Surface Water and Drainage Features

The mapped watercourse, a tributary of Lovers Creek which bisects the center of the property, flows into the Site from the west. The feature converges with Lovers Creek approximately 1 km east of the Site. Flows are conveyed through the Site within a defined channel. Flowing conditions were documented during all 2020 site visits, indicating a permanent flow regime. Channel morphology was characterized by a riffle-run-pool-glide sequence. At the time of the assessment, low water levels resulted in braiding and some exposed vegetated islands. Substrates consisted of approximately 75% large gravel and small cobble, with 25% fines (sand and silt) covering the coarse substrates. Some large boulders were also present throughout within the channel. Limited overhanging grasses/riparian vegetation at the water's edge provided some overhead cover. Banks were documented as nearly vertical with several areas of exposed soils and signs of erosion. The maximum water depth in pools varied from

0.11 m to 0.25 m. Wetted width varied from 1.75 m to 2.19 m, and maximum bankfull width varied from 2.91 m to 8.22 m.

The proposed development includes a crossing of the watercourse. Aquatic habitat conditions were documented at the proposed crossing location shown on Figure 4. At the time of the investigation low water levels resulted in braiding and a vegetated island approximately 1.2 m wide. The wetted width at the crossing site was 1.81 m, with maximum water depth of 0.25 m at the time of the investigation. The banks in the area were steep (nearly vertical) with minimal signs of erosion. Channel substrates consisted of mainly of boulders (40%) and cobbles (40%) with some fines (silt and sand 10%). Riparian vegetation in the area included willows, Smooth Brome (*Bromus inermis*), goldenrods, Manitoba Maple (*Acer negundo*), Wild Carrot (*Daucus carota*), and Reed Canary Grass (*Phalaris arundinacea*).

No other surface water features, drainage features, springs, or seeps were observed on the Site during the field investigations. Overland drainage on the Site is generally directed towards Lovers Creek and eventually Lake Simcoe. The on-site tributary of Lovers Creek, as it relates to fish habitat, is further discussed in Section 4.5

4.3 Wetland Delineation

The background review revealed the presence of a provincially significant wetland (PSW; Lovers Creek Swamp) on the Site. The presence of this wetland was confirmed during the field investigations and its boundaries were generally consistent with the delineation previously completed in coordination with LSRCA staff (see Figure 3).

The wetland consisted of one distinct vegetation community (MAM2-10). The feature was found to surround a portion of the mapped watercourse that traverses the Site, and was distinguished from the surrounding area based on the dominance of wetland vegetation (>50 % relative cover). Soils within the wetland consisted of a 68 cm deep mineral horizon with humic material incorporated over silty clay. Mottles were observed at a depth of 70 cm; no gleys were observed. The water table was observed at 40 cm.

4.4 Vegetation Communities

Nine vegetation community types were identified on the Site. The vegetation communities were initially classified through aerial photograph interpretation and were subsequently confirmed through the vegetation inventories. The vegetation communities on the Site are summarized in Table 3. The extents of the vegetation communities identified on the Site are illustrated in Figure 3. A list of identified species and representative photos for each community are provided in Appendix D.

Table 3 Vegetation Communities

No.	ELC Code	Community Description	Community Type	S - Rank
1	AGR	Agricultural Fields	Terrestrial	N/A
2	N/A	Hedgerow	Terrestrial	N/A
3	FOD5-10	Fresh Sugar Maple - White Birch - Aspen Deciduous Forest	Terrestrial	S5
4	FOD5-3	Dry-Fresh Sugar Maple – Oak Deciduous Forest	Terrestrial	S5
5	CUT1-1	Sumac Cultural Thicket	Terrestrial	N/A
6	MAM2-10	Forb Mineral Meadow Marsh	Wetland	S4S5
7	FOD3-1	Dry-Fresh Aspen-Poplar Deciduous Forest	Terrestrial	S5
8	CUM1-1	Dry-Moist Old Field Meadow	Terrestrial	N/A
9	CVR	Developed Area	Terrestrial	N/A

A search for butternut (*Juglans cinerea*; provincially endangered) was completed as part of the vegetation survey; one butternut was identified on the Site and further details are provided in Section 4.10.

4.5 Fish and Fish Habitat

The thermal regime of the watercourse on the Site is unclassified based on MNRF mapping; however, given the fish species assemblage historically documented downstream of the Site,

the tributary is assumed to provide cool/coldwater habitat. Appendix E includes a list of fish species known to occur in the watercourse, based on the background information review, and species-specific life history information. One fall spawning, coldwater species was documented in the area, Brook Trout (*Salvelinus fontinalis*).

Upstream of the Site, the subject watercourse is extensively piped. Flows are conveyed to the Site through a concrete outlet structure at the western property boundary. This structure likely acts as an upstream barrier to fish movement due to elevation loss and the amount of armouring present.

4.6 Birds and Habitat Features

Background information available from the OBBA (10 km UTM Grid Square #17PK00) identified a total of 110 bird species within the general area of the Site, as listed in Appendix F. Of these, 12 species are federally or provincially listed SAR (Government of Canada, 2019; Government of Ontario, 2019). The identified SAR are included in the habitat-based screening summarized in Section 4.10.

Site-specific breeding bird surveys were completed as a part of the current study, during which a total of 47 bird species were identified on or adjacent to the Site, as listed in Appendix G. Of these, 27 had probable or confirmed breeding evidence. Species with probable or confirmed breeding evidence included:

- Eastern Wood-pewee (special concern)
- Grasshopper Sparrow (special concern)

Two area-sensitive forest birds were observed on the Site: Red-breasted Nuthatch and Scarlet Tanager; however, no probable or confirmed breeding evidence was recorded.

No grassland birds (Eastern Meadowlark or Bobolink) were documented on the Site.

Although no probable or confirmed breeding evidence was documented for Barn Swallow or Bank Swallow, both SAR species were documented utilizing the Site for foraging.

4.7 Amphibians and Habitat Features

Background information available through a query of the ORAA database (10 km UTM Grid Square #17PK00) identified a total of 10 amphibian species within the general area of the Site. Of these, one species is a federally and provincially listed SAR (Government of Canada, 2019; Government of Ontario, 2019). The identified SAR are included in the habitat-based screening for SAR summarized in Section 4.10.

The wetland and watercourse on the Site likely provide suitable amphibian habitat.

Amphibian breeding surveys were completed and a total of 3 species were identified on or adjacent to the Site, as shown in Table 4. The majority of the calls were documented coming from the wetland on the Site.

Table 4 Summary of Amphibian Survey Results

Sample Point	Survey Date	Species	Maximum Call Intensity	Number of Individuals	Inside or Outside 100 m Sample Plot
1	May 22	-	-	-	-
	June 8	American Toad	1	1	In
	June 25	-	-	-	-
2	May 22	Spring Peeper	2	4	In
	June 8	Green Frog	1	1	In
	June 25	-	-	-	-

Notes: - means to no calls heard

4.8 Reptiles and Habitat Features

Background information available through a query of the ORAA database (10 km UTM Grid Square #17PK00) identified a total of four reptile species within the general area of the Site. Of these, three species are federally or provincially listed SAR (Government of Canada, 2019; Government of Ontario, 2019). The identified SAR are included in the habitat-based screening summarized in Section 4.10.

No incidental reptile observations were recorded and no reptile hibernaculum were documented on Site. The wetland and watercourse on the Site may provide suitable habitat for some native reptile species.

4.9 Mammals and Habitat Features

Targeted mammal surveys were limited to Bat Maternity Roost Habitat surveys. For the bat maternity roost survey, a total of eight plots were surveyed in the deciduous forest communities in the northwest corner the Site (FOD5-10 and FOD5-3). Given the relatively small size of the other forest communities located on the Site, the entire communities were surveyed through transects. During the survey, a limited number of cavity trees of an appropriate size were observed on the Site. The Site does not qualify for Bat Maternity Roost Significant Wildlife Habitat, but bats and their habitat are discussed further in Section 4.10.

Incidental mammal observations documented during the field investigations included Red Squirrel (*Sciurus vulgaris*), Eastern Chipmunk (*Tamias striatus*), Striped Skink (*Mephitis mephitis*), Coyote (*Canis latrans*) and Eastern Gray Squirrel (*Sciurus carolinensis*). The Site is likely used by other species common to wooded and agricultural lands, including, Porcupine (*Erethizon dorsatum*), and Raccoon (*Procyon lotor*).

4.10 Species at Risk

A list of SAR with potential to occur in the general vicinity of the Site has been compiled based on known species' ranges and habitat requirements and review of background information sources (as listed in Section 3.1). In addition, the SAR list has been augmented with direct field observations from the current study, as detailed in the previous sections. Cambium has employed a habitat-based screening, supplemented with targeted field surveys when necessary, in order to identify suitable habitat for SAR located on or adjacent to the Site. A detailed habitat suitability analysis is provided in Appendix G and a discussion of the results is provided below.

No Critical Habitat for aquatic species at risk listed under SARA was identified in the tributary of Lovers Creek on the Site.



Based on our screening, the Site and/or adjacent lands have the potential to provide habitat for the following species:

Special Concern Species (not afforded habitat protection under the ESA)

- Eastern Wood-pewee (*Contopus virens*)
- Wood Thrush (*Hylocichla mustelina*)
- Snapping Turtle (*Chelydra serpentina*)
- Golden Winged Warbler (*Vermivora chrysoptera*)
- Grasshopper Sparrow (*Ammodramus savannarum*)
- Olive-sided Flycatcher (*Contopus cooperi*)
- Red-headed Woodpecker (*Melanerpes erythrocephalus*)

Threatened and Endangered Species (habitat protected under the ESA)

- Bank Swallow (*Riparia riparia*; threatened)
- Barn Swallow (*Hirundo rustica*; threatened)
- Bobolink (*Dolichonyx oryzivorus*; threatened)
- Eastern Meadowlark (*Sturnella magna*; threatened)
- Little Brown Myotis (*Myotis lucifugus*; endangered)
- Northern Myotis (*Myotis septentrionalis*; endangered)
- Eastern Small-footed Myotis (*Myotis leibii*; endangered)
- Tri-coloured Bat (*Perimyotis subflavus*; endangered)
- Butternut (*Juglans cinerea*; endangered)

The only SAR birds recorded with probable breeding evidence on the Site were Grasshopper Sparrow and Eastern Wood-pewee. Grasshopper Sparrow were recorded with probable breeding evidence at BB2 (in the CUM1-1 community) and Eastern Wood-pewee were

documented with probable breeding evidence at BB3 (FOD5-10 community). Barn Swallow and Bank Swallow were also observed on the Site likely foraging as no probable or confirmed breeding evidence was documented. Barn Swallow were observed at BB1 and BB2 and Bank Swallow were observed at BB8. Mitigation measures relating to the protection of birds is provided in Section 6.2.

Snapping Turtle (*Chelydra serpentina*) may be present in the watercourse on the Site. The on-site wetland community (MAM2-10) also contained areas of ponded water, and provides aquatic habitat for turtles. Existing ground cover in open areas was dominated by meadow, which is not preferred nesting habitat for turtles. Mitigation measures relating to the protection of turtles are provided in Section 6.4.

Field investigations determined that a limited number of cavity trees of an appropriate size were present on the Site. SWH maternity roosting habitat for SAR bats was not present on the Site; however, it may provide foraging habitat for bats roosting on adjacent lands.

A search for butternut (*Juglans cinerea*; provincially endangered) was completed as part of the vegetation survey; one butternut was identified on the Site, in the woodland in the northwest corner. A butternut assessment was conducted by Cambium and has been submitted under a separate cover. Based on the assessment, the Butternut was determined to be a hybrid. Hybrid trees are not protected under the Endangered Species Act, 2007.

5.0 Assessment of Natural Heritage Significance

It is our understanding that the City has identified the subject lands for commercial/industrial development, therefore the following assessment of natural features on the Site and adjacent lands was based on applicable provincial criteria.

Based on information gathered from the background review and field investigations, six natural heritage feature types that receive protection under provincial policy were considered in our assessment of candidate features on the Site and adjacent lands: Wetlands, Significant Woodlands, Significant Valleylands, Significant Wildlife Habitat, Fish Habitat and Permanent Streams and Habitat of Threatened and Endangered Species. Based on our review of topographic information from background sources and the field investigations, it was determined that there are no features on the Site that would qualify as valleylands.

5.1 Wetlands

A single Provincially Significant Wetland (Lovers Creek Swamp) was identified on the Site. This wetland feature is afforded protection under the Ontario Regulation (179/06) which requires a development setback of 120 m from the wetland boundary. This required setback can be reduced to a maximum of 30 m if it can be demonstrated that the development will have no negative impact on the hydrologic function of the wetland.

5.2 Significant Woodlands

The woodland located in the northwest corner of the property was assessed in the Woodland Assessment conducted by Cambium (Cambium Inc., 2020), provided under a separate cover.

Four areas of forest (FOD3-1) were identified in the southern portion of the Site. The four FOD3-1 areas ranged from 0.2 – 2.3 ha in size. Significant woodlands are (key) natural heritage features that are afforded protection under the PPS. The four areas of woodland on the Site would not be considered significant based on provincial criteria (Ministry of Natural Resources, 2010) because they are each less than 4 ha in size and sufficiently spaced apart to be considered disconnected.

The two FOD3-1 communities in the southeast corner of the Site were evaluated separately as the hedgerow between the two areas was determined to not qualify as a connection. This evaluation was based on the criteria in the Oak Ridges Moraine Conservation Plan (ORMCP) Technical Paper 7 – Identification and Protection of Significant Woodlands. To constitute as a connection the length of the hedgerow must be less than three times the average width. Measurements of this feature were informed by the dripline delineation conducted with LSRCA. The subject hedgerow does not meet the connection criteria as the average width of the feature was approximately 11 m and the overall length was 34.7 m.

5.3 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) guidance documents produced by MNRF for Ecodistrict 6E were used as a guide to identify and confirm SWH on the Site (Ministry of Natural Resources, 2000; Ministry of Natural Resources, 2013). Information gathered during the background review and field studies was compared to SWH criteria to identify potential SWH habitat on the Site.

As detailed in Sections 4.6 and 4.10, breeding bird surveys confirmed the presence of probable breeding evidence for two special concern species; Eastern Wood-Pewee (BBS3) and Grasshopper Sparrow (BBS2), shown on Figure 3. As specified in the SWH criteria table, the ELC community in which the species is documented represents the extent of the SWH. As such, both the CUM1-1 community where the Grasshopper Sparrow was recorded and the FOD3-1 in the southern portion of the Site were identified as Special Concern and Rare Wildlife Species SWH.

Discussion of potential impacts and mitigation strategies is provided in Section 6.2.

5.4 Fish Habitat/ Permanent Watercourse

The tributary of Lovers Creek which bisects the Site provides habitat for cool/coldwater fish, and may provide seasonal foraging habitat for coldwater species (i.e., Brook Trout). As specified by the PPS (Ministry of Municipal Affairs and Housing, 2014), development is not permitted in fish habitat except in accordance with provincial and federal requirements.



Fish habitat protection provisions in the federal Fisheries Act prohibit harmful alteration, disruption or destruction (HADD) of fish habitat. Any work proposed near the watercourses on the Site (i.e., road crossing construction) must be assessed to determine the risk of causing HADD of fish habitat. If HADD may be unavoidable, a Request for Project Review should be submitted to DFO.

The subject watercourse is also afforded protection under the Ontario Regulation (179/06), which requires a development setback of at least 30 m.

5.5 Habitat of Endangered and Threatened Species

Based on the results of a Butternut Health Assessment, the Butternut identified at the Site was determined to be a hybrid. Hybrid trees are not afforded protection under the Endangered Species Act, 2007.

As such, no habitat of endangered and threatened species was identified at the Site.

6.0 Impact Assessment and Mitigation Measures

The proposed development consists of a commercial/industrial subdivision and extension of Welham Road, with a new connection at Lockhart Road. The proposed road extension will include a new crossing at Lovers Creek. The current Draft Plan is provided in Appendix B.

The following sections address potential impacts to protected features identified on and adjacent to the Site that may result from the proposed development and site alteration:

- Provincially Significant Wetlands
- Significant Wildlife Habitat
- Fish Habitat/Permanent Watercourse

No other natural heritage features protected by provincial policy were confirmed on or adjacent to the Site.

Mitigation measures and best management practices have been recommended to ensure that the integrity of the current existing natural features are protected and/or enhanced and furthermore that their functions are not negatively impacted during or following construction.

6.1 Wetlands

A 30 m setback is recommended for the PSW on the Site, as shown on Figure 3. The 30 m setback is considered sufficient to protect the existing form and function of local wetland features provided that the area be maintained as the existing forest cover and be allowed to naturally self-sustain (i.e., a buffer area where no vegetation removals or grading is allowed). The watercourse located within the wetland community will also be protected through the implementation of wetland setbacks/buffers.

No direct impacts to wetlands on the Site are anticipated with the provision of a 30 m wetland setback. Existing habitat linkages will be maintained through the retention and addition of natural cover within and beyond the setback. Indirect impacts to the surrounding wetlands can also be effectively mitigated provided that all proposed structures, parking areas, and associated infrastructure are located beyond this setback.

According to the Natural Heritage Network resource definitions on Schedule H (Natural Heritage Resources) of the City of Barrie Official Plan, the PSW and its setback should be considered a Level 1 Resource moving forward (see Section 2.4, above).

6.1.1 Erosion and Sediment Control

Prior to any construction activities taking place, it is essential that perimeter sediment fencing be installed around construction areas. Fencing should be properly keyed into the ground and securely fastened to vertical supports spaced ≤ 2 m apart. This key control measure will help prevent sediment from entering surface water features (i.e., wetlands and the watercourse) in the surrounding landscape. All sediment fencing should be regularly maintained and kept in good working condition, until the area has been stabilized and/or successfully revegetated. Any observed overland drainage channels originating from Site, that may or may not have arisen as a result of erosion, should be directed to a check dam structure, prior to discharging to off-site areas.

6.1.2 Stormwater Management

Runoff from the Site is expected to increase with the introduction of impermeable surfaces (i.e., building roofs, roadways, and walkways) and compacted surfaces with reduced infiltration capacity. Measures to increase infiltration of run-off from these surfaces should be encouraged and, where possible, included in the Site Plan for the development. Eaves trough downspouts should be directed to vegetated areas (such as lawn, or gardens) and not onto hardened surfaces, to encourage infiltration. It is anticipated that a hydrogeological study will be prepared (i.e., required) in support of the subject development application. This study should specifically address potential stormwater-related impacts to the hydrological regime of the surrounding wetlands, through a feature-based water balance study.

6.2 Significant Wildlife Habitat

Special Concern and Rare Wildlife Species SWH was documented in the southern FOD3-1 community (for Eastern Wood-pewee) and the central CUM1-1 community (for Grasshopper Sparrow) on the Site (see Figure 3). Although these vegetation communities qualify as SWH

based on the presence of special concern species, they are both common (i.e., non-limiting) vegetation community types on the local landscape.

While Eastern Wood-pewee is listed as special concern in Ontario, it is locally abundant in areas of Simcoe County with expansive forest cover. Eastern Wood-pewee is not an area-sensitive species and is known to inhabit a range of forest types that provide mid-canopy foraging habitat. As such, the proposed development includes the removal of portions of the FOD3-1 communities along the watercourse and eastern lot boundary. High quality habitat for this species will continue to exist on the Site and on adjacent lands south of Site, in the proposed post-development condition.

The proposed development also includes removal of the central CUM1-1 community where Grasshopper Sparrow was documented. This community has developed as a result of the lack of regular active farming on the Site. Old Field Meadow (CUM1-1) communities are relatively common vegetation community and are non-limiting on the local landscape. Quality meadow habitat can be accommodated on the Site, through enhancement of existing agricultural lands within the watercourse corridor (i.e., beyond the limit of development).

Nesting birds are protected under the *Migratory Birds Convention Act, 1994*. Vegetation clearing on the Site should occur outside the breeding bird season, which extends from April 15 to August 15 in the local area (as per Environment and Climate Change Canada Guidelines). Where feasible, construction should take place outside this period. In the event that construction is planned to proceed during the breeding season, the area should be investigated for the presence of breeding birds and nests containing eggs and/or young, prior to Site alteration. Nests discovered should be left undisturbed until young have fledged or the nest is determined to be inactive.

6.3 Fish Habitat/ Permanent Watercourse

Fish habitat is present on the Site, in the tributary of Lovers Creek. A 30 m watercourse setback is recommended to provide protection for this feature, as shown on Figure 4. The proposed development includes a road crossing of the watercourse (see Figure 4). The proposed crossing is located outside of the wetland setback but will require development within

the watercourse and its setback. It is recommended that the proposed crossing be designed to span the entire watercourse channel and provide ecopassage function that maintains a suitable corridor for both aquatic and medium-sized terrestrial wildlife.

A Fisheries Act review should be completed once the proposed crossing design has been established. A proponent-led self-assessment is required for any project near water that could potentially impact fish or fish habitat. The purpose of the self-assessment is to determine whether the harmful alteration, disruption, or destruction (HADD) of fish habitat, as defined by the Act, can be avoided.

Indirect impacts to fish habitat, including potential for changes to water quality, will be mitigated through appropriate Erosion and Sediment Control (ESC) measures and stormwater management.

According to Schedule H (Natural Heritage Resources) of the Official Plan, the watercourse and its vegetation protection zone (30 m setback) should be designated as a Level 1 Resource, moving forward (see Section 2.4, above).

6.4 Best Management Practices

Development and construction within natural areas can potentially result in encounters with wildlife. Care should be taken to minimize these encounters and to appropriately handle any wildlife encounter that does occur.

Erosion and sediment control measures to be implemented during construction (see Section 6.1.1) are essential to ensuring that there will be minimal impacts to the watercourse and downstream receivers. Wildlife exclusion fencing (or appropriate heavy-duty sediment fencing without synthetic meshing), should be properly installed (i.e., trenched-in) around the development envelope, prior to site alteration, to prevent turtles and snakes from inadvertently entering the construction area. During the construction phase, the development envelope should be routinely checked for the presence of wildlife.

Turtles and snakes are particularly vulnerable to construction-related impacts on sites adjacent to wetlands, watercourses, and waterbodies. As the Site is located adjacent to potential habitat



for turtles, workers should be aware of the nesting season for turtles, which extends from May 15 to August 15. All stockpiled materials should be kept inside the exclusion fencing area and ideally should be covered and well secured around the base, to prevent turtles from nesting in loose substrates. Should any nesting turtles be encountered, work should stop immediately and the turtle should be left to finish nesting undisturbed. The turtle should be photographed and the nest marked to ensure it is not disturbed during construction, or until eggs have hatched (late August – September). If a nest is laid in a stockpile or other area that requires disturbance, Cambium should be contacted to determine if the nest can be relocated. If any individuals are encountered, they should be photographed and allowed time to move out of harm's way. Species at Risk observations, including most species of snakes and turtles, should be reported to the Natural Heritage Information Centre.

7.0 Opportunities for Restoration and Enhancement

The PSW and Lovers Creek are expected to remain intact in the proposed post-development condition. The application of a 30 m development setback to these features provides an opportunity for restoration and enhancement, particularly in areas that are currently of low ecological value (agricultural lands and impacted by non-native invasive species). In addition, the lands located between the 30 m setback and the proposed lots, herein referred to as the “fringe lands”, shown on the Draft Plan (Appendix B), have also been recommended as additional areas for restoration and enhancement. The fringe lands provide approximately 3550 m² of potential restoration area to the east of the Lovers Creek crossing (Block 4) and approximately 4035 m² to the west of the crossing (Block 3). Cambium recommends that these fringe lands be designated as a Level 2 Resource on Schedule H of the City of Barrie’s Official Plan, moving forward. Planting of native trees, shrubs and herbaceous plants in previously disturbed areas, particularly in close proximity to the watercourse channel, would provide increased bank stability and infiltration of run-off, while increasing visual appeal.

Additional plantings of native trees and shrubs will improve species diversity and provide cover, shelter and nesting habitat for bird species. A portion of the existing agricultural lands within the 30 m watercourse/wetland setback and fringe lands should be converted to Old Field Meadow communities through targeted habitat enhancement. These habitat enhancements will serve to replace Grasshopper Sparrow habitat lost in other areas of the Site, and will promote use by other native bird species of conservation concern, including Eastern Wood-pewee.

Specific habitat restoration and enhancement prescriptions (i.e., planting, tending, etc.) should be developed through the preparation of a Buffer Enhancement and Edge Management Plan for the Site. The Plan should include a post-construction monitoring component, to ensure that the proposed prescriptions are achieving the desired habitat conditions. This Plan will serve to mitigate edge effects resulting from the proposed vegetation removals in wooded areas where new, hard forest edges will be created. It will also provide for valuable wildlife habitat



enhancements to offset for the loss of natural cover on the Site. Cambium is qualified and available to assist with the development and implementation of this Plan.

8.0 Policy Compliance

Based on the key natural heritage features identified (wetlands, fish habitat, permanent streams, and significant wildlife habitat) and the findings of the field investigations conducted on the Site, the proposed development was assessed for compliance with applicable policies in the PPS and LSPP. Compliance with applicable PPS natural heritage policy is summarized in Table 5.

Table 5 Policy Compliance Summary

Key Natural Heritage / Hydrologic Feature	On Site	On Adjacent Lands	Meets Associated Policy
Significant Wetland in Ecoregions 5E, 6E and 7E or in the Canadian Shield north of Ecoregions 5E, 6E and 7E	Yes	No	Yes
	Explanation: A 30 m wetland setback is recommended for the wetland, as shown on Figure 3. The 30 m setback is considered sufficient to protect the existing form and function of local wetland features provided that the area be maintained as the existing forest cover and be allowed to naturally self-sustain.		
Significant Coastal Wetland	No	No	N/A
	Explanation: N/A		
Coastal Wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b)	No	No	N/A
	Explanation: N/A		
Fish Habitat	Yes	Yes	Yes
	Explanation: The 30 m buffer on the watercourse will prevent HADD of fish habitat.		
Significant Wildlife Habitat (including habitat of special concern species)	Yes	Yes (likely)	Yes
	Explanation: SWH was documented for two special concern bird species. In both cases, the vegetation communities encompassing the SWH are relatively common and non-limiting on the local landscape. Suitable habitat can be		



	maintained on the Site for both species, through the recommended mitigation measures. These include development setbacks (VPZs), which will serve to maintain forest habitat, and enhancement measures which will serve to create high quality meadow habitat in existing agricultural and areas beyond the development limit.		
Habitat of Threatened and Endangered Species	No	No	N/A
	Explanation: N/A		
Areas of Natural and Scientific Significance	No	No	N/A
	Explanation: N/A		
Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)	No	No	N/A
	Explanation: N/A		
Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)	No	No	N/A
	Explanation: N/A		

With respect to the natural heritage policies of the LSPP, in Cambium's opinion, the proposed mitigation measures (i.e., maintenance of vegetation protection zones, and habitat enhancement works beyond the limit of development) satisfy the requirements of sections 6.33-dp and 6.34-dp.

9.0 Summary of Recommended Mitigation, Compensation, and Best Practices

1. Site Plans for the proposed development should clearly illustrate the wetland boundaries and natural feature setbacks relative to proposed built features. Built features should be located outside of wetland features and associated setbacks.
2. The buffer areas created by establishment of wetland and watercourse setbacks and the provision of additional undevelopable fringe lands should be enhanced with native species and maintained as naturally self-sustaining vegetative cover. Specific habitat restoration and enhancement prescriptions (i.e., planting, tending, etc.) should be developed through the preparation of a Buffer Enhancement and Edge Management Plan for the Site. The Plan should include a post-construction monitoring component, to ensure that the proposed prescriptions are achieving the desired habitat conditions.
3. All relevant approvals and permits should be obtained, prior to any site alteration activities taking place.
4. Clearing of vegetation should occur outside of the April 15 to August 15 breeding bird timing window as per Environment and Climate Change Canada guidelines. Vegetation removal should be limited to the greatest extent possible. Any active bird nests should be left undisturbed until young have fledged or the nest is determined to be inactive.
5. Prior to the commencement of site alteration, heavy duty silt fence should be installed around the perimeter of construction area and any proposed material stockpile locations, as per Ontario Provincial Standard Drawing (OPSD 219.110).
6. All erosion and sediment control measures should be inspected and maintained throughout the construction phase, until the Site has been fully stabilized. All temporary ESC measures should be removed following construction.
7. Machinery or construction materials should be stored within the construction area throughout the construction period.



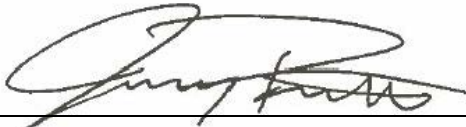
8. Eavestrough downspouts should be directed to vegetated buffer areas or infiltration features, wherever possible.
9. Should any nesting turtles be encountered during construction, work should stop immediately and the turtle should be left to finish nesting undisturbed. The turtle should be photographed and the nest marked to ensure it is not disturbed, until it has hatched (late August – September). If a nest is laid in a stockpile or other area that requires disturbance, Cambium should be contacted to determine if the nest can be relocated.
10. Any species at risk discovered on the property will be left undisturbed as required by the Endangered Species Act, 2007. If any individuals are encountered, they should be photographed and allowed time to move out of harm's way. SAR observations should be reported to the MNRF Natural Heritage Information Centre.

10.0 Closing

In conclusion, potential negative impacts associated with the proposed development and site alteration can be appropriately avoided and mitigated, provided that the recommendations outlined in Section 9.0 are adhered to. The information presented herein demonstrates that the proposed development can be carried out in a way that will not adversely impact natural heritage and hydrologic features and functions identified on or adjacent to the subject Site. Cambium has demonstrated that the proposed development complies with applicable provincial natural heritage policies. Furthermore, we have recommended revisions to the Natural Heritage Network designations of non-development lands on the Site, which should be reflected in a future update to Schedule H of the City of Barrie Official Plan.

Respectfully submitted,

Cambium Inc.



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Ecological Technician

References

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Glossary of Terms

ANSI: Area of Natural and Scientific Interest

ARA: Aquatic Resources Area

ARA: Aggregate Resources Act

AS: Agricultural System

ATK: Aboriginal Traditional Knowledge

BMA: Bear Management Area

BMP: Best Management Practice

CA: Conservation Authority

CEAA: Canadian Environmental Assessment
Act/Agency

CFA: Canadian Forestry Association

CFIP: Community Fisheries Involvement
Program

CFS: Canadian Forestry Service

CHU: Critical Habitat Unit

CH: Cultural Heritage

CLI: Canada Land Inventory

CLU: Crown Land Use

COSSARO: Committee on the Status of
Species at Risk in Ontario

CR: Conservation Reserve

CWIP: Community Wildlife Involvement
Program

CWS: Canadian Wildlife Service

DFO: Fisheries and Oceans Canada

EA: Environmental Assessment

EAA: Environmental Assessment Act

EAB: Emerald Ash Borer

EBR: Environmental Bill of Rights

EIA: Environmental Impact Assessment

EIS: Environmental Impact Study/Statement

ELC: Ecological Land Classification System

ELUP: Ecological Land Use Plan

END: Endangered species

EPA: Environmental Protection Act

ER: Environmental Registry

ESA: Endangered Species Act (2007)

ESA: Environmentally Sensitive Area

ESC: Erosion and Sediment Control

F&W: Fish and Wildlife

FA: Fisheries Act (Federal)

FEC: Forest Ecosystem Classification

FMP: Forest Management Plan

FRI: Forest Resources Inventory

FWCA: Fish and Wildlife Conservation Act

GGH: Greater Golden Horseshoe

GHP: General Habitat Protection

GIS: Geographic Information System

GLSL: Great Lakes – St. Lawrence



GPGGH: Growth Plan for the Greater Golden Horseshoe

GPS: Global Positioning System

HSA: Habitat Suitability Analysis

HIS: Habitat Suitability Index

KHA: Key Hydrologic Areas

KHF: Key Hydrologic Features

KNHF: Key Natural Heritage Features

LCFSP: Licence to Collect Fish for Scientific Purposes

LIO: Land Information Ontario

LRIA: Lake and Rivers Improvement Act

LUP: Land Use Permit or Plan

MA: Management Area

MAFA: Moose Aquatic Feeding Area

MCEA: Municipal Class Environmental Assessment

MECP: Ontario Ministry of Environment, Conservation and Parks

MNRF: Ontario Ministry of Natural Resources and Forestry

NER: Natural Environment Report

NHIC: Natural Heritage Information Centre

NHIS: Natural Heritage Information System

NHS: Natural Heritage System

OBM: Ontario Base Map

OFIS: Ontario Fisheries Information System

OLI: Ontario Land Inventory

OMAFRA: Ontario Ministry of Agriculture, Food and Rural Affairs

OWES: Ontario Wetland Evaluation System

PPS: Provincial Policy Statement (2014)

PSW: Provincially Significant Wetland

RLUP: Regional Land Use Plan

RMP: Regional Management Plan

R.P.F.: Registered Professional Forester

SAR: Species at Risk

SARO: Species at Risk in Ontario

SC: Special Concern species

SWH: Significant Wildlife Habitat

SWM: Stormwater Management

THR: Threatened species

TOR: Terms of Reference

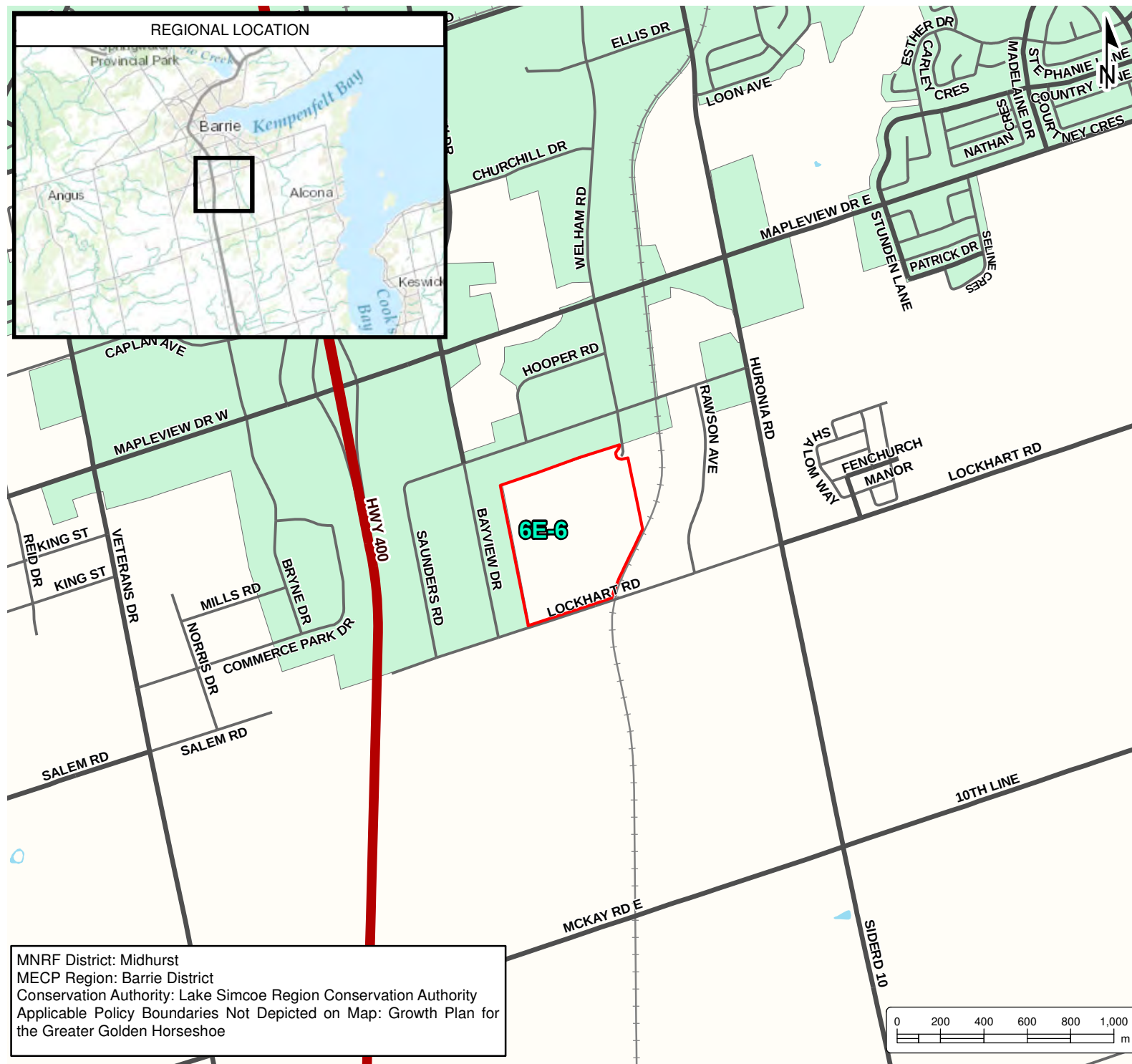
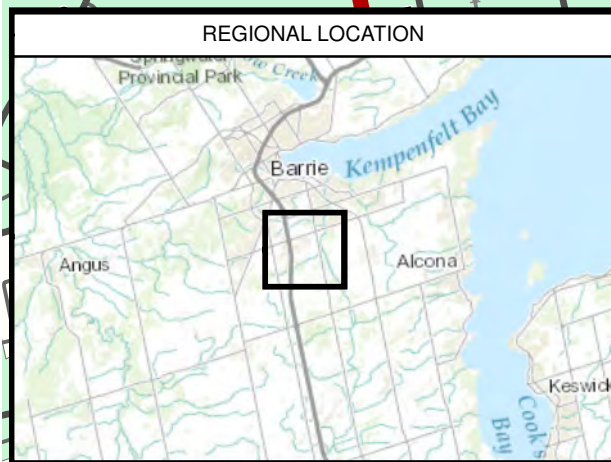
TPP: Tree Preservation Plan

WIA: Woodlands Improvement Act

WMU: Wildlife Management Unit



Appended Figures



ENVIRONMENTAL IMPACT STUDY 2640085 ONTARIO INC. 140 Lockhart Road, Barrie, Ontario

LEGEND

- Highway
- Major Road
- Minor Road
- Railroad
- Water Area
- Greater Golden Horseshoe Delineated Boundary
- Ecodistrict
- Site (approximate) (37.12 ha)

Notes:
- Base mapping features are © Queen's Printer of Ontario, 2019 (this does not constitute an endorsement by the Ministry of Natural Resources and Forestry or the Ontario Government).
- Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
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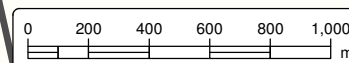


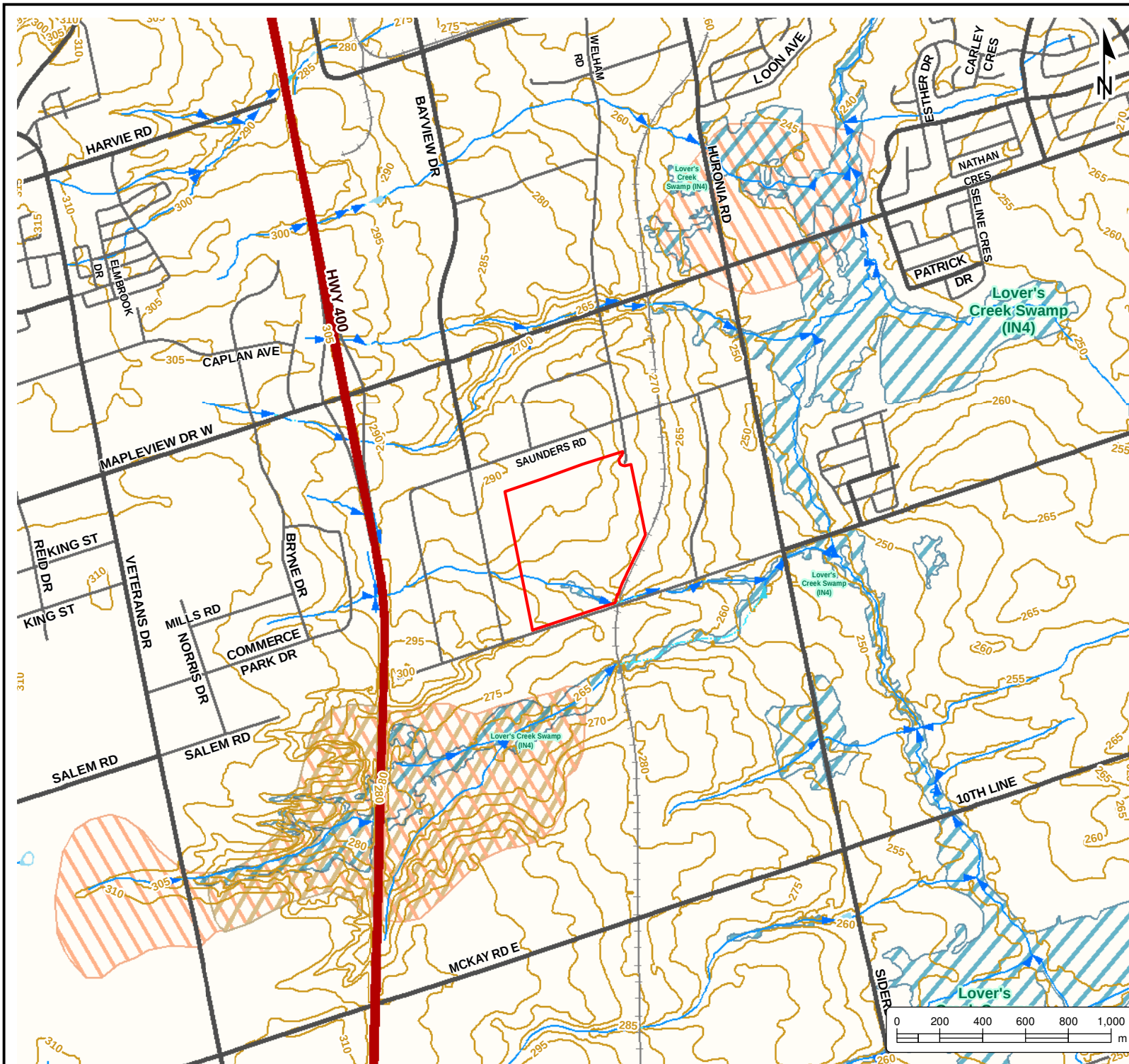
P.O. Box 325, 52 Hunter Street East
Peterborough, Ontario, K9H 1G5
Tel: (705) 742.7900 Fax: (705) 742.7907
www.cambium-inc.com

SITE LOCATION AND SPECIAL PLANNING AREAS

Project No.: 10957-001	Date: October 2020
Scale: 1:25,000	Rev.: JP
Created by: MAT	Checked by: JP
Figure: 1	

MNRF District: Midhurst
MECP Region: Barrie District
Conservation Authority: Lake Simcoe Region Conservation Authority
Applicable Policy Boundaries Not Depicted on Map: Growth Plan for the Greater Golden Horseshoe





ENVIRONMENTAL IMPACT STUDY 2640085 ONTARIO INC. 140 Lockhart Road, Barrie, Ontario

LEGEND

- Highway
- Major Road
- Minor Road
- +— Railroad
- Watercourse, Intermittent
- Watercourse, Permanent
- Contour 5m Interval (Major)
- Contour 5m Interval (Minor)
- Provincially Significant Wetlands
- Water Area
- Deer Wintering Area (Stratum 1)
- Deer Wintering Area (Stratum 2)
- Site (approximate) (37.12 ha)

Notes:
 - Base mapping features are © Queen's Printer of Ontario, 2019 (this does not constitute an endorsement by the Ministry of Natural Resources and Forestry or the Ontario Government).
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LOCAL NATURAL HERITAGE FEATURES

Project No.: 10957-001	Date: October 2020
Scale: 1:25,000	Rev.: NAD 1983 UTM Zone 17N
Created by: MAT	Checked by: JP
Figure: 2	

C:\Users\daniele_angelos\Desktop\10957-001_2640085 Ontario Inc. - EIS - 140 Lockhart Road, Barrie\2020-11-17\Fig 3 - Site Natural Heritage Features Revised



ENVIRONMENTAL IMPACT STUDY

2640085 ONTARIO INC.
140 Lockhart Road,
Barrie, Ontario

LEGEND

- Bat Maternity Roost Station
- Breeding Bird Survey Station
- Butternut Tree
- Marsh Monitoring Point
- Soil Sample
- Dripline staked in the field with LSRCA
- Culvert
- Watercourse
- LSRCA Verified Wetland Boundary
- Vegetation Community
- Wetland
- Site (approximate) (37.12 ha)

Notes:
- Base mapping features are © Queen's Printer of Ontario, 2019 (this does not constitute an endorsement by the Ministry of Natural Resources or the Ontario Government).
- Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
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SITE NATURAL HERITAGE FEATURES AND SURVEY LOCATIONS

Project No.:	10957-001	Date:	October 2020
Scale:	1:4,500	Rev.:	
Created by:	MAT	Projection:	NAD 1983 UTM Zone 17N
Checked by:	JP	Figure:	3



ENVIRONMENTAL IMPACT STUDY 2640085 ONTARIO INC. 140 Lockhart Road, Barrie, Ontario

LEGEND

- 30m Wetland/Watercourse Setback
- Watercourse
- Culvert
- Wetland - Delineated with LSRCA
- Proposed Crossing
- Developable Area (33.0 ha)
- Site (approximate) (37.12 ha)

Notes:

- Site Plan overlay is Conceptual Industrial Subdivision for 140 Lockhart Road, by Innovative Planning Solutions, dated May 6, 2020, file number: 18-779.
- Base mapping features are © Queen's Printer of Ontario, 2019 (this does not constitute an endorsement by the Ministry of Natural Resources or the Ontario Government).
- Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.
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PRELIMINARY NATURAL HERITAGE CONSTRAINTS

Project No.:	10957-001	Date:	January 2021
Scale:	1:4,500	Rev.:	
Created by:	MAT	Checked by:	JP
Figure:			4



Appendix A Correspondence

Danielle Langlois

From: Jeremy Prah
Sent: June 17, 2020 10:00 AM
To: Celeste Kitsemetry; Kate Lillie
Cc: Cambium File; Vanessa Simpson; Melinda Bessey; Kevin Rankin
Subject: RE: Draft TOR for EIS @140 Lockhart Road, Barrie (10957-001)

Hi Celeste and Kate,

Thanks very much for your prompt input. We will ensure that these requirements are addressed in our submission.

Regards,
Jeremy



Jeremy Prah, B.Sc., EP
Project Manager / Senior Biologist

Cambium Inc. - Barrie

p: 705.719.0700 x 412 | c: 249.359.0689 | toll: 866.217.7900 | w: cambium-inc.com

Under modified work conditions in response to the current pandemic and government directives, Cambium continues to provide the professional services you have come to expect to guide good decisions. The well-being and safety of our teams, clients, and communities are a top priority. We ask for your patience and look forward to working together as we evolve into the "new normal". Stay safe. Better days are ahead.

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From: Celeste Kitsemetry
Sent: June 16, 2020 12:12 PM
To: Jeremy Prah
Cc: Cambium File ; Vanessa Simpson ; Melinda Bessey ; Kevin Rankin ; Kate Lillie
Subject: RE: Draft TOR for EIS @140 Lockhart Road, Barrie (10957-001)

Good Afternoon.

The City is accepting of the EIS ToFR, subject to acknowledgement that the "Edge Management Plan, Ecological Offsetting Strategy, and Tree Inventory/Assessment And Preservation Plan" would be a requirement of the site alteration and tree removal stage of the development.

Feel free to contact me with any additional questions or to discuss the project.

Regards,
Celeste

Celeste Kitsemetry, RPP
Senior Planner, Development Services
Tel: 705-739-4220 ext. 4430

From: Kate Lillie <K.Lillie@lsrca.on.ca>
Sent: Tuesday, June 16, 2020 10:07 AM
To: Jeremy Prah <Jeremy.Prah@cambium-inc.com>
Cc: Cambium File <file@cambium-inc.com>; Vanessa Simpson <vsimpson@ipsconsultinginc.com>; Melinda Bessey

<M.Bessey@lsrca.on.ca>; Celeste Kitsemetry <Celeste.Kitsemetry@barrie.ca>

Subject: RE: Draft TOR for EIS @140 Lockhart Road, Barrie (10957-001)

Hi Jeremy,

Thanks for providing a proposed Terms of Reference for an Environmental Impact Study (EIS). The scope of study you've proposed is appropriate from LSRCA's perspective, with one point of clarification:

- While a feature-based water balance is being completed by others, the EIS must still coordinate with/summarize the water balance work as it relates to any anticipated hydrologic impacts to natural heritage features.

Kind regards,

Kate Lillie, HBSc, EP, ISA

Natural Heritage Ecologist

Lake Simcoe Region Conservation Authority

120 Bayview Parkway,

Newmarket, Ontario L3Y 3W3

905-895-1281, ext. 286 | 1-800-465-0437

k.lillie@LSRCA.on.ca | www.LSRCA.on.ca

Twitter: @LSRCA

Facebook: LakeSimcoeConservation

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From: Celeste Kitsemetry <Celeste.Kitsemetry@barrie.ca>

Sent: June 10, 2020 4:46 PM

To: Melinda Bessey <M.Bessey@lsrca.on.ca>; Kate Lillie <K.Lillie@lsrca.on.ca>

Cc: Cambium File <file@cambium-inc.com>; Vanessa Simpson <vsimpson@ipsconsultinginc.com>; Jeremy Prah
<Jeremy.Prah@cambium-inc.com>

Subject: RE: Draft TOR for EIS @140 Lockhart Road, Barrie (10957-001)

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

Good Afternoon.

Please review the proposed ToR and provide any comments or additions on behalf of the LSRCA. The ToR has been circulated internally at the City for comments by **June 17, 2020** specific to the significant woodlot feature that is not regulated by LSRCA and for general conformity with City policies.

Regards,

Celeste

Celeste Kitsemetry, RPP

Senior Planner, Development Services

Tel: 705-739-4220 ext. 4430

From: Jeremy Prah Jeremy.Prah@cambium-inc.com

Sent: Tuesday, June 09, 2020 2:28 PM

To: Celeste Kitsemetry Celeste.Kitsemetry@barrie.ca

Cc: Cambium File file@cambium-inc.com; Vanessa Simpson vsimpson@ipsconsultinginc.com

Subject: Draft TOR for EIS @140 Lockhart Road, Barrie (10957-001)

Good afternoon Celeste,

Cambium has been retained by 2640085 Ontario Inc. to complete an Environmental Impact Study (EIS) at 140 Lockhart Road in the City of Barrie. Pre-consultation comments regarding natural heritage were provided by the City (File No. D28-010-2019) and Lake Simcoe Region Conservation Authority in previous discussions with representatives from Innovative Planning Solutions. A copy of the latest pre-consultation comments from the City's Planning & Building Services department is attached hereto. If you could kindly review and comment on the suitability of the following proposed Terms of Reference for the EIS, that would be greatly appreciated.

- Consult with the LSRCA and City staff, as required, to determine their interest/concerns regarding the proposed development and study requirements.
- Compile and review applicable background information and environmental mapping pertaining to the Site.
- Conduct a survey for SAR bat maternity roost trees, according to the current MNRF Midhurst District Protocol (2015), to assess the Site for SAR bat habitat in treed areas during the leaf-off period.
- Conduct an aquatic habitat assessment, to characterize aquatic features including watercourses, seeps/springs etc. on the Site based on Ontario Stream Assessment Protocol definitions.
- Conduct a two season vascular plant survey on the Site, in late spring and mid-summer. This includes a survey for Butternut and associated health assessments, as required.
- Complete woodland dripline and top of bank staking, to be verified in the field with LSRCA staff.
- Classify existing vegetation communities on the Site, according to the Ecological Land Classification System for Southern Ontario (Lee et. al., 1998), and evaluate them for sensitivity, rarity, and botanical quality.
- Evaluation of wooded communities according to provincial, City of Barrie, and LSRCA criteria. (Woodlot Assessment letter report to be provided to the City under separate cover).
- Confirm existing staked wetland boundaries following the Ontario Wetland Evaluation System (OWES) for Southern Ontario (Ministry of Natural Resources, 2013). Any potential PSW boundary revisions will be confirmed in coordination with MNRF representative(s).
- Conduct three (3) amphibian breeding surveys, following the Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada, 2008), to document frog and toad breeding activity on and adjacent to the Site.
- Conduct three (3) breeding bird surveys on the Site, using Components of the Ontario Breeding Bird Atlas Guide for Participants (OBBA, 2001) and the Forest Bird Monitoring Program (Canadian Wildlife Service, 2005) as appropriate, based on site conditions.
- Conduct three (3) Species at Risk Grassland Bird Surveys using the MNRF protocols for Eastern Meadowlark and Bobolink.
- Undertake a Species at Risk (SAR) screening (i.e., Rare, Threatened and Endangered Species Analysis) to assess for potential SAR habitat and evaluate compliance with the provincial Endangered Species Act, 2007. This includes reviewing species occurrence records as well as based on the habitat present on and adjacent to the subject property. This preliminary screening will follow the MECP Guide to Preliminary Screening for Species at Risk (May 2019). We acknowledge that additional surveys may be required if habitat to support certain species is identified.
- Record observations of wildlife occurrences and assess wildlife habitat function, including significant wildlife habitat on the Site. Any evidence of breeding, forage, shelter or nesting sites, and/or travel corridors will be noted.
- Identify, assess, and include detailed descriptions of the natural features and functions identified on the Site and adjacent lands.

- Map key natural heritage and hydrologic features, vegetation communities, and other environmental features (watercourses, wetlands, areas of groundwater discharge, wildlife habitat, etc.) and proposed development on current, high quality aerial imagery. Any environmental feature/area mapping generated through the EIS work will be made available in GIS shapefile format.
- Provide an assessment of the potential impacts of the proposed development on natural features and their related ecological and hydrologic functions.
- Demonstrate conformity with the applicable policies and plans within the Lake Simcoe watershed, including: City of Barrie Official Plan, Provincial Policy Statement, 2020; Conservation Authorities Act and O.Reg. 179/06.
- Develop an appropriate avoidance, mitigation, and/or restoration strategy, to address the potential impacts identified. Recommendations are to include proposed updates to Schedule H of the City of Barrie Official Plan, based on our findings.
- Complete one (1) final report with supporting figures for circulation for approval to the LSRCA and the City.

Note that an Edge Management Plan, Ecological Offsetting Strategy, and Tree Inventory/Assessment will be provided under separate cover, if required. Feature-based water balance work will be completed by others, as part of a hydrogeological analysis.

If you have any questions related to the above, please don't hesitate to contact me.

Thanks,
Jeremy



Jeremy Prah, B.Sc., EP
Project Manager / Senior Biologist

Cambium Inc. - Barrie

p: 705.719.0700 x 412 | c: 249.359.0689 | toll: 866.217.7900 | w: cambium-inc.com

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Jeremy Prah, B.Sc., EP
Project Manager / Senior Biologist

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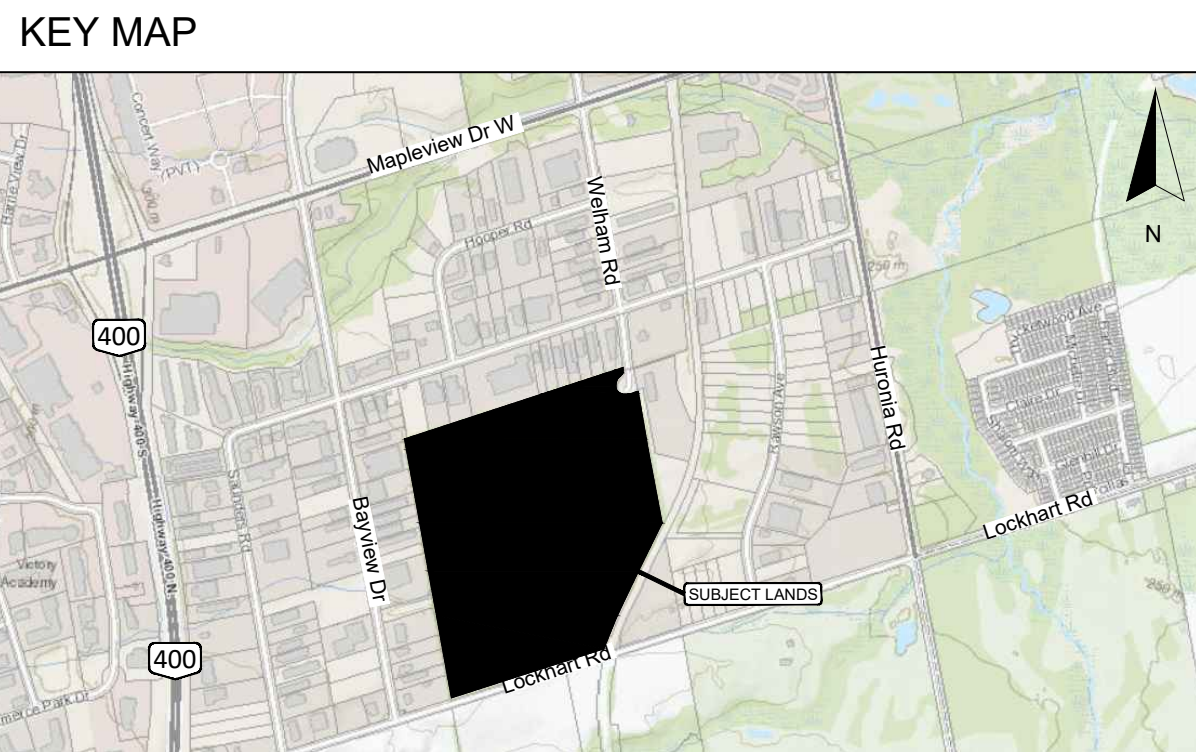


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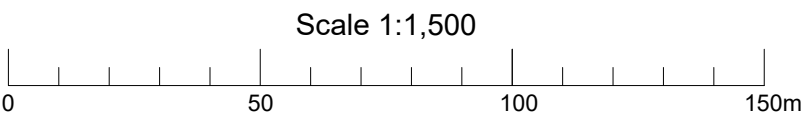
Appendix B

Conceptual Site Plans



DRAFT PLAN OF SUBDIVISION

PART OF THE SOUTH HALF OF LOT 9,
CONCESSION 11
MUNICIPALLY KNOWN AS
140 LOCKHART ROAD
CITY OF BARRIE



LEGEND

	WETLAND (SURVEYED JUNE 25, 2019)		WATER SERVICES
	30m WETLAND SETBACK (SURVEYED JUNE 25, 2019)		STORM SERVICES
	WATERCOURSE (SURVEYED MAY 14, 2019)		SANITARY SERVICES
	30m WATERCOURSE SETBACK		
	PORTION OF TEMPORARY CUL-DE-SAC TO BE MERGED WITH SUBJECT LANDS Area: 0.1ha (0.2ac)		

LAND USE STATISTICS

LAND USE	LOT / BLOCK NO.	LOTS	AREA (HA.)
Light Industrial	1-33	33	16.73
Industrial	1	1	11.48
Stormwater Management Pond	2	1	1.28
Environmental Protection	3-4	2	3.92
Road Widening	5	1	0.20
Welham Road (extension)			2.33
Street 'A'			1.21
Total		38	37.15

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51(17) OF THE PLANNING ACT

a) SHOWN ON PLAN	d) SEE LAND USE SCHEDULE	f) SHOWN ON PLAN	i) ALLISTON SANDY LOAM
b) SHOWN ON PLAN	e) SHOWN ON PLAN	g) SHOWN ON PLAN	j) SHOWN ON PLAN
c) SHOWN ON PLAN		h) MUNICIPAL WATER	k) ALL MUNICIPAL SERVICES
			l) NONE

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE INNOVATIVE PLANNING SOLUTIONS TO PREPARE THIS DRAFT PLAN OF SUBDIVISION AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION FOR APPROVAL.

DATE PAUL RACCO
2640085 Ontario Inc. (Ram Iron)

SURVEYOR'S CERTIFICATE

I CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE RUDY MAK SURVEYING LTD

SCHEDULE OF REVISIONS

No.	Date	Description	By
1	Jan 27, 2021	Issued for Draft Plan Submission;	V.S.

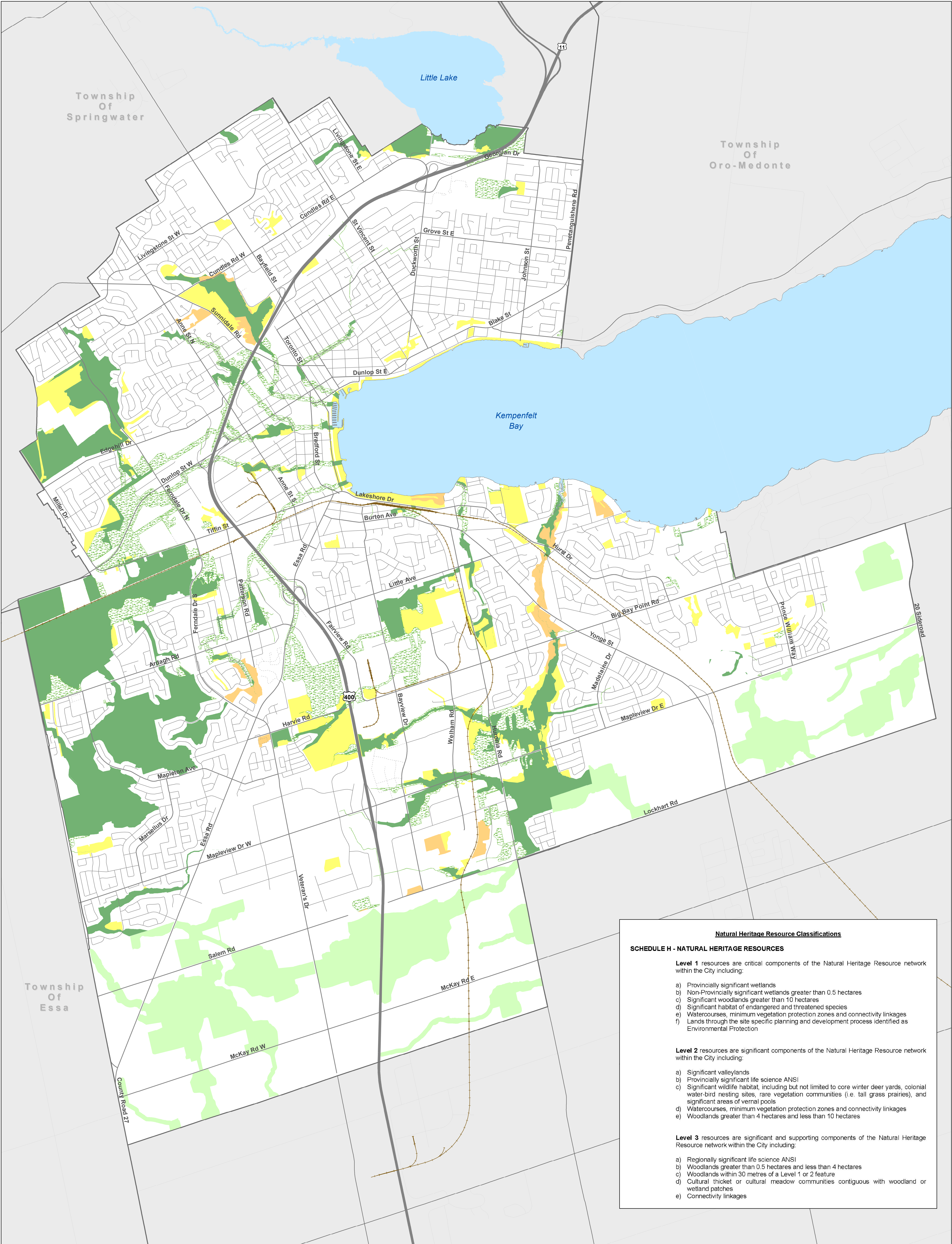
IPS INNOVATIVE PLANNING SOLUTIONS
PLANNERS • PROJECT MANAGERS • LAND DEVELOPERS
647 WELHAM RD., UNIT 9A, BARRIE, ONTARIO, L4N 0B7
tel: 705 • 812 • 3281 fax: 705 • 812 • 3434 e: info@ipsconsultinginc.com www.ipsconsultinginc.com

Date: May 6, 2020 Drawn By: VS
File: 18-779 Designed By: DV



Appendix C

City of Barrie Official Plan Schedule H



Natural Heritage Resource Classifications

SCHEDULE H - NATURAL HERITAGE RESOURCES

Level 1 resources are critical components of the Natural Heritage Resource network within the City including:

- a) Provincially significant wetlands
- b) Non-Provincially significant wetlands greater than 0.5 hectares
- c) Significant woodlands greater than 10 hectares
- d) Significant habitat of endangered and threatened species
- e) Watercourses, minimum vegetation protection zones and connectivity linkages
- f) Lands through the site specific planning and development process identified as Environmental Protection

Level 2 resources are significant components of the Natural Heritage Resource network within the City including:

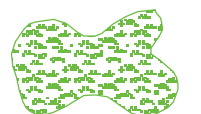
- a) Significant valleylands
- b) Provincially significant life science ANSI
- c) Significant wildlife habitat, including but not limited to core winter deer yards, colonial water-bird nesting sites, rare vegetation communities (i.e. tall grass prairies), and significant areas of vernal pools
- d) Watercourses, minimum vegetation protection zones and connectivity linkages
- e) Woodlands greater than 4 hectares and less than 10 hectares

Level 3 resources are significant and supporting components of the Natural Heritage Resource network within the City including:

- a) Regionally significant life science ANSI
- b) Woodlands greater than 0.5 hectares and less than 4 hectares
- c) Woodlands within 30 metres of a Level 1 or 2 feature
- d) Cultural thicket or cultural meadow communities contiguous with woodland or wetland patches
- e) Connectivity linkages

OFFICIAL PLAN
Schedule H
Natural Heritage
Resources
Office Consolidation
January 2018

- 

Level 1
- 

Level 1 with Existing Development Designation Subject to 3.5.2.4 d
- 

Level 2
- 

Level 3
- 

Natural Heritage System Salem and Hewitt's Secondary Plan Areas



1:20,000



0 0.5 1 2 km



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GIS Branch 4/27/2018



Appendix D

Vegetation Species List



VEGETATION COMMUNITY CLASSIFICATION:

Agricultural Fallow AGR –
Community 1

LOCATION: 140 lockhart

COORDINATES: 44.33246270568775, -
79.6689149337929

PROJECT NUMBER: 10957-001

DATE: June 11, 2020

PROJECT
MANAGER: Jeremy Prah

FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	COSEWIC	SARO	CoC	S-Rank
Common Dandelion	<i>Taraxacum officinale</i>	Asteraceae	-	-	-	SNA
Common Goatsbeard	<i>Aruncus dioicus</i> var. <i>vulgaris</i>	Rosaceae	-	-	-	SNA
Common Mullein	<i>Verbascum thapsus</i> ssp. <i>thapsus</i>	Scrophulariaceae	-	-	-	SNA
Common Wood-sorrel	<i>Oxalis montana</i>	Oxalidaceae	-	-	7	S5
European Field Pansy	<i>Viola arvensis</i>	Violaceae	-	-	-	SNA
Field Penny-cress	<i>Thlaspi arvense</i>	Brassicaceae	-	-	-	SNA
Orchard Grass	<i>Dactylis glomerata</i>	Poaceae	-	-	-	SNA
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Asteraceae	-	-	-	SNA
Tower-mustard	<i>Turritis glabra</i>	Brassicaceae	-	-	4	S5
White Campion	<i>Silene latifolia</i>	Caryophyllaceae	-	-	-	SNA
White Goosefoot	<i>Chenopodium album</i>	Chenopodiaceae	-	-	-	SNA
Wild Carrot	<i>Daucus carota</i>	Apiaceae	-	-	-	SNA

NOTES: Fallow field.

VEGETATION COMMUNITY PHOTOS:





VEGETATION COMMUNITY CLASSIFICATION: Hedgerow – Community 2

LOCATION: 140 lockhart

COORDINATES: 44.33195993069782, -79.67047486364112

PROJECT NUMBER: 10957-001

DATE: June 11, 2020

PROJECT
MANAGER: Jeremy Prah

FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	COSEWIC	SARO	CoC	S-Rank
Alternate-leaved Dogwood	<i>Cornus alternifolia</i>	Cornaceae	-	-	6	S5
American Basswood	<i>Tilia americana</i>	Tiliaceae	-	-	4	S5
Black Cherry	<i>Prunus serotina</i> var. <i>serotina</i>	Rosaceae	-	-	3	S5
Bladder Campion	<i>Silene vulgaris</i>	Caryophyllaceae	-	-	-	SNA
Bracken Fern	<i>Pteridium aquilinum</i>	Dennstaedtiaceae	-	-	2	S5
Choke Cherry	<i>Prunus virginiana</i> var. <i>virginiana</i>	Rosaceae	-	-	2	S5
Common Apple	<i>Malus pumila</i>	Rosaceae	-	-	-	SNA
Common Buckthorn	<i>Rhamnus cathartica</i>	Rhamnaceae	-	-	-	SNA
Common Motherwort	<i>Leonurus cardiaca</i> ssp. <i>cardiaca</i>	Lamiaceae	-	-	-	SNA
Common Red Raspberry	<i>Rubus idaeus</i> ssp. <i>idaeus</i>	Rosaceae	-	-	-	SNA
Creeping Thistle	<i>Cirsium arvense</i>	Asteraceae	-	-	-	SNA
English Hawthorn	<i>Crataegus monogyna</i> var. <i>monogyna</i>	Rosaceae	-	-	-	SNA
Garlic Mustard	<i>Alliaria petiolata</i>	Brassicaceae	-	-	-	SNA
Gray Dogwood	<i>Cornus racemosa</i>	Cornaceae	-	-	2	S5
Green Ash	<i>Fraxinus pennsylvanica</i>	Oleaceae	-	-	3	S4
Herb-Robert	<i>Geranium robertianum</i>	Geraniaceae	-	-	2	S5
Highbush Cranberry	<i>Viburnum opulus</i> ssp. <i>trilobum</i> var. <i>americanum</i>	Caprifoliaceae	-	-	5	S5
Northern Red Oak	<i>Quercus rubra</i>	Fagaceae	-	-	6	S5
Prickly Gooseberry	<i>Ribes cynosbati</i>	Grossulariaceae	-	-	4	S5
Riverbank Grape	<i>Vitis riparia</i>	Vitaceae	-	-	0	S5
Siberian Elm	<i>Ulmus pumila</i>	Ulmaceae	-	-	-	SNA
Staghorn Sumac	<i>Rhus typhina</i>	Anacardiaceae	-	-	1	S5
Sugar Maple	<i>Acer saccharum</i>	Aceraceae	-	-	4	S5
Tatarian Honeysuckle	<i>Lonicera tatarica</i>	Caprifoliaceae	-	-	-	SNA
Trembling Aspen	<i>Populus tremuloides</i>	Salicaceae	-	-	2	S5
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Vitaceae	-	-	6	S4?

NOTES:

VEGETATION COMMUNITY PHOTOS:





VEGETATION COMMUNITY CLASSIFICATION:

FOD5-1 Dry-Fresh Sugar
Maple Deciduous Forest
Community 3

LOCATION: 140 Lockhart

COORDINATES: 44.33128649512127, -
79.67197353964148

PROJECT NUMBER: 10957-001

June 11, 2020
DATE: August 12, 2020PROJECT
MANAGER: Jeremy PrahFIELD STAFF: Tyler Jamieson
Ernie Silhanek

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	COSEWIC	SARO	CoC	S-Rank
Common Buckthorn	<i>Rhamnus cathartica</i>	Rhamnaceae	-	-	-	SNA
Garlic Mustard	<i>Alliaria petiolata</i>	Brassicaceae	-	-	-	SNA
Northern Red Oak	<i>Quercus rubra</i>	Fagaceae	-	-	6	S5
Paper Birch	<i>Betula papyrifera</i>	Betulaceae	-	-	2	S5
Riverbank Grape	<i>Vitis riparia</i>	Vitaceae	-	-	0	S5
Sugar Maple	<i>Acer saccharum</i>	Aceraceae	-	-	4	S5
Trembling Aspen	<i>Populus tremuloides</i>	Salicaceae	-	-	2	S5
White Ash	<i>Fraxinus americana</i>	Oleaceae	-	-	4	S4

NOTES: Dominated by sugar maple. Bare understory

VEGETATION COMMUNITY PHOTOS:







VEGETATION COMMUNITY CLASSIFICATION:

FOD5-3 Dry-Fresh Sugar
Maple – Oak Deciduous
Forest Community 4

LOCATION: 140 Lockhart

COORDINATES: 44.331225842582974,
-79.67246730221864

PROJECT NUMBER: 10957-001

June 11, 2020
DATE: August 12, 2020PROJECT
MANAGER: Jeremy PrahFIELD STAFF: Tyler Jamieson
Ernie Silhanek

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	COSEWIC	SARO	CoC	S-Rank
Alternate-leaved Dogwood	<i>Cornus alternifolia</i>	Cornaceae	-	-	6	S5
American Basswood	<i>Tilia americana</i>	Tiliaceae	-	-	4	S5
American Beech	<i>Fagus grandifolia</i>	Fagaceae	-	-	6	S4
Black Cherry	<i>Prunus serotina</i> var. <i>serotina</i>	Rosaceae	-	-	3	S5
Blue Bead-lily	<i>Clintonia borealis</i>	Liliaceae	-	-	7	S5
Blue Cohosh	<i>Caulophyllum thalictroides</i>	Berberidaceae	-	-	5	S5
Butternut	<i>Juglans cinerea</i>	Juglandaceae	END	END	6	S2?
Canada Enchanter's Nightshade	<i>Circaea canadensis</i> ssp. <i>canadensis</i>	Onagraceae	-	-	2	S5
Cleavers	<i>Galium aparine</i>	Rubiaceae	-	-	4	S5
Common Buckthorn	<i>Rhamnus cathartica</i>	Rhamnaceae	-	-	-	SNA
Common Elderberry	<i>Sambucus canadensis</i>	Caprifoliaceae	-	-	5	S5
Common Red Raspberry	<i>Rubus idaeus</i> ssp. <i>idaeus</i>	Rosaceae	-	-	-	SNA
Eastern Hop-hornbeam	<i>Ostrya virginiana</i>	Betulaceae	-	-	4	S5
Herbaceous Carrionflower	<i>Smilax herbacea</i>	Smilacaceae	-	-	5	S4?
Herb-Robert	<i>Geranium robertianum</i>	Geraniaceae	-	-	2	S5
Jack-in-the-pulpit	<i>Arisaema triphyllum</i> ssp. <i>triphyllum</i>	Araceae	-	-	5	S5
May-apple	<i>Podophyllum peltatum</i>	Berberidaceae	-	-	5	S5
Northern Red Oak	<i>Quercus rubra</i>	Fagaceae	-	-	6	S5
Pennsylvania Sedge	<i>Carex pensylvanica</i>	Cyperaceae	-	-	5	S5
Prickly Gooseberry	<i>Ribes cynosbati</i>	Grossulariaceae	-	-	4	S5
Red Maple	<i>Acer rubrum</i>	Aceraceae	-	-	4	S5
Red Trillium	<i>Trillium erectum</i>	Liliaceae	-	-	6	S5
Rose Twisted-stalk	<i>Streptopus lanceolatus</i>	Liliaceae	-	-	7	S5
Smooth Serviceberry	<i>Amelanchier laevis</i>	Rosaceae	-	-	5	S5
Spinulose Wood Fern	<i>Dryopteris carthusiana</i>	Dryopteridaceae	-	-	5	S5
Sugar Maple	<i>Acer saccharum</i>	Aceraceae	-	-	4	S5
White Ash	<i>Fraxinus americana</i>	Oleaceae	-	-	4	S4
White Baneberry	<i>Actaea pachypoda</i>	Ranunculaceae	-	-	6	S5

White Trillium	<i>Trillium grandiflorum</i>	Liliaceae	-	-	5	S5
Wild Lily-of-the-valley	<i>Maianthemum canadense</i> ssp. <i>canadense</i>	Liliaceae	-	-	5	S5
Wild Sarsaparilla	<i>Aralia nudicaulis</i>	Araliaceae	-	-	4	S5
Woodland Strawberry	<i>Fragaria vesca</i> ssp. <i>vesca</i>	Rosaceae	-	-	-	SNA

NOTES:

VEGETATION COMMUNITY PHOTOS:







VEGETATION COMMUNITY CLASSIFICATION:

CUT1-1 Sumac Cultural
Thicket
Community 5

LOCATION: 140 Lockhart

COORDINATES: 44.32979724836475, -
79.67414280959602

PROJECT NUMBER: 10957-001

June 11, 2020
DATE: August 12, 2020PROJECT
MANAGER: Jeremy PrahFIELD STAFF: Tyler Jamieson
Ernie Silhanek

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	COSEWIC	SARO	CoC	S-Rank
Alfalfa	<i>Medicago sativa ssp. sativa</i>	Fabaceae	-	-	-	SNA
American Basswood	<i>Tilia americana</i>	Tiliaceae	-	-	4	S5
Balsam Fir	<i>Abies balsamea</i>	Pinaceae	-	-	5	S5
Canada Goldenrod	<i>Solidago canadensis var. canadensis</i>	Asteraceae	-	-	1	S5
Clammy Ground-cherry	<i>Physalis heterophylla</i>	Solanaceae	-	-	3	S4
Common Hawkweed	<i>Hieracium vulgatum</i>	Asteraceae	-	-	-	SNA
Common Milkweed	<i>Asclepias syriaca</i>	Asclepiadaceae	-	-	0	S5
Common Mullein	<i>Verbascum thapsus ssp. thapsus</i>	Scrophulariaceae	-	-	-	SNA
Common Timothy	<i>Phleum pratense ssp. pratense</i>	Poaceae	-	-	-	SNA
Eastern Tall Goldenrod	<i>Solidago altissima var. altissima</i>	Asteraceae	-	-	1	S5
Garden Bird's-foot Trefoil	<i>Lotus corniculatus</i>	Fabaceae	-	-	-	SNA
Northern Red Oak	<i>Quercus rubra</i>	Fagaceae	-	-	6	S5
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Asteraceae	-	-	-	SNA
Poison Ivy	<i>Toxicodendron radicans</i>	Anacardiaceae	-	-	2	S5
Riverbank Grape	<i>Vitis riparia</i>	Vitaceae	-	-	0	S5
Spreading Dogbane	<i>Apocynum androsaemifolium</i>	Apocynaceae	-	-	3	S5
Staghorn Sumac	<i>Rhus typhina</i>	Anacardiaceae	-	-	1	S5
Sugar Maple	<i>Acer saccharum</i>	Aceraceae	-	-	4	S5
Sulphur Cinquefoil	<i>Potentilla recta</i>	Rosaceae	-	-	-	SNA
Trembling Aspen	<i>Populus tremuloides</i>	Salicaceae	-	-	2	S5
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Vitaceae	-	-	6	S4?
White Ash	<i>Fraxinus americana</i>	Oleaceae	-	-	4	S4
White Spruce	<i>Picea glauca</i>	Pinaceae	-	-	6	S5
Wild Carrot	<i>Daucus carota</i>	Apiaceae	-	-	-	SNA
Wild Red Raspberry	<i>Rubus idaeus ssp. strigosus</i>	Rosaceae	-	-	2	S5

NOTES: Sumac dominated thicket - amongst planted white spruce

VEGETATION COMMUNITY PHOTOS:







VEGETATION COMMUNITY CLASSIFICATION:

MAM2-10 Forb Mineral

Meadow Marsh –

Community 6

LOCATION: 140 lockhart

COORDINATES: 44.32741428174914, -

79.67232797839424

PROJECT NUMBER: Plot 6

DATE: June 11, 2020

PROJECT
MANAGER: Jeremy Prah

FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	COSEWIC	SARO	CoC	S-Rank
Black Cherry	<i>Prunus serotina</i> var. <i>serotina</i>	Rosaceae	-	-	3	S5
Cleavers	<i>Galium aparine</i>	Rubiaceae	-	-	4	S5
Common Apple	<i>Malus pumila</i>	Rosaceae	-	-	-	SNA
Common Boneset	<i>Eupatorium perfoliatum</i>	Asteraceae	-	-	2	S5
Common Red Raspberry	<i>Rubus idaeus</i> ssp. <i>idaeus</i>	Rosaceae	-	-	-	SNA
Eastern White Cedar	<i>Thuja occidentalis</i>	Cupressaceae	-	-	4	S5
Gray Dogwood	<i>Cornus racemosa</i>	Cornaceae	-	-	2	S5
Green Ash	<i>Fraxinus pennsylvanica</i>	Oleaceae	-	-	3	S4
Hairy Willowherb	<i>Epilobium hirsutum</i>	Onagraceae	-	-	-	SNA
Highbush Cranberry	<i>Viburnum opulus</i> ssp. <i>trilobum</i> var. <i>americanum</i>	Caprifoliaceae	-	-	5	S5
Narrow-leaved Cattail	<i>Typha angustifolia</i>	Typhaceae	-	-	-	SNA
New England Aster	<i>Symphyotrichum novae-</i> <i>angliae</i>	Asteraceae	-	-	2	S5
Red-osier Dogwood	<i>Cornus sericea</i>	Cornaceae	-	-	2	S5
Round-leaved Dogwood	<i>Cornus rugosa</i>	Cornaceae	-	-	6	S5
Spotted Joe Pye Weed	<i>Eutrochium maculatum</i> var. <i>maculatum</i>	Asteraceae	-	-	3	S5
Swamp Aster	<i>Symphyotrichum puniceum</i> var. <i>puniceum</i>	Asteraceae	-	-	6	S5

NOTES: Dominated by grasses and asters. Woody vegetation in margins.

VEGETATION COMMUNITY PHOTOS:





VEGETATION COMMUNITY CLASSIFICATION:

FOD3-1 Dry-Fresh Poplar
Deciduous Forest –
Community 7

LOCATION: 140 lockhart

COORDINATES: 44.32708427427271, -
79.67012652983146

PROJECT NUMBER: 10957-001

DATE: June 11, 2020

PROJECT
MANAGER: Jeremy Prah

FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	COSEWIC	SARO	CoC	S-Rank
American Basswood	<i>Tilia americana</i>	Tiliaceae	-	-	4	S5
Choke Cherry	<i>Prunus virginiana</i> var. <i>virginiana</i>	Rosaceae	-	-	2	S5
Common Apple	<i>Malus pumila</i>	Rosaceae	-	-	-	SNA
Common Hawkweed	<i>Hieracium vulgatum</i>	Asteraceae	-	-	-	SNA
Dame's Rocket	<i>Hesperis matronalis</i>	Brassicaceae	-	-	-	SNA
Green Ash	<i>Fraxinus pennsylvanica</i>	Oleaceae	-	-	3	S4
Large-toothed Aspen	<i>Populus grandidentata</i>	Salicaceae	-	-	5	S5
Poison Ivy	<i>Toxicodendron radicans</i>	Anacardiaceae	-	-	2	S5
Prickly Gooseberry	<i>Ribes cynosbati</i>	Grossulariaceae	-	-	4	S5
Rough-leaved Dogwood	<i>Cornus drummondii</i>	Cornaceae	-	-	4	S4
Scots Pine	<i>Pinus sylvestris</i> var. <i>sylvestris</i>	Pinaceae	-	-	-	SNA
Staghorn Sumac	<i>Rhus typhina</i>	Anacardiaceae	-	-	1	S5
Sugar Maple	<i>Acer saccharum</i>	Aceraceae	-	-	4	S5
Tatarian Honeysuckle	<i>Lonicera tatarica</i>	Caprifoliaceae	-	-	-	SNA
Trembling Aspen	<i>Populus tremuloides</i>	Salicaceae	-	-	2	S5
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	Vitaceae	-	-	6	S4?

NOTES: Trembling aspen dominant.

VEGETATION COMMUNITY PHOTOS:





VEGETATION COMMUNITY CLASSIFICATION:

CUM1-1 Dry-Moist Old
field Meadow –
Community 8

LOCATION: 140 lockhart

COORDINATES: ,

PROJECT NUMBER: 10957-001

DATE: June 11, 2020

PROJECT
MANAGER: Jeremy Prah

FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	COSEWIC	SARO	CoC	S-Rank
Black Medic	<i>Medicago lupulina</i>	Fabaceae	-	-	-	SNA
Bladder Campion	<i>Silene vulgaris</i>	Caryophyllaceae	-	-	-	SNA
Canada Goldenrod	<i>Solidago canadensis</i> var. <i>canadensis</i>	Asteraceae	-	-	1	S5
Common Apple	<i>Malus pumila</i>	Rosaceae	-	-	-	SNA
Common Hawkweed	<i>Hieracium vulgatum</i>	Asteraceae	-	-	-	SNA
Common Mullein	<i>Verbascum thapsus</i> ssp. <i>thapsus</i>	Scrophulariaceae	-	-	-	SNA
English Hawthorn	<i>Crataegus monogyna</i> var. <i>monogyna</i>	Rosaceae	-	-	-	SNA
English Plantain	<i>Plantago lanceolata</i>	Plantaginaceae	-	-	-	SNA
European Swallow-wort	<i>Vincetoxicum rossicum</i>	Asclepiadaceae	-	-	-	SNA
Orchard Grass	<i>Dactylis glomerata</i>	Poaceae	-	-	-	SNA
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Asteraceae	-	-	-	SNA
Red Clover	<i>Trifolium pratense</i>	Fabaceae	-	-	-	SNA
Riverbank Grape	<i>Vitis riparia</i>	Vitaceae	-	-	0	S5
Smooth Brome	<i>Bromus inermis</i>	Poaceae	-	-	-	SNA
Spotted Knapweed	<i>Centaurea stoebe</i> ssp. <i>micranthos</i>	Asteraceae	-	-	-	SNA
Staghorn Sumac	<i>Rhus typhina</i>	Anacardiaceae	-	-	1	S5
Sulphur Cinquefoil	<i>Potentilla recta</i>	Rosaceae	-	-	-	SNA
Tower-mustard	<i>Turritis glabra</i>	Brassicaceae	-	-	4	S5
Virginia Rose	<i>Rosa virginiana</i> ssp. <i>virginiana</i>	Rosaceae	-	-	-	SU
Virginia Rose	<i>Rosa virginiana</i> ssp. <i>virginiana</i>	Rosaceae	-	-	-	SU
White Goosefoot	<i>Chenopodium album</i>	Chenopodiaceae	-	-	-	SNA
White Sweet-clover	<i>Melilotus albus</i>	Fabaceae	-	-	-	SNA
Wild Carrot	<i>Daucus carota</i>	Apiaceae	-	-	-	SNA
Wild Strawberry	<i>Fragaria virginiana</i> ssp. <i>virginiana</i>	Rosaceae	-	-	2	S5

NOTES: Grasses dominate

VEGETATION COMMUNITY PHOTOS:





Appendix E

Fish Species List

Table 1 - Fish Species List and Life History Information

Family	Common name	Scientific name	Source	S-Rank	SARA	ESA	Tolerance ¹	Thermal Regime ¹	Spawning Months ¹	Spawning Habitat Preferences ²														
										Water depth (m)				Cover		Substrate								
										0-1	1-2	2-5	5+	Submergent Vegetation	Emergent Vegetation	Bedrock	Boulder	Cobble	Rubble	Gravel	Sand	Silt	Clay	Hard-pan Clay
Cyprinidae	Bluntnose Minnow	<i>Pimephales notatus</i>	MNRF	S5			Intermediate	Warmwater	June-August	X	X	X	-	medium	medium	-	medium	medium	high	medium	high	-	-	-
Gasterosteidae	Brook Stickleback	<i>Culaea inconstans</i>	MNRF	S5			Intermediate	Coolwater	May-July	X	-	-	-	high	high	-	-	-	medium	high	high	-	-	-
Salmonidae	Brook Trout	<i>Salvelinus fontinalis fontinalis</i>	MNRF	S5			Intolerant	Coldwater	September-November	X	X	-	-	-	-	-	-	high	high	medium	low	-	-	-
Umbidae	Central Mudminnow	<i>Umbra limi</i>	MNRF	S5			Tolerant	Coolwater	April-May	X	-	-	-	high	high	-	-	-	-	-	high	-	-	-
Cyprinidae	Common Shiner	<i>Luxilus cornutus</i>	MNRF	S5			Intermediate	Coolwater	May-June	X	-	-	-	low	low	-	-	-	medium	high	medium	-	-	-
Cyprinidae	Creek Chub	<i>Semotilus atromaculatus</i>	MNRF	S5			Intermediate	Coolwater	May-June	X	-	-	-	-	-	-	-	-	high	high	high	-	-	-
Cyprinidae	Blacknose Dace	<i>Rhinichthys atratulus</i>	MNRF	S5			Intermediate	Coolwater	May-June	X	-	-	-	-	-	-	-	-	high	high	medium	-	-	-
Cyprinidae	Fathead Minnow	<i>Pimephales promelas</i>	MNRF	S5			Tolerant	Warmwater	May-August	X	X	-	-	medium	medium	-	-	-	medium	high	high	-	-	-
Cyprinidae	Longnose Dace	<i>Rhinichthys cataractae</i>	MNRF	S5			Intermediate	Coolwater	May-July	X	X	-	-	-	-	-	-	-	medium	high	high	medium	-	-
Cottidae	Mottled Sculpin	<i>Cottus bairdi</i>	MNRF	S5			Intermediate	Coolwater	April-May	X	-	-	-	-	-	-	high	high	high	high	high	-	-	-
Cyprinidae	Northern Redbelly Dace	<i>Phoxinus eos</i>	MNRF	S5			Intermediate	Coolwater	May-July	X	X	-	-	high	-	-	-	-	medium	high	high	-	-	-
Cyprinidae	Pearl Dace	<i>Margariscus margarita</i>	MNRF	S5			Intermediate	Coolwater	May-June	X	-	-	-	low	low	-	-	-	-	high	high	-	-	-
Centrarchidae	Pumpkinseed	<i>Lepomis gibbosus</i>	MNRF	S5			Intermediate	Warmwater	May-August	X	X	-	-	high	high	-	-	-	-	high	high	-	medium	-
Catostomidae	White Sucker	<i>Catostomus commersoni</i>	MNRF	S5			Tolerant	Coolwater	April-June	X	X	-	-	low	low	-	-	-	medium	high	medium	-	-	-

Note:

A dash (-) indicated that the species was not reported to utilize a particular depth stratum, cover or substrate.

Tolerance refers to the ability of a species to adapt to environmental perturbations or anthropogenic stresses.

¹ Eakins, R. J. (2018). Ontario Freshwater Fishes Life History Database. Version 4.81. Online database. (<http://www.ontariofishes.ca>), accessed 26 July 2018

² Lane, J. A., Minns, C. K., & Portt, C. B. (1996). Spawning habitat characteristics of Great Lakes fishes (p. 47). Fisheries and Oceans Canada



Appendix F

Bird Species List


Appendix - Ontario Breeding Bird Atlas: GRID SQUARE #17PK00

Common name	Scientific name	COSEWIC	SARO	S-Rank
Canada Goose	<i>Branta canadensis</i>	-	-	S5
Wood Duck	<i>Aix sponsa</i>	-	-	S5
American Black Duck	<i>Anas rubripes</i>	-	-	S4
Mallard	<i>Anas platyrhynchos</i>	-	-	S5
Blue-winged Teal	<i>Anas discors</i>	-	-	S4
Hooded Merganser	<i>Lophodytes cucullatus</i>	-	-	S5B,S5N
Ruffed Grouse	<i>Bonasa umbellus</i>	-	-	S4
Wild Turkey	<i>Meleagris gallopavo</i>	-	-	S5
American Bittern	<i>Botaurus lentiginosus</i>	-	-	S4B
Green Heron	<i>Butorides virescens</i>	-	-	S4B
Turkey Vulture	<i>Cathartes aura</i>	-	-	S5B
Northern Harrier	<i>Circus hudsonius</i>	NAR	NAR	S4B
Sharp-shinned Hawk	<i>Accipiter striatus</i>	NAR	NAR	S5
Cooper's Hawk	<i>Accipiter cooperii</i>	NAR	NAR	S4
Red-shouldered Hawk	<i>Buteo lineatus</i>	NAR	NAR	S4B
Broad-winged Hawk	<i>Buteo platypterus</i>	-	-	S5B
Red-tailed Hawk	<i>Buteo jamaicensis</i>	NAR	NAR	S5
American Kestrel	<i>Falco sparverius</i>	-	-	S4
Virginia Rail	<i>Rallus limicola</i>	-	-	S5B
Sora	<i>Porzana carolina</i>	-	-	S4B
Killdeer	<i>Charadrius vociferus</i>	-	-	S5B,S5N
Rock Pigeon	<i>Columba livia</i>	-	-	SNA
Spotted Sandpiper	<i>Actitis macularius</i>	-	-	S5
American Woodcock	<i>Scolopax minor</i>	-	-	S4B
Mourning Dove	<i>Zenaida macroura</i>	-	-	S5
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	-	-	S4B
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	-	-	S5B
Eastern Screech-Owl	<i>Megascops asio</i>	NAR	NAR	S4
Great Horned Owl	<i>Bubo virginianus</i>	-	-	S4
Common Nighthawk	<i>Chordeiles minor</i>	SC	SC	S4B
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B,S4N
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	-	-	S5B
Belted Kingfisher	<i>Megaceryle alcyon</i>	-	-	S4B
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	END	SC	S4B
Yellow-bellied Sapsucker	<i>Sphyrapicus varius</i>	-	-	S5B
Downy Woodpecker	<i>Picoides pubescens</i>	-	-	S5
Hairy Woodpecker	<i>Picoides villosus</i>	-	-	S5
Northern Flicker	<i>Colaptes auratus</i>	-	-	S4B
Pileated Woodpecker	<i>Dryocopus pileatus</i>	-	-	S5
Olive-sided Flycatcher	<i>Contopus cooperi</i>	SC	SC	S4B
Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC	S4B
Alder Flycatcher	<i>Empidonax alnorum</i>	-	-	S5B
Willow Flycatcher	<i>Empidonax traillii</i>	-	-	S5B
Least Flycatcher	<i>Empidonax minimus</i>	-	-	S4B
Eastern Phoebe	<i>Sayornis phoebe</i>	-	-	S5B
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	-	-	S4B
Eastern Kingbird	<i>Tyrannus tyrannus</i>	-	-	S4B
Warbling Vireo	<i>Vireo gilvus</i>	-	-	S5B
Red-eyed Vireo	<i>Vireo olivaceus</i>	-	-	S5B
Blue Jay	<i>Cyanocitta cristata</i>	-	-	S5
American Crow	<i>Corvus brachyrhynchos</i>	-	-	S5B
Horned Lark	<i>Eremophila alpestris</i>	-	-	S5B
Tree Swallow	<i>Tachycineta bicolor</i>	-	-	S4B



Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	-	-	S4B
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	-	-	S4B
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B
Black-capped Chickadee	<i>Poecile atricapillus</i>	-	-	S5
Red-breasted Nuthatch	<i>Sitta canadensis</i>	-	-	S5
White-breasted Nuthatch	<i>Sitta carolinensis</i>	-	-	S5
Brown Creeper	<i>Certhia americana</i>	-	-	S5B
House Wren	<i>Troglodytes aedon</i>	-	-	S5B
Winter Wren	<i>Troglodytes hiemalis</i>	-	-	S5B
Golden-crowned Kinglet	<i>Regulus satrapa</i>	-	-	S5B
Eastern Bluebird	<i>Sialia sialis</i>	NAR	NAR	S5B
Veery	<i>Catharus fuscescens</i>	-	-	S4B
Hermit Thrush	<i>Catharus guttatus</i>	-	-	S5B
Wood Thrush	<i>Hylocichla mustelina</i>	THR	SC	S4B
American Robin	<i>Turdus migratorius</i>	-	-	S5B
Gray Catbird	<i>Dumetella carolinensis</i>	-	-	S4B
Brown Thrasher	<i>Toxostoma rufum</i>	-	-	S4B
European Starling	<i>Sturnus vulgaris</i>	-	-	SNA
Cedar Waxwing	<i>Bombycilla cedrorum</i>	-	-	S5B
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	-	-	S5B
Yellow Warbler	<i>Setophaga petechia</i>	-	-	S5B
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>	-	-	S5B
Magnolia Warbler	<i>Setophaga magnolia</i>	-	-	S5B
Black-throated Blue Warbler	<i>Setophaga caerulescens</i>	-	-	S5B
Yellow-rumped Warbler	<i>Setophaga coronata</i>	-	-	S5B
Black-throated Green Warbler	<i>Setophaga virens</i>	-	-	S5B
Pine Warbler	<i>Setophaga pinus</i>	-	-	S5B
Black-and-white Warbler	<i>Mniotilta varia</i>	-	-	S5B
American Redstart	<i>Setophaga ruticilla</i>	-	-	S5B
Ovenbird	<i>Seiurus aurocapilla</i>	-	-	S4B
Northern Waterthrush	<i>Parkesia noveboracensis</i>	-	-	S5B
Mourning Warbler	<i>Geothlypis philadelphia</i>	-	-	S4B
Common Yellowthroat	<i>Geothlypis trichas</i>	-	-	S5B
Chipping Sparrow	<i>Spizella passerina</i>	-	-	S5B
Field Sparrow	<i>Spizella pusilla</i>	-	-	S4B
Vesper Sparrow	<i>Poocetes gramineus</i>	-	-	S4B
Savannah Sparrow	<i>Passerculus sandwichensis</i>	-	-	S4B
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B
Song Sparrow	<i>Melospiza melodia</i>	-	-	S5B
Swamp Sparrow	<i>Melospiza georgiana</i>	-	-	S5B
White-throated Sparrow	<i>Zonotrichia albicollis</i>	-	-	S5B
Scarlet Tanager	<i>Piranga olivacea</i>	-	-	S4B
Northern Cardinal	<i>Cardinalis cardinalis</i>	-	-	S5
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>	-	-	S4B
Indigo Bunting	<i>Passerina cyanea</i>	-	-	S4B
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	-	-	S4
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B
Common Grackle	<i>Quiscalus quiscula</i>	-	-	S5B
Brown-headed Cowbird	<i>Molothrus ater</i>	-	-	S4B
Baltimore Oriole	<i>Icterus galbula</i>	-	-	S4B
Purple Finch	<i>Haemorhous purpureus</i>	-	-	S4B
House Finch	<i>Haemorhous mexicanus</i>	-	-	SNA
American Goldfinch	<i>Spinus tristis</i>	-	-	S5B
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	SC	SC	S4B
House Sparrow	<i>Passer domesticus</i>	-	-	SNA

Notes:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARO - Species at Risk in Ontario



S-Rank - Provincial rank used by the Natural Heritage Information Centre to prioritize protection efforts

SC - Special Concern

THR - Threatened

END - Endangered

NAR - Not at risk

S1 - Extremely rare in Ontario

S2 - Very rare in Ontario

S3 - Rare to uncommon in Ontario

S4 - Considered to be common in Ontario

S5 - Species is widespread in Ontario

SNA - Not Applicable (typically introduced species)

SU - Status is uncertain due to insufficient information

"?" - Indicates uncertainty in classification due to lack of information



Appendix - Avifauna Survey List

Common name	Scientific name	COSEWIC	SARO	S-Rank
American Crow	<i>Corvus brachyrhynchos</i>	-	-	S5B
American Goldfinch	<i>Spinus tristis</i>	-	-	S5B
American Redstart	<i>Setophaga ruticilla</i>	-	-	S5B
American Robin	<i>Turdus migratorius</i>	-	-	S5B
Baltimore Oriole	<i>Icterus galbula</i>	-	-	S4B
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	-	-	S5B
Black-capped Chickadee	<i>Poecile atricapillus</i>	-	-	S5
Blue Jay	<i>Cyanocitta cristata</i>	-	-	S5
Brown Thrasher	<i>Toxostoma rufum</i>	-	-	S4B
Brown-headed Cowbird	<i>Molothrus ater</i>	-	-	S4B
Cedar Waxwing	<i>Bombycilla cedrorum</i>	-	-	S5B
Chipping Sparrow	<i>Spizella passerina</i>	-	-	S5B
Common Grackle	<i>Quiscalus quiscula</i>	-	-	S5B
Common Yellowthroat	<i>Geothlypis trichas</i>	-	-	S5B
Downy Woodpecker	<i>Picoides pubescens</i>	-	-	S5
Eastern Kingbird	<i>Tyrannus tyrannus</i>	-	-	S4B
Eastern Phoebe	<i>Sayornis phoebe</i>	-	-	S5B
Eastern Wood-pewee	<i>Contopus virens</i>	SC	SC	S4B
European Starling	<i>Sturnus vulgaris</i>	-	-	SNA
Field Sparrow	<i>Spizella pusilla</i>	-	-	S4B
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B
Gray Catbird	<i>Dumetella carolinensis</i>	-	-	S4B
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	-	-	S4B
House Wren	<i>Troglodytes aedon</i>	-	-	S5B
Indigo Bunting	<i>Passerina cyanea</i>	-	-	S4B
Killdeer	<i>Charadrius vociferus</i>	-	-	S5B,S5N
Least Flycatcher	<i>Empidonax minimus</i>	-	-	S4B
Mourning Dove	<i>Zenaida macroura</i>	-	-	S5
Nashville Warbler	<i>Oreothlypis ruficapilla</i>	-	-	S5B
Northern Cardinal	<i>Cardinalis cardinalis</i>	-	-	S5
Northern Flicker	<i>Colaptes auratus</i>	-	-	S4B
Pileated Woodpecker	<i>Dryocopus pileatus</i>	-	-	S5
Red-breasted Nuthatch	<i>Sitta canadensis</i>	-	-	S5
Red-eyed Vireo	<i>Vireo olivaceus</i>	-	-	S5B
Red-tailed Hawk	<i>Buteo jamaicensis</i>	NAR	NAR	S5
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	-	-	S4
Ring-billed Gull	<i>Larus delawarensis</i>	-	-	S5B,S4N
Rock Pigeon	<i>Columba livia</i>	-	-	SNA
Savannah Sparrow	<i>Passerculus sandwichensis</i>	-	-	S4B
Scarlet Tanager	<i>Piranga olivacea</i>	-	-	S4B
Song Sparrow	<i>Melospiza melodia</i>	-	-	S5B
Vesper Sparrow	<i>Poocetes gramineus</i>	-	-	S4B
Warbling Vireo	<i>Vireo gilvus</i>	-	-	S5B
Wild Turkey	<i>Meleagris gallopavo</i>	-	-	S5
Yellow Warbler	<i>Setophaga petechia</i>	-	-	S5B

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Appendix - Avifauna Observations

Common name	08-Jun-20								15-Jun-20							
	BB1	BB2	BB3	BB4	BB5	BB6	BB7	BB8	BB1	BB2	BB3	BB4	BB5	BB6	BB7	BB8
Killdeer	A			A	A				A	X	X	A	A	A		
Northern Flicker	X					X										S
Least Flycatcher	S	S	S		S											
Eastern Kingbird	A		CF		X				T			X	A			
Red-eyed Vireo	S	S	CF	S	S	S	S	S	T		S	T	T			
Blue Jay	X	A		X		X		X		T	X				X	X
American Crow	X					X		X		X		X	X		X	X
Barn Swallow	H	H														
Black-capped Chickadee	S	A	A		A			S	T					X	S	
House Wren	S	S	S			S		S	T		T	S	S	T	S	S
Gray Catbird	FY	X		S				S	S		T	S	S			
Cedar Waxwing	H	H			H			H	H				H			
American Redstart	S	S	S		S				T		T	S	T			
Song Sparrow	S	X		A	S	S			T		S	T	T	A		
Indigo Bunting	S	S	S			S		S	T	S		S			S	T
Red-winged Blackbird	X	A	S	S	P				T	S		T	A			
Brown-headed Cowbird	X	X		X						A		S		X		A
Baltimore Oriole	S		S	A	S	S			T	S	P	S	T	T		S
American Goldfinch	S	X		X	X	X		X	D	X		X	X	X		X
Northern Cardinal	S	S			S		S		T			S			T	S
Grasshopper Sparrow	S	S								T	S	S				
Nashville Warbler	S						S	S								
Black-billed Cuckoo	S															
Ring-billed Gull		F	X	X	X	X				X	X					
Savannah Sparrow		X	S	S					S	S	T					S
Common Grackle		X										X				
Red-breasted Nuthatch		H														
Eastern Wood-pewee			S					X			T	S		S		
Eastern Phoebe			S													
American Robin		S	S	A		S		S	X	T	T	A				S
Wild Turkey			NU		X										H	
Mourning Dove				S								T				
Warbling Vireo			S	S	S				S		T	T	T			
Yellow Warbler				S	S								T			
Pileated Woodpecker				X												
Brown Thrasher		S			S							S				
European Starling				FY	X			CF	X		X		X			
Field Sparrow					S	S				S	S	S		A		S
Downy Woodpecker							X									S
Vesper Sparrow								S				S				T
Red-tailed Hawk							FY									
Rock Pigeon									X							
Chipping Sparrow									S	X	S	S				
Great Crested Flycatcher												S				
Common Yellowthroat												S				
Scarlet Tanager															S	S
Bank Swallow																H

Note:

Shaded cells indicate probable or confirmed breeding by the species within the vegetation community.

Observed

X = Species observed in its breeding season (no breeding evidence)

Possible Breeding



H = Species observed in its breeding season in suitable nesting habitat

S= Singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat

Probable Breeding

P= Pair observed in their breeding season in suitable nesting habitat

T= Permanent territory presumed through registration of territorial song on at least 2 days, a week apart, at the same place

D= Courtship or display between a male and a female or 2 males, including courtship feeding or copulation

V= Visiting probable nest site

A = Agitated behaviour or anxiety calls of an adult

B= Brood patch on adult female or cloacal protuberance on adult male

N= Nest-building or excavation of nest hole

Confirmed Breeding

DD= Distraction display or injury feigning

NU= Used nest or egg shell found (occupied or laid within the period of study)

FY= Recently fledged young or downy young, including young incapable to sustain flight

AE= Adults leaving or entering nest site in circumstances indicating occupied nest

FS= Adult carrying faecal sac

CF= Adult carrying food for young

NE= Nest containing eggs

NY= Nest with young seen or heard



Appendix G

Species at Risk Screening

APPENDIX: Species at Risk Habitat-Based Screening - Simcoe County

COMMON NAME	SCIENTIFIC NAME	SARA	SARO	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	HABITAT-BASED SCREENING (High/Moderate/Low)	RATIONALE
Birds							
Bald Eagle	<i>Haliaeetus leucocephalus</i>	No Status	SC	S2N,S4B	The Bald Eagle is a bird of prey with a white head, neck and tail, a massive bright yellow beak, powerful legs, and a wingspan of over 2 m. It nests in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting. These nests are usually on islands in freshwater lakes or in large trees such as the pine and poplar. During the winter, they may also be found near open bodies of water that do not freeze (1).	Low	No suitable habitat present.
Bank Swallow	<i>Riparia riparia</i>	THR	THR	S4B	The Bank Swallow is a small songbird of around 12 cm long with a distinctive dark breast band, that flies with quick and erratic wingbeats (1). It nests in burrows in natural and human-made settings where there are vertical faces in silt and sand deposits. This can include banks of rivers and lakes, bluffs, active sand and gravel pits, road cuts and stockpiles of soils. However, they prefer sand-silt substrates for excavating their nest burrows. They often use large wetlands as communal nocturnal roosts post-breeding or during wintering periods (2).	Moderate	The watercourse banks may provide suitable habitat.
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4B	The Barn Swallow is a mid-sized songbird with steel-blue backs and wings, glossy in males, and a line of white spots across its upper tail. It lives in a variety of open habitats for foraging, such as grassy fields, pastures, certain agricultural crops, shorelines, cottage areas, wetlands, or subarctic tundra (2). They prefer to nest within human made structures such as barns, bridges, and culverts. Barn Swallow nests are cup-shaped and made of mud, typically attached to horizontal beams or vertical walls underneath an overhang (1).	Moderate	The existing structures on the Site may provide suitable habitat.
Black Tern	<i>Chlidonias niger</i>	No Status	SC	S3B	The Black Tern is a small waterbird with a forked tail, straight pointed bill, slender shape, and black head during breeding season. It builds floating nests in loose colonies in shallow marshes, with a preference for cattails. They breed primarily in the marshes along the edges of the Great Lakes, but may also use wetlands further north if suitable (1).	Low	No suitable habitat present.
Bobolink	<i>Dolichonyx oryzivorus</i>	THR	THR	S4B	The Bobolink is a mid-sized songbird of tan colour with black stripes, except for males during summer breeding season who are black with a white back and yellow collar. It prefers tall, grassy meadows, hayfields and some croplands, and feeds (largely on insects) on the ground in dense grasses (1). It tends to nest in forage crops: hayfields and pastures dominated by species including clover, bluegrass, and broadleaf plants (2).	Moderate	The open fields may provide suitable habitat for this species.

APPENDIX: Species at Risk Habitat-Based Screening - Simcoe County

COMMON NAME	SCIENTIFIC NAME	SARA	SARO	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	HABITAT-BASED SCREENING (High/Moderate/Low)	RATIONALE
Canada Warbler	<i>Cardellina canadensis</i>	THR	SC	S4B	The Canada Warbler is a small songbird with bright yellow underparts and bluish-grey back and tail (1). It can be found in a variety of forest types, but is most abundant in moist, mixed forests with a well-developed, dense shrub layer. Nests are usually located on or near the ground on mossy logs, and along stream banks (3).	Low	No suitable habitat present.
Cerulean Warbler	<i>Setophaga cerulea</i>	END	THR	S3B	The Cerulean Warbler, a small songbird, is blue-green with white eyebrows and two prominent white wing bars (1). It requires relatively large tracts of mature deciduous forest (>100 ha), and nests in older, second-growth deciduous forests. During breeding season, it is found in relatively large tracts of mature deciduous forests that feature large, tall trees and an open understorey (4).	Low	No suitable habitat present.
Chimney Swift	<i>Chaetura pelagica</i>	THR	THR	S4B,S4N	The Chimney Swift is a small bird, between 12 and 14 cm, with a brown, cigar-shaped body, slender wings, and an erratic flight pattern. Prior to settlement, the Chimney Swift would mainly nest in cave walls and hollow trees. Now, it is found mostly near urban and suburban areas where the presence of chimneys or other manmade structures provide nesting and roosting habitat. They also tend to stay in habitat close to the water (1).	Low	No suitable habitat present.
Common Nighthawk	<i>Chordeiles minor</i>	THR	SC	S4B	The Common Nighthawk is a medium-sized bird with long, pointed wings, a long tail with a notch, and and large eyes. Its plumage of dark brown with black and white specks blends with its roost site. It is typically found in open areas such as gravel beaches, rock outcrops and burned woodlands, that have little to no ground vegetation. This species can also be found in highly disturbed locations such as clear cuts, mine tailing areas, cultivated fields, urban parks, gravel roads, and orchards (1).	Low	No suitable habitat present.
Eastern Meadowlark	<i>Sturnella magna</i>	THR	THR	S4B	The Eastern Meadowlark is a medium-sized migratory songbird with a bright yellow throat and belly, a black V shape on its chest, and a pointed bill. It prefers pastures and hayfields, but is also found to breed in orchards, shrubby fields, human-use areas such as airports and roadsides, or other open areas. The Eastern Meadowlark can nest from early May to mid-August, in nests that are built on the ground and well-camouflaged with a roof woven from grasses (1).	Moderate	The open fields may provide suitable habitat for this species.

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COMMON NAME	SCIENTIFIC NAME	SARA	SARO	S-RANK	SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	HABITAT-BASED SCREENING (High/Moderate/Low)	RATIONALE
Eastern Whip-poor-will	<i>Antrostomus vociferus</i>	THR	THR	S4B	The Eastern Whip-poor-will is a medium-sized bird with mottled brown and grey feathers to blend in with its surroundings, a large flattened head, and small bill. They are usually found in areas with a mix of open and forested areas such as patchy forests with clearings, forests that are regenerating after major disturbances, savannahs, open woodlands or openings in more mature forests. Breeding habitat is dependent on forest structure rather than composition, although common tree associations are pine and oak, and it nests directly on the forest floor (2). The species prefers to nest in semi-open or patchy forests with clearings as it forages in open areas and uses forested areas for roosting (1).	Low	No suitable habitat present.
Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC	S4B	The Eastern Wood-pewee is a species of 'flycatcher', a bird that eats flying insects. It grows to approximately 15 cm, has greyish-olive upper parts and pale bars on its wings. This species lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It prefers intermediate-age forest stands with little understory vegetation (1). It typically creates nests on tree branches 2-12 m in height (2).	High	The forested areas on the Site may provide suitable habitat.
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	No Status	SC	S4B	The Evening Grosbeak is a large songbird with a thick greenish bill. It is a social bird that is often found in flocks, particularly during the winter months. Their preferred habitat is thick coniferous forest. During their breeding season, they are generally found in open, mature mixed forests dominated by Firs, White Spruce, or Trembling Aspen (1).	Low	No suitable habitat present.
Golden Winged Warbler	<i>Vermivora chrysoptera</i>	THR	SC	S4B	The Golden-winged Warbler is a small songbird with distinctive yellow wing patches and patches behind their eyes. It inhabits early successional habitat of old fields and favour areas where trees are spread out or forest edges to use for perching, singing, and searching for food. They seem to prefer regeneration zones with young shrub growth, surrounded by mature forest, locations that have recently been disturbed, such as field edges, hydro or utility right-of-ways, or logged areas for their breeding sites; often frequenting clusters of herbaceous plants and low bushes (1).	Moderate	The Site may provide suitable habitat for this species.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	SC	SC	S4B	The Grasshopper Sparrow is a small songbird with a streaked back, a white stripe down the center of its crown, a flattish head, and a conical beak. It inhabits open grasslands and prairies with well-drained soil, preferring areas that are sparsely vegetated. It will also nest in hayfields and pastures, as well as alvars and occasionally grain crops such as barley (1).	Moderate	The open fields may provide suitable habitat for this species.

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King Rail	<i>Rallus elegans</i>	END	END	S2B	The King Rail is a large bird, standing at around 40 cm tall, with a long, curved bill, orange chest and neck, and black sides with vertical white bars. This species prefers densely vegetated freshwater marshes with open shallow water and shrub thicket areas. Current records for Ontario suggest that these birds prefer sites within coastal marshes of the Great Lakes. Most breeding pairs left in Ontario are found in wetlands bordering Lake St Clair or coastal marshes along Lakes Erie and Ontario (1).	Low	No suitable habitat present.
Least Bittern	<i>Ixobrychus exilis</i>	THR	THR	S4B	The Least Bittern is a small member of the heron family, reaching around 30 cm in length. It has brown and beige plumage with chestnut patches on its wings (1). The species nests in marshes (> 5 - 10 ha) and swamps dominated by emergent vegetation, preferably cattails, interspersed with patches of woody vegetation and open water. They require dense vegetation and open water with stable levels within 10 m for nesting, and access to clear, open water for foraging (4).	Low	No suitable habitat present.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	END	END	S2B	The Loggerhead Shrike is a small bird with a black, hooked bill, grey crown, and white throat and chest. This species has specific habitat requirements that are dependent on active livestock grazing, or grassland areas that have naturally short grass cover (i.e. alvar communities). They also require spiny, multi-branched shrubs, or barbed fencing, to catch prey. They prefer grassland habitats that have sporadic occurrences of low trees and shrubs; particularly hawthorn species, which are used as part of their feeding behaviour (1).	Low	No suitable habitat present.
Olive-sided Flycatcher	<i>Contopus cooperi</i>	THR	SC	S4B	The Olive-sided Flycatcher is a medium-sized songbird with olive colouring, often seen perching on top of tall trees waiting to catch their prey. It prefers open areas along natural mature forest edges, forest edges near natural openings such as rivers or swamps, human-made openings, or burned forest openings with numbers of dead trees. Breeding habitat usually consists of coniferous or mixed forests adjacent to rivers or wetlands, in Ontario often nesting in White and Black Spruce, Jack Pine, and Balsam Fir (1).	Moderate	The forested areas adjacent to the wetlands and watercourse may provide suitable habitat.
Peregrine Falcon	<i>Falco peregrinus</i>	SC	SC	S3B	The Peregrine Falcon is a bird of prey with a slate blue back, cream-coloured chest with dark markings, and pointed wings spanning around 1 m. It also has bright yellow feet and legs. This species can be found nesting on tall, steep cliff ledges close to large bodies of water. They prefer open habitats such as wetlands, tundra, savanna, sea coasts and mountain meadows for hunting , but may also be found above open forests. This species has also adapted well to living and nesting in urban areas, and has been documented using the ledges of tall buildings and other tall man-made structures for perches and nesting (1).	Low	No suitable habitat present.

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Piping plover	<i>Charadrius melodus</i>	END	END	S1B	The Piping Plover is a small shorebird with light colouring, a stubby orange bill and orange legs. This species almost exclusively nests on dry sandy or gravelly beaches above the high-water mark to avoid waves. It can be found pecking the sand, searching for small pools of water for insects and small crustaceans to consume. Although not particularly common in Ontario, it is found along the shores of the Great Lakes, and in the Lake of the Woods in northwestern Ontario (1).	Low	No suitable habitat present.
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	THR	SC	S4B	The Red-headed Woodpecker is a mid-sized bird, at around 20 cm long, with a vivid red head, neck and breast as well a strong bill. The species can be found in open woodland and woodland edges, often near man-made landscapes such as parks, golf courses and cemeteries. These areas must contain a large number of dead trees for perching and nesting (1).	High	The forested areas on the Site may provide suitable habitat.
Short-eared owl	<i>Asio flammeus</i>	SC	SC	S2N,S4B	The Short-eared Owl has a large round head with small tufts of feathers, long wings, a short tail, and cryptic colouring of brown streaks. This species is found in scattered pockets across the province where suitable open habitat, including grasslands, tundra, peat bogs and marsh, can be found in sufficient quantities. Adults build nests on the ground in grassy areas and occasionally agricultural fields (1). The main factor influencing their choice in habitat is believed to be an abundance of their food source, primarily rodents and other small mammals (2).	Low	No suitable habitat present.
Wood Thrush	<i>Hylocichla mustelina</i>	THR	SC	S4B	The Wood Thrush is a medium-sized songbird of around 20 cm with rusty brown coloured upper parts and white underparts with large dark spots. It breeds in deciduous and mixed forests with moderate understories, shade and abundant leaf litter where it forages for food, including larval and adult insects as well as plant material. They prefer moist stands of trees with well-developed undergrowth and tall trees for perches (1).	High	The forested areas on the Site may provide suitable habitat.
Yellow Rail	<i>Coturnicops noveboracensis</i>	SC	SC	S4B	The Yellow Rail is a small, quail-like marsh bird with a short yellow or black bill, short tail, with yellowish and black streaks on its back and white wing patches. This species is mainly found in the Hudson Bay Lowlands region, and is only found in localized marshes in southern Ontario. It is a secretive bird that lives deep within the reeds, sedges, and marshes of shallow wetlands which nest on the ground in areas that have an overlying mat of dry vegetation that can be used for nest building (1).	Low	No suitable habitat present.
Fish							

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American Eel	<i>Anguilla rostrata</i>	No Status	END	S1?	The American Eel is a long, slender bodied fish, with one long fin extending down the back and around the tail, and two small pectoral fins. It has thick lips, and a protruding lower jaw that extends out above the upper jaw. At the juvenile stage, they swim up the St. Lawrence River to reach Lake Ontario and connected tributaries where they will remain for 8 to 23 years before migrating back to their spawning grounds. In Ontario, the American eel prefers mud, sand or gravel substrates during the juvenile stage when they reside primarily in the benthic zone of waterbodies. More mature eels are able to thrive in most environments provided there is available cover during daylight hours, and the habitat is accessible (2).	Low	No suitable habitat present.
Lake Sturgeon	<i>Acipenser fulvescens</i>	No Status	END	S2	The Lake Sturgeon, a large freshwater fish, has an extended snout with four whisker-like organs hanging near the mouth and is dark to light brown or grey on its back and sides with a lighter belly. In Ontario, this fish is found in the rivers of the Hudson Bay Basin, the Great Lakes basin, and their connecting waterways. Lake Sturgeon’s live almost exclusively in freshwater lakes and rivers with soft bottoms of mud, sand or gravel and are usually found at depths of 5 to 20 m. They spawn in relatively shallow, fast-flowing water or if available deeper water habitat as well (1).	Low	No suitable habitat present.
Herptiles							
Blanding's Turtle	<i>Emydoidea blandingii</i>	THR	THR	S3	Blanding’s Turtles are identifiable by their bright yellow throat and chin and domed shell. They spend the majority of their life cycle in the aquatic environment, usually in large wetlands or shallow lakes with high densities of water plants (1). These turtles prefer shallow, nutrient rich water with organic sediment and dense vegetation. They use terrestrial sites for travel between habitat patches and to lay clutches of eggs, often going hundreds of meters from their nearest water body. Blanding’s Turtles nest in dry coniferous and mixed forest habitats, as well as fields and roadsides (2). From late October until the end of April, they hibernate in the mud at the bottom of permanent water bodies (1).	Low	No suitable habitat present.
Eastern Musk Turtle	<i>Sternotherus odoratus</i>	SC	SC	S3	The Eastern Musk Turtle is small with a narrow carapace, a dark brown body and two light stripes on each side of their head (5). It is a small freshwater turtle found primarily in slow moving water bodies with abundant emergent vegetation and mucky bottoms along the southern edge of the Canadian Shield within which they burrow into overwinter. Nesting sites vary, but must be close to the water and exposed to direct sunlight (1).	Low	No suitable habitat present.

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Northern Map Turtle	<i>Graptemys geographica</i>	SC	SC	S3	The Northern Map Turtle is a medium sized turtle identified by its carapace's map contour-like patterning. It lives in larger lakes and rivers, requiring high water quality to support their primary prey species: molluscs. This species can often be seen in large groups basking together on rocks and logs. In the winter, the Northern Map Turtle can be found hibernating on the bottom of slow-moving rivers (1).	Low	No suitable habitat present.
Snapping Turtle	<i>Chelydra serpentina</i>	SC	SC	S3	The Snapping Turtle, with its large serrated carapace, small plastron, and spiked tail, is Canada's largest freshwater turtle (5). It spends the majority of its life in water, preferring shallow water with soft mud and leaf litter, and will travel upland to gravel or sandy embankments, roadsides, along railway lines or beaches to lay their eggs (1).	Moderate	The watercourse may provide suitable habitat for this species.
Spotted Turtle	<i>Clemmys guttata</i>	END	END	S2	The Spotted Turtle is named after the distinct yellow spots on its carapace. The species is semi-aquatic and prefers ponds, marshes, bogs and even ditches with slow-moving, unpolluted water and an abundant supply of aquatic vegetation. This species usually hibernates in wetlands or seasonally wet areas with structures such as overhanging banks, hummocks, tree roots, or aquatic animal burrows (1).	Low	No suitable habitat present.
Wood Turtle	<i>Glyptemys insculpta</i>	THR	END	S2	The Wood Turtle has orange coloured front legs, neck and chin and a sculpted carapace with raised, pyramidal scutes (5). They prefer clear rivers and streams that have moderate current, and sandy or gravelly substrates. This species spends more time on land than other turtle species including in meadows, swamps and fields. Wooded areas are an essential habitat component, and the species uses aquatic habitats for hibernation and mating. Nesting occurs in areas with sandy soil and abundant light (1).	Low	No suitable habitat present.
Eastern Fox Snake (Georgian Bay GLSL Population)	<i>Pantherophis gloydi</i>	END	THR	S3	The Eastern Foxsnake has a rusty orange head and a golden-brown body with dark blotches. The Georgian Bay population predominantly uses open habitats along shorelines (e.g., coastal rock barrens and meadow marshes) as habitat during the active season. The foxsnakes inhabiting this coastline do not venture far inland, restricting the majority of their activity to within 150 m of the water (4). The females require rotten logs, stumps, compost or decaying leaf piles for incubating their eggs (5).	Low	No suitable habitat present.
Eastern Hog-nosed Snake	<i>Heterodon platirhinos</i>	THR	THR	S3	The Eastern Hog-nosed Snake can be a variety of colours and patterns so is most easily identified by its flattened, upturned nose. They prefer sandy well-drained habitats such as beaches and dry forests because they lay their eggs, hibernate and burrow in these areas. The main diet of this snake is toads and frogs, so they usually stay close to water including marshes and swamps, where they have an increased chance of finding their preferred prey (1).	Low	No suitable habitat present.

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Eastern Ribbonsnake	<i>Thamnophis sauritus</i>	SC	SC	S4	The Eastern Ribbonsnake is slender with three bright yellow stripes running down its back and sides and a white crescent in front of each eye. This snake is usually found close to water as they are strong swimmers, often fleeing predators by diving into shallow water. It prefers wetland habitats where its prey species, frogs and small fish, are abundant. Over winter, they congregate in underground burrows or rock crevices to hibernate (1).	Low	No suitable habitat present.
Massasauga Rattlesnake (Great Lakes - St. Lawrence population)	<i>Sistrurus catenatus</i>	THR	THR	S3	The Massasauga, Ontario's venomous snake, can be identified by its rattle, vertical pupils, and triangular head. It inhabits a range of different habitats throughout Ontario, including tall grass prairies, marshes, bogs, shorelines, forests, and alvars. Within these habitats they require open areas to warm themselves in the sun (1).	Low	No suitable habitat present.
Common Five-lined Skink (Southern Shield Population)	<i>Plestiodon fasciatus</i>	SC	SC	S3	The Common Five-lined Skink is Ontario's only lizard species. Its Southern Shield population can be found underneath rocks on open bedrock in forests and like to bask on sunny rocks and logs. They hibernate in crevices among rocks or buried in the soil (1). They hibernate in groups under rocks and tree stumps or in rotting wood (5).	Low	No suitable habitat present.
Invertebrates							
Gypsy Cuckoo Bumble Bee	<i>Bumbus bohemicus</i>	END	END	S1S2	The Gypsy Cuckoo Bumble Bee is a medium-sized bumble bee that resides in a wide range of habitats such as open meadows, agricultural and urban areas, boreal forest, and woodlands. In Ontario, it was historically found throughout the province; however, in recent years it is only known to occur in Pinery Provincial Park (1).	Low	Not within species known range.
Monarch Butterfly	<i>Danaus plexippus</i>	SC	SC	S2N,S4B	The Monarch is an orange and black butterfly with small white spots and a wingspan of around 10 cm. It relies on milkweed plants as a food source for growing caterpillars, but the adult butterflies forage in diverse habitats for nectar from wildflowers (1).	Low	No suitable habitat present.
West Virginia White	<i>Pieris virginiensis</i>	No Status	SC	S3	The West Viginia White is a small, dingy white butterfly. This species is found in moist deciduous woods, and requires a supply of toothwort, a small, spring-blooming plant, which provides the only source of food for its larvae. The West Virginia White is found mostly in the central and southern parts of Ontario, but its range extends north to Manitoulin and St. Joseph islands (1).	Low	No suitable habitat present.
Mammals							

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Tri-colored Bat	<i>Perimyotis subflavus</i>	END	END	S3?	The Tri-colored Bat is small, with pale brown with orange-red forearms, muzzle, and ears. It is named for the black, yellow, and brown hairs on its back. It is considered rare in this region of Ontario which is at the northernmost limit of the natural range. These bats prefer to nest in foliage, tree cavities and woodpecker holes, but are occasionally found in buildings; though this is not their preferred habitat. Winter hibernation takes place in caves, mines and deep crevices. Tri-colored Bats prefer an open forest habitat type in proximity to water (6).	High	The forested areas on the Site may provide suitable habitat.
Eastern Small-footed Myotis	<i>Myotis leibii</i>	No Status	END	S2S3	The Eastern Small-footed Myotis has fur with black roots and shiny brown tips as well as very small feet. In the spring and summer, the Eastern Small-footed Myotis will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. They change their roosting locations daily and hunt at night for insects. They hibernate in winter, often in caves and abandoned mines choosing colder and drier sites than other similar bats (1).	High	The forested areas on the Site may provide suitable habitat.
Little Brown Myotis	<i>Myotis lucifugus</i>	END	END	S4	The Little Brown Myotis has glossy brown fur and a fleshy projection covering the entrance to its ears. This species roosts in trees and buildings, often selecting attics, abandoned buildings and barns for summer colonies where they can raise their young. Little Brown Bats hibernate from October/November to March/April, most often in caves or abandoned mines that are humid and remain above freezing (1).	High	The forested areas on the Site may provide suitable habitat.
Northern Myotis	<i>Myotis septentrionalis</i>	END	END	S3	The Northern Myotis has dull yellow-brown fur with pale bellies and long, rounded ears. This species is found in boreal forests, roosting under loose bark and in the cavities of trees. These bats hibernate from October/November to March/April, most often in caves or abandoned mines (1).	High	The forested areas on the Site may provide suitable habitat.
Trees, plants, fungi and lichens							
American Ginseng	<i>Panax quinquefolius</i>	END	END	S2	American Ginseng is a perennial plant which grows up to 60 centimetres in height. The leaves typically have five leaflets arranged in a whorl at the end of the leaf stem. The root looks like a gnarly parsnip. The flowers are an inconspicuous green-white in colour, but the berries are bright red and arranged in a cluster. In Ontario, the American Ginseng typically grows in rich, moist, and mature deciduous woods dominated by Sugar Maple, White Ash, and American Basswood. It typically grows in deep, nutrient rich soil over limestone or marble bedrock (1).	Low	No suitable habitat present.

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American Hart's-tongue Fern	<i>Asplenium scolopendrium</i>	SC	SC		American Hart's Tongue Fern is a perennial evergreen fern with fronds growing from a short underground stem. Its blades are strap-shaped with a heart-shaped base and pointed tip. The species grows on calcareous rocks on slopes in deciduous forests, preferring deep shade. In Ontario, most occurrences are in maple-beech forests (1).	Low	No suitable habitat present.
Broad Beech Fern	<i>Phegopteris hexagonoptera</i>	SC	SC	S3	The Broad Beech Fern can grow to a height of 50 cm or more and has a creeping, scaly root (2). The fern has large divided leaves called fronds which grow from 25 to 75 cm long and triagular leaf blades. The Broad Beech Fern perfers rich, moist soils in deciduous forests, usually in full shade and often dominated by Maple and Beech trees. In Ontario, it is found in southern Muskoka, along Lake Erie, and in the eastern Lake Ontario - St Lawrence River region (1).	Low	No suitable habitat present.
Butternut	<i>Juglans cinerea</i>	END	END	S2?	The Butternut is a medium sized tree reaching 30 m in height. It has large compound leaves with 11 to 17 leaflets. The fruit is oval, fuzzy and sticky. In Ontario, the Butternut prefers moist, well-drained soil, often along streams, or occasionally well-drained gravel sites. It grows alone or in small groups in deciduous forests (1).	High	The forested areas on the Site may provide suitable habitat.
Eastern Prairie Fringed-orchid	<i>Platanthera leucophaea</i>	END	END	S2	The Eastern Prairie Fringed-Orchid has distinctive fringed white flowers with a deep "nectar spur" containing nectar and a flat, fringed "lip" serving as a platform for pollinating insects. It may lie dormant for years before flowering. It can be found in areas of tallgrass prairie or fen throughout the province and in some tamarack swamps of the Bruce Peninsula and Ottawa Area (1).	Low	No suitable habitat present.
Purple Twayblade	<i>Liparis liliifolia</i>	THR	THR	S2	The Purple Twayblade is a small orchid with two broad, shiny leaves at the base of the plant and a single stem from which mauve-purple flowers cluster. It can be found in a variety of habitats including open woodlands, mixed deciduous forests, shrub thickets, deciduous swamps, and coniferous plantations. It requires partial, but can not tolerate full, shade and therefore depends on natural disturbances to keep its habitat relatively open (1).	Low	No suitable habitat present.

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