Environmental Impact Study - Lot 13 & 14, Concession 6 Otonabee, Keene, County of Peterborough, Ontario

2021-09-24

Prepared for:
2564669 Ontario Inc. & 520039 Ontario Ltd.

Cambium Reference No.: 12655-001

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1.0 Introduction

Cambium Inc. (Cambium) was retained by 2564669 Ontario Inc. & 520039 Ontario Ltd. to conduct an Environmental Impact Study - Lot 13 & 14, Concession 6 Otonabee, Keene, County of Peterborough, Ontario (Figure 1). The proposed development includes approval of a Plan of Condominium. Based on the proposed development, the whole property will be considered the Site for this report.

The Environmental Impact Study (the Study) is required to address potential negative impacts to natural heritage features identified during the preliminary development review process, as required by the Provincial Policy Statement, 2020 (PPS). The Site contains or is adjacent to (within 120 m) the following mapped natural heritage and/or hydrologic features: Indian River Mouth Provincially Significant Wetland (PSW), unevaluated wetland, watercourse, and potential habitat for endangered and threatened species. The Site is within Ecoregion 6E of Ontario (Crins, Gray, Uhlig, & Wester, 2009). The property is within the Settlement Area of the Town of Keene, Township of Otonabee-South Monaghan, Ontario.

The Site is within the jurisdiction of the Otonabee Region Conservation Authority and their regulated area does overlap the Site in association with the mapped wetlands and watercourse. As such, the Study will consider regulations on development as imposed by the local Conservation Authority's Regulation under the *Conservation Authorities Act, 1990*.

The *Endangered Species Act, 2007* (ESA) protects endangered or threatened species and their habitats from harm or destruction. Habitat of endangered and threatened species is protected under provincial natural heritage policy; however, it is also the landowner's responsibility to ensure that no harm to these species occurs on their property. This Study includes a habitat-based screening for species of conservation concern to determine if the Site has suitable habitat for any provincial or federal species at risk (SAR).

In order to address the Study requirements of the approval authorities, Cambium has conducted this Study to provide an evaluation of reasonably anticipated ecological impacts,

positive or negative, that may arise as a result of this proposed development to guide the decision making process.

1.1 Terms of Reference

A Terms of Reference (TOR) was confirmed with Matt Wilkinson, Planner, ORCA in email correspondence dated June 10, 2021, prior to the completion of field work. The correspondence is provided in Appendix A.

1.2 Proposed Development and Conceptual Site Plan

The Site is mostly rectangular and approximately 5 ha in size. It has a small extension fronting on Heritage Line. It is currently used as agricultural land and contains an animal shelter and a barn. Adjacent land use is residential, agricultural, as well as natural areas of the Indian River and wetlands.

The Site Plan proposes a Plan of Condominium with 20 lots with roadway connection to Heritage Line, Keene, Ontario. A Site Plan is provided in Appendix B.

2.0 Applicable Natural Heritage Policy and Regulation

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*.

Section 2.2 of the PPS protects the quality and quantity of water, including the form and hydrologic function of sensitive surface water features and sensitive ground water features. Focus is given to maintaining hydrologic linkages and functions at the watershed scale to minimize potential negative impacts, including cross-jurisdictional and cross-watershed impacts of development. Mitigative measures and/or alternative development approaches should be considered for development near water features.

2.2 Official Plan and Zoning By-Law

The Record of Pre-Consultation prepared by the Peterborough County Planning Department indicates that the Site is located within the Settlement Area of Keene, Ontario. The Township of Otonabee-South Monaghan designates the land use of the Site as Hamlet.

According to the Township of Otonabee-South Monaghan Zoning By-law, the Site is zoned as Future Development – 4 (FD4), which specifies special regulations including a minimum lot

area of 5.0 ha and a minimum lot frontage of 20.0 m. A Zoning By-Law Amendment will be required for the proposed development.

2.3 Conservation Authority Regulation

“Conservation Authorities are local watershed management agencies that deliver services and programs to protect and manage impacts on water and other natural resources in partnership with all levels of government, landowners and many other organizations” (Conservation Ontario, 2021). Conservation Authorities each have their own Ontario Regulation under the *Conservation Authorities Act, 1990*. In general, they regulate development within and adjacent to river or stream valleys, Great Lakes and inland lakes shorelines, watercourses, hazardous lands (flood, erosion, unstable soils) and wetlands.

Otonabee Region Conservation Authority regulates these features under Ontario Regulation 167/06: *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*.

2.4 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.

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 orthoimagery, topographic base mapping, and geological records. Natural environment and land use schedules prepared in support of Official Plans and Zoning By-Laws 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 (Ministry of Natural Resources and Forestry, 2018);
- Aquatic Species at Risk Maps - Ontario (Fisheries and Oceans Canada, 2018);
- Aquatic Resource Area Summary Data (Government of Ontario, 2015);
- Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature, 2018);
- Ontario Breeding Birds Atlas (OBBA) (2001-2005) (Bird Studies Canada, 2005)
- County of Peterborough On-line Mapping: Natural Heritage Features, Official Plan and Zoning By-Law maps

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

3.1.1 Ministry Consultation

Depending on the natural feature of the Site, ministry consultation may include the Ministry of Northern Development, Mines, Natural Resources, and Forestry (MNDMRF) and/or the Ministry of Environment, Conservation, and Parks (MECP), as applicable.

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* (Ministry of the Environment, Conservation and Parks, 2019). This document aims to "help clients better understand their obligation to gather information and complete a preliminary screening for SAR before contacting the Ministry". This document was used to guide the SAR habitat-based screening for the 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 sections provide the methods that were used to gather site-specific information.

3.2.1 Ecological Land Classification and Vegetation Inventory

The Ecological Land Classification (ELC) System for Southern Ontario (Lee, et al., 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, et al., 1998) and the revised 2008 tables. ELC units were initially delineated and classified by orthoimagery interpretation. Field investigations served to confirm the type and extent of communities on the Site through vegetation inventory and soil assessment with a hand auger. Where vegetation communities extend off the Site, classification is done through observation from property boundaries and publicly accessible lands.

3.2.2 Wetland Boundary Delineation

In Ontario, wetlands are mapped and evaluated under the Ontario Wetland Evaluation System (OWES). Mapped evaluated wetlands have undergone extensive study and been assessed based on their form and function under four categories: Biological, Social, Hydrological, and Special Features (Ministry of Natural Resources, 2014). Evaluated wetlands that score high enough are deemed Provincially Significant Wetlands (PSW). Evaluated wetlands that did not score high enough to be a PSW are called Locally Significant Wetlands (LSW). The province

also maps unevaluated wetlands. These mapped wetlands are approximate; as such, they require field verification in order to confirm their presence and determine their boundaries.

The subject wetland was delineated following provincially approved methods outlined in the Ontario Wetland Evaluation System: Southern Manual, 3rd Ed. (Ministry of Natural Resources, 2014). Fieldwork was carried out by provincially certified Cambium staff.

The Site was visited during the early spring in order to document the extent of surface flooding at that time of year. This information is used to assist with the determination of wetland boundaries during the growing season. Wetland boundaries were initially delineated and classified by orthoimagery interpretation. The presence/absence of wetlands on the Site was confirmed through field investigations during the growing season (late May through October). Wetland boundaries were determined using the 50% wetland vegetation rule. Where vegetation-based delineation was inconclusive, soil assessment with a hand auger was used to confirm wetland boundaries. Wetland boundaries on the Site were marked with a hand-held GPS unit. Where wetland communities extend off the Site, classification was done through observation from property boundaries and publically accessible lands.

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 and drainage feature crossings were noted and GPS marked in the field, including bridges, culverts, and bed-level crossings.

3.2.4 Breeding Bird Surveys

Two (2) breeding bird surveys 7-10 days apart were carried out during the peak breeding season between May 24 and July 10. 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 and assigned a code based on the highest level of breeding evidence, as defined by the protocol: Confirmed, Probable, Possible or Observed.

3.2.5 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 MNDMRF 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.

3.2.6 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.

4.0 Characterization of Natural Features and Functions

Background information and field investigation data is provided in the following sections. Based on the background and field data, an assessment of significance has been completed to identify protected natural heritage features on and/or adjacent to the Site.

The following field investigations were carried out on the Site and are summarized in Table 1. Representative Site photos are included in Appendix C and locations of specific surveys are shown on Figure 3.

Table 1 Summary of Field Investigations

Date	Time On Site	Weather	Observer	Activities
2021-03-17	0925-1000	Overcast	A. Hicks	Preliminary Feature Identification
2021-05-25	0700-0800	12°C Clear Wind: 0 Noise: 0	T. Jamieson	Grassland Breeding Bird Survey #1
2021-06-02	0730-0815	24°C Clear Wind: 0 Noise: 1	T. Jamieson	Grassland Breeding Bird Survey #2 Breeding Bird Survey #1
2021-06-10	0730-0815	15°C 90% Cloud Cover Wind: 1 Noise: 1	T. Jamieson	Grassland Breeding Bird Survey #3
2021-07-07	0630-0745	15°C Light Rain 100% Cloud Cover Wind: 1 Noise: 0-2	K. McKitterick	Breeding Bird Survey #2

2021-06-28	1400-1600	15°C 90% Cloud Cover Wind: 1 Noise: 1	T. Jamieson	Ecological Land Classification Wetland Boundary Delineation

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.

Basking temperature is reported as the temperature measured at ground level.

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, et al., 1998).

Topography at the Site includes a tableland feature and the top of a slope. The east and central portion of the Site are on a tableland which is relatively flat. The slope is located along the eastern property boundary and the southeastern corner of the Site. Based on available contours, the slope is relatively steep, dropping approximately 35 m in elevation over 130 m down to the Indian River. Detailed topography and determination of the stable top of slope was completed by D.M. Wills (Wills) and is provided under separate cover. The top of slope is shown on Figure 3.

4.1.1 Significant Valleylands

Significant valleylands are natural heritage features that are afforded protection under provincial policy. Currently, according to their respective Official Plan Schedules, the planning authority has not explicitly defined or designated significant valleylands within their jurisdiction.

In the absence of local criteria for evaluating valleylands, the Natural Heritage Reference Manual (NHRM) provides guidance (Ministry of Natural Resources, 2010). In addition, the Greenbelt Plan provided evaluation criteria: *Technical definitions and criteria for key natural heritage features in the Natural Heritage System of the Protected Countryside Area* (Ministry of Natural Resources, 2012). While the Site is outside the Greenbelt Plan area, these technical definitions can be used to guide evaluations in the absence of local criteria. These criteria were reviewed with respect to the valley feature on and adjacent to the Site.

The slope at the Site is part of a larger valley feature that surrounds the Indian River and the associated Indian River Mouth PSW. Based on criteria provided in the NHRM ad Greenbelt Plan, the feature qualifies as Significant Valleyland. The boundary of this feature is the top of slope, as shown on Figure 3.

4.2 Vegetation Communities

Based on a review of publicly available imagery, the Site consists of agricultural fields surrounded by deciduous hedgerows. A large, forested area connected to provincially significant wetland is located to the east of the Site. An additional area of forested unevaluated wetland is located on the adjacent property to the north.

The vegetation communities on the Site are summarized in Table 2 and are mapped on Figure 3. A list of identified species and representative photos for each community are provided in Appendix D.

Table 2 Vegetation Communities

No.	ELC Code	Community Description	Community Type	S -Rank
1	CUM1	Cultural Meadow/Hay Field	Terrestrial	SNA
2	MAS2-1	Cattail Mineral Shallow Marsh	Wetland	S5
3	FODM11	Naturalized Deciduous Hedgerow	Terrestrial	-
4	CUP3-1	Red Pine Coniferous Plantation	Terrestrial	SNA
5	FOD5	Dry – Fresh Sugar Maple Deciduous Forest	Terrestrial	-

6	OAGM4	Open Pasture	Terrestrial	SNA

A search for butternut (*Juglans cinerea*; provincially endangered) was completed as part of the vegetation survey; no butternut were identified on the Site.

The CUM1 community on the Site showed signs of cutting in 2020; however, the fields were left fallow in 2021 and were not cut during the duration of the field investigations.

4.2.1 Significant Woodlands

Significant woodlands are natural heritage features that are afforded protection under provincial policy. Currently, according to their respective Official Plan Schedules, the planning authority has not explicitly defined or designated significant woodlands within their jurisdiction. In the absence of local criteria for evaluating woodlands, the NHRM provides guidance on evaluating woodlands (Ministry of Natural Resources, 2010). In addition, the Greenbelt Plan provided evaluation criteria: *Technical definitions and criteria for key natural heritage features in the Natural Heritage System of the Protected Countryside Area* (Ministry of Natural Resources, 2012). While the Site is outside the Greenbelt Plan area, these technical definitions can be used to guide evaluations in the absence of local criteria. These criteria were reviewed with respect to the woodland feature on and adjacent to the Site.

Community 5 overlaps the eastern and southern boundary of the Site and is connected to a larger woodland feature to the east that extends along the shore of the Indian River. Based on a review of publicly available imagery, the overall woodland exceeds 50 ha in size. The woodland is also connected to a PSW, the Indian River, and fish habitat. Based on these characteristics, Community 5 should be considered Significant Woodland.

4.3 Wetland Delineation

The Indian River Mouth Provincially Significant Wetland (PSW) is mapped directly adjacent to the Site, along the southern half of the eastern property boundary. This PSW is approximately 438 ha in size. It is composed of two wetland types: 58% marsh and 42% swamp. The soils

are primarily organic. The PWS provides nesting habitat for colonial waterbirds, winter cover for wildlife, fish spawning habitat, and habitat for the at risk Black Tern (*Chlidonias niger*).

Field investigations confirmed that the wetland did not extend as far up the slope as the eastern property boundary. The boundary of the PSW was verified via a trail that extends from Mill Street, southeast of the Site. The boundary is located towards the toe of the slope. The open water of the Indian River transitions through open marsh, deciduous swamp, and then to deciduous forest as the slope rises. The wetland boundary in proximity to the Site was distinguished based on the presence of wetland species, including Black Ash, Red Ash and Eastern White Cedar. The boundary of this feature was marked with GPS.

An area of mapped unevaluated wetland was located on the adjacent property to the north. This wetland was located on private property beyond the Site boundaries; as such, an assessment was not possible during the field investigations. The wetland was therefore assumed to be present and was mapped based on the boundaries provided in publicly available imagery.

An area of unmapped unevaluated wetland was identified to the west of the Site. An area of cattail marsh was located directly adjacent to the northwest corner of the Site (Community 2). The wetland boundary was delineated based on the vegetation community, over 50% of which comprised of wetland species including Narrow-leaved Cattail, Red-osier Dogwood, and Reed Canarygrass. This wetland area was associated with a mapped watercourse that flows from the wetland north of the Site and through adjacent lands to the west. The laneway that is present directly north of the Site may restrict flows in this feature as no culvert was visible at the time of the field investigations. The boundary of this feature along the Site's boundary was marked with GPS.

4.4 Wildlife Survey Results

Wildlife species observations were recorded during every site visit. These included American Goldfinch (*Spinus tristis*), American Robin (*Turdus migratorius*), Baltimore Oriole (*Icterus galbula*), Black-billed Cuckoo (*Coccyzus erythropthalmus*), Blue Heron (*Ardea herodias*), Blue Jay (*Cyanocitta cristata*), Common Grackle (*Quiscalus quiscula*), Eastern Kingbird (*Tyrannus*

tyrannus), Eastern Wood-pewee (*Contopus virens*), European Starling (*Sturnus vulgaris*), Gray Catbird (*Dumetella carolinensis*), Mourning Dove (*Zenaida macroura*), Northern Cardinal (*Cardinalis cardinalis*), Pileated Woodpecker (*Drycopus pileatus*), Red-winged Blackbird (*Agelaius phoeniceus*), Savannah Sparrow (*Passerculus sandwichensis*), and Wood Thrush (*Hylocichla mustelina*).

It is noted that incidental observations of Eastern Wood-pewee and Wood Thrush were recorded during field investigations. Both of these species are SAR (Special Concern) and were heard calling from Community 5 located adjacent to the Site to the east. Details on species of conservation concern and their protected habitat is provided under Section 4.6.

4.4.1 Birds

OBBA breeding bird surveys were completed as a part of the current study. The goal of the breeding bird surveys was to determine the presence of breeding birds within the forest community that overlaps the eastern boundary of the Site (Community 5). One survey point was established at the Site, facing east into Community 5 (Figure 3). Bird species observed on or adjacent to the Site, breeding evidence, federal and provincial status and s-ranks are provided in Appendix E. A total of three had probable or confirmed breeding evidence (shaded cells). Species with probable or confirmed breeding evidence **on the Site** included:

- American Goldfinch (*Spinus tristis)*
- Red-eyed Vireo (*Vireo olivaceus*)
- Song Sparrow (*Melospiza melodia*)

In addition, grassland breeding bird surveys were completed as a part of the current study. The area of suitable habitat was the fields (CUM1) encompassing most of the Site, as shown in Figure 3. No Bobolink, Eastern Meadowlark, or Grasshopper Sparrow were observed during the survey; therefore, the Site is not breeding habitat for any of these species.

The barn on the Site were investigated for potential Barn Swallow habitat. The barn on the Site was of solid construction, with fully covered walls rather than boards. The perimeter of the structure was investigated and no openings/gaps that would allow Barn Swallows access to

the structure were found. Based on this assessment, the barn does not provide habitat for this species.

4.5 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) guidance documents produced by the MNRF were used as a guide to identify and confirm SWH on the Site (MNR, 2000). The Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (Ministry of Natural Resources and Forestry, 2015) apply to the proposed works. Information gathered during the background review and field investigations were compared to SWH criteria to identify SWH habitat at the Site. Based on our observations during field investigations and the ELC classifications described in Section 4.1.1, the Site does not meet the criteria for designation as SWH. Details on species of conservation concern and their protected habitat is provided under Section 4.6.

4.6 Species of Conservation Concern

A list of species of conservation concern, including species at risk, with potential to occur in the general vicinity of the Site has been compiled based on known species' ranges, habitat requirements, and review of background information sources (as listed in Section 3.1). In addition, the 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 species located on or adjacent to the Site. A detailed habitat suitability analysis is provided in Appendix F and a discussion of the results is provided below.

4.6.1 Special Concern Species

Community 5 consists of a mature deciduous forest which connects to a greater area of forest and wetland that extends along the Indian River. Most of this community is located on private property; as such, a comprehensive survey of the habitat characteristics of this community off-Site was not feasible. Habitat form and quality was assessed from the property boundaries. This community consisted of large mature trees with a relatively open understory, consisting of shrubs and young trees. Understory density appeared to be variable throughout the

community. The area of Community 5 that overlapped the Site boundaries consisted of mostly young poplar trees.

Community 5 provides potential habitat for both the Eastern Wood-pewee and Wood Thrush, and both species were heard calling from Community 5 during field investigations. No evidence of probable breeding for these species was collected during breeding bird surveys; however, these species may be breeding within the larger woodland area. Community 5 is candidate SWH for these species.

The Monarch relies on milkweed plants as a food source for growing caterpillars, but the adult butterflies forage in diverse habitats for nectar from wildflowers. Common Milkweed was observed within the hedgerows on the Site (Community 3). The Site also contains meadow, and forest habitat with numerous flowering species that provide potential foraging habitat for Monarchs. According to the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (OMNRF, 2015), candidate Butterfly Migratory Stopover SWH must be within 5 km of Lake Ontario. As such, the Site is not considered candidate SWH for this species.

The Yellow-banded Bumble Bee is a forage and habitat generalist and will utilize flowering species in a range of habitat types. No individuals were observed during site visits. As habitat loss is not a significant threat to this generalist species, no further consideration is required.

5.0 Impact Assessment and Mitigation Measures

Reiterate the proposed development here – copy/paste from intro.

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:

- Significant Valleylands
- Significant Woodlands
- Provincially Significant Wetlands
- Indian River and Fish Habitat
- Other Wetlands
- Significant Wildlife Habitat

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.

5.1 Significant Valleylands

Significant Valleylands were identified on the Site based on provincial criteria; however, it is the responsibility of the Planning Authority to designate Significant Valleylands within their jurisdiction. The feature on and adjacent to the Site will be presumed significant for the purpose of this Study.

The Significant Valleyland on the Site represents a landform and ecological feature important for water conveyance, connectivity to natural features, and linkage functions. The majority of the feature is located on adjacent lands, with only the southeast portion of the Site within the feature. The limit of the feature is the top of slope; this boundary will receive a development setback of 6 m, appropriate to ensuring its long-term stability. By protecting the top of slope,

the valleyland feature is also protected on and adjacent to the Site. No negative impacts to this feature are anticipated from the proposed development. In order to provide a net-gain to this feature on the Site, the unvegetated portion of the slope should be replanted with native vegetation, consistent with the adjacent woodlands. Further recommendations on replanting are provided in Section 5.2.

Since the valleyland boundary represents the top of slope, sediment control fencing should be installed along the top of slope or at the limit of development, whichever is greater. The 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 features 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.

5.2 Significant Woodlands

Significant Woodlands were identified on the Site based on provincial criteria; however, it is the responsibility of the Planning Authority to designate Significant Woodlands within their jurisdiction. The feature on and adjacent to the Site will be presumed significant for the purpose of this Study.

Community 5 was confirmed as Significant Woodland, present along the east and south boundaries of the Site and extending onto adjacent lands. The portion of the Significant Woodland on the Site is small by comparison to the overall woodland feature. The portions on the Site also do not contribute substantively to the protection of PSW, water quality, or fish habitat due to the distance between the Site and these other natural features. Based on this assessment, the portions of woodland on the Site could be removed with no negative impact to the form and function of the Significant Woodland feature.

The proposed development can provide a net-benefit to this woodland feature through revegetation of the lands adjacent to the woodland that are outside the developable area due to the slope/valleyland. As shown on Figure 4, the area of proposed woodland removal is 0.13 ha and the area of woodland that could be restored is 0.67 ha. The revegetation of this area should focus on tree species consistent with an upland, deciduous forest. Removal of the Red

Pine within the plantation area should be done selectively, allowing other native species to become established around the remaining trees, until this area is a diverse mix of trees.

Tree species recommended for revegetation of the Site include Sugar Maple, Black Cherry, Trembling Aspen, Large-toothed Aspen, White Birch, White Pine, White Cedar. Shrub species recommended for revegetation of the Site include Alternate Dogwood, Staghorn Sumac, Downey Serviceberry, Common Elderberry, Ninebark.

5.3 Provincially Significant Wetlands, Indian River, Fish Habitat

A 30 m setback is recommended for the PSW located on adjacent lands, as shown on Figure 4. The 30 m setback is considered sufficient to protect the existing form and function of the wetland 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). Since this feature and its setback are located on adjacent lands which are fully vegetated, no impacts to this feature from the proposed development are anticipated.

The Indian River and associated fish habitat are located beyond the PSW boundary to the east. Due to the distance between the Site and these feature, along with the PSW and woodlands present, no impacts to these features from the proposed development are anticipated.

5.4 Other Wetlands

The wetlands identified off Site to the north and west will not be directly impacted by the proposed development. There is potential for in-direct impacts to these features from construction and residential use of the Site, including sedimentation, noise, and lighting.

Prior to any construction activities taking place, it is essential that sediment fencing be installed along the northern and northwest areas of the Site, adjacent to these wetland features. 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.

A 10 m development setback off the northern and northwest areas of the Site, adjacent to these wetland features, is recommended to protect these adjacent features. This setback is considered sufficient based on the existing laneway that separates the northern wetland and the existing residential development in proximity to the northwest wetland. The 10 m development setback should be planted with native trees and shrubs in order to buffer these adjacent wetland features from noise and lighting. See Section 5.2 for a list of recommended species.

5.5 Significant Wildlife Habitat

Community 5 provides potential habitat for both the Eastern Wood-pewee and Wood Thrush. The majority of Community 5 is located beyond the Site boundaries; as such, tree clearing is expected to be limited to the area of Community 5 that overlaps the Site boundaries. These areas represent edge habitats that will are less sensitive to removals and do not impact the key nesting habitat of these species. No impacts to the habitat of Eastern Wood-pewee and Wood Thrush habitat are anticipated from the proposed devleopment.

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).

If vegetation clearing is to occur between April 15 and August 15, the vegetation should be investigated by a qualified biologist to confirm if any nests are present. Vegetation clearing can proceed provided there are no active nests. If active nests are confirmed, the nests should be left undisturbed until young have fledged or the nest is determined to be inactive.

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.

5.6 Best Management Practices

Cambium understands that a walking trail may be included in the landscaping plans for the Site. This type of low-intensity recreational use is compatible with buffer lands of natural features provided the impacts from construction and use can be minimized. Cambium would recommend that any trail system be located such that tree removal and erosion prone areas are avoided; the trail bed be constructed of a pervious material such as wood chips or pea gravel; and that signage be included to provide awareness of invasive species.

6.0 Policy Compliance

The proposed development is subject to the policies of the PPS and is in compliance with these policies, as detailed in Table 3.

Table 3 PPS 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	No	Yes	Yes: 2.1.4, 2.1.8
	Explanation: The PSW boundary was confirmed on adjacent lands and appropriate development setbacks have been identified herein. No impacts to this feature are anticipated.		
Fish Habitat	No	Yes	Yes: 2.1.6, 2.1.8
	Explanation: Fish habitat is located over 30 m from the property boundary. No impacts to this feature are anticipated.		
Significant Wildlife Habitat (including habitat of special concern species)	No	Potentially	Yes: 2.1.5, 2.1.8
	Explanation: SWH for SC bird species may be present within woodlands on adjacent lands. No impacts to their habitat are proposed.		
Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)	Yes	Yes	Yes: 2.1.5, 2.1.8
	Explanation: Portion of significant woodland on the Site can be removed without negative impact to the overall feature's form and function. Net-benefit to woodland cover can be provided through revegetation of the slope.		
Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)	Yes	Yes	Yes: 2.1.5, 2.1.8
	Explanation: The significant valleyland feature boundary on the Site is the top of slope; no development beyond the top of slope is proposed. No impacts to this feature are anticipated		

7.0 Summary of Mitigation, Compensation, and Best Practices

The following are recommended with respect to the proposed development:

1. Site Plans for the proposed development should show the following features on and adjacent to the Site:

   1.1. PSW and 30 m setback

   1.2. Unevaluated wetland and 10 m setback

   1.3. Significant Valleyland (i.e., top of slope) and 6 m setback

2. Sediment control fencing should be installed along the top of slope (or at the limit of development, whichever is greater) and along the 10 m wetland setback. The 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 features 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.

3. 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).

4. If vegetation clearing is to occur between April 15 and August 15, the vegetation should be investigated by a qualified biologist to confirm if any nests are present. Vegetation clearing can proceed provided there are no active nests. If active nests are confirmed, the nests should be left undisturbed until young have fledged or the nest is determined to be inactive.

5. 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. A net-gain to the valleyland and woodland features on/adjacent to the Site can be achieved through replanting the unvegetated portion of the slope with native vegetation, consistent with the adjacent woodlands. In addition, the 10 m wetland development setback should be planted with native trees and shrubs in order to buffer these adjacent wetland features from noise and lighting.

   6.1. Tree species recommended for revegetation of the Site include Sugar Maple, Black Cherry, Trembling Aspen, Large-toothed Aspen, White Birch, White Pine, White Cedar.

   6.2. Shrub species recommended for revegetation of the Site include Alternate Dogwood, Staghorn Sumac, Downey Serviceberry, Common Elderberry, Ninebark.

7. Walking trails are compatible with buffer lands of natural features provided the impacts from construction and use can be minimized. Cambium would recommend that any trail system be located such that tree removal and erosion prone areas are avoided; the trail bed be constructed of a pervious material such as wood chips or pea gravel; and that signage be included to provide awareness of invasive species.

8.0 Closing

In closing, potential negative impacts associated with the proposed development and site alteration can be appropriately minimized, provided that the recommendations outlined in Section 7.0 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 function identified on or adjacent to the subject Site. Furthermore, the proposed development complies with applicable provincial policy.

Respectfully submitted,

Cambium Inc.

Andrea Hicks, M.Sc.
Natural Science Group Manager

Tyler Jamieson, M.Sc.
Biological/Ecological Technologist

P:\12600 to 12699\12655-001 2564669 Ontario Inc. & 520039 Ontario Ltd. - EIS - Plan of Condominium Heritage Line\Deliverables\REPORT - EIS\Final\2021-09-24 RPT EIS - Lot 13-14 Conc 6, Keene.docx

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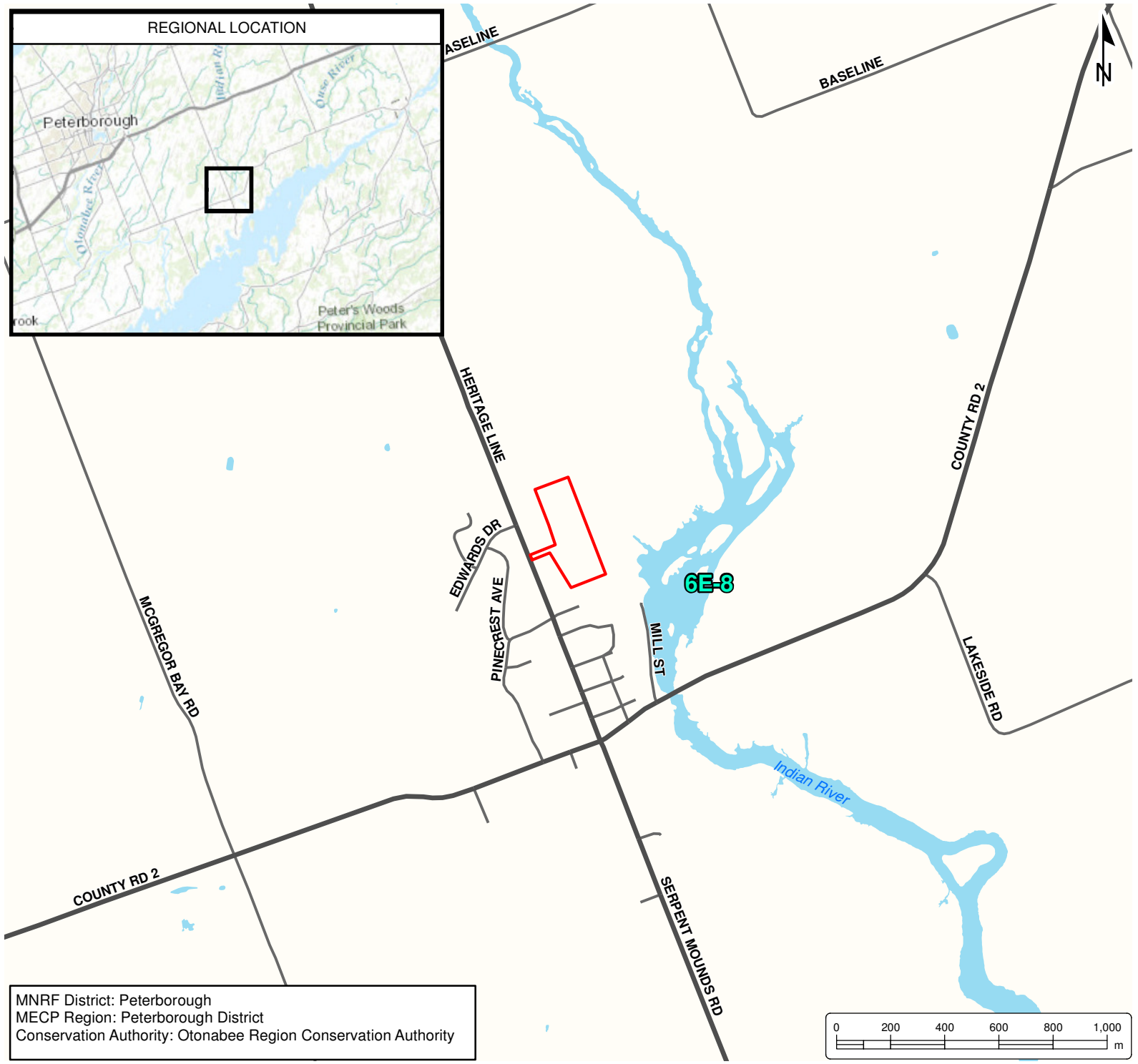
Glossary of Terms

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
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
MNDMRF: 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

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
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

2564669 ONTARIO INC. &
520039 ONTARIO LIMITED
Lot 13 & 14, Concession 6 Otonabee,
Keene, Ontario

LEGEND

- Major Road
- Minor Road
- Water Area
- Ecodistrict
- Site (5.59 ha) (approximate)

Notes:
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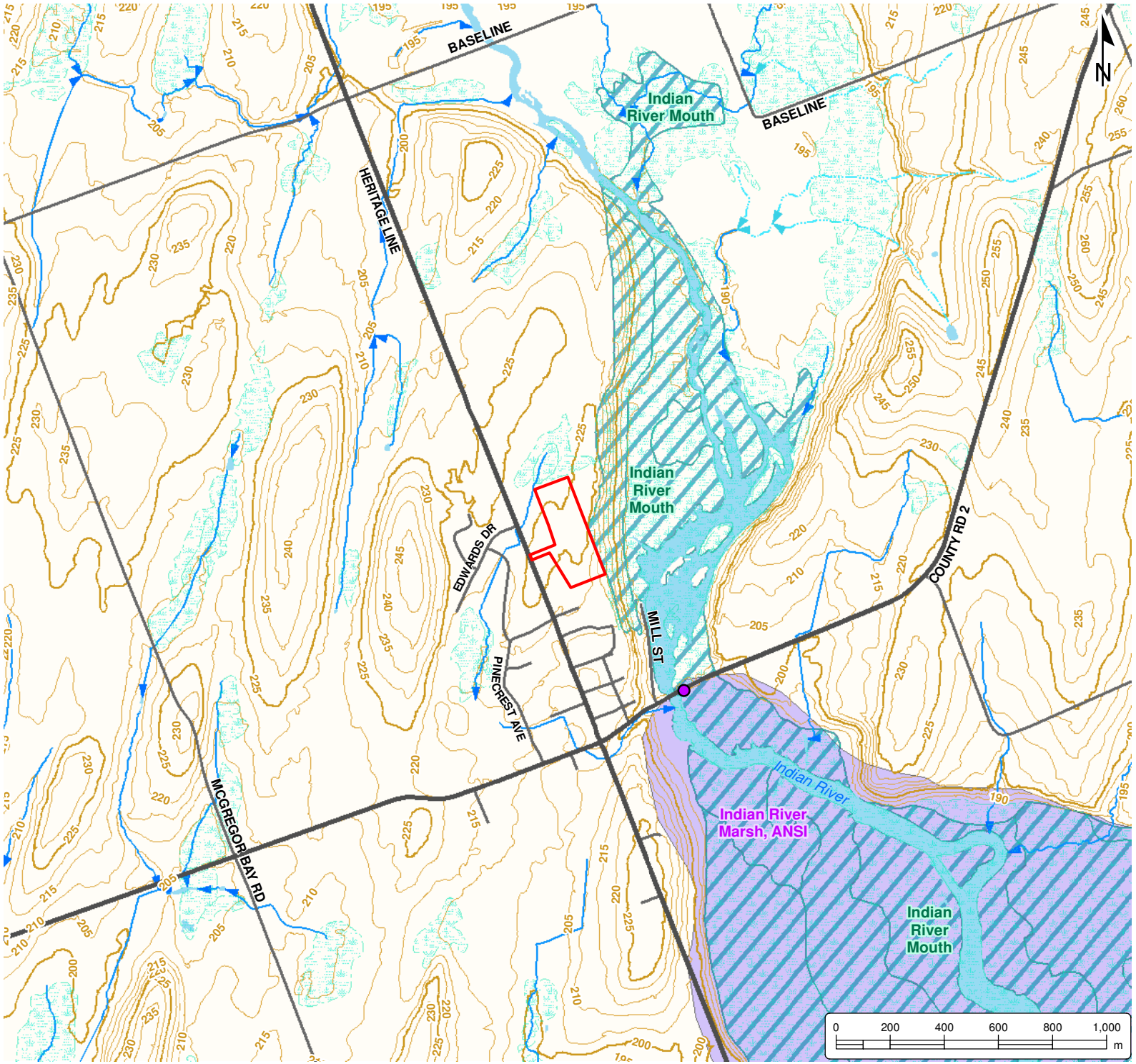
SITE LOCATION AND SPECIAL PLANNING AREAS

Project No.: 12655-001		Date: August 2021	Rev.:
Scale: 1:20,000		Projection: NAD 1983 UTM Zone 17N	
Created by: MAT	Checked by: ALH	Figure: 1	

O:\GIS\MXDs\12600-12699\12655-001 2564669 Ontario Inc. & 520039 Ontario Ltd. - EIS - Plan of Condominium Heritage Line\2021-08-19 FIG 1 - Site Location and Special Planning Areas.mxd



ENVIRONMENTAL IMPACT STUDY

2564669 ONTARIO INC. &
520039 ONTARIO LIMITED
Lot 13 & 14, Concession 6 Otonabee,
Keene, Ontario

LEGEND

- Aquatic Resources Survey Point
- Major Road
- Minor Road
- Watercourse, Intermittent
- Watercourse, Permanent
- Contour 5m Interval (Major)
- Contour 5m Interval (Minor)
- Unevaluated Wetlands
- Provincially Significant Wetlands
- Water Area
- ANSI, Life Science
- Site (5.59 ha) (approximate)

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LOCAL NATURAL HERITAGE FEATURES

Project No.: 12655-001		Date: August 2021 Rev.:	
Scale: 1:20,000		Projection: NAD 1983 UTM Zone 17N	
Created by: MAT	Checked by: ALH	Figure:	2

O:\GIS\MXDs\12600-12699\12655-001 2564669 Ontario Inc. & 520039 Ontario Ltd. - EIS - Plan of Condominium Heritage Line\2021-08-19 FIG 2 - Local Natural Heritage Features.mxd

ENVIRONMENTAL IMPACT STUDY

2564669 ONTARIO INC. &
520039 ONTARIO LIMITED
Lot 13 & 14, Concession 6 Otonabee,
Keene, Ontario

LEGEND

- Breeding Bird Survey Station
- Grassland Bird Survey Station
- Contour 5m Interval (Major)
- Contour 5m Interval (Minor)
- Top of Slope/Limit of Significant Valleyland
- Verified Wetland Boundary
- Vegetation Community
- Watercourse, Permanent
- 120m Adjacent Lands
- Significant Woodland
- Wetland
- Unevaluated Wetland
- Provincially Significant Wetland
- Site (5.59 ha) (approximate)

VEGETATION COMMUNITIES

1: CUM1; Mineral Cultural Meadow
2: MAS2-1; Cattail Mineral Shallow Marsh
3: FODM11; Naturalized Deciduous Hedgerow
4: CUP3-1; Red Pine Coniferous Plantation
5: FOD5; Dry – Fresh Sugar Maple Deciduous Forest
6: OAGM4; Open Pasture
SWD: Deciduous Swamp
MAS: Shallow Marsh

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SITE NATURAL HERITAGE FEATURES

Project No.: 12655-001		Date: August 2021 Rev.:	
Scale: 1:3,500		Projection: NAD 1983 UTM Zone 17N	
Created by: MAT	Checked by: ALH	Figure:	3

O:\GIS\MXDs\12600-12699\12655-001 2564669 Ontario Inc. & 520039 Ontario Ltd. - EIS - Plan of Condominium Heritage Line\2021-08-19 FIG 3 - Site Natural Heritage Features.mxd

ENVIRONMENTAL IMPACT STUDY

2564669 ONTARIO INC. &
520039 ONTARIO LIMITED
Lot 13 & 14, Concession 6 Otonabee, Keene, Ontario

LEGEND

- 6m Top of Slope/Significant Valleyland Setback
- 10m Unevaluated Wetland Setback
- 30m PSW Setback
- Contour 5m Interval (Major)
- Contour 5m Interval (Minor)
- Top of Slope/Limit of Significant Valleyland
- Verified Wetland Boundary
- Watercourse, Permanent
- 120m Adjacent Lands
- Significant Woodland
- Significant Woodland: to be Removed (0.130 ha)
- Woodland to be Restored (0.670 ha)
- Wetland
- Unevaluated Wetland
- Provincially Significant Wetland
- Site (5.59 ha) (approximate)

Notes:
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NATURAL HERITAGE CONSTRAINTS

Project No.: 12655-001		Date: August 2021 Rev.:	
Scale: 1:3,500		Projection: NAD 1983 UTM Zone 17N	
Created by: MAT	Checked by: ALH	Figure:	4

O:\GIS\MXDs\12600-12699\12655-001 2564669 Ontario Inc. & 520039 Ontario Ltd. - EIS - Plan of Condominium Heritage Line\2021-08-19 FIG 4 - Natural Heritage Constraints.mxd

Appendix A
Correspondence

Candice VanNorman

From: Matt Wilkinson <mwilkinson@otonabeeconservation.com>
Sent: June-10-21 12:01 PM
To: Andrea Hicks
Subject: RE: Terms of Reference - Heritage Line Condominiums (12655-001)

Hi Andrea,
Sorry for the confusion. Yes the subject site is within the settlement area and the 30m VPZ from Growth Plan policies wouldn't be applicable.

The mitigation hierarchy assessment statement is inline with your comment: *Develop and provide an appropriate avoidance, mitigation, restoration, and/or offsetting strategy, to address the potential impacts identified.*

I debated included it after you mentioned it. We only wanted to highlight it because the current site plan may traverse some areas of wetland. We would look for a justification as to why the wetland needs to be impacted.
Happy to chat.

Best,
Matt

Matt Wilkinson
Planner
705-745-5791 x213
mwilkinson@otonabeeconservation.com

ARE YOU PLANNING AN UPCOMING CONSTRUCTION PROJECT ON YOUR PROPERTY? Submit a Property Inquiry Form so we can help you understand how natural hazards may affect your property.

This e-mail is confidential. If you are not an addressee named above, please immediately delete and notify the sender. Thank you.

From: Andrea Hicks <Andrea.Hicks@cambium-inc.com>
Sent: June 10, 2021 11:45 AM
To: Matt Wilkinson <mwilkinson@otonabeeconservation.com>
Cc: Cambium File <file@cambium-inc.com>
Subject: RE: Terms of Reference - Heritage Line Condominiums (12655-001)

Thanks Matt -

As the Site is within the Settlement Area, a 30 m VPZ is not specified for the PSW under provincial policy; however, we do acknowledge that this setback is included in ORCA's planning policies. Based on a preliminary site visit, the PSW does not come as close to the eastern property boundary as currently mapped. We will be refining this wetland boundary and will apply a setback based on that revision for inclusion on the Concept Plan. Since this is a PSW, that boundary revision would be submitted to the MNRF for their review/approval.

You also noted a "mitigation hierarchy assessment" would be required; this is the first time I have seen this term. Can you please clarify the requirements of this in case we do need to propose compensation?

Kind Regards,
Andrea

Andrea Hicks, M.Sc.
Group Manager - Natural Science

Cambium Inc. - Peterborough
p: 705.742.7900 x 235 | **c:** 705.957.9046 | **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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Check out our video - an inside look at Cambium's culture & career opportunities.

From: Matt Wilkinson <mwilkinson@otonabeeconservation.com>
Sent: June-10-21 9:59 AM
To: Andrea Hicks <Andrea.Hicks@cambium-inc.com>
Subject: RE: Terms of Reference - Heritage Line Condominiums (12655-001)

Hi Andrea,
ORCA staff agree in principle with Cambium's Terms of Reference (ToR).
Please note: to be consistent with provincial and regulatory policies the 30 metre VPZ buffer/ setback to the PSW should be applied to the residential lots. The circulated concept plan does not appear to be consistent with policies.
As noted a mitigation hierarchy assessment and compensation plan is required where wetland or buffer encroachment is proposed.

Best,
Matt

Matt Wilkinson
Planner
705-745-5791 x213
mwilkinson@otonabeeconservation.com

ARE YOU PLANNING AN UPCOMING CONSTRUCTION PROJECT ON YOUR PROPERTY? Submit a Property Inquiry Form so we can help you understand how natural hazards may affect your property.

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From: Andrea Hicks <Andrea.Hicks@cambium-inc.com>
Sent: June 1, 2021 1:53 PM
To: Matt Wilkinson <mwilkinson@otonabeeconservation.com>
Cc: Tyler Jamieson <Tyler.Jamieson@cambium-inc.com>; Cambium File <file@cambium-inc.com>; Kevin M. Duguay <kevin@kmdplanning.com>; jamie@kmdplanning.com
Subject: Terms of Reference - Heritage Line Condominiums (12655-001)

Good afternoon Matt,

We have been retained by the proponent of the Plan of Condominium on Heritage Line, Keene (Roll No.(s) 1506-010-003-10500) to conduct the Environmental Impact Study for the property. As per the pre-consultation record, we are providing the following terms of reference for ORCA's review:

- Consult with ORCA and the Planning Authority to determine their interest/concerns regarding the proposed works and scope the work requirements.
- Compile and review applicable background information and environmental mapping pertaining to the Site.
- Conduct one (1) survey of vascular plants on the Study Area during the growing season (June) to provide an inventory. Survey will include identification of any Butternut trees. One survey is considered sufficient based on the agricultural nature of the property.
- Classify existing vegetation communities on the Study Area, according to the Ecological Land Classification System for Southern Ontario (Lee, et al., 1998), and evaluate them for sensitivity, rarity, and botanical quality.
- Delineate wetland boundaries on and adjacent to the property following the Ontario Wetland Evaluation System (OWES) for Southern Ontario (Ministry of Natural Resources, 2013). Please note that wetlands on adjacent lands are not directly accessible due to private property restrictions. Wetland boundaries will be assessed using imagery and LIDAR interpretation, together with field observations from property boundaries and publically accessible lands.

- Evaluate the woodland on the adjacent property for significance following the Greenbelt Plan's technical definitions.

- Identify and delineate any other key hydrologic features on the Site, including watercourses, ponds, seeps, springs, and drainage areas following Ontario Stream Assessment Protocol.

- Conduct three (3) breeding bird surveys on the Site, using Components of the Ontario Breeding Bird Atlas Guide for Participants (OBBA, 2001) and MNRF survey protocol for Eastern Meadowlark. This will inform the identification of species at risk (SAR) habitat and significant wildlife habitat (SWH).

- 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. The Site is within EcoRegion 6E; as such, the criteria tables for this region will be reviewed to evaluate SWH types present on or adjacent to the site.

    - Please note that amphibian breeding surveys are not included in the proposed scope of work. While there is a wetland on adjacent lands to the north that may provide suitable amphibian breeding habitat, it is on adjacent private property and separated from the Site by a laneway.

- Undertake a Species at Risk (SAR) screening to asses for potential SAR habitat and evaluate compliance with the provincial Endangered Species Act, 2007.

- Identify, assess and include detailed descriptions of the natural features and functions identified on the Site and adjacent lands.

- Map natural heritage and hydrologic features, vegetation communities, other environmental features (watercourses, wetlands, areas of groundwater discharge, wildlife habitat, etc.), and development setbacks on current high quality aerial imagery. These features and setbacks will be provided to the Client for inclusion on site plans for the proposed development.

- 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 within the Provincial Policy Statement, 2020 and Endangered Species Act, 2007.

- Develop and provide an appropriate avoidance, mitigation, restoration, and/or offsetting strategy, to address the potential impacts identified.

- Complete one (1) final report that includes the Environmental Impact Study components for circulation to ORCA and the Planning Authority, which includes a CV of all qualified practitioners.

If you have any comment to provide with respect to the Terms of Reference, please let me know. I am also available for a phone call if that is easier and can be reached by cell phone.

Kind Regards,

Andrea

Andrea Hicks, M.Sc.
Group Manager - Natural Science

Cambium Inc. - Peterborough
Environmental | Building Sciences | Geotechnical | Construction Monitoring
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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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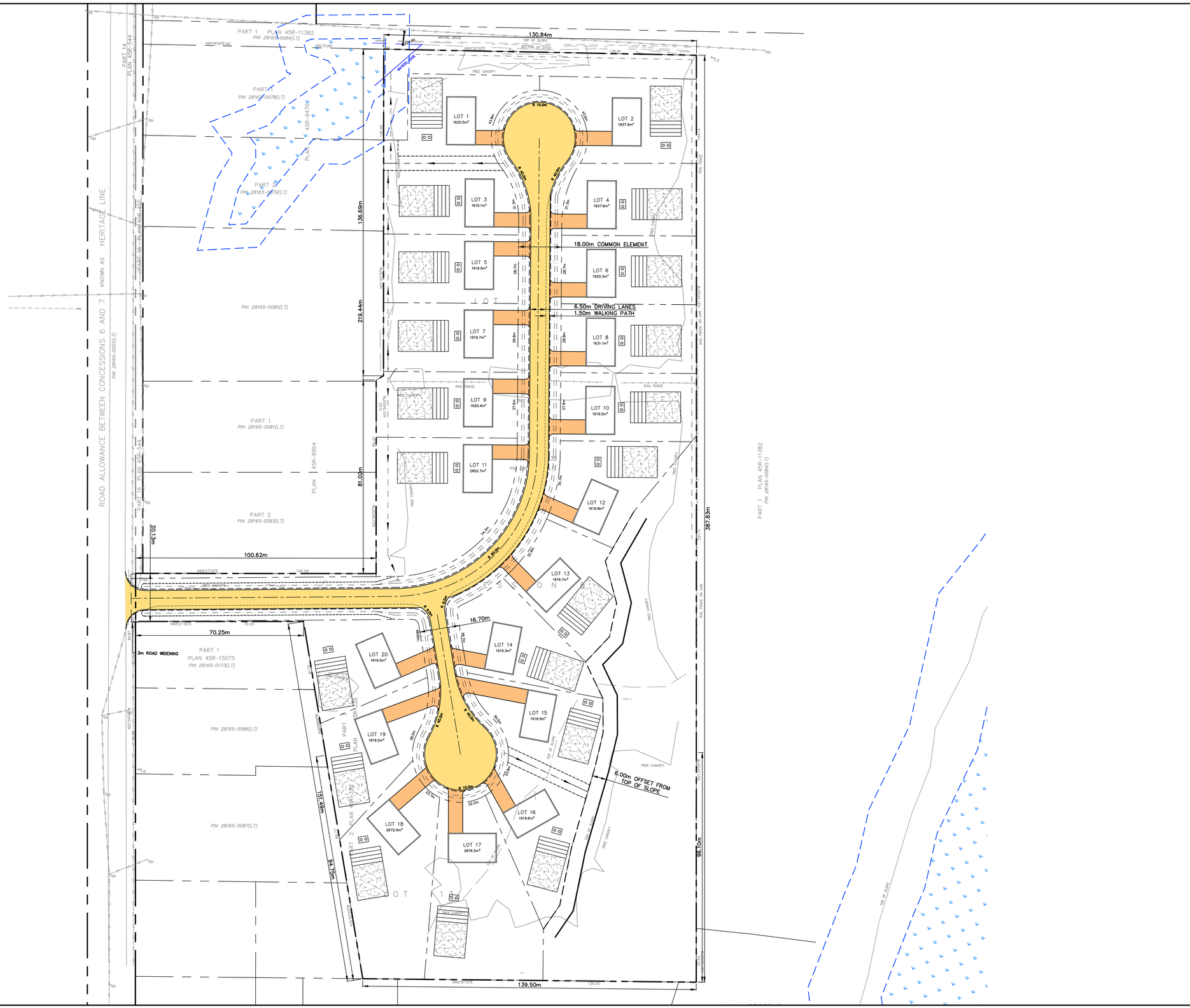
Appendix B

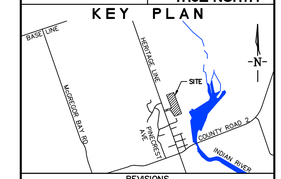
Conceptual Site Plans



BM1 – 206.93m
N: 4902490.35m
E: 726461.29m
KEENE PUBLIC SCHOOL, TABLET IN NORTHEAST FACE OF CONCRETE FOUNDATION WALL

TRUE NORTH

KEY PLAN



REVISIONS

No.	Description	Date
1	ZBA – 1ST SUBMISSION	21/09/02

METRIC Dimensions are in METRES and/or MILLIMETRES unless otherwise shown

LEGEND TO BE READ IN CONJUNCTION WITH OPSD 100 SERIES

- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED MEDIUM DUTY ASPHALT
- PROPOSED GRASS/LANDSCAPED
- UNEVALUATED WETLAND
- EX. BUILDING
- EX./PR. EDGE OF PAVEMENT
- EX./PR. ROAD CENTERLINE
- EX./PR. EDGE OF SHOULDER/GRAVEL
- EX./PR. WATER VALVE
- EXISTING HYDRO POLE
- EX. OVERHEAD HYDRO
- EX. UNDERGROUND HYDRO
- EX./PR. DITCH
- EX./PR. WATERMAIN
- R.O.W
- PROPERTY LINE
- EXISTING VEGETATION
- TEE
- PROPOSED HOUSE WITH 2 CAR GARAGE
- SEPTIC TANK
- TILE FIELD AND MANTLE

WILLS

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F. 705.748.9744
E. wills@dmwills.com

Project Name/Location

HERITAGE LINE RESIDENTIAL

KEENE, ONTARIO

Drawing Title

SITE PLAN

Drawn By: M.B.	SCALE: Horz. 1:750 Vert. –		
Designed By: M.B.	Issue Date: July 8, 2021		
Checked By: J.D.F.	Project No.: 21–10985	Sht. No.:	
Engineer: D.K.	Dwg File No.: 10985–SP	500	

NOT FOR CONSTRUCTION

Printed By: mbell Printed On: September 10, 2021
z:\10900-10999\10985 – heritage line residential\02 drawings\current drawings\10985-mp.dwg

Appendix C
Photographic Log

Photo 1 Livestock Shelter in active pasture, June 2021.

Photo 2 Barn in active pasture, June 2021.

Photo 3 View looking west at right of way access, June 2021.

Appendix D

Vegetation Species List

VEGETATION COMMUNITY CLASSIFICATION: CUM1 COMMUNITY #: 1 LOCATION: Heritage Line COORDINATES: 44.2485947, -78.16047

PROJECT NUMBER: 12655-001 DATE: June 28, 2021 PROJECT MANAGER: Andrea Hicks FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	CoW	CoC	SARA	SARO	S-Rank
Alfalfa	*Medicago sativa ssp. sativa*	*Fabaceae*	5				SNA
Annual Fleabane	*Erigeron annuus*	*Asteraceae*	3	0			S5
Black Medick	*Medicago lupulina*	*Fabaceae*	3				SNA
Bladder Campion	*Silene vulgaris*	*Caryophyllaceae*	5				SNA
Canada Bluegrass	*Poa compressa*	*Poaceae*	3				SNA
Canada Goldenrod	*Solidago canadensis var. canadensis*	*Asteraceae*	3	1			S5
Canada Thistle	*Cirsium arvense*	*Asteraceae*	3				SNA
Common Ragweed	*Ambrosia artemisiifolia*	*Asteraceae*	3	0			S5
Common St. John's-wort	*Hypericum perforatum ssp. perforatum*	*Clusiaceae*	5				SNA
Common Timothy	*Phleum pratense ssp. pratense*	*Poaceae*	3				SNA
Red Clover	*Trifolium pratense*	*Fabaceae*	3				SNA
Redtop	*Agrostis gigantea*	*Poaceae*	-3				SNA
Reed Canarygrass	*Phalaris arundinacea var. arundinacea*	*Poaceae*	-3	0			S5
Tufted Vetch	*Vicia cracca*	*Fabaceae*	5				SNA
White Heath Aster	*Symphyotrichum ericoides var. ericoides*	*Asteraceae*	3	4			S5
Wild Carrot	*Daucus carota*	*Apiaceae*	5				SNA

NOTES: Dominated by Goldenrod in the centre of the property. Dominated by grasses in southern portion of Site.

VEGETATION COMMUNITY CLASSIFICATION: CUM1 COMMUNITY #: 1 LOCATION: Heritage line COORDINATES: 44.2485947, -78.16047

PROJECT NUMBER: 12655-001 DATE: June 28, 2021 PROJECT MANAGER: Andrea Hicks FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

VEGETATION COMMUNITY PHOTOS:

VEGETATION COMMUNITY CLASSIFICATION: MAS2-1 COMMUNITY #: 2 LOCATION: Heritage Line COORDINATES: 44.2474858, -78.1653813

PROJECT NUMBER: 12655-001 DATE: June 28, 2021 PROJECT MANAGER: Andrea Hicks FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	CoW	CoC	SARA	SARO	S-Rank
Grey Dogwood	*Cornus racemosa*	*Cornaceae*	0	2			S5
Nannyberry	*Viburnum lentago*	*Caprifoliaceae*	0	4			S5
Narrow-leaved Cattail	*Typha angustifolia*	*Typhaceae*	-5				SNA
Red-osier Dogwood	*Cornus sericea*	*Cornaceae*	-3	2			S5
Reed Canarygrass	*Phalaris arundinacea var. arundinacea*	*Poaceae*	-3	0			S5

NOTES: Cattail marsh. Edge directly on property boundary.

VEGETATION COMMUNITY PHOTOS:

VEGETATION COMMUNITY CLASSIFICATION: FODM11 COMMUNITY #: 3 LOCATION: Heritage Line COORDINATES: 44.2485769, -78.1653872

PROJECT NUMBER: 12655-001 DATE: June 28, 2021 PROJECT MANAGER: Andrea Hicks FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	CoW	CoC	SARA	SARO	S-Rank
Basswood	*Tilia americana*	*Tiliaceae*	3	4			S5
Bebb's Willow	*Salix bebbiana*	*Salicaceae*	-3	4			S5
Black Cherry	*Prunus serotina var. serotina*	*Rosaceae*	3	3			S5
Black Locust	*Robinia pseudoacacia*	*Fabaceae*	3				SNA
Black Walnut	*Juglans nigra*	*Juglandaceae*	3	5			S4?
Canada Goldenrod	*Solidago canadensis var. canadensis*	*Asteraceae*	3	1			S5
Chokecherry	*Prunus virginiana var. virginiana*	*Rosaceae*	3	2			S5
Common Lilac	*Syringa vulgaris*	*Oleaceae*	5				SNA
Common Milkweed	*Asclepias syriaca*	*Apocynaceae*	5	0			S5
Eastern Hop-hornbeam	*Ostrya virginiana*	*Betulaceae*	3	4			S5
Eastern White Pine	*Pinus strobus*	*Pinaceae*	3	4			S5
European Buckthorn	*Rhamnus cathartica*	*Rhamnaceae*	0				SNA
European Lily-of-the-valley	*Convallaria majalis*	*Liliaceae*	5				SNA
Grey Dogwood	*Cornus racemosa*	*Cornaceae*	0	2			S5
Highbush Cranberry	*Viburnum opulus ssp. trilobum var. americanum*	*Caprifoliaceae*	-3	5			S5
Little-leaved Linden	*Tilia cordata*	*Tiliaceae*	5				SNA
Nannyberry	*Viburnum lentago*	*Caprifoliaceae*	0	4			S5
Philadelphia Panicgrass	*Panicum philadelphicum*	*Poaceae*	0	8			S4
Red Ash	*Fraxinus pennsylvanica*	*Oleaceae*	-3	3			S4
Red Raspberry	*Rubus idaeus*	*Rosaceae*	3	2			S5
Red-osier Dogwood	*Cornus sericea*	*Cornaceae*	-3	2			S5
Riverbank Grape	*Vitis riparia*	*Vitaceae*	0	0			S5
Smooth Brome	*Bromus inermis*	*Poaceae*	5				SNA
Staghorn Sumac	*Rhus typhina*	*Anacardiaceae*	3	1			S5
Sugar Maple	*Acer saccharum*	*Aceraceae*	3	4			S5
Tatarian Honeysuckle	*Lonicera tatarica*	*Caprifoliaceae*	3				SNA

VEGETATION COMMUNITY CLASSIFICATION: FODM11 COMMUNITY #: 3 LOCATION: Heritage line COORDINATES: 44.2485769, -78.1653872

PROJECT NUMBER: 12655-001 DATE: June 28, 2021 PROJECT MANAGER: Andrea Hicks FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	CoW	CoC	SARA	SARO	S-Rank
Trembling Aspen	*Populus tremuloides*	*Salicaceae*	0	2			S5
Tufted Vetch	*Vicia cracca*	*Fabaceae*	5				SNA
Virginia Creeper	*Parthenocissus quinquefolia*	*Vitaceae*	3	6			S4?
White Ash	*Fraxinus americana*	*Oleaceae*	3	4			S4
White Elm	*Ulmus americana*	*Ulmaceae*	-3	3			S5
White Poplar	*Populus alba*	*Salicaceae*	5				SNA

NOTES: Hedgerow

VEGETATION COMMUNITY CLASSIFICATION: FODM11

COMMUNITY #: 3

LOCATION: Heritage line

COORDINATES: 44.2485769, -78.1653872

PROJECT NUMBER: 12655-001

DATE: June 28, 2021

PROJECT MANAGER: Andrea Hicks

FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

VEGETATION COMMUNITY PHOTOS:

VEGETATION COMMUNITY CLASSIFICATION: CUP3-1 COMMUNITY #: 4 LOCATION: Heritage Line COORDINATES: 44.230386, -78.1633906

PROJECT NUMBER: 12655-001 DATE: June 28, 2021 PROJECT MANAGER: Andrea Hicks FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

Common Name	Scientific Name	Family	CoW	CoC	SARA	SARO	S-Rank
Alfalfa	*Medicago sativa ssp. sativa*	*Fabaceae*	5				SNA
Black Locust	*Robinia pseudoacacia*	*Fabaceae*	3				SNA
Black Walnut	*Juglans nigra*	*Juglandaceae*	3	5			S4?
Canada Goldenrod	*Solidago canadensis var. canadensis*	*Asteraceae*	3	1			S5
Common Lilac	*Syringa vulgaris*	*Oleaceae*	5				SNA
Common Milkweed	*Asclepias syriaca*	*Apocynaceae*	5	0			S5
Common Prickly-ash	*Zanthoxylum americanum*	*Rutaceae*	3	3			S5
Common St. John's-wort	*Hypericum perforatum ssp. perforatum*	*Clusiaceae*	5				SNA
Eastern Red Cedar	*Juniperus virginiana*	*Cupressaceae*	3	4			S5
European Buckthorn	*Rhamnus cathartica*	*Rhamnaceae*	0				SNA
Long-headed Anemone	*Anemone cylindrica*	*Ranunculaceae*	5	7			S4
New England Aster	*Symphyotrichum novae-angliae*	*Asteraceae*	-3	2			S5
Red Pine	*Pinus resinosa*	*Pinaceae*	3	8			S5
Red Raspberry	*Rubus idaeus*	*Rosaceae*	3	2			S5
Riverbank Grape	*Vitis riparia*	*Vitaceae*	0	0			S5
Scots Pine	*Pinus sylvestris var. sylvestris*	*Pinaceae*	3				SNA
Smooth Brome	*Bromus inermis*	*Poaceae*	5				SNA
Tatarian Honeysuckle	*Lonicera tatarica*	*Caprifoliaceae*	3				SNA
Virginia Creeper	*Parthenocissus quinquefolia*	*Vitaceae*	3	6			S4?

NOTES: Red pine plantation.

VEGETATION COMMUNITY CLASSIFICATION: CUP3-1

COMMUNITY #: 4

LOCATION: Heritage line

COORDINATES: 44.230386, -78.1633906

PROJECT NUMBER: 12655-001

DATE: June 28, 2021

PROJECT MANAGER: Andrea Hicks

FIELD STAFF: Tyler Jamieson

FIELD SHEET – Vegetation Species List

VEGETATION COMMUNITY PHOTOS:

Appendix E

Bird Species List

VEGETATION COMMUNITY CLASSIFICATION:	Cultural Meadow/Forest Edge	LOCATION:	Heritage Line, Keen, ON	COORDINATES:	44.5973455, -78.1955786	POINT COUNT #:	BBS1
PROJECT NUMBER:	12655-001	DATE:	June 02 and July 07, 2021	PROJECT MANAGER:	Andrea Hicks	FIELD STAFF:	Keegan McKitterick

FIELD SHEET – Bird Species List

Common Name	Scientific Name	Family	SARA	SARO	S-Rank	Breeding Evidence
American Goldfinch	Spinus tristis	Fringillidae			S5B	P
American Robin	Turdus migratorius	Turdidae			S5B	S
Brown Thrasher	Toxostoma rufum	Mimidae			S4B	H
Red-eyed Vireo	Vireo olivaceus	Vireonidae			S5B	T
Song Sparrow	Melospiza melodia	Passerellidae			S5B	T

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

X = Species observed in its breeding season (no breeding evidence)
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
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
X = Species observed in its breeding season (no breeding evidence)
CF= Adult carrying food for young
NE= Nest containing eggs

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
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
NY= Nest with young seen or heard

NOTES: Forest edge at eastern property boundary.

Appendix F

Species Of Conservation Concern Screen

APPENDIX: Species of Conservation Concern - County of Peterborough

COMMON NAME	SCIENTIFIC NAME	Federal	Provincial		SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	SUITABLE HABITAT	SPECIES OBSERVATIONS	ASSESSMENT
		SARA	SARO	S-RANK				
Birds								
Bald Eagle	*Haliaeetus leucocephalus*	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).	No	Known to occur in the general area	No further consideration required
Bank Swallow	*Riparia riparia*	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).	No	Known to occur in the general area	No further consideration required
Barn Swallow	*Hirundo rustica*	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).	No	Known to occur in the general area	No further consideration required
Black Tern	*Chlidonias niger*	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).	Yes: adjacent lands only	Known to occur in the general area	No further consideration required
Bobolink	*Dolichonyx oryzivorus*	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).	Yes: on-site	Confirmed absent through targeted surveys	No further consideration required
Canada Warbler	*Cardellina canadensis*	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).	No	Known to occur in the general area	No further consideration required
Cerulean Warbler	*Setophaga cerulea*	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).	No	Known to occur in the general area	No further consideration required

APPENDIX: Species of Conservation Concern - County of Peterborough

COMMON NAME	SCIENTIFIC NAME	Federal	Provincial		SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	SUITABLE HABITAT	SPECIES OBSERVATIONS	ASSESSMENT
		SARA	SARO	S-RANK				
Chimney Swift	*Chaetura pelagica*	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).	No	Known to occur in the general area	No further consideration required
Common Nighthawk	*Chordeiles minor*	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).	No	Known to occur in the general area	No further consideration required
Eastern Meadowlark	*Sturnella magna*	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).	Yes: on-site	Confirmed absent through targeted surveys	No further consideration required
Eastern Whip-poor-will	*Antrostomus vociferus*	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).	No	Known to occur in the general area	No further consideration required
Eastern Wood-Pewee	*Contopus virens*	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).	Yes: adjacent lands only	Incidental observation on-site	Potential significant wildlife habitat on adjacent lands
Evening Grosbeak	*Coccothraustes vespertinus*	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).	No	Known to occur in the general area	No further consideration required

APPENDIX: Species of Conservation Concern - County of Peterborough

COMMON NAME	SCIENTIFIC NAME	Federal	Provincial		SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	SUITABLE HABITAT	SPECIES OBSERVATIONS	ASSESSMENT
		SARA	SARO	S-RANK				
Golden Winged Warbler	*Vermivora chrysoptera*	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).	No	Known to occur in the general area	No further consideration required
Grasshopper Sparrow	*Ammodramus savannarum*	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).	Yes: on-site	Confirmed absent through targeted surveys	No further consideration required
Least Bittern	*Ixobrychus exilis*	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).	No	Known to occur in the general area	No further consideration required
Loggerhead Shrike	*Lanius ludovicianus*	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).	No	Known to occur in the general area	No further consideration required
Olive-sided Flycatcher	*Contopus cooperi*	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).	No	Known to occur in the general area	No further consideration required
Red-headed Woodpecker	*Melanerpes erythrocephalus*	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).	No	Known to occur in the general area	No further consideration required

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COMMON NAME	SCIENTIFIC NAME	Federal	Provincial		SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	SUITABLE HABITAT	SPECIES OBSERVATIONS	ASSESSMENT
		SARA	SARO	S-RANK				
Short-eared owl	*Asio flammeus*	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 agriultural 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).	Yes: on-site	Known to occur in the general area	No further consideration required
Wood Thrush	*Hylocichla mustelina*	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).	Yes: adjacent lands only	Known to occur in the general area	No further consideration required
Fish								
American Eel	*Anguilla rostrata*	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).	No	Known to occur in the general area	No further consideration required
Lake Sturgeon	*Acipenser fulvescens*	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).	No	Known to occur in the general area	No further consideration required
Herptiles								
Blanding's Turtle	*Emydoidea blandingii*	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).	No	Known to occur in the general area	No further consideration required

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		SARA	SARO	S-RANK				
Eastern Musk Turtle	*Sternotherus odoratus*	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).	No	Known to occur in the general area	No further consideration required
Midland Painted Turtle	*Chrysemys picta marginata*	SC	-	S4	The Midland Painted Turtle has a olive to black carapace with red or dark orange markings on the marginal scutes, as well as red and yellow stripes on the head and neck. The species uses a variety of waterbodies including, ponds, marshes, lakes and slow-moving creeks with a soft bottom and an abundance of basking sites and aquatic vegetation. This species usually hibernates on the bottom of waterbodies (5).	No	Known to occur in the general area	No further consideration required
Northern Map Turtle	*Graptemys geographica*	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).	No	Known to occur in the general area	No further consideration required
Snapping Turtle	*Chelydra serpentina*	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).	No	Known to occur in the general area	No further consideration required
Spotted Turtle	*Clemmys guttata*	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).	No	Known to occur in the general area	No further consideration required
Wood Turtle	*Glyptemys insculpta*	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).	No	Known to occur in the general area	No further consideration required
Eastern Hog-nosed Snake	*Heterodon platirhinos*	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).	No	Known to occur in the general area	No further consideration required

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COMMON NAME	SCIENTIFIC NAME	Federal	Provincial		SPECIES DESCRIPTION AND HABITAT REQUIREMENTS	SUITABLE HABITAT	SPECIES OBSERVATIONS	ASSESSMENT
		SARA	SARO	S-RANK				
Eastern Milksnake	*Lampropeltis triangulum*	SC	NAR	S4	The Eastern Milksnake's colouration is grey or tan with reddish alternating blotches otlines in black along its back and sides (5). It has recently been delisted from being a species at risk in Ontario (1). This species tends to use open habitats such as rocky outcrops, fields and forest edges. The preferred prey of milksnakes are mice, small rodents, and ground nesting birds which are amply found in and surrounding agricultural outbuildings. The milksnake is secretive and is not likely to be encountered during the day or at night while hunting (5).	No	Known to occur in the general area	No further consideration required
Eastern Ribbonsnake	*Thamnophis sauritus*	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).	No	Known to occur in the general area	No further consideration required
Common Five-lined Skink (Southern Shield Population)	*Plestiodon fasciatus*	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).	No	Known to occur in the general area	No further consideration required
Western Chorus Frog	*Pseudacris triseriata*	THR	-	S3	The Western Chorus Frog is small with a dark stripe running through its eye and a light stripe underneath (5). It is primarily a lowland terrestrial species that requires access to terrestrial and aquatic habitats in close proximity to one another. Relying on marshes and wooded wetlands adjacent to forested habitats, this species also requires isolated, predator free pools for breeding. Temporary pools, such as vernal pools in wooded areas, are preferred. This species hibernates terrestrially in a variety of environments, including leaf litter, wood debris, and vacant animal burrows (2).	No	Known to occur in the general area	No further consideration required
Invertebrates								
Monarch Butterfly	*Danaus plexippus*	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).	Yes: on-site	Known to occur in the general area	No further consideration required
Mottled Duskywing	*Erynnis martialis*	No Status	END	S2	The mottled duskywing is a medium-sized butterfly in the skipper family with a wingspan of 25-42 mm. It is dark grey with yellow-brown spots on its hind wings that give the species its mottled appearance and its name. The wings of freshly emerged adults have a purplish iridescence that fades with age. The mottled duskywing tends to live in dry habitats with sparse vegetation. These include open barrens, sandy patches among woodlands, and alvars. In Ontario, the mottled duskywing will only deposit their eggs on two closely-related plants: New Jersey tea and prairie redroot (1).	No	Known to occur in the general area	No further consideration required
West Virginia White	*Pieris virginiensis*	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).	No	Known to occur in the general area	No further consideration required

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		SARA	SARO	S-RANK				
Yellow-banded Bumble Bee	*Bombus terricola*	SC	SC	S3S5	The Yellow-banded Bumble Bee is a medium-sized bumble bee with a distinct yellow and black abdominal band pattern found on its queens, males, and workers. This species is a forage and habitat generalist, able to use a variety of nectaring plants and environmental conditions. It can be found in mixed woodlands, particularly for nesting and overwintering, as well as a variety of open habitat such as native grasslands, farmlands and urban areas. The Yellow-banded Bumble Bee ranges from the Mixedwood Plains of southern Ontario to the Hudson Bay Lowlands in the north (1).	Yes: on-site and adjacent lands	Known to occur in the general area	No further consideration required
Mammals								
Tri-colored Bat	*Perimyotis subflavus*	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).	No	Known to occur in the general area	No further consideration required
Eastern Small-footed Myotis	*Myotis leibii*	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).	No	Known to occur in the general area	No further consideration required
Little Brown Myotis	*Myotis lucifugus*	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).	No	Known to occur in the general area	No further consideration required
Northern Myotis	*Myotis septentrionalis*	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).	No	Known to occur in the general area	No further consideration required
Algonquin Wolf	*Canis lycaon*	SC	THR	S4	Formerly called the Eastern Wolf, this canine was recently renamed the Algonquin Wolf. In the southern portion of the province, this species prefers deciduous and mixed forest landscapes while their northern range include mixed and coniferous forests. It is most prevalent in areas with abundant prey species which include Beaver, White-tailed Deer and Moose. Dens sites are usually found in coniferous forests with easily excavated soil types like sand and close to a permanent water source (1).	No	Known to occur in the general area	No further consideration required
Trees, plants, fungi and lichens								

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		SARA	SARO	S-RANK				
American Ginseng	*Panax quinquefolius*	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).	No	Known to occur in the general area	No further consideration required
Butternut	*Juglans cinerea*	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).	No	Known to occur in the general area	No further consideration required
Pale-bellied Frost Lichen	*Physconia subpallida*	END	END	S3	The Pale-bellied Frost Lichen resembles a light dusting of frost on a dark tree trunk. This species is found throughout eastern North America, growing in wooded areas rich in hardwood species, such as White Ash, Hop Hornbeam (Ironwood), Black Walnut, and American Elm. It is also common to find this species growing on fenceposts or boulders within or near these wooded areas. In Ontario, this species has been found in the following counties: Frontenac, Haliburton, Hastings, Peterborough, Lanark and Renfrew (1).	No	Known to occur in the general area	No further consideration required

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