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# **Natural Environment Report for Chinguacousy Road**

**Town of Caledon, Region of Peel**

*Palmer Project #*  
1705612

*Prepared For*  
Ainley Group

October 21, 2022

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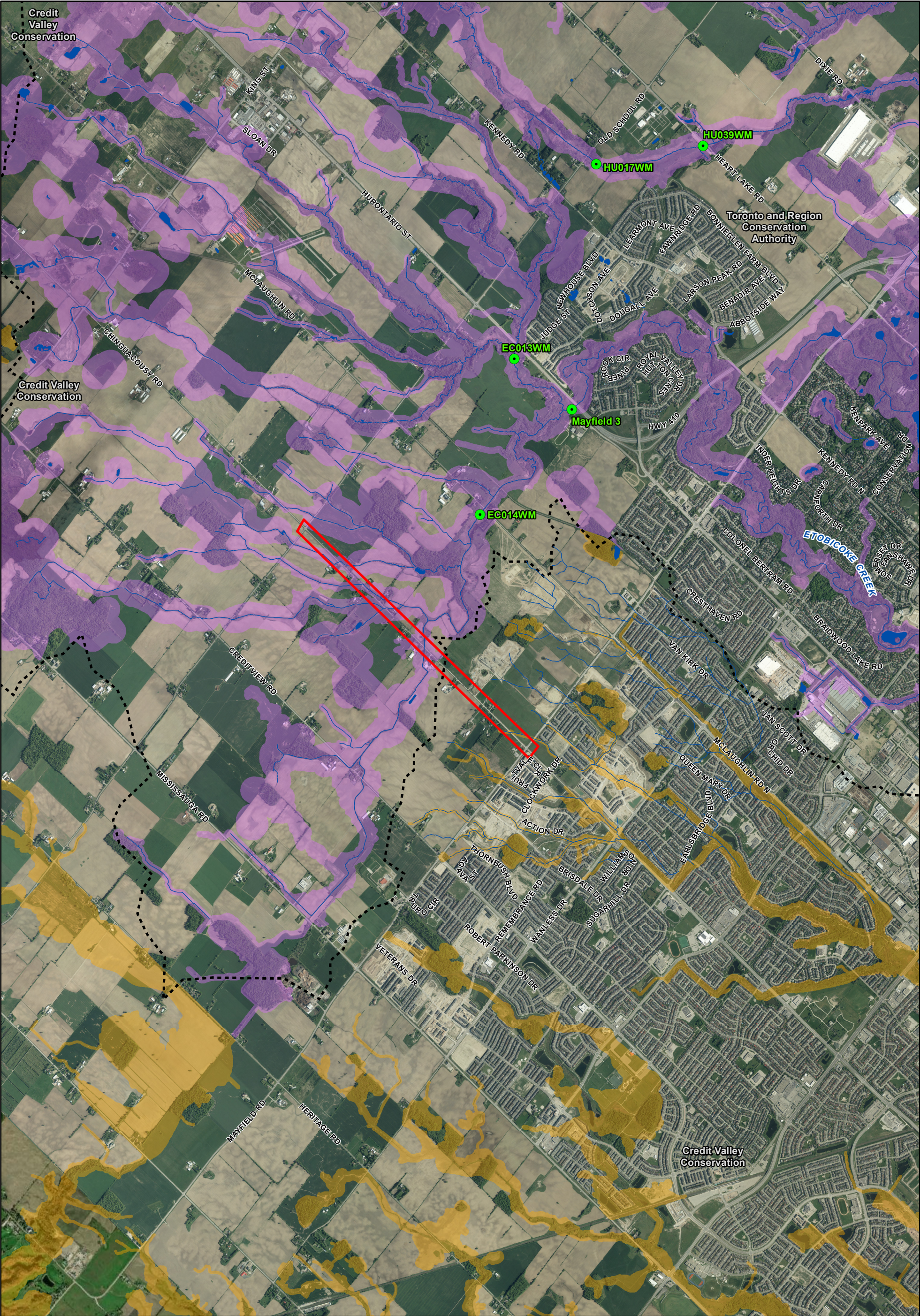
- Appendix A. Flora List
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- Appendix D. Significant Wildlife Habitat Screening

# 1. Introduction

Palmer was retained by Ainley Group to assess the natural environmental conditions as part of the Town of Caledon's Growth-Related Roads Program. This project involves improvements to Chinguacousy Road (the Study Area – **Figure 1**), within the Town of Caledon. The Chinguacousy Road Study Area covers the length between Mayfield Road to Old School Road (3.0 km).

This Natural Environment Report (NER) has been prepared as part of the road reconstruction and improvement design prepared by Ainley and is submitted to support the Environmental Assessment (EA) process, the project detailed design, and the project approval and permitting process. This report describes the background review, agency consultation and field investigations undertaken to support the characterization of existing natural environmental conditions through the Study Area and the identification of potential impacts. As part of this collaborative process, input has been provided to Ainley regarding ecological features and recommended general and site-specific mitigation measures to be advanced as part of the EA and detailed design.

The objectives of this study are to inventory and evaluate the existing natural heritage features and ecological functions within the Study Area, including Ecological Land Classification (ELC) mapping, Species at Risk (SAR) habitat screening and assessment, evaluation of sensitive natural features, and assessment of wildlife habitat. The potential project options have been identified and evaluation from an ecological perspective. This information has been used as part of the identification and development of the preferred alternative option(s) for road improvement design and provide guidance on the design, mitigation recommendations and implementation.



LEGEND

- Fish Monitoring Station (TRCA)
- ~ Watercourse (LIO/MNRF)
- Road Corridor
- Conservation Authority Boundary
- TRCA Regulation Limit
- CVC Regulation Limit

**Note:** Map extent is within MNRF Ecoregion 6E

**Key Map**

0 0.5 1  
Kilometres

North American Datum 1983  
Universal Transverse Mercator Projection Zone 17

Scale: 1:35,000  
Page Size: Tabloid (11 x 17 inches)

Drawn: SM  
Checked: RM  
Date: Jul 11, 2022

Source Notes:  
Background imagery (2020) from the Peel Region Webmap service.

NORTH

CLIENT	Ainley Group	
PROJECT	Caledon Growth Roads Program	
TITLE	Study Area	
REF. NO.	1705612-1-3	REV. 4
		Figure 1

## 2. Environmental Policy

### 2.1 Provincial Policy Statement 2020

The Provincial Policy Statement (PPS) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources (Ontario Ministry of Municipal Affairs and Housing, 2020). Section 2.1 of the PPS defines ten natural heritage features (NHF) and adjacent lands and provides planning policies for each. Of these NHF, development is not permitted in:

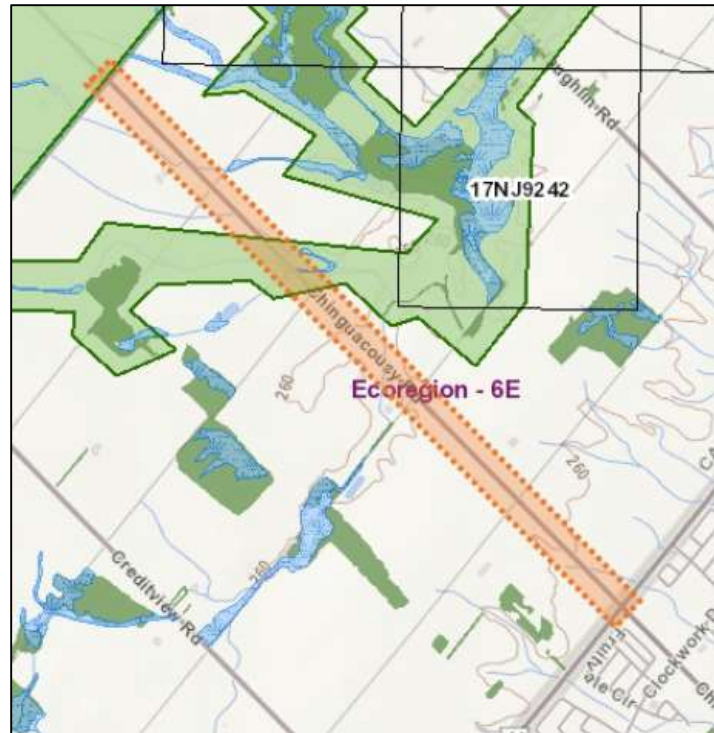
- Significant Coastal Wetlands;
- Significant Wetlands in Ecoregions 5E, 6E and 7E;
- Fish Habitat, except in accordance with provincial and federal requirements; or
- Habitat of species designated as Endangered and Threatened, except in accordance with provincial and federal requirements.

Additionally, unless it can be demonstrated through an EIS that there will be no negative impacts on the natural features or their ecological functions, development and site alteration are also not permitted in:

- Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Wildlife Habitat;
- Significant Areas of Natural and Scientific Interest;
- Other Coastal Wetlands in Ecoregions 5E, 6E and 7E; and
- Lands defined as *Adjacent Lands* to all the above natural heritage features.

Each of these natural heritage features is afforded varying levels of protection subject to guidelines, and in some cases, regulations. The Study Area is in Ecoregion 6E (Crins, Gray, Uhlig, & Wester, 2009). Natural Heritage Features, as depicted on the Ministry of Natural Resources and Forestry (MNRF) Natural Heritage Information Centre (NHIC) mapping, include Provincially Significant Wetlands (PSW) and watercourses (Ministry of Natural Resources and Forestry, 2022). Woodlands (significance to be determined) and Greenbelt Plan area is also depicted.

The identification and provisions for the protection of natural features identified in the PPS are for projects such as land development that are subject to approvals under the *Planning Act*. While road reconstruction is subject to the *Environmental Assessment Act*, NHF defined and identified under the PPS are taken into consideration as part of the natural environment assessment.



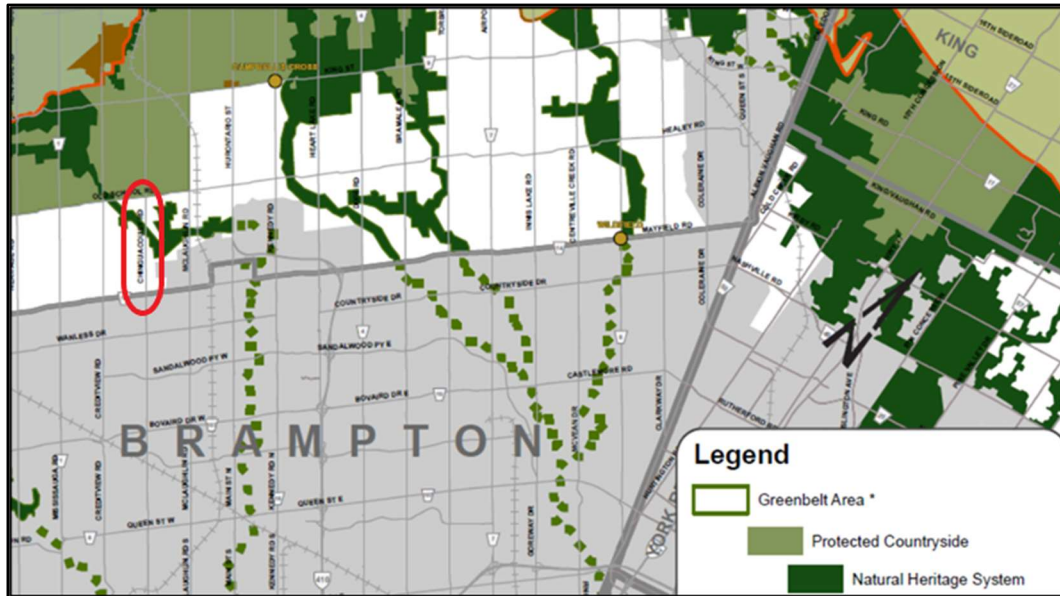
*Map A: MNR mapping for Chinguacousy Road Study Area, including Greenbelt Plan Protected Countryside, Woodland and PSW)*

## 2.2 Greenbelt Plan

The Greenbelt Plan (2017) was prepared and approved under the *Greenbelt Act, 2005* and took effect in December 2004. The Greenbelt Plan, together with the Oak Ridges Moraine Conservation Plan (ORMCP) and the Niagara Escarpment Plan (NEP), builds on the PPS to identify where urbanization should not occur in order to provide permanent protection to the agricultural land base and the ecological and hydrological features, areas and functions occurring on the landscape of the Greater Golden Horseshoe.

The Protected Countryside lands identified in the Greenbelt Plan are intended to enhance the spatial extent of the agriculturally and environmentally protected lands covered by the NEP and the ORMCP, while improving linkages between these areas and the surrounding major lake systems and watersheds. The Protected Countryside is made up of an Agricultural System and a Natural System, together with a series of settlement areas.

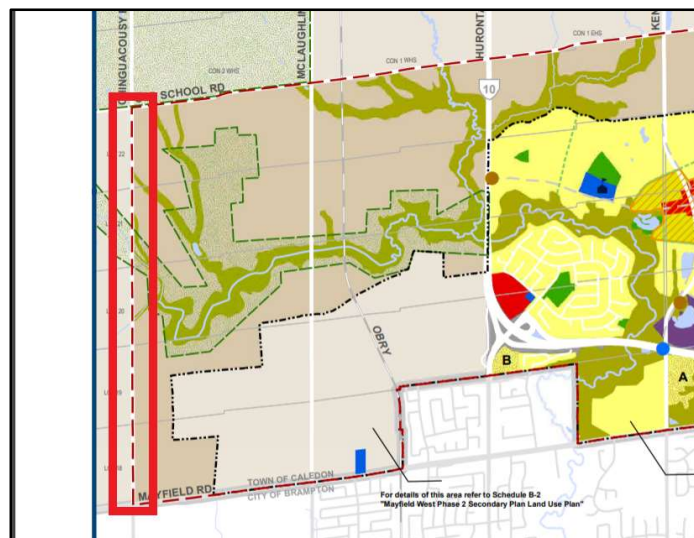
Section 4.2 of the Greenbelt Plan outlines the policies that apply to areas of Protected Countryside with respect to infrastructure. Subject to the applicable environmental assessment and approval process, all existing, expanded, or new infrastructure is permitted within Protected Countryside provided that the project meets objectives and policies outlined in Section 4.2.1. The Study Area falls within the Greenbelt Area (**Map B**). The associated Greenbelt Plan policies will therefore apply.



*Map B: Greenbelt Plan – Protected Countryside in the vicinity of the Study Area*

## 2.3 Town of Caledon Official Plan

The *Town of Caledon Official Plan* (OP) underwent office consolidation in April 2018. The OP's Environmental Policy Area (EPA) includes all Natural Core Areas and Natural Corridors (Town of Caledon, 2018). As depicted in the OP's Schedules A and B (Land Use Plan), the Road Study Area is within or near EPAs (**Map C**). According to the Town OP's Section 5.7.3.5, new public infrastructure will not be permitted in EPA, apart from essential infrastructure which may be permitted subject to approval requirements of the Town and other relevant agencies. An EIS or an MP should be prepared demonstrating that all reasonable alternatives to locating the proposed infrastructure outside of the EPA have been explored.



*Map C. The Town's OP Schedule B depicts portions of the Chinguacousy Road Study Area within an EPA (green layer)*

## 2.4 Conservation Authorities

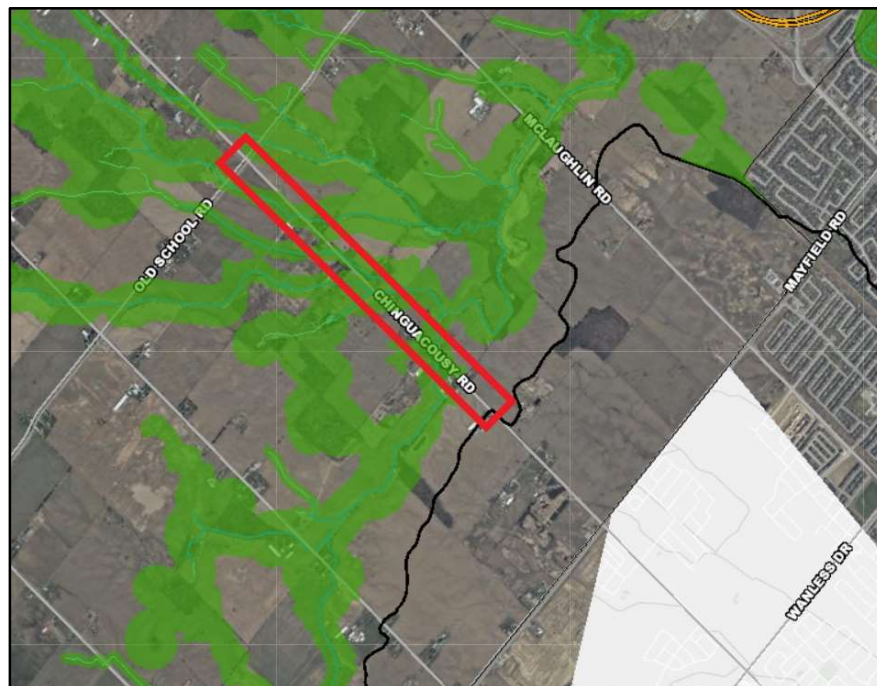
The Chinguacousy Road Study Area is split between the Etobicoke Creek Watershed, under the jurisdiction of the TRCA; and within the Credit River Watershed, under the jurisdiction of the Credit Valley Conservation Authority (CVC). While most watercourse crossings and headwater drainage features (HDF) lie within the TRCA regulated areas (**Figure 1**), the HDF labelled CH-HDF-2 just north of Mayfield road is within CVC regulated area (Section 4.6).

### 2.4.1 Toronto and Region Conservation Authority

Relevant TRCA regulations and policies include the following:

- Ontario Regulation 166/06 - *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* (Government of Ontario, 1990). Through this regulation, the TRCA regulates activities in natural and hazardous areas (e.g., areas in and near rivers, streams, floodplains, wetlands, slopes, and shorelines).
- *The Living City Policies* (Toronto and Region Conservation Authority, 2014) and associated *Planning and Development Procedural Manual* (Toronto and Region Conservation Authority, 2008). These documents present TRCA's planning and permit review practices and technical guidelines.

The Study Area falls within TRCA regulated lands (**Map D**). The associated TRCA policies, regulations and permitting will therefore apply and approvals will be required from the agency.



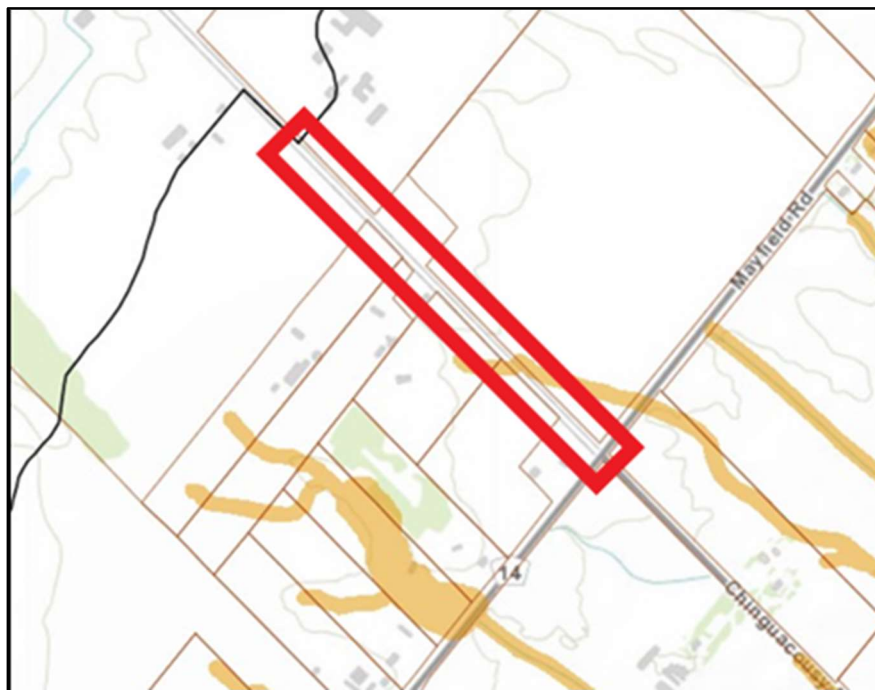
**Map D. TRCA mapping for Chinguacousy Road Study Area (green layer = Regulation Limit)**

## 2.4.2 Credit Valley Conservation Authority

Relevant CVC regulations and policies include the following:

- Ontario Regulation 160/06 - *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* (Government of Ontario, 2013). Through this regulation, CVC regulates activities in natural and hazardous areas (e.g., areas in and near rivers, streams, floodplains, wetlands, and slopes and shorelines).
- *Watershed Planning and Regulation Policies* (2010). This document presents CVC's planning and permit review practices and technical guidelines. Relevant policies will be discussed in applicable sections of this report.

A portion of the Chinguacousy Road Study Area occurs within CVC Regulated Area, just north of Mayfield Road (**Map E**). The associated CVC policies, regulations and permitting will therefore apply and approvals will be required from the agency.



*Map E. CVC Regulated Area for Chinguacousy Road (orange = Regulation Limit)*

## 2.5 Migratory Birds Convention Act

The *Migratory Birds Convention Act*, (1994) (MBCA) and Migratory Birds Regulations, 2014 (MBR), together with the provincial *Fish and Wildlife Conservation Act* (1997), protect most species of migratory birds and their nests and eggs anywhere they are found in Canada. General prohibitions under the MBCA and MBR protect migratory birds, their nests and eggs and prohibit the deposition of harmful substances in

waters / areas frequented by them. The MBR includes an additional prohibition against incidental take, which is the inadvertent harming or destruction of birds, nests, or eggs.

## 2.6 Endangered Species Act

Species listed as Species at Risk in Ontario (SARO) which are designated as *Threatened* or *Endangered* are afforded species and habitat protection under the *Endangered Species Act* (ESA) (Government of Ontario, 2007). This *Act* is administered by the Ministry of the Environment, Conservation and Parks (MECP).

The protection provisions for species and their habitat (e.g., areas essential for breeding, rearing, feeding, hibernation, and migration) within the *ESA* apply only to those species listed as *Endangered* or *Threatened* on the SARO list, being Ontario Regulation 230/08 of the *ESA*. Species listed as Special Concern may be afforded protection through policy instruments respecting significant wildlife habitat (e.g., the PPS) as defined by the Province or other relevant authority, or other protections contained in Official Plan policies.

## 2.7 Fisheries Act

The Fisheries Act is administered by Fisheries and Oceans Canada (DFO) and requires that project activities avoid causing serious harm to fish (Government of Canada, 1985). The Fish and Fish Habitat Protection Policy Statement issued in August 2019 replaces the Fisheries Protection Provisions of the pre-royal assent *Fisheries Act*. The new Fish and Fish Habitat Protection Provisions include:

- Factors to be considered (subsection 34.1(1))
- Death of fish (section 34.4)
- Harmful alteration, disruption, or destruction of fish habitat (section 35)
- Ministerial authorizations (paragraph 34.4(2)(b) and 35(2)(b))

Self-assessment has been used to determine the potential for a project to cause harmful alteration, disruption, or destruction of fish habitat (HADD) in recent years; however, the submission of a Request for Review (RFR) is the current requirement when works include areas below the highwater mark. This offers DFO a chance to determine if the project requires an Authorization (i.e., HADD cannot be avoided). An RFR may be required to be submitted to DFO pertaining to this project.

## 3. Study Approach

### 3.1 Background Review and Agency Consultation

Palmer has reviewed relevant background material to provide a focus to field investigations and ensure compliance with applicable regulations and policy. Background information collection is guided by the *Natural Heritage Information Request Guide* (Ministry of Natural Resources and Forestry, 2018). Current direction from the Ministry of Natural Resources and Forestry (MNRF) and Ministry of Environment, Conservation and Parks (MECP) is to gather natural heritage information and species occurrence records from available sources; the Natural Heritage Information Centre (NHIC) Make-a-Map application being the main source of information and records from the Ministry itself. Information gathered is recommended to be balanced and supplemented by professional ecological review of potential habitats and characteristics of a project site.

Background review included the collection and review of relevant mapping and reports, including regulations and policies, Official Plans, and zoning by-laws; and the NHIC Make-a-Map application for species occurrences and designated area mapping. In addition to these, the following data sources were reviewed for the project:

- **Land Information Ontario (LIO):** certain data types including aquatic resource area (ARA) information is available through these publicly available data layers (Government of Ontario, 2022).
- **Conservation Authorities:** TRCA and CVC collect and maintain natural heritage mapping and data, and publish reports, that all provide regional and often site-specific ecological context.
- **Atlas of the Breeding Birds of Ontario:** Provides range maps and other information regarding breeding birds in Ontario (Bird Studies Canada, 2022).
- **Ontario Reptile and Amphibian Atlas:** Ontario Nature maintains an identification resource including range maps (Ontario Nature, 2022).
- **Fisheries and Oceans Canada (DFO):** The DFO maintains mapping of aquatic species at risk (SAR) habitats, including the critical habitat, occupied, and contributing habitat ranges of SAR and Special Concern species (Fisheries and Oceans Canada, 2022).

Following the *Information Request Guide*, MECP advice and direction should be solicited once potential Species at Risk (SAR) requirements associated with the *Endangered Species Act* are identified via field investigation and analysis.

### 3.2 Methodology

Palmer ecologists undertook ecological field investigations along each road alignment to inventory the flora, conduct a tree inventory, conduct wildlife surveys, characterize aquatic habitat, assess physical terrain characteristics, classify headwater drainage features, and to provide an assessment of the ecological overall features and functions within the Study Area. Survey methods are described below.

### 3.2.1 Vegetation and Flora

Vegetation communities were mapped and described following the Ecological Land Classification (ELC) System for Southern Ontario (Lee, et al., 1998). Vegetation community boundaries were delineated on field maps through the interpretation of recent aerial photographs and existing ELC data provided by the TRCA and CLOCA and was refined in the field. Information collected during ELC surveys includes dominant species cover, community structure, as well as level of disturbance, presence of indicator species, and other notable features.

An ELC and botanical survey was completed on July 6, 2021, by traversing the road segment and recording species observed. Identified vascular plants were checked for their status at local, regional, and provincial levels. Local plant rarity status is based on TRCA species L-ranks (Toronto and Region Conservation Authority, 2019) and on *The Vascular Plant Flora of the Greater Toronto Area* (Varga, et al., 2000). Provincial plant status was based on the *Provincially Rare Flora of Ontario* (Oldham & Brinker, 2009) and the Natural Heritage Information Centre (Ministry of Natural Resources and Forestry, 2022).

Based on professional experience, searches for Butternut (*Juglans cinerea*), an *Endangered* SAR tree, were completed during the botanical surveys.

### 3.2.2 Tree Inventory

The tree inventory (**Appendix B**) was directed by an International Society of Arboriculture (ISA) Certified Arborist and was completed on August 16 - 19, 2021. A tree inventory was completed for all trees  $\geq 10$  cm in Diameter at Breast Height (DBH) within the tree assessment area (the Right-of-Way (ROW) and 15 m beyond). Information collected during the inventory for individual trees includes species name, tree tag number, tree size (DBH), crown diameter, geo-location, a condition rating, and notes on tree trunk and canopy conditions.

In natural areas, tree groups were used in areas where species made individual counts cumbersome (e.g., groups of Eastern White Cedar, Spruces), or where hazardous ground conditions were present; in most cases individual trees within the ROW were inventoried. For trees beyond the ROW and within woodlands, a density stem analysis was completed. For tree groups, information collected during the inventory includes tree group number, species composition, tree/stem count, DBH range, and general notes. A proposed action was determined for all individual trees and tree groups.

### 3.2.3 Wildlife Surveys

#### Amphibian Breeding Surveys

Amphibian breeding surveys were conducted on April 23 and May 19, 2021, at three stations within the Study Area (**Figure 2**). The locations were selected based on their publicly-accessible proximity to mapped wetlands and potential habitats, specifically the proximity to portions of the Etobicoke Creek Headwater Wetland Complex PSW. Breeding surveys were conducted in accordance with standard field protocols (Bird Studies Canada, 2009). Surveys were completed in the evenings between 22:15 and 23:50 h. Weather conditions were between 8°C and 21°C, with few clouds, no precipitation, and light wind.

Species were identified by call, and an abundance code for each species heard calling was assessed by the following the Amphibian Monitoring protocol:

- Code 0: No calls heard.
- Code 1: Calls not overlapping or simultaneous, number of individual frogs can be counted
- Code 2: Calls overlapping or simultaneous, number of individuals can still be distinguished, number of individual frogs cannot be counted, but a reliable estimate of numbers can be made based on location and call voices
- Code 3: Full chorus, calls simultaneous and overlapping, numbers of calling males cannot be reasonably counted or estimated

#### Reptile Occurrence and Movement

Visual encounters of reptile and occurrence and movement were completed on an opportunistic basis during daytime field surveys on sunny, warm mornings.

#### Incidental Wildlife Observations

Incidental observations of wildlife were recorded during field investigations. Incidental observations included direct sightings and indirect evidence such as nests, tracks, scat, and browse.

### **3.2.4 Aquatic Habitat**

An assessment of the existing aquatic habitat and riparian conditions were conducted on March 30 and May 31, 2021. The weather conditions were 8°C, 50% cloud cover, with 18 km/h winds, and 18°C, 30% cloud cover, with 8 km/h winds, respectively. The assessment was carried out by assessing the existing conditions of watercourses in the Study Area, recording the following parameters:

- Identification of in-stream barriers to fish passage;
- Channel morphology measurements (water depth, pool depth, stream width, bankfull width, stream order, habitat structure, pools, and riffles);
- Bank undercuts and instream cover;
- Point source impacts (e.g., outfalls, sources of pollution) and surrounding land uses;
- Baseflow, flow regime characteristics (e.g., flashy urban system);
- Water quality;
- Substrate type;
- Critical habitats (spawning, nursery, or rearing grounds);
- Riparian cover and shading;
- Groundwater discharge and upwellings; and
- Other measurements that indicate the quality of the habitat such as entrenchment, erosion, degradation.

### **3.2.5 Headwater Drainage Features**

A rapid Headwater Drainage Feature (HDF) assessment was completed using desktop screening and Study Area knowledge from field surveys, in order to classify the various characteristics of the features and to identify the functions they provide, based of the *Evaluation, Classification and Management of Headwater*

*Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014).

### **3.2.6 Species at Risk**

For the purposes of this report, SAR include species listed as *Endangered*, *Threatened* or *Special Concern* under Ontario's ESA. The protection provisions for species and their habitat within the ESA apply only to those species listed as *Endangered* or *Threatened* on the SARO list. *Special Concern* species may be afforded protection through policy instruments respecting significant wildlife habitat (SWH) as defined by the Province or other relevant authority, or other protections contained in Official Plan policies.

Prior to field work, existing SAR records were queried through the Natural Heritage Information Centre (NHIC) online database and based on Palmer's professional experience based on habitat representation and opportunities.

Habitats within the Study Area were characterized and screened for evidence of or potential use by these species. A brief discussion of the status, habitat requirements, and assessment of likely presence of SAR species in the Study Area is provided in **Section 4.6**.

## 4. Existing Conditions

### 4.1 General Overview

The Chinguacousy Road Study Area occurs within the Etobicoke Creek Watershed, under the jurisdiction of the TRCA and within the Credit River Watershed, under the jurisdiction of the CVC. Chinguacousy Road, through the Study Area, crosses (or is immediately adjacent to) several watercourses and wetland communities, including the Etobicoke Creek Headwater Provincially Significant Wetland Complex. A review of SAR mapping from the DFO revealed no aquatic SAR in the vicinity of the Study Area. A review of the NHIC database revealed records of SAR in the vicinity of the Study Area including Eastern Meadowlark (Threatened).

### 4.2 Vegetation and Flora

#### 4.2.1 Vegetation Communities

Field investigations identified five vegetation community types within or immediately adjacent to the Study Area, in addition to other cultural areas such as hedgerows, row crop, and residential areas. These communities are delineated on **Figure 2** and summarized in **Table 1**.

Table 1. Vegetation Communities

Vegetation Community	Vegetation Community Description
<b>Wetland Communities</b>	
MAS2-1: Cattail Mineral Shallow Marsh	MAS2-1 communities were identified in areas associated with watercourse crossings ( <b>Photo 1</b> ). These communities were dominated by cattails ( <i>Typha</i> sp.), providing 90% cover.
MAM2-2: Reed Canary Grass Mineral Meadow Marsh	MAM2-2 communities were identified on Chinguacousy Road ( <b>Photo 2</b> ). These communities were dominated by Reed Canarygrass, providing 90% cover.
<b>Cultural</b>	
CUM1: Mineral Cultural Meadow	CUM1 communities were identified throughout the Study Area for all three roads. In general, these communities were dominated by common meadow species such as Smooth Brome ( <i>Bromus inermis</i> ), goldenrod, fleabane ( <i>Erigeron</i> sp.), Oxeye Daisy ( <i>Leucanthemum vulgare</i> ), Tufted Vetch, and Bird's-foot Trefoil ( <i>Lotus corniculatus</i> ), providing 90% cover.
CUW1: Mineral Cultural Woodland	CUW1 was dominated by Norway Maple with occasional Black Walnut ( <i>Juglans nigra</i> ), with abundant European Buckthorn in the understory ( <b>Photo 3</b> )
CUP3: Coniferous Plantation	This community was located on the west side of Chinguacousy Road, approximately 300 m north of Mayfield Road. This community was classified as a coniferous plantation based on aerial imagery as there was no access to it from the ROW.
HR: Hedgerow	These hedgerows contained large trees in addition to shrubs, including abundant dead ash, Silver Maple, and White Elm. All hedgerows were dominated by European Buckthorn in the understory. Groundcover species included goldenrod, Poison Ivy, and Smooth Brome.
OAGM1: Annual Row Crops	Annual Row Crops were identified throughout the Study Area of all roads ( <b>Photo 4</b> ). These agricultural lands consisted mostly grain crops.
OAGM4: Open Pasture	Pasture lands were identified throughout the Study Area. All pastures were noted to be grazed and did not support any tall grass. Grass species could not be identified from the ROW.
Mowed Lawn	Maintained grass areas such as mowed lawns were noted throughout the Study Area. These were generally found within the residential areas of the roads.
European Reed	Small patches of invasive European Reed ( <i>Phragmites australis</i> ) were noted and mapped throughout the Study Area. These were generally found along drainage ditch areas where conditions are wet and suitable for this invasive wetland species to grow.
CVR: Residential	Residential areas are found throughout the Study Area and are identified as anthropogenic lands that support single-family dwellings. These areas generally contain mowed lawns and planted trees or hedgerows.



*Photo 1. MAS2-1: Cattail Mineral Shallow Marsh (July 6, 2021)*



*Photo 2. MAM2-2: Reed Canary Grass Mineral Meadow Marsh (July 6, 2021)*

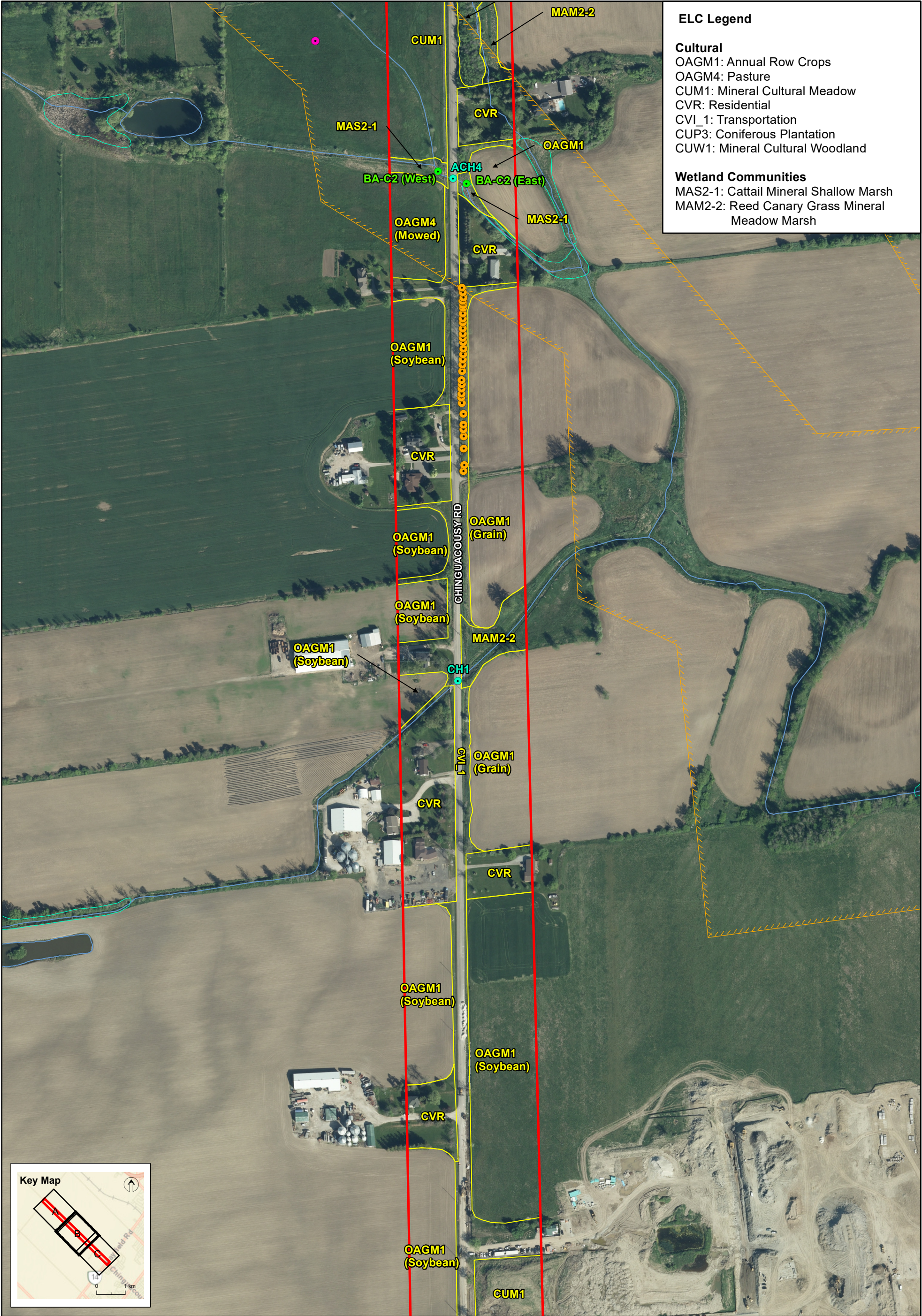


*Photo 3. CUW1: Mineral Cultural Woodland (July 6, 2021)*



*Photo 4. OAGM1: Annual Row Crops (July 6, 2021)*

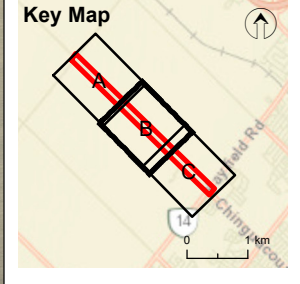




ELC Legend

- Cultural**  
OAGM1: Annual Row Crops  
OAGM4: Pasture  
CUM1: Mineral Cultural Meadow  
CVR: Residential  
CVL\_1: Transportation  
CUP3: Coniferous Plantation  
CUW1: Mineral Cultural Woodland

- Wetland Communities**  
MAS2-1: Cattail Mineral Shallow Marsh  
MAM2-2: Reed Canary Grass Mineral Meadow Marsh



- LEGEND**
- Honey Locust
  - Bobolink (incidental observation)
  - Breeding Amphibian Survey Location
  - Aquatic Assessment Location
  - Watercourse (LIO/MNRF)
  - Study Area
  - Greenbelt - Protected Countryside
  - ELC Community
  - PSW (LIO/MNRF)

0 60 120  
METRE SCALE

North American Datum 1983  
Universal Transverse Mercator Projection Zone 17

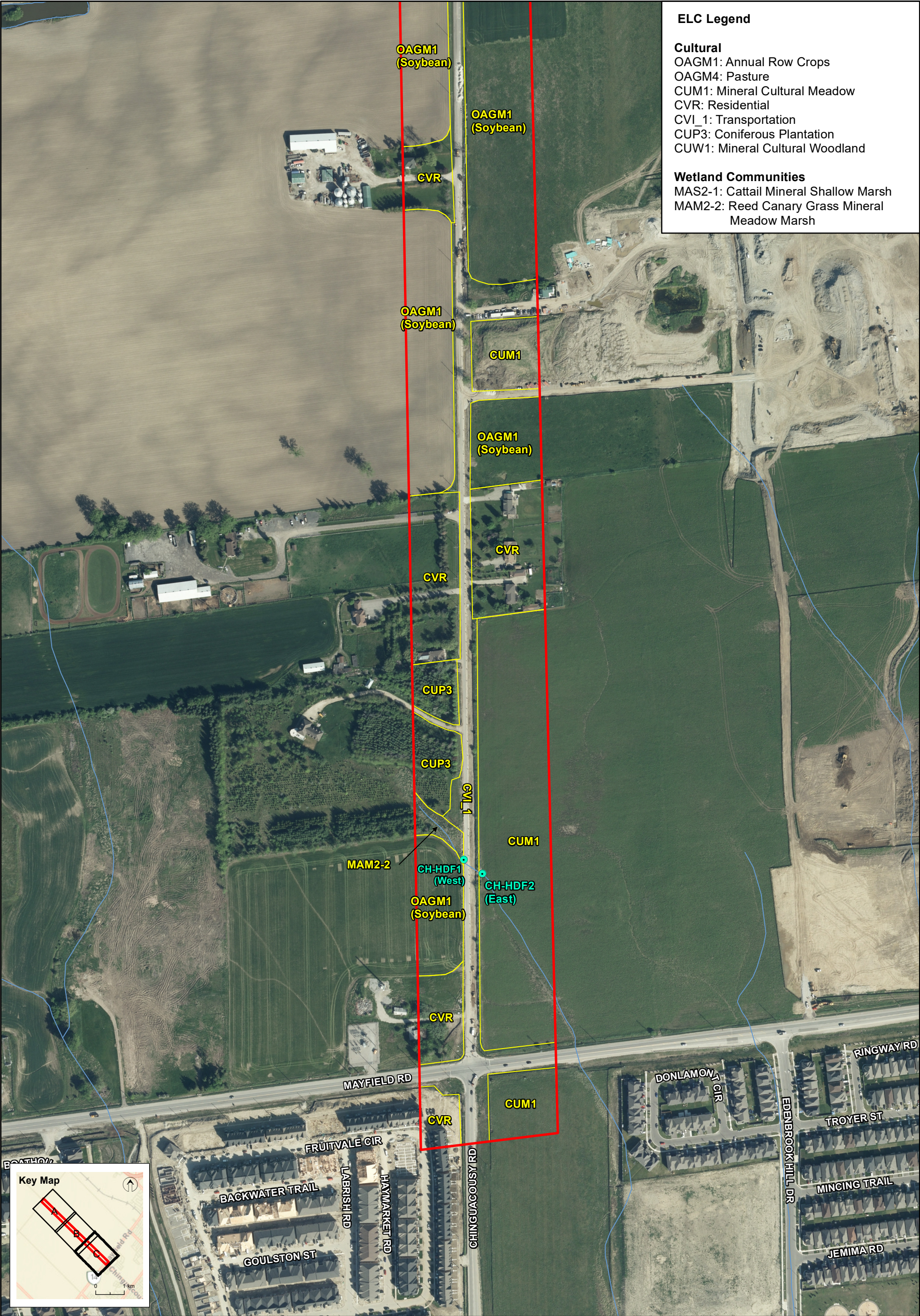
Scale: 1:4,300  
Page Size: Tabloid (11 x 17 inches)

Drawn: SM  
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Date: Oct 21, 2022

Source Notes: Base imagery obtained from Peel Region open data portal.

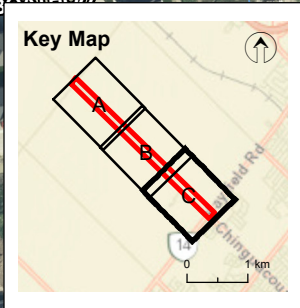
**NORTH**

CLIENT	Ainley Group	
PROJECT	Caledon Growth Roads	
TITLE	Existing Environmental Conditions (Chinguacousy Road)	
<b>Palmer™</b>	REF. NO.	1705612-2c-6
	Figure 2-B	



ELC Legend

- Cultural**  
OAGM1: Annual Row Crops  
OAGM4: Pasture  
CUM1: Mineral Cultural Meadow  
CVR: Residential  
CVL\_1: Transportation  
CUP3: Coniferous Plantation  
CUW1: Mineral Cultural Woodland
- Wetland Communities**  
MAS2-1: Cattail Mineral Shallow Marsh  
MAM2-2: Reed Canary Grass Mineral Meadow Marsh



- LEGEND**
- Honey Locust
  - Bobolink (incidental observation)
  - Breeding Amphibian Survey Location
  - Aquatic Assessment Location
  - Watercourse (LIO/MNRF)
  - Study Area
  - Greenbelt - Protected Countryside
  - ELC Community
  - PSW (LIO/MNRF)

0 60 120  
METRE SCALE

North American Datum 1983  
Universal Transverse Mercator Projection Zone 17

Scale: 1:4,300  
Page Size: Tabloid (11 x 17 inches)

Drawn: SM  
Checked: MV  
Date: Oct 21, 2022

Source Notes: Base imagery obtained from Peel Region open data portal.

NORTH

CLIENT	Ainley Group	
PROJECT	Caledon Growth Roads	
TITLE	Existing Environmental Conditions (Chinguacousy Road)	
	REF. NO.	1705612-2c-6
	Figure 2-C	

## 4.2.2 Flora

A total of 42 species were recorded during field surveys. Based on these findings, 52% are native to Ontario, 38% were non-native, and 4 species were identified to the genus only due to limited representation of key characteristics. Several highly invasive species were recorded within the Study Area, including European Buckthorn and Garlic Mustard. The recorded presence of non-native species is indicative of past disturbance in the Study Area, typical of developed areas in the Greater Toronto Area (GTA) (Morton & Venn, 1984). Oldham et al. (1995) indicate that in southern Ontario plant communities, non-native flora presence averages between 20 and 30%.

No SAR plants were observed during the 2021 field investigations. Most native plants are identified as S5 or S4 ranking, indicating that they are common within Ontario (Ministry of Natural Resources and Forestry, 2022). Honey Locust (*Gleditsia triacanthos*), ranked as S2, were noted in the Study Area. Species ranked S2 are “imperiled”, in which there are between 5-20 recorded occurrences in Ontario. Individuals were found growing on/adjacent to the ROW in culturally influenced areas (hedgerows); therefore, it is likely that these are planted individuals (**Figure 2-B**).

Following the 2019 TRCA flora list for the Greater Toronto Area, most species were listed as common (L5, L4) or alternatively as exotic (L+) (Toronto and Region Conservation Authority, 2019). Fringed Sedge (*Carex crinita*), Pointed Broom Sedge (*Carex scoparia*), Tamarack (*Larix laricina*), and White Spruce (*Picea glauca*) were ranked as “L3” by the TRCA. Fringed Sedge, Pointed Broom Sedge, and White Spruce are also considered locally uncommon in Peel Region (Varga, et al., 2000). A plant list for the Study Area is provided in **Appendix A**.

## 4.2.3 Tree Inventory

The tree inventory included 187 individuals and six groupings (comprised of approximately 151 individuals), for a total of approximately 338 recorded trees along Chinguacousy Road (**Appendix B**). Approximately half of the inventoried trees were species native to Ontario (52%). Among the individually inventoried trees, Green Ash (*Fraxinus pennsylvanica*) was the most common species, followed by Honey Locust (*Gleditsia triacanthos*). Similarly, along this road, most inventoried ash were dead or in poor condition, as a result of infestation by Emerald Ash Borer (EAB). Among the tree groups within natural areas, ash was the most common species, followed by Silver Maple.

## 4.3 Wildlife

### 4.3.1 Breeding Amphibian Surveys

The surveys conducted targeted potentially suitable wetland areas in the Study Area at three locations. Two species of amphibians were recorded during the surveys: American Toad (*Anaxyrus americanus*) and Spring Peeper (*Pseudacris crucifer*). A summary of the surveys is provided in **Table 2** and monitoring station locations are shown on **Figure 2**. All species recorded are considered common, widespread, and abundant in Ontario. In general, relatively few calls were recorded throughout the Study Area. Only one station noted to provide breeding amphibian habitat.

Though suitable breeding amphibian habitat is present within the Study Area, no stations are considered candidate Significant Wildlife Habitat (SWH). Criteria for SWH, such as two or more of the listed frog/toad species with at least 20 individuals (adults or egg masses), two or more of the listed frog/toad species with Call Level Codes of 3, or confirmed breeding Bullfrogs (*Lithobates catesbeianus*), were not met in any of the breeding habitats surveyed in the Study Area (Ontario Ministry of Natural Resources, 2015). Additionally, no SAR amphibians were recorded during the 2021 field investigations.

Additional locations were not surveyed as lack of still open water habitats was not observed, and lack of near-distance calling from the three survey locations indicated that additional locations would not provide significant additional data. A third survey was not completed considering the lack of calls heard during the two surveys and the anticipated limited and temporary impacts that road improvements may have on the observed overall habitats.

**Table 2. Breeding Amphibians Results**

Breeding Amphibian Monitoring Station	April 23, 2021	May 19, 2021
Weather Conditions:	12°C, clear sky, Beaufort wind scale: 3	20°C, 40% cloud cover, Beaufort wind scale: 2
BA-C1 (east)	No amphibian calls	No amphibian calls
BA-C2 (west)	No amphibian calls	American Toad: code 1-3 Spring Peeper: code 1-1
BA-C2 (east)	No amphibian calls	No amphibian calls

**\*Note:**

The calling codes are designated according to the Marsh Monitoring Program Participant's Handbook for Surveying Amphibians (Bird Studies Canada, 2009).

They are as follows:

- 1 – Individuals of one species can be counted, calls are not overlapping; second number denotes number of individuals.
- 2 – Calls of one species are overlapping; second number denotes estimated number of individuals.
- 3 – Full chorus of one species, calls continuous and overlapping, individuals not distinguishable.

### 4.3.2 Reptile Occurrence and Movement

Visual encounter surveys for reptiles were completed during mornings and afternoons on May 26, June 19, and July 28, 2020. Weather conditions were 18°C, 17°C, and 23°C with no to few clouds, no precipitation, and light to moderate winds, respectively. No herpetofauna were observed in the Study Area during any site visit.

### 4.3.3 Incidental Wildlife Observations

The following incidental wildlife was observed within the Study Area during the 2021 field investigations:

#### Mammals

- Beaver (*Castor canadensis*) – chew marks observed on trees near Chinguacousy Road (March 30, 2021)
- Red Squirrel (*Sciurus vulgaris*) – Observed in various treed locations

#### Birds

Incidental observations without breeding evidence in the Study Area include: American Crow (*Corvus brachyrhynchos*), American Goldfinch (*Spinus tristis*), American Robin (*Turdus migratorius*), Chipping Sparrow (*Spizella passerina*), Black-capped Chickadee (*Poecile atricapillus*), Grey Catbird (*Dumetella carolinensis*), Hairy Woodpecker (*Leuconotopicus villosus*), House Sparrow (*Passer domesticus*), Killdeer (*Charadrius vociferus*), Mourning Dove (*Zenaida macroura*), Northern Cardinal (*Cardinalis cardinalis*), Red-winged Blackbird (*Agelaius phoeniceus*), Song Sparrow (*Melospiza melodia*), Blue Jay (*Cyanocitta cristata*), Brown Thrasher (*Toxostoma rufum*), Willow Flycatcher (*Empidonax traillii*), Yellow Warbler (*Setophaga petechia*), Brown-headed Cowbird (*Molothrus ater*), and Mallard (*Anas platyrhynchos*).

Bobolink (*Dolichonyx oryzivorus*) was observed in a cultural meadow adjacent to Chinguacousy Road (**Figure 2**).

Of the above species, most are commonly observed in southern Ontario. Hairy Woodpecker and Bobolink are area-sensitive species. Area-sensitive species are those which either require larger patches of habitat in which to breed or are more productive in larger patches of habitat. Despite being area-sensitive, Hairy Woodpecker and Bobolink are relatively common in southern Ontario in treed areas and open meadows, respectively. Habitat opportunities for both species in the Study Area are limited as most lands are occupied by agricultural fields and anthropogenic lands which are unsuitable habitat for Hairy Woodpecker and unideal for Bobolink (McCracken, et al., 2013).

Two SAR birds were noted within the Study Area, including Barn Swallow and Bobolink, both of which are listed as *Threatened* under the ESA. See Section 4.7 for further discussion on SAR.

## 4.4 Fish Communities

The Study Area cross tributaries of Etobicoke Creek, which hold a warm water thermal regime. All tributary crossings are presumed to include fish habitat; the communities potentially present are described below, and aquatic habitat characteristics are detailed in **Section 4.5**.

### 4.4.1 Etobicoke Creek

The Etobicoke and Mimico Creeks Watersheds Technical Update Report (Toronto and Region Conservation Authority, 2010) identifies “(t)he dominant fish community through the Etobicoke Creek watershed is comprised of cool-warm water, tolerant species that can occupy many different types of habitats (i.e., they are generalists)”. The TRCA’s Regional Watershed Monitoring Program (RWMP) has monitored station ECO14WM every three years since 2001 (**Table 3**). The TRCA Open Data Portal has data for station ECO14WM in 2001, 2004, 2007, 2010, and 2013. It also had data for station Mayfield3 (**Figure 1; Table 3**). At station ECO14WM and EC013WM, 22 and 14 fish species have been captured by the RWMP, respectively. While Land Information Ontario (LIO) has identified these tributaries with a warm thermal regime, the fish captured at this station are all considered ‘common’ in Ontario, and most are considered ‘coolwater’ fish. Most of the fish species are classified as ‘tolerant’ or of ‘intermediate’ tolerance. Tolerance is defined as the ability of a species to adapt to environmental perturbations or anthropogenic stresses.

**Table 3: Fish Species Captured at Nearby TRCA Fish Sampling Stations – Etobicoke Creek**

Common Name	ECO14WM					MAYFIELD3	
	2001 08-21	2004 06- 29	2007 8- 21	2010 7-26	2013 06-14	2013-08- 06	2016-07- 22
Blacknose Dace	X	X		X	X		X
Blacknose Shiner	X					X	
Bluntnose Minnow		X	X	X	X	X	X
Brook Stickleback		X		X	X	X	X
Brown Bullhead			X	X			
Central Mudminnow			X				
Centrarchidae sp.			X				
Common Shiner		X	X	X	X	X	X
Creek Chub	X	X	X	X	X	X	X
Cyprinidae	X		X	X			
Fantail Darter	X	X		X	X	X	X
Fathead Minnow	X	X	X	X			
Golden Shiner	X		X	X			
Johnny Darter	X	X	X	X	X	X	X
Lepomis sp.			X				
Mimic Shiner			X				
Northern Pearl Dace			X				
Northern Redbelly Dace			X				
Pumpkinseed	X		X	X	X	X	X
Rock Bass	X	X	X	X	X	X	X
Spottail Shiner	X						
White Sucker	X	X	X	X	X	X	X

## 4.5 Aquatic Habitat Crossings

One watercourse (CH1) was surveyed for this project on Chinguacousy Road, as improvements to this crossing are part of the anticipated project works (**Figure 2**). Note that three other watercourse crossings (ACH2 to ACH4) are also found along the Study Area length; however, these culverts have been replaced during this assessment as another scope of work, and alterations are not anticipated to be part of detailed design for this project. Observations on these additional watercourses are included herein to consider potential general impacts and mitigations for the overall project.

### 4.5.1 Project Watercourse

#### Watercourse CH1

This watercourse is located approximately 1.65 km south of Old School Road (**Figure 2**). CH1 is a 6.0 m-wide concrete box culvert that conveys a watercourse across Chinguacousy Road. The watercourse is unconfined and has a low gradient. Historically the channel had a slightly sinuous planform, but it has since been realigned and straightened with a uniformly trapezoidal cross-section. The channel is also anomalously wide at the culvert inlet and outlet (**Photo 5**) before narrowing and regaining sinuosity about

10 m further downstream. The average bankfull width of the channel measured upstream of the culvert is 5.73 m and the bankfull depth measured at the culvert inlet is 0.60 m (**Photo 6**). The channel bed is unvegetated and the banks are vegetated with Reed Canarygrass. No fish species were observed during the March 30<sup>th</sup> survey.



*Photo 5. CH1 facing northwest (March 30, 2021).*



*Photo 6. CH1 facing northwest from bridge, overlooking MAM2-2 (March 30, 2021).*

#### 4.5.2 Additional Watercourses

##### Watercourse ACH2 - East

Located approximately 0.45 km south of Old School Road, a 6 m wide concrete creek culvert crosses over the watercourse. Limited riparian vegetation was observed as agricultural lands were adjacent to the feature (**Photo 7**), with some meadow marsh species observed at the edge of the field. A small HDF connects to creek culvert through the adjacent agricultural field east of the crossing. The HDF feature was 0.4 m wide

and 0.1 m deep at the time of the survey on March 30 (**Photo 8**). Pockets of standing water and saturated soils were observed within. A manmade “scour pool” approximately 0.4 m deep was observed.



*Photo 7. ACH2 feature, facing south (March 30, 2021).*



*Photo 8. Small HDF through field east of ACH2, facing east (March 30, 2021).*

#### Watercourse ACH2 - West

A moderate flow was observed coming from the creek (**Photo 9**). A drainage ditch from the north connects to the watercourse. No HDFs were observed on west side of Chinguacousy Road. The creek bankfull width was 3.7 m and bankfull depth was 0.4 m at the time of the March 30 survey (**Photo 10**).



*Photo 9. West side of CH1 facing north (March 30, 2021).*



*Photo 10. (March 30, 2021).*

#### Watercourse ACH3 – West

Approximately 0.78 km south of Old School Road, this feature had a 3.75 m wide concrete box culvert with water flowing eastward. The waters in the adjacent agricultural field were approximately 0.3 to 0.6 m in wetted width and 0.1 to 0.15 m deep at the time of the March 30 survey (**Photo 11**); however, became less visible when seen again during the May 31 visit. Standing water of approximately 0.15 m was observed

during the May 31 visit. Riparian vegetation comprised of grasses and Reed Canarygrass. The feature had a muck bottom with some gravel.



*Photo 11. (March 30, 2021).*

#### Watercourse ACH3 – East

During the March 30 site visit, water was observed flowing south along road ditch (**Photo 12**). This area had a bankfull width of 1.7 m and a bankfull depth of 0.25 m. No connecting HDF was observed. Riparian vegetation comprised of Reed Canarygrass and cattail in the ditch south of the culvert. In May, standing water of 0.15 m was observed with an abundance of algae on top.



*Photo 1. (March 30, 2021).*

Watercourse ACH4 – West

This watercourse was located approximately 1.1 km south of Old School Road and was observed to be very wide and deep near the culvert, however, become much more shallow further northwest into the adjacent agricultural field (**Photo 13**). Riparian vegetation included cattail and Reed Canarygrass. During the May 31 survey, turbid, standing water was observed to be approximately 0.4 m deep.



*Photo 13. (March 30, 2021).*

Watercourse ACH4 – East

A 4 m wide box culvert crosses over this feature. A water depth of 0.4 m was observed at the culvert on March 30, as well as a bankfull width of 4.9 m and bankfull depth of 0.3 m measured 0.3 km from the culvert (**Photo 14 & 15**). Riparian vegetation was dominated by cattail continuing along the feature.



*Photo 2. (March 30, 2021).*



*Photo 15. (March 30, 2021).*

## 4.6 Headwater Drainage Features

In addition to the watercourses, there are two potential headwater drainage features (HDFs) present crossing the Study Area (**Figure 2**). These are to be considered in the project detailed design.

### CH-HDF1

A corrugated culvert, 0.42 m in diameter, was observed approximately 1.7 km south of Old School Road (**Photo 16, Figure 2**). No flow was observed, though standing water of approximately 10 cm was observed during the March 30 site visit in front of the culvert (**Photo 16**). This feature connected with the roadside ditch that continued north of the culvert. While dry during the March and May surveys, this feature appears to have connection to other tributaries, likely after a storm event.



*Photo 16. CH-HDF1 facing north (March 30, 2021).*

### CH-HDF2 – West

This feature was located approximately 0.2 km north of Mayfield Road (**Figure 2**). A corrugated culvert 0.6 m in diameter with an eroded bottom was observed (**Photo 17**). A bankfull width of 2.2 m and bankfull depth of 0.05 m was recorded during the March 30 site visit. Some pockets of slow flowing water were visible while other sections of the feature were covered by dense Reed Canarygrass. Occasional Calico Aster and young maple saplings were present along the feature edges. No defined channel or banks were observed in the adjacent agricultural field (**Photo 18**). The feature was completely dry during the May 31 survey.



*Photo 17. View of west CH-HDF2 culvert (March 30, 2021).*



*Photo 18. CH5 facing southwest (March 30, 2021).*

#### CH-HDF2 – East

On the east side of Chinguacousy Road, a culvert was observed between two silt fences due to active construction nearby (**Photo 19**). Water approximately 0.1 m deep was observed to be flowing south during the March 30 survey. No vegetation was present aside from lawn grass as the area had been cleared for construction. Pockets of shallow, standing water of 0.01 to 0.02 m depth were observed during the May survey.



*Photo 19. CH-HDF2 facing northeast (March 30, 2021).*

#### 4.6.1 Headwater Drainage Feature Classification and Management

Preliminary classification and management recommendations have been determined based on aerial imagery and field observations. It is important to note that the field investigations were limited to the proposed footprint of the Study Area components and the road right-of-way along the proposed Study Areas.

Functional classifications have been evaluated for the above described HDFs to determine the management recommendations per the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014) (Table 4).

*Table 4: Functional Classification and Management*

Drainage Feature	Conservation Authority	Step 1		Step 2	Step 3	Step 4	Management Recommendation
		Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	
CH-HDF1	TRCA	Limited	Agriculture	Limited	Contributing	Limited	No Management

Drainage Feature	Conservation Authority	Step 1		Step 2	Step 3	Step 4	Management Recommendation
		Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	
CH-HDF2	CVC	Contributing	Unknown	Valued	Contributing	Valued	Mitigation

#### 4.6.1.1 No Management

CH-HDF1 is classified as having no management recommendations due to the limited hydrological functions and limited terrestrial habitat.

#### 4.6.1.2 Mitigation

CH-HDF2 is classified as requiring mitigation. This feature was observed as having a light flow of water following the spring freshet but did not maintain flows through the spring. These features also provide limited to valued riparian and terrestrial habitat. This can be achieved through replicating or enhancing HDF functions by methods such as constructed wetlands, well-vegetated swales, or enhanced lot level controls as outlined in the *Final Evaluation Classification and Management of Headwater Drainage Features* (TRCA and CVC, 2014).

## 4.7 Species at Risk

Prior to field investigations, a background review was completed for potential SAR habitat opportunities. The NHIC database, the Ontario Breeding Bird Atlas (OBBA), and the Ontario Reptile and Amphibian Atlas (ORAA) were screened for SAR records (Bird Studies Canada, 2022; Ontario Nature, 2022). Based on professional experience, it was determined that larger trees may present habitat opportunities for SAR bat species

Based on available background information and the 2021 field investigations, the Study Area was screened for potential SAR habitat opportunities. The assessment was conducted by comparing habitat preferences of species deemed to have potential to occur against current site conditions. This SAR habitat assessment can be found in **Appendix C**, providing a detailed description of each species' habitat (including those deemed to not have potential habitat), as well as a discussion of habitat suitability within the Study Area, potential impacts, and mitigation, where applicable. The following eleven (11) SAR have been identified as having potential within the Study Area:

### Birds

- Barn Swallow (*Hirundo rustica*) – Threatened (Observed foraging over meadow community)
- Bobolink (*Dolichonyx oryzivorus*) – Threatened (Observed in adjacent meadow community)
- Chimney Swift (*Chaetura pelagica*) – Threatened
- Red-headed Woodpecker (*Melanerpes erythrocephalus*) – Special Concern

### Reptiles

- Snapping Turtle (*Chelydra serpentina*) – Special Concern

**Mammals**

- Eastern Small-footed Myotis (*Myotis leibii*) – Endangered
- Little Brown Myotis (*Myotis lucifugus*) – Endangered
- Northern Myotis (*Myotis septentrionalis*) – Endangered
- Tri-colored Bat (*Perimyotis subflavus*) – Endangered

**Insects**

- Monarch Butterfly (*Danaus plexippus*) – Special Concern

Potential impacts to SAR are assessed in Section 6 below.

**Barn Swallow**

These birds prefer to nest within human made structures such as barns, bridges, and culverts. Barn swallow nests are cup-shaped and made of mud; they are typically attached to horizontal beams or vertical walls underneath an overhang. Barn Swallows were observed foraging over open fields throughout the Study Area. Foraging habitat is present throughout the Study Area, particularly in open fields, wetlands, and open water, where there may be abundant insects for this species to forage. Concrete box culverts found in water crossings have the potential to provide suitable nesting habitat. At the time of the 2021 field investigations, no nests were observed within the ROW, including on culverts. Potential impacts to Barn Swallows are assessed in Section 6 below.

**Bobolink**

Bobolinks are found in grasslands and hayfields, and feeds and nests on the ground. This species is widely distributed across most of Ontario; however, are designated at risk because of rapid population decline over the last 50 years (McCracken, et al., 2013). Nesting habitat opportunities are present in the Study Area in large cultural meadows, particularly in grass fields that are not regularly maintained (not mowed) and that contain shrubs suitable for perching. Potential impacts to Bobolinks area assessed in Section 6 below.

**Chimney Swift**

Chimney Swifts are found mostly near urban areas where the presence of chimneys or other manmade structures provide nesting and roosting habitat. Prior to settlement, the chimney swift would mainly nest in cave walls and hollow tress. Within the Study Area, there is potential for this species to nest in chimneys within anthropogenic areas. The proposed works will not require the removal of residential or commercial buildings within the Study Area, therefore, no impacts to this species are anticipated.

**SAR Bats**

Species at Risk (SAR) bats including, Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, and Tri-colored Bat can be found roosting under loose bark and in the cavities of trees. Within the Study Area, there is potential roosting habitat within deciduous forests, swamps, and hedgerows containing large trees with cavities and/or loose bark. Potential impacts to SAR bats area assessed in Section 6 below.

### Special Concern Species

Potential habitat for Eastern Wood-pewee, Redheaded Woodpecker, and Snapping Turtle may also be present within the Study Area. As species of Special Concern (not *Endangered* or *Threatened* under the ESA), the habitats for these species are discussed as Potential Significant Wildlife Habitat in Section 4.8.

## 4.8 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) can be difficult to appropriately determine at the site-specific level, as the assessment must incorporate information from a wide geographic area and consider other factors such as regional resource patterns and landscape effects. To help with site level assessments, the MNRF developed the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (Ontario Ministry of Natural Resources, 2015). Except for wintering deer yards, which could be, and often are, considered SWH, the detailed identification and designation of SWH has not been completed in Peel Region or the Town of Caledon.

SWH is defined by the MNRF in the Significant Wildlife Habitat Technical Guide (Ontario Ministry of Natural Resources, 2000) and Natural Heritage Reference Manual (Ontario Ministry of Natural Resources, 2010) and includes the following categories:

- Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities or Specialized Habitats for Wildlife;
- Habitats of Species of Conservation Concern; and
- Animal Movement Corridors.

Criteria for the identification of these features are also provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E*. These criteria were used to provide a screening for wildlife habitat within the Study Area for potential SWH within and immediately adjacent to the proposed development footprint, as detailed in **Appendix D**.

Although no SWH has been confirmed within the Study Area, based on the 2021 field investigations and a background review, the following potential SWH may be found within the Study Area:

### Seasonal Concentration Areas of Animals:

- Turtle Wintering Area: The MAS2-1 communities found throughout the Study Area may provide soft mud substrate and free water beneath the ice for suitable wintering (**Figure 2**).

### Special Concern and Rare Wildlife Species

- Red-headed Woodpecker: Habitat for the birds includes open woodland and woodland edges, often near man-made landscapes such as parks, golf courses and cemeteries. Within the Study Area, edges of the FOD4, CUW1, SWD3-2 communities may provide suitable nesting habitat for this species (**Figure 2**).

- Snapping Turtle: This species' potential habitat is considered above as Turtle Wintering Area.
- Monarch Butterfly: SWH habitat is not thought to be found in the Study Area, as it is >5 km from Lake Ontario, and nectar species such as Common Milkweed (*Asclepias syriaca*) are not prevalent.

## 5. Road Reconstruction Options Evaluation

In considering the Chinguacousy Road improvements, six alternatives were evaluated, and include:

- Alternative 1 – “Do Nothing”
- Alternative 2 – Limit Development
- Alternative 3 – Improve Alternative Routes
- Alternative 4 – Local Roadway/ Intersection Improvements on Chinguacousy Road.
- Alternative 5 – Capacity Enhancement on Chinguacousy Road
- Alternative 6 – Integrate Facilities for Alternate Travel Modes on Chinguacousy Road

Of these, a combination of Alternatives 4, 5 and 6 was determined to be the Preferred Solution through the EA process. From an ecological perspective, Alternatives 4 – 6 were considered relatively similar, as potential impacts would be relatively similar. While Alternative 4 - local roadway / intersections may have slightly fewer ecological areas of concern, it is felt that general project mitigation would be required regardless of alternative and considered incremental in face of the long-term viability of the roadway.

In the development of a concept to implement the Preferred Solution combining Alternative 4 to 6, three Options (Options 1 to 3) are evaluated for road widening from 2 to 4 lanes and improvements between Mayfield Road and the future Tim Manley Avenue, which will intersect with Chinguacousy Road approximately mid-way through the Study Area.

North of Tim Manley Avenue, two options (Options A and B) for road rehabilitation with limited widening (no additional lanes) are considered as part of this project. These improvements are to be implemented by 2031. Eventual lane widening from Tim Manley Avenue to Old School Road will be evaluated in future projects or considerations towards 2041.

### 5.1 Option 1 to Option 3

Option 1 to Option 3 are evaluated from an ecological perspective in **Table 5**. The cross sections of all three options are developed to remain in the 36 m road allowance, and widening requirements are considered relatively similar between the options, as grading and tree loss is assumed to be similar in all three options. All three options include a bioswale on either side of the road that will allow for stormwater management and tree planting.

Options 1 and 2 are relatively similar, with Option 1 including a multiuse path adjacent to the right of way limits, and Option 2 separating bike paths from sidewalks, with the bioswales as dividers. Both options include a planting box within the median (5 m wide) that would allow for trees and/or shrubby vegetation separating the north and south bound lanes. Option 3 is also similar but abandons the planted median in favour of larger shoulders, being 1.5 m wide rather than 0.4 to 0.5 m for Options 2 and 1, respectively.

Therefore, from an ecological perspective, Options 1 or 2 are preferred, as they would allow for planting in the centre medians with more opportunities for trees. Trees within the median may provide interim resting options for birds and small mammals crossing the roadway. These two options also have slightly more pervious surfaces and consequent groundwater recharge capacity.

**Table 5: Ecological Evaluation of Options 1 to 3**

Evaluation Criteria	Option 1	Option 2	Option 3	
<b>Terrestrial Wildlife and Vegetation (including Species at Risk)</b> – Potential to impact area wildlife and Species at Risk (SAR)	Some tree removal may be required. Tree removal may affect potential SAR bat habitat. Adequate avoidance and/or mitigation can be implemented for the above. Center lane median provides potential for additional tree and/or shrub plantings and therefore provides an opportunity to recover the tree loss along the corridor for widening and add to natural environment. This median is anticipated to provide a short-term resting spot for birds or small mammals crossing the roadway.	P This Option is similar to Option 1 in potential impacts and benefits.	P This Option is similar to Option 1 & 2 in terms of potential impacts along the corridor. While the Option would provide a wider buffer (~1 m greater) to adjacent lands, it does not provide any center median for additional tree planting that will contribute to natural environment, as the 1.5 m shoulder would not provide the typical 2.45 m considered a minimum spacing for trees. It is therefore anticipated that the buffer would remain treeless post-construction.	NP
<b>Fisheries / Aquatic</b> – Potential to impact fish habitat and aquatic features.	Watercourse crossings and HDF are present in the study area. Potential to impact fish and fish habitat at watercourse crossings due to culvert replacements are needed to accommodate road widening.	P This option will have the same impact as compared to Option 1 & 3.	P This option will have the same impact as compared to Option 1 & 2.	P
<b>Wetlands</b> – Potential to impact existing vegetation.	The Etobicoke Creek Headwater Wetland Complex is present in adjacent lands. Other wetlands present at watercourse crossings. Potential to impact wetlands and watercourse crossings due to	P This option will have the same impact as compared to Option 1 & 3.	P This option will have the same impact as compared to Option 1 & 2.	P

Evaluation Criteria	Option 1	Option 2	Option 3
	culvert replacement needed to accommodate road widening.		
<b>Surface Water and Groundwater</b> – Potential to impact surface water and groundwater resources	This Option will improve groundwater. The Option proposes 12.0 m of ROW space (3.5 m Blvd. on west side + 3.5 m Blvd. on east side and 5.0 m median space) for plantation and implementation of best management practices for stormwater management. The option will improve ground water recharge by infiltration through a bio-swale medium.	P This Option will be similar to Option 1.	P This Option will be slightly less favourable than Option 1 & 2 due to less pervious area by removing the centre median. The total pervious areas available is 10.0 m as compared to 12.0 in Option 1 & 2.
			NP

Note – “P” = Preferred, “NP” = Not Preferred.

## 5.2 Option A and Option B

Road rehabilitation options north of the future Tim Manley Avenue are also similar to each other, and all activities are to be limited to the existing rights of way. The two options vary in that Option B provides for a roadway 3.0 m widening to provide a 1.5 m bicycle-accessible shoulder on either side. This option would require additional grading, which would be limited to the road-side limits of existing ditches. This option would therefore require more disturbance and would create steeper shoulders that may pose a greater erosion risk, potentially increasing sediments and road runoff to adjacent environments. This option also increases the potential for tree removal requirements, including the native Honey Locust trees identified (**Figure 2-B**).

Therefore, Option A is preferred from an ecological perspective. Mitigations to be implemented would be relatively similar between the two options; however, if implemented, Option B may require additional tree protection and/or compensation requirements.

## 6. Potential Impacts

This section represents an assessment of potential impacts based on the current conceptual design options (Section 5). Refinements to the assessment of impacts will be made as necessary to reflect updates to the proposed road reconstruction design, as part of subsequent design submissions.

Based on the Study Area, the proposed works will occur mostly within of the existing ROW limits (**Figure 2**). The proposed works may result in minor encroachment (to be determined at detailed design) into watercourse and wetland areas, which may include the removal of individual edge trees. Potential impacts to the overall function of these communities are not expected. Potential loss of edge areas and potential additional impacts associated with runoff and sedimentation are the primary concern and therefore erosion and sediment control will be necessary.

### 6.1 Vegetation

The proposed roadway improvements are to be predominately within the existing road right-of-way limits thereby minimizing potential impacts to vegetation communities (**Figure 2-B**). The proposed works may result in minor encroachment into the edge of cultural woodland and wetland communities, which may include the removal of individual edge trees. The tree inventory for the Project Area is found in **Appendix B**. This may include the removal of a number of native Honey Locust (**Figure 2-B**).

Potential impacts to the overall ecological functions of these communities are not expected provided that mitigation measures are implemented during construction and the roadway design and construction maintains hydrologic conditions. For wetland communities, potential impacts are expected to be minimal and contained within the rights of way. Effects associated with sedimentation are the predominant concern; therefore, erosion and sediment control will be necessary.

### 6.2 Wildlife and Species at Risk

Potential impacts to SAR and wildlife due to construction activity include minor impacts to potential habitat and individuals. The primary concern for SAR habitat impacts is associated with treed areas, including the waterways and adjacent PSW areas. In these areas, construction activities such as vegetation removal, grading, use of machinery, noise/activity, and other nearby disturbances, should be avoided and/or minimized to the greatest extent feasible. Impacts to wildlife are associated with construction works and are therefore considered short-term.

SAR identified that may be affected by the project include Barn Swallow and SAR Bats. Bobolink and Chimney Swift may be adjacent to the Study Area, but habitats would unlikely be affected by construction. The project may also affect potential SWH turtle habitats in adjacent wetlands, and tree removal may affect habitats for forest birds and Red-headed Woodpecker if present. The mitigations in **Section 7** seek to avoid and mitigate for these species and their habitats.

## 6.3 Fish and Aquatic Habitat

With the implementation of the proposed roadway improvements, potential impacts associated with sedimentation and changes in flows are the predominant concerns for the identified watercourse tributaries and headwater drainage features through the Study Area. Therefore, appropriate design of the road improvements, sizing of culverts and ESC measures will be necessary to mitigate potential short- and long-term impacts.

No long-term impacts are anticipated to the watercourses and headwater drainage features (**Figures 2A to 2C**). As noted previously, all watercourses and headwater drainage features through the Study Area are characterized by the presence of seasonal crops, evidence of cultivation, lack of flow and lack of natural vegetation. Based on the field investigations and the TRCA *Evaluation, Classification and Management of Headwater Drainage Features Guidelines*, these features provide limited fish or terrestrial habitat. Maintaining the conveyance of these features is the primary consideration.

The proposed culvert replacements will result in temporary impacts to fish habitat during culvert removal and installation, including sedimentation, erosion and temporary restrictions to flow and fish passage. Long-term, the proposed culvert replacements may enhance existing fish habitat through improvements to the quality and quantity of fish habitat. For example, larger culverts could span the bankfull width of the creek and improve fish passage (i.e., allow passage of larger fish). Open-footing culvert designs may also enhance existing fish habitat by maintaining the natural stream bed, natural substrates, and stream gradient through the length of the culvert. This will allow for more naturalized stream conditions through the culvert, which will improve the quality of fish habitat through the connection.

Potential impacts to Fish Habitat can be mitigated through the implementation of the mitigation measures detailed in **Section 7** below, particularly as they relate to Erosion and Sediment Control (ESC) and seasonal timing of construction works.

## 7. Mitigation Recommendations

Through Detailed Design, mitigation measures will be detailed and coordinated with the design. These measures typically include standard mitigation to be applied across the whole Study Area, as well as site-specific measures. Specific mitigation measures applicable to the environmental conditions of the selected option(s) will be finalized during the detailed design stage. The following general mitigation and enhancement measures are recommended for consideration through subsequent design phases:

- As mentioned in Section 6.3, open foot designs and larger culverts should be considered in road design to improve fish habitat and passage opportunities.
- To minimize the potential for erosion and off-site transport of sediment into surface water features and the natural environment, the project will implement Best Practices related to erosion and sediment control (ESC) (See Section 7.1). ESC measures used by the contractor on all construction should meet guidelines as outlined in the TRCA *Erosion and Sediment Control Guide for Urban Construction*, December 2019 (ESC Guideline) (Toronto and Region Conservation Authority, 2019).
- Environmental protection, specifically ESC fencing, should be installed along the limits of the construction area at predetermined sensitive areas prior to the commencement of construction (includes prior to vegetation removal).
- An Arborist Report and Tree Protection Plan should be developed following detailed design to protect trees that can be retained. This report is to build on the inventory in **Appendix B**.
- Where feasible and necessary, trees proposed to be retained will be protected by tree protection fencing (TPF), which is to be placed at the dripline or in a location to minimize encroachment into the root zone and protect the trunk. Fencing provides protection from potential damage during construction activities such as the use of machinery near trees and branches, and stockpiling of materials over the root zone. ESC fencing can be combined with TPF.
- All ESC and TPF measures are to be inspected for placement and installation prior to commencement of any construction activities.
- Tree removals should not occur between April 1 to September 30, to avoid the maternity roosting period for Endangered Bats. If tree removals need to occur within the maternity roosting period for Endangered Bats (April 1 to September 30), a qualified ecologist must screen for potential snag trees that may be used for roosting; further investigation may be required should potential roost trees be identified.
- All vegetation clearing (trees, shrubs, meadows) outside of the breeding bird season (generally late April to late July) will prevent nest destruction, complying with the *Migratory Birds Convention Act*. The winter season, during frozen ground conditions, is the ideal period for tree and vegetation removal, as feasible. In the event that tree removal must occur within the breeding bird window a qualified biologist must screen the area. Clearing in identified nesting areas would be prohibited until such time that it has been confirmed that the young have fledged.
- A screening of existing culverts for Barn Swallow nests should also be conducted should road demolition occur between April 1 to September 30. Similarly, clearing in identified nesting areas would be prohibited until such time that it has been confirmed that the young have fledged.
- Prior to work near any type of open water wetland, if construction activities occur within the period of April to July, areas with standing water that may support amphibians are to be protected with ESC fencing.
- In the unlikely event that SAR are encountered, work will stop and the MECP will be contacted for direction.

- As part of the project Spill Plan, all activities, including the maintenance of construction machinery, should be controlled to prevent the entry of petroleum products, debris, rubble, concrete or other deleterious substances into the natural environment. Refueling should not occur within 30 m of the wetland communities.
- All exposed and newly constructed surfaces are to be stabilized using appropriate means in accordance with the characteristics of the exposed soils and adjacent lands. These surfaces should be fully stabilized and re-vegetated as quickly as possible following the completion of the works (Section 7.3).
- Construction practices to control the spread of invasive species will be implemented (Section 7.4).

## 7.1 Fish Passage

A Project Review by DFO in accordance with the Fisheries Act may be required for the culvert replacements to determine if an Authorization is required under Paragraph 35(2)(b) to proceed with the Project. A Request for Project Review will be prepared and submitted to DFO as part of the application process. The request will summarize the existing conditions on site, anticipated Project activities and construction schedule, the potential pathways of effects, and applicable mitigation measures. The TRCA will also be consulted during the permitting stage. Measures to avoid or mitigate harm to fish, which will be implemented as part of this Project, are described in subsequent Sections.

The culvert replacements will be conducted based on recommendations from DFO, such as guidance contained in the Fisheries Protection Policy Statement (Fisheries and Oceans Canada, 2019) and Measures to Avoid Causing Harm to Fish and Fish Habitat (Fisheries and Oceans Canada, 2019).

## 7.2 Erosion and Sediment Control Measures

The installation and maintenance of ESC measures are of specific importance to the protection of watercourse features and wetland communities from sediment laden water and to delineate the construction envelope to minimize damage to the adjacent natural area.

The TRCA requires that the ESC measures be illustrated on all relevant plans and/or drawings submitted. Further recommendations for the ESC plan include:

- The ESC measures should remain in place and in good working condition for the duration of the project, until seeding, landscaping, and/or sodding has stabilized.
- All work areas are to be effectively isolated from wetland communities and watercourses with appropriate ESC measures in order to ensure that deleterious substances do not enter these areas at any time.
- ESC fencing/measures are to be erected as near to the proposed works as possible.
- ESC measures are to be installed prior to beginning work and are maintained in working order throughout all stages of construction activities.
- That ESC fencing be erected to specifications outlined in Ontario Provincial Standard Drawings (OSPD), being at a minimum, a double row of sediment silt fencing consisting of a non-woven geotextile with straw bales staked in between. The OSPD standard to be used should be detailed in the Construction Drawings as a typical drawing.

- No sediment, sediment-laden water or deleterious substances are to be discharged into watercourses at any time.
- All ESC measures are to be inspected daily including after every rainfall, cleaned, maintained, and/or adjusted accordingly to ensure sediment does not enter the creek at any time.
- Machinery or equipment will be maintained and refueled within the construction area defined by the ESC measures, and at no time during maintenance will approach within 30 m of the watercourses or wetland areas.
- Any equipment, stockpiled material or construction material will be stored within the construction area defined by the ESC measures, and in a manner that prevents sediment or deleterious substances from entering the creek.
- Any dewatering (if required) is to be filtered to remove sediment prior to discharging to a well vegetated area at least 30 m from the watercourses.
- All disturbed areas will be appropriately and effectively stabilized and/or restored immediately following completion of the works with native species.

## 7.3 Dewatering

Construction of the new culverts should be completed “in the dry”. A dewatering trap should be placed no less than 30 m away from the receiving waterbody and pumped into a densely vegetated receiving area. If a densely vegetated area is not available, coir matting should be utilized.

### 7.3.1 Dam-and-Pump

All in-channel work should be completed in-the-dry through the implementation of a dam-and-pump approach to safely by-pass streamflow around the work area, which should be isolated between temporary cofferdams. The natural flow regime should be maintained for any diversion works. Any minor through-flow or seepage that accumulates within the isolated work area should be collected in a sump and pumped via a small-diameter pipe into a nearby filter bag, which will be set back from the channel and allowed to drain passively through existing riparian vegetation. All in-channel work should be supervised by an environmental monitor and techniques for site isolation and siltation control should be confirmed with the on-site environmental monitor. The isolated works area is to be monitored for trapped fish. If fish are identified, a qualified ecologist should capture and relocate fish trapped from within the isolated area before excavation can begin.

### 7.3.2 Fish Protection

The construction of the culverts will require activities to ensure the protection of fish, in compliance with the Federal *Fisheries Act*. Measures must be taken to avoid harm to fish and fish habitat. For the project, this will involve limiting any in-water work to specific timing windows and relocating any fish trapped within the channel realignment area prior to putting it “on-line”. Specifically:

- Construction is to respect timing windows for in-water works. As the fish community are classified as warmwater, no in-water work will occur between the restriction periods for southern Ontario, being March 15 to July 15, subject to confirmation with the DFO and the TRCA.

- Fish removal (salvage) will be required prior to pumping out the watercourse/HDF work areas. Prior to construction, a License to Collect Fish for Scientific Purposes will be required from the MNRF, in order to proceed with the proposed works and fish removal. Fish removal must be completed by a qualified ecologist, and fish salvaged must be relocated downstream of the construction area.
- Any non-native species encountered during the fish salvage will be euthanized and disposed of using appropriate methods. The euthanization of non-native, invasive species is a standard practice and is generally included as a condition of the License to Collect Fish permit.
- Should the channel realignment work area flood, a second fish salvage may need to occur.

## 7.4 Tree Replacement

Tree replacement and restoration should commence as soon as feasible after construction. For the best chances of success, planting events should target spring or fall, when trees are focused on establishment activities. Summer periods should be avoided as trees are often focused on maintenance during high-heat periods, which may over-stress newly planted stock. Winter periods should also be avoided, as in addition to frozen ground conditions, trees are largely dormant during this time and root growth would be delayed, potentially inhibiting establishment.

It is recommended that only species native to southern Ontario be used in tree replacement and restoration activities. Native species tend to be adapted to their natural conditions and consequently can develop deeper root systems, which would be beneficial to vegetation establishment and erosion control. Native species would also serve to enhance the natural character of the area. A diversity of the trees and shrubs already found in the Study Area are recommended. Non-native species including those found in the area, such as Manitoba Maple, should be avoided. The planting of Ash (*Fraxinus*) species should also currently be avoided due to the presence of Emerald Ash Borer (EAB) in southern Ontario.

The number of trees to be removed and recommended replacements are to be developed at Detailed Design. It is recommended that a tree replacement ratio of 2:1 be implemented (Town of Caledon, 2017). In some areas, the TRCA or CVC standards may require additional replacement, following documents such as the TRCA *Guideline for Determining Ecosystem Compensation* (Toronto and Region Conservation Authority, 2018). Replacement trees should be planted in groupings that will provide ecological buffer to existing woodlands or other features or areas with runoff interception functions. The planned medians also present other options for tree planting near these features.

## 7.5 Recommended Seeding Mixes

Restoration seeding mixes are recommended within areas disturbed by the proposed construction works in order to protect and preserve the existing soil. Roadside right-of way areas should be seeded a rate of 25 kg/ha with the OCS Rural Ontario Roadside Native Seed Mixture (8145) and should also be seeded with a cover (nurse) crop of Common Oats (*Avena sativa*) or Buckwheat (*Fagopyrum esculentu*) at a rate of 22 kg/ha (Table 6).

**Table 6: OCS Rural Ontario Roadside Native Seed Mix**

Common Name	Scientific Name	Percentage of Mix
Black Eyed Susan	<i>Rudbeckia hirta</i>	2%
Blue Vervain	<i>Verbena hastata</i>	2%
Boneset	<i>Eupatorium perfoliatum</i>	1%
Canada Wild Rye	<i>Elymus canadensis</i>	24%
Dense Blazing Star	<i>Liatris spicata</i>	1%
Foxglove/Beardtongue	<i>Penstemon digitalis</i>	2%
Indiangrass	<i>Sorghastrum nutans</i>	20%
Little Bluestem	<i>Schizachyrium scorparium</i>	20%
New England Aster	<i>Aster novae-angliae</i>	2%
Showy Tick Trefoil	<i>Desmodium canadense</i>	3%
Virginia Wild Rye	<i>Elymus virginicus</i>	22%
Wild Bergamot	<i>Monarda fistulosa</i>	1%

## 7.6 Invasive Species Management

Non-native species and highly invasive species such as European Buckthorn were noted within the Study Area. To reduce the potential for invasive species re-establishment in disturbed areas, these areas should be seeded as soon as possible using the seed mix recommended in Section 7.5. Certified weed-free topsoils and materials should be used to make up any shortfall in fill materials.

### 7.6.1 Construction Equipment

To prevent the spread of invasive species, construction equipment should arrive at the site clean and leave the site clean.

- Before arriving on site, construction equipment should be pressured washed with high-pressure steam-cleaning methods.
- Equipment cleaning stations should be established to ensure that invasive species seeds and other viable plant parts cannot escape in runoff or through other means.
- During construction, equipment used in areas with an abundance of invasive species should be cleaned prior to moving to another portion of the site.
- A high-pressure steam-cleaning should also be completed on vehicles prior to leaving the site.

### 7.6.2 Equipment Cleaning Stations

Equipment should be cleaned in an area where contamination and seed spread are not possible (or limited) (Ontario Invasive Plant Council, 2013). The site should be:

- Ideally, mud free, gravel covered or a hard surface. If this option is not available, choose a well maintained (i.e., regularly mowed) grassy area.
- Gently sloping to assist in draining water and material away from the vehicle or equipment. Care should be taken to ensure that localized erosion will not be created, and that water runs back into the area where contamination occurred.
- A means of collecting equipment washings and adding them to soils destined for landfills should be integrated into standard construction practices.
- Cleaning stations should be at least 30 m away from any watercourse, water body and natural vegetation.
- Cleaning stations should be large enough to allow for adequate movement of larger vehicles and equipment.

## 8. Conclusion

The findings of this Natural Environmental Report are the result of a background review, ecological field surveys, and an analysis of data using current scientific understanding of the ecology of the area and natural heritage policy requirements. This information is provided as input into the detailed design in the context of existing conditions and protection of the natural environment.

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## 9. References

- Bird Studies Canada. (2009). *Marsh Monitoring Program Participant's Handbook for Surveying Amphibians*.
- Bird Studies Canada. (2022). *Atlas of the Breeding Birds of Ontario*. Retrieved from Atlas of the Breeding Birds of Ontario: <http://www.birdsontario.org/atlas/index.jsp?lang=en>
- Credit Valley Conservation Authority. (2010, April). *Watershed Planning and Regulation Policies*. Retrieved from Credit Valley Conservation Authority: [https://cvc.ca/wp-content/uploads/2011/01/004-CVC-WPR-Policies\\_APR-2010.pdf](https://cvc.ca/wp-content/uploads/2011/01/004-CVC-WPR-Policies_APR-2010.pdf)
- Crins, W. J., Gray, P. A., Uhlig, P. W., & Wester, M. C. (2009). *The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions*. Peterborough, Ontario: Ontario Ministry of Natural Resources. Retrieved from file:///C:/Users/Austin%20Adams/AppData/Local/Packages/Microsoft.MicrosoftEdge\_8wekyb3d8bbwe/TempState/Downloads/stdprod-101587%20(1).pdf
- Fisheries and Oceans Canada. (2019). *Fish and Fish Habitat Protection Policy Statement, August 2019*. Retrieved from <https://www.dfo-mpo.gc.ca/pnw-ppe/policy-politique-eng.html#toc-1>
- Fisheries and Oceans Canada. (2019). *Measures to Protect Fish and Fish Habitat*. Retrieved from [www.dfo-mpo.gc.ca: https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html](https://www.dfo-mpo.gc.ca/pnw-ppe/measures-mesures-eng.html)
- Fisheries and Oceans Canada. (2022). *Aquatic Species at Risk Map*. Retrieved from Fisheries and Oceans Canada: <http://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html>
- Government of Ontario. (1997). *Fish and Wildlife Conservation Act, 1997, S.O. 1997, c. 41*. Retrieved from [ontario.ca: https://www.ontario.ca/laws/statute/97f41](https://www.ontario.ca/laws/statute/97f41)
- Government of Canada. (1985). *Fisheries Act, 1985, c. F-14*. Retrieved from Government of Canada: <https://laws-lois.justice.gc.ca/eng/acts/f-14/>
- Government of Canada. (1994). *Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22)*. Retrieved from <http://laws-lois.justice.gc.ca/eng/acts/m-7.01/>
- Government of Ontario. (1990). O. Reg. 166/06: Toronto and Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Retrieved from <https://www.ontario.ca/laws/regulation/060166>
- Government of Ontario. (2007). *Endangered Species Act, 2007, S.O. 2007, c. 6*. Retrieved from <https://www.ontario.ca/laws/statute/07e06>

- Government of Ontario. (2013). *Credit Valley Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. Retrieved from Credit Valley Conservation Authority: [https://cvc.ca/wp-content/uploads/2011/01/002-Ontario-Regulation-160\\_06.pdf](https://cvc.ca/wp-content/uploads/2011/01/002-Ontario-Regulation-160_06.pdf)
- Government of Ontario. (2022). *Land Information Ontario*. Retrieved from ontario.ca: <https://www.ontario.ca/page/land-information-ontario>
- Greater Golden Horseshoe Conservation Authorities. (2006). *Erosion and Sediment Control Guidelines for Urban Construction*. Retrieved from [www.trca.on.ca/dotAsset/40035.pdf](http://www.trca.on.ca/dotAsset/40035.pdf)
- Lee, H. T., Bakowsky, W. D., Riley, J., Bowles, J., Puddister, M., Uhlig, P., & McMurray, S. (1998). *Ecological Land Classification for Southern Ontario: First Approximation and its Application*. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch.
- McCracken, J. D., Reid, R. A., Renfrew, R. B., Frei, B., Jalava, J. V., Cowie, A., & Couterier, A. R. (2013). *Recovery Strategy for The Bobolink (*Dolichonyx oryzivorus*) and Eastern Meadowlark (*Sturnella magna*) in Ontario*. Ontario Recovery Strategy Series. Prepared for the Ministry of Natural Resources. Peterborough, Ontario.
- Ministry of Natural Resources and Forestry. (2018). *Natural Heritage Information Request Guide*. Ministry of Natural Resources and Forestry.
- Ministry of Natural Resources and Forestry. (2022). *Natural Heritage Information Centre Species Lists*. Retrieved from Ministry of Natural Resources and Forestry: <https://www.ontario.ca/page/get-natural-heritage-information>
- Morton, J. K., & Venn, J. M. (1984). *The Flora of Manitoulin Island. 2nd Ed. Biology Series No. 28*. Waterloo, Ontario: University of Waterloo.
- Oldham, M. J., & Brinker, S. R. (2009). *Rare Vascular Plants of Ontario, Fourth Edition*. Peterborough, Ontario: Natural Heritage Information Centre, Ministry of Natural Resources.
- Oldham, M. J., Bakowsky, W. D., & Sutherland, D. A. (1995). *Floristic Quality Assessment System for Southern Ontario*. Peterborough, ON: Natural Heritage Information Centre, Ontario Ministry of Natural Resources.

- Ontario Invasive Plant Council. (2013). *Clean Equipment Protocol for Industry*. Retrieved from ontarioinvasiveplants.ca: [https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol\\_June2016\\_D3\\_WEB-1.pdf](https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf)
- Ontario Ministry of Municipal Affairs and Housing. (2017). *Greenbelt Plan (2017)*. Retrieved from Ministry of Municipal Affairs and Housing: <http://www.mah.gov.on.ca/Page13783.aspx>
- Ontario Ministry of Municipal Affairs and Housing. (2020). *Provincial Policy Statement, 2020*. Toronto, ON. doi:ISBN 978-1-4606-3522-3
- Ontario Ministry of Natural Resources. (2000). *Significant Wildlife Habitat Technical Guide*. Peterborough: Queen's printer for Ontario. Retrieved from <https://www.ontario.ca/document/guide-significant-wildlife-habitat>
- Ontario Ministry of Natural Resources. (2010). *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition*. Toronto: Queen's Printer for Ontario. Retrieved from <http://cloca.ca/resources/Outside%20documents/Natural%20Heritage%20Policies%20of%20the%20Provincial%20Policy%20Statement%20MNR%202010.pdf>
- Ontario Ministry of Natural Resources. (2015). *Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E*. Peterborough: Regional Operations Division, Southern Region Resources Section.
- Ontario Nature. (2022). *Ontario Reptile and Amphibian Atlas*. Retrieved from Ontario Nature: <https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/>
- Toronto and Region Conservation Authority. (2008). *Planning and Development Procedural Manual*. Retrieved from [https://trca.ca/app/uploads/2016/02/Procedural\\_Manual\\_January\\_2008.pdf](https://trca.ca/app/uploads/2016/02/Procedural_Manual_January_2008.pdf)
- Toronto and Region Conservation Authority. (2010). *Etobicoke and Mimico Creeks Watersheds Technical Update Report*. Retrieved from Toronto and Region Conservation Authority: <https://trca.ca/conservation/watershed-management/etobicoke-mimico-creek/resources/>
- Toronto and Region Conservation Authority. (2014). *The Living Cities Policies*. Retrieved from Toronto and Region Conservation Authority: <https://trca.ca/planning-permits/living-city-policies/>
- Toronto and Region Conservation Authority. (2018, June). *Guideline for Determining Ecosystem Compensation*. Retrieved from Toronto and Region Conservation Authority:

<https://laserfiche.trca.ca/WebLink/0/edoc/1499894/Guideline%20for%20Determining%20Ecosystem%20Compensation,%20June%202018.pdf>

Toronto and Region Conservation Authority. (2019). *2019 Flora Ranks and Scores*. Retrieved from Toronto

and Region Conservation Authority: [https://s3-ca-central-1.amazonaws.com/trcaca/app/uploads/2019/07/08142613/2019\\_Flora\\_Ranks\\_\\_Scores.pdf](https://s3-ca-central-1.amazonaws.com/trcaca/app/uploads/2019/07/08142613/2019_Flora_Ranks__Scores.pdf)

Toronto and Region Conservation Authority. (2019). *Erosion and Sediment Control Guide For Urban*

*Construction*. Retrieved from [https://s3-ca-central-1.amazonaws.com/trcaca/app/uploads/2020/01/30145157/ESC-Guide-for-Urban-Construction\\_FINAL.pdf](https://s3-ca-central-1.amazonaws.com/trcaca/app/uploads/2020/01/30145157/ESC-Guide-for-Urban-Construction_FINAL.pdf)

Toronto and Region Conservation Authority and Credit Valley Conservation. (2014). *Evaluation, Classification and Management of Headwater Drainage Features Guidelines*. Toronto.

Town of Caledon. (2009). *Development Standards, Policies and Guidelines*. Retrieved from

<https://www.caledon.ca/en/townhall/resources/DevelopmentStandardsPoliciesGuidelines.pdf>

Town of Caledon. (2017). *Town of Caledon Comprehensive Town-wide Design Guidelines*. Retrieved from

[www.caledon.ca: https://www.caledon.ca/en/town-services/resources/Documents/business-planning-development/Caledon-Town-Wide-Design-Guidelines.pdf](https://www.caledon.ca/en/town-services/resources/Documents/business-planning-development/Caledon-Town-Wide-Design-Guidelines.pdf)

Town of Caledon. (2018). *Town of Caledon Official Plan, April 2018 Consolidation*. Retrieved from Town of

Caledon: <https://www.caledon.ca/en/townhall/officialplan.asp>

Varga, S., Leadbeater, D., Webber, J., Kaiser, J., Crins, B., Kamstra, J., . . . Zajc, E. (2000). *Distribution*

*and Status of the Vascular Plants of the Greater Toronto Area*. Ontario Ministry of Natural Resources Aurora District.



# **Appendix A**

## **Flora List**

# Appendix A

## Flora List

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CC	CW	Weediness Index	Peel*	TRCA 2019
						Global	Provincial	Exotic					
Aceraceae	<i>Acer platanoides</i>	Norway Maple				GNR	SNA	SE5		5	-3		L+
Aceraceae	<i>Acer saccharinum</i>	Silver Maple				G5	S5		5	-3			L4
Anacardiaceae	<i>Toxicodendron radicans</i>	Poison Ivy				G5	S5		2	0			
Asteraceae	<i>Cirsium arvense</i>	Canada Thistle				G5	SNA	SE5		3	-1		L+
Asteraceae	<i>Erigeron annuus</i>	Annual Fleabane				G5	S5		0	3			
Asteraceae	<i>Erigeron sp.</i>	Fleabane Species											
Asteraceae	<i>Eurybia macrophylla</i>	Large-leaved Aster				G5	S5		5	5			L5
Asteraceae	<i>Inula helenium</i>	Elecampane				GNR	SNA	SE5		3	-2		L+
Asteraceae	<i>Solidago sp.</i>	Goldenrod Species											
Balsaminaceae	<i>Impatiens capensis</i>	Spotted Jewelweed				G5	S5		4	-3			L5
Boraginaceae	<i>Myosotis arvensis</i>	Field Forget-me-not				GNR	SNA	SE4		3			L+
Caprifoliaceae	<i>Lonicera sp.</i>	Honeysuckle Species											
Cyperaceae	<i>Carex crinita</i>	Fringed Sedge				G5	S5		6	-5		U	L3
Cyperaceae	<i>Carex cristatella</i>	Crested Sedge				G5	S5		3	-3			L5
Cyperaceae	<i>Carex scoparia</i>	Pointed Broom Sedge				G5	S5		5	-3		R5	L3
Cyperaceae	<i>Scirpus atrovirens</i>	Dark-green Bulrush				G5	S5		3	-5			L5
Dipsacaceae	<i>Dipsacus fullonum</i>	Common Teasel				GNR	SNA	SE5		3	-1		L+

### Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

CC – Coefficient of Conservatism Index (Oldham et al., 1995)

CW – Coefficient of Wetness Index (Oldham et al., 1995)

Peel – Peel Region Rank (Varga et al., 2000)

TRCA (2019) – TRCA 2019 Flora Ranks and Scores

Weediness Index per Oldham et al., 1995

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CC	CW	Weediness Index	Peel*	TRCA 2019
						Global	Provincial	Exotic					
Dryopteridaceae	<i>Onoclea sensibilis</i>	Sensitive Fern				G5	S5		4	-3			L5
Fabaceae	<i>Gleditsia triacanthos</i>	Honey Locust				G5	S2?		8	0			L+
Grossulariaceae	<i>Ribes rubrum</i>	European Red Currant				G4G5	SNA	SE5		5			L+
Juglandaceae	<i>Juglans nigra</i>	Black Walnut				G5	S4?		5	3			L5
Liliaceae	<i>Asparagus officinalis</i>	Garden Asparagus				G5?	SNA	SE5		3	-1		L+
Lythraceae	<i>Lythrum salicaria</i>	Purple Loosestrife				G5	SNA	SE5		-5	-3		L+
Oleaceae	<i>Fraxinus pennsylvanica</i>	Red Ash				G5	S4		3	-3			L5
Onagraceae	<i>Circaea alpina</i>	Small Enchanter's Nightshade				G5	S5		6	-3			L3
Pinaceae	<i>Larix laricina</i>	Tamarack				G5	S5		7	-3			L3
Pinaceae	<i>Picea glauca</i>	White Spruce				G5	S5		6	3		R3	L3
Pinaceae	<i>Pinus sylvestris</i>	Scots Pine				GNR	SNA	SE5		3	-3		L+
Poaceae	<i>Bromus inermis</i>	Smooth Brome				G5	SNA	SE5		5	-3		L+
Poaceae	<i>Dactylis glomerata</i>	Orchard Grass				GNR	SNA	SE5		3	-1		L+
Poaceae	<i>Phalaris arundinacea</i>	Reed Canarygrass				G5	S5		0	-3			L+?
Polygonaceae	<i>Rumex crispus</i>	Curled Dock				GNR	SNA	SE5		0	-2		L+
Rhamnaceae	<i>Rhamnus cathartica</i>	European Buckthorn				GNR	SNA	SE5		0	-3		L+
Rosaceae	<i>Amelanchier</i> sp.	Serviceberry Species											
Rosaceae	<i>Geum urbanum</i>	Wood Avens				G5	SNA	SE3		5	-1		L+
Rosaceae	<i>Rubus idaeus</i>	Red Raspberry				G5	S5		2	3			
Rubiaceae	<i>Galium palustre</i>	Common Marsh Bedstraw				G5	S5		5	-5			L5

**Legend:**

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

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TRCA (2019) – TRCA 2019 Flora Ranks and Scores

Weediness Index per Oldham et al., 1995

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CC	CW	Weediness Index	Peel*	TRCA 2019
						Global	Provincial	Exotic					
Salicaceae	<i>Populus deltoides</i>	Eastern Cottonwood				G5	S5		4	0			L5
Solanaceae	<i>Solanum dulcamara</i>	Bittersweet Nightshade				GNR	SNA	SE5		0	-2		L+
Typhaceae	<i>Typha angustifolia</i>	Narrow-leaved Cattail				G5	SNA	SE5		-5			L+
Ulmaceae	<i>Ulmus americana</i>	White Elm				G4	S5		3	-3			L5
Vitaceae	<i>Parthenocissus quinquefolia</i>	Virginia Creeper				G5	S4?		6	3		RLR	L5

**Legend:**

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

CC – Coefficient of Conservatism Index (Oldham et al., 1995)

CW – Coefficient of Wetness Index (Oldham et al., 1995)

Peel – Peel Region Rank (Varga et al., 2000)

TRCA (2019) – TRCA 2019 Flora Ranks and Scores

Weediness Index per Oldham et al., 1995



# **Appendix B**

## **Tree Inventory**



74 Berkeley Street, Toronto, ON M5A 2W7  
Tel: 647-795-8153 | [www.pecg.ca](http://www.pecg.ca)

# **Tree Inventory – Chinguacousy Road**

**Town of Caledon Growth Related Roads**

*Palmer Project #*  
1705612

*Prepared For*  
Town of Caledon

October 21, 2022

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Appendix A. Tree Inventory – Chinguacousy Road
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# 1. Introduction


Palmer was retained by the Ainley Group to assess the natural environmental conditions as part of the Town of Caledon's Growth-Related Roads Program. This project involves improvements to a municipal road segment (the Project Area – **Figure 1**), within the Town of Caledon, being Chinguacousy Road – from Old School Road to Mayfield Road (3.0 km).


This tree inventory has been prepared as part of the road reconstruction and improvement design being prepared by the Ainley Group and is submitted to support the Environmental Assessment (EA) process. An Arborist Report and Tree Protection Plan (TPP) are to be developed at the Detailed Design stage, as part of the project approval and permitting process.


This tree inventory includes a review of relevant tree preservation policies, methods and results of the tree inventory completed within the Project Area.



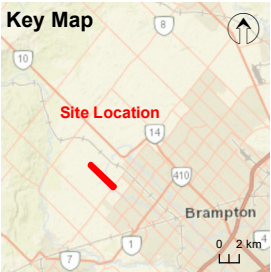
LEGEND

 Road Corridor

 Culvert Crossing Site

 Watercourse (MNR)

Key Map



00.51


Kilometres

North American Datum 1983  
Universal Transverse Mercator Projection Zone 17

Scale: 1:33,200  
Page Size: Tabloid (11 x 17 inches)


Drawn: KG  
Checked: RM  
Date: Jul 11, 2022

Source Notes:  
Background imagery (2020) from the Peel Region Webmap service.



NORTH

CLIENT	Ainley Group		
PROJECT	Caledon Growth Roads Program		
TITLE	Study Area		
	REF. NO.	1705612-MR-001	
	Figure 1		REV. B



Document Path: G:\Shared drives\Projects 2017\17056 - Ainley Group\1705612 - Caledon Growth Roads\Mapping\Figures\5\_ArcGIS\Arborist\1705612-1-1 Study Area.mxd

## 2. Relevant Policy

### 2.1 Town of Caledon

This tree inventory was guided by The Town of Caledon *Development Standards Manual* (Town of Caledon, 2019), and is supplemented by the City of Toronto *Tree Protection Policy and Specifications for Construction Near Trees* (2016). The Town of Caledon document guides the content of the report and details the standards for tree protection measures. Where additional construction management and monitoring guidance was required, the City of Brampton *Tableland Tree Assessment Guidelines* (2018) were employed, employing standards from the nearest neighbouring municipality.

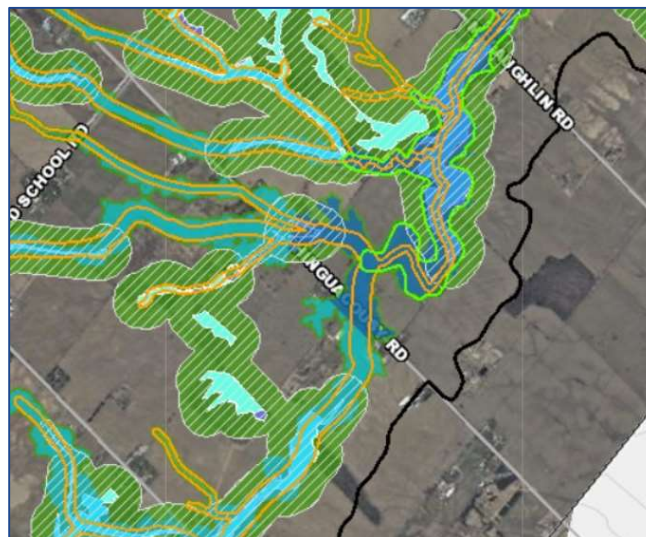
#### 2.1.1 Woodland Conservation By-law (2000-10)

The Woodland Conservation By-law (2000-10) is intended to protect Caledon's woodlands (Town of Caledon, 2000). This by-law applies to all lands defined as “woodlands”. The definition of a woodland is different trees, shrubs, ground vegetation and soil complexes that provide habitat for plants and animals which is a minimum of 0.5 hectares (1.2 acres) in area.

### 2.2 Conservation Authorities

#### 2.2.1 Toronto and Region Conservation Authority

Within their regulated limits, the Toronto and Region Conservation Authority (TRCA)'s *Guideline for Determining Ecosystem Compensation* provides direction for replacing natural features lost through the development and/or infrastructure planning processes, after a decision to compensate has been made (Toronto and Region Conservation Authority, 2018). The Project is partly within TRCA's regulation limit along Chinguacousy Road (**Map A**). The TRCA's *Guideline* provides recommended tree compensation ratios and guidelines for natural areas.



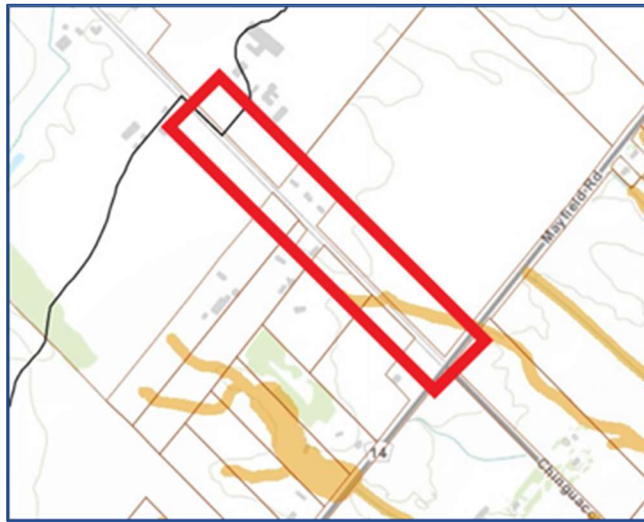
**Map A. TRCA Regulated Mapping for Chinguacousy Road (green layer = regulated areas)**

### 2.2.2 Credit Valley Conservation Authority

Relevant Credit Valley Conservation (CVC) regulations and policies include the following:

- Ontario Regulation 160/06 - *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. Through this regulation, CVC regulates activities in natural and hazardous areas (e.g., areas in and near rivers, streams, floodplains, wetlands, and slopes and shorelines).

A portion of the Chinguacousy Road Project Study Area occurs within CVC Regulated Area, just north of Mayfield Road (**Map B**). The associated CVC policies, regulations and permitting will therefore apply and approvals will be required from the agency.



*Map B. CVC Regulated Area for Chinguacousy Road (orange layer = regulated areas)*

## 2.3 Endangered Species Act

Species designated as *Threatened* or *Endangered* by the Committee on the Status of Species at Risk in Ontario (COSSARO), otherwise known as Species at Risk in Ontario (SARO), and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation and migration) are afforded legal protection under the *Endangered Species Act* (ESA) (Government of Ontario, 1997). The ESA is currently administered by the Ministry of Environment, Conservation and Park (MECP). Species at Risk (SAR) protected by the ESA include tree species, such as Butternut (*Juglans cinerea*), Kentucky Coffeetree (*Gymnocladus dioica*), and American Chestnut (*Castanea dentata*).

## 2.4 Migratory Bird Convention Act

The *Migratory Birds Convention Act* (MBCA) 1994, and *Migratory Birds Regulations* (MBR) 2014, together with the provincial *Fish and Wildlife Conservation Act* (1997), protect most species of migratory birds and their nests and eggs anywhere they are found in Canada (Government of Canada, 1994). General prohibitions under the MBCA and MBR protect migratory birds, their nests, and eggs, and prohibit the deposition of harmful substances in waters/areas frequented by them. The MBR includes an additional prohibition against incidental take, which is the inadvertent harming or destruction of birds, nests, or eggs.

### **3. Methods**

The tree inventory was directed by an International Society of Arboriculture (ISA) Certified Arborist and was completed on August 16 - 19, 2021. A tree inventory was completed for all trees  $\geq 10$  cm in Diameter at Breast Height (DBH) within the tree assessment area (the Right-of-Way (ROW) and 15 m beyond). Information collected during the inventory for individual trees includes species name, tree tag number, tree size (DBH), crown diameter, geo-location, a condition rating, and notes on tree trunk and canopy conditions.

In natural areas, tree groups were used in areas where species made individual counts cumbersome (e.g., groups of Eastern White Cedar, Spruces), or where hazardous ground conditions were present; in most cases individual trees within the ROW were inventoried. For trees beyond the ROW and within woodlands, a density stem analysis was completed. For tree groups, information collected during the inventory includes tree group number, species composition, tree/stem count, DBH range, and general notes. A proposed action was determined for all individual trees and tree groups.

## 4. Results

The tree inventory included 187 individuals and six groupings (comprised of approximately 151 individuals), for a total of approximately 338 recorded trees along Chinguacousy Road (**Figure 2**). Approximately half of the inventoried trees were species native to Ontario (52%). Among the individually inventoried trees, Green Ash (*Fraxinus pennsylvanica*) was the most common species, followed by Honey Locust (*Gleditsia triacanthos*) (Error! Reference source not found.1). Similarly, along this road, most inventoried ash were dead or in poor condition, as a result of infestation by Emerald Ash Borer (EAB). Among the tree groups within natural areas, ash was the most common species, followed by Silver Maple (**Table 2**).

No SAR trees were recorded along Chinguacousy Road during the 2021 field investigations; however, Honey Locust is ranked as S2 by the Natural Heritage Information Centre (Ministry of Natural Resources and Forestry, 2022). Species ranked S2 are “imperiled”, in which there are between 5-20 recorded occurrences in Ontario. Individuals were found growing on/adjacent to the ROW in culturally influenced areas (hedgerows); therefore, while they appear native (e.g., they include thorns indicative of native individuals vs. cultivars), it is likely that these are planted individuals.

The full tree inventory is provided in **Appendix A**.

**Table 1. Summary of Tree Inventory Results (Individuals)**

Scientific Name	Common Name	Tree Count
<i>Acer negundo</i>	Manitoba Maple	1
<i>Acer platanoides</i> *	Norway Maple	11
<i>Acer platanoides</i> 'Crimson King'	Crimson King Norway Maple	1
<i>Acer saccharinum</i>	Silver Maple	11
<i>Acer saccharum</i>	Sugar Maple	1
<i>Aesculus hippocastanum</i> *	Horse Chestnut	1
<i>Betula papyrifera</i>	White Birch	1
<i>Fraxinus americana</i>	White Ash	1
<i>Fraxinus pennsylvanica</i>	Green Ash	41
<i>Fraxinus</i> sp.	Ash Species	23
<i>Gleditsia triacanthos</i>	Honey Locust	36
<i>Gleditsia triacanthos</i> var. <i>inermis</i> 'Suncole'	Sunburst' Honey Locust	1
<i>Juglans nigra</i>	Black Walnut	3
<i>Larix laricina</i>	Tamarack	6
<i>Malus</i> sp.*	Apple Species	1
<i>Picea abies</i> *	Norway Spruce	4
<i>Picea glauca</i>	White Spruce	7
<i>Picea pungens</i> *	Blue Spruce	3
<i>Pinus sylvestris</i> *	Scots Pine	12
<i>Pyrus</i> sp.*	Pear Species	1
<i>Quercus alba</i>	White Oak	10

Scientific Name	Common Name	Tree Count
<i>Robinia pseudoacacia</i> *	Black Locust	3
<i>Salix babylonica</i> *	Weeping Willow	4
<i>Tilia cordata</i> *	Little-leaf Linden	2
<i>Ulmus americana</i>	White Elm	2
<b>TOTAL (individuals)</b>		<b>187</b>

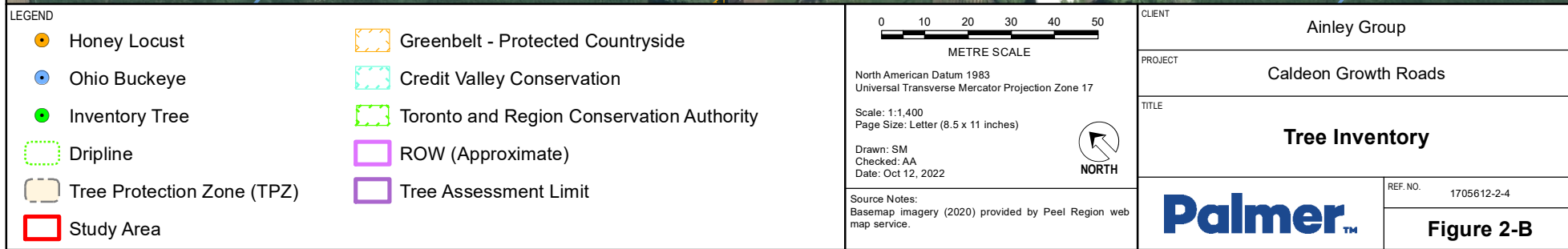
\*Non-native species

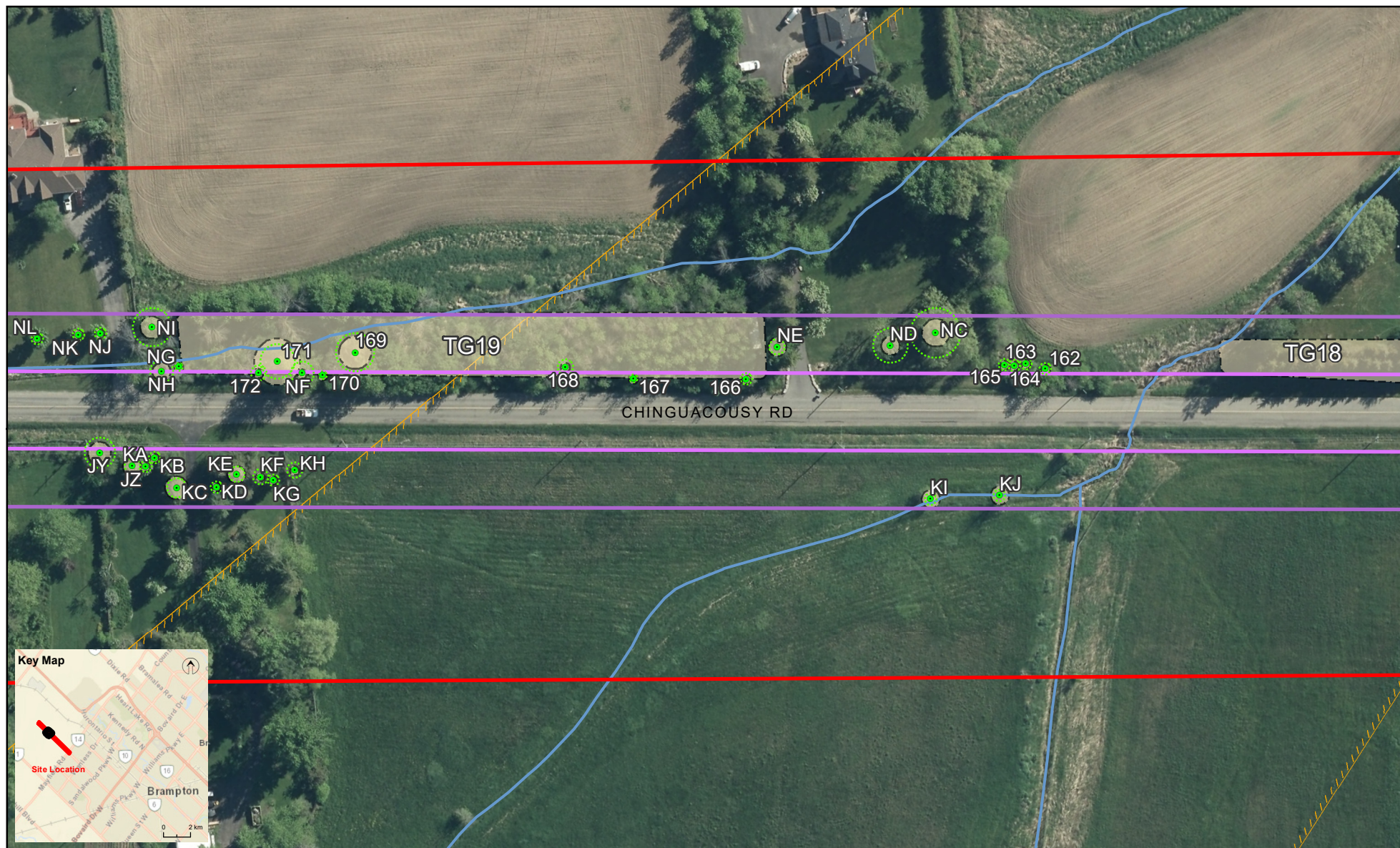
*Table 2. Summary of Tree Inventory Results (Tree Groups)*















Tree Group	Species Composition	Approximate Tree Count (Trees ≥10 cm DBH)	Total
<b>TG15</b>	White Spruce	3	39
	Scots Pine	32	
	Blue Spruce	4	
<b>TG16</b>	Norway Maple	16	18
	Scots Pine	2	
<b>TG17</b>	White Spruce	8	9
	Norway Maple	1	
<b>TG18</b>	Blue Spruce	14	14
<b>TG19</b>	Ash Species	50	70
	Silver Maple	20	
<b>TG20</b>	Black Walnut	1	1
<b>Approximate Total of Trees within Groups</b>			<b>151</b>



<div>LEGEND</div> <div><div><div><div><div></div><div>Honey Locust</div></div><div><div></div><div>Ohio Buckeye</div></div><div><div></div><div>Inventory Tree</div></div><div><div></div><div>Dripline</div></div><div><div></div><div>Tree Protection Zone (TPZ)</div></div><div><div></div><div>Study Area</div></div></div><div><div><div></div><div>Greenbelt - Protected Countryside</div></div><div><div></div><div>Credit Valley Conservation</div></div><div><div></div><div>Toronto and Region Conservation Authority</div></div><div><div></div><div>ROW (Approximate)</div></div><div><div></div><div>Tree Assessment Limit</div></div></div></div></div>		<div><div><div><div>01020304050</div><div></div></div><div>METRE SCALE</div><div>North American Datum 1983 Universal Transverse Mercator Projection Zone 17</div><div>Scale: 1:1,400 Page Size: Letter (8.5 x 11 inches)</div><div><div>Drawn: SM Checked: AA Date: Oct 12, 2022</div><div><div></div><div>NORTH</div></div></div></div><div><div>Source Notes: Basemap imagery (2020) provided by Peel Region web map service.</div></div></div>	<div><div>CLIENT</div><div>Ainley Group</div><div>PROJECT</div><div>Caldeon Growth Roads</div><div>TITLE</div><div>Tree Inventory</div><div><div><div><div><div></div><div>Palmer™</div></div></div><div>REF. NO. 1705612-2-4</div></div><div>Figure 2-A</div></div></div>
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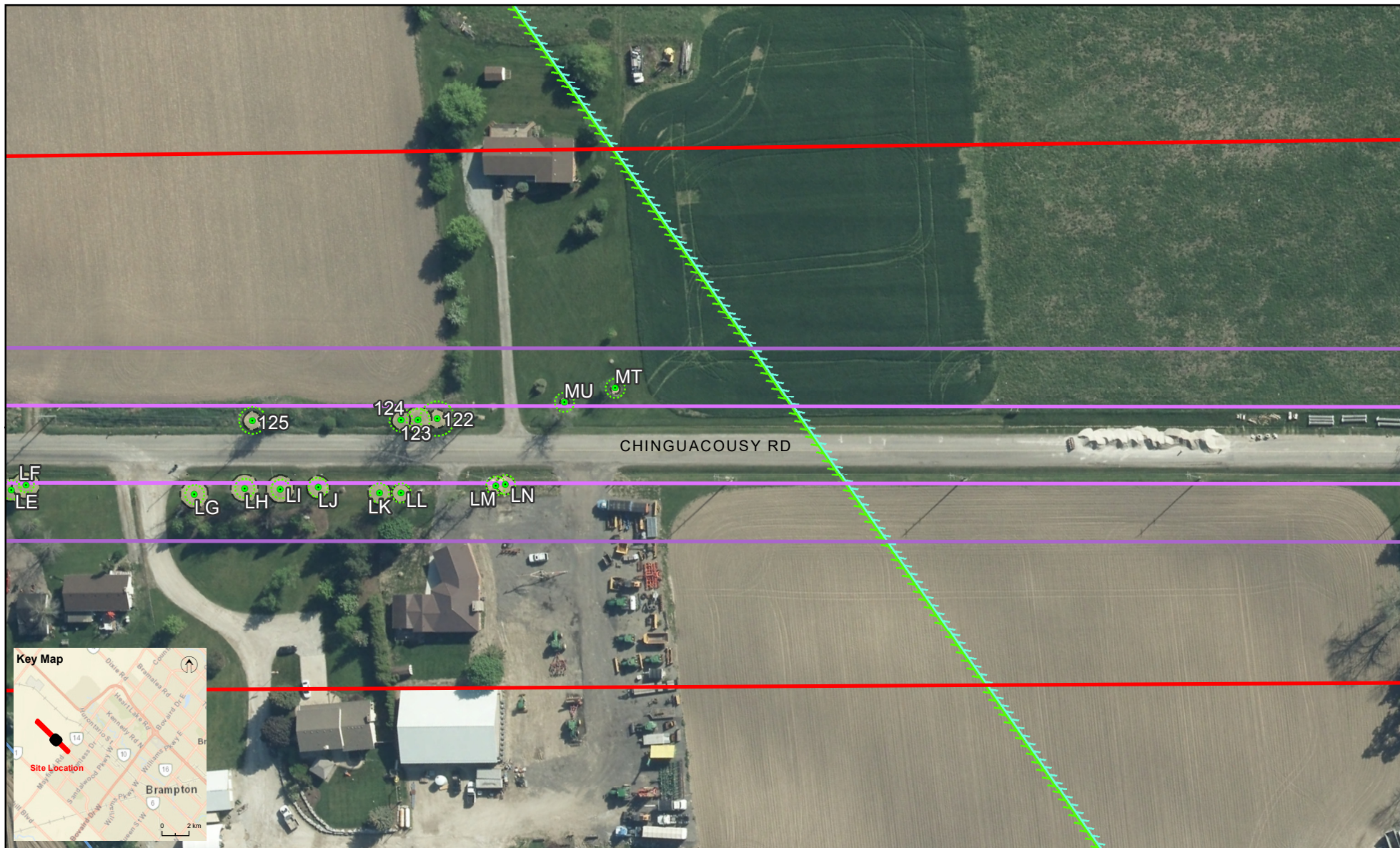
<b>LEGEND</b>  Honey Locust  Ohio Buckeye  Inventory Tree  Dripline  Tree Protection Zone (TPZ)  Study Area		 Greenbelt - Protected Countryside  Credit Valley Conservation  Toronto and Region Conservation Authority  ROW (Approximate)  Tree Assessment Limit		 <b>METRE SCALE</b> North American Datum 1983 Universal Transverse Mercator Projection Zone 17 Scale: 1:1,400 Page Size: Letter (8.5 x 11 inches) Drawn: SM Checked: AA Date: Oct 12, 2022  <b>NORTH</b>		CLIENT Ainley Group PROJECT Caldeon Growth Roads TITLE <b>Tree Inventory</b>		REF. NO. 1705612-2-4 		<b>Figure 2-C</b>	
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LEGEND		<div><div><div>01020304050</div><div>METRE SCALE</div></div><div>North American Datum 1983 Universal Transverse Mercator Projection Zone 17</div><div>Scale: 1:1,400 Page Size: Letter (8.5 x 11 inches)</div><div>Drawn: SM Checked: AA Date: Oct 12, 2022</div><div>Source Notes: Basemap imagery (2020) provided by Peel Region web map service.</div></div>	CLIENT	Ainley Group	
<div><div><div><div><div></div></div><div>Honey Locust</div></div><div><div><div></div></div><div>Ohio Buckeye</div></div><div><div><div></div></div><div>Inventory Tree</div></div><div><div><div></div></div><div>Dripline</div></div><div><div><div></div></div><div>Tree Protection Zone (TPZ)</div></div><div><div><div></div></div><div>Study Area</div></div></div></div> <div><div><div><div></div></div><div>Greenbelt - Protected Countryside</div></div><div><div><div></div></div><div>Credit Valley Conservation</div></div><div><div><div></div></div><div>Toronto and Region Conservation Authority</div></div><div><div><div></div></div><div>ROW (Approximate)</div></div><div><div><div></div></div><div>Tree Assessment Limit</div></div></div>	PROJECT		Caldeon Growth Roads		
			TITLE	Tree Inventory	
			<div><div><div>Palmer™</div></div></div>	REF. NO.	1705612-2-4
		Figure 2-D			



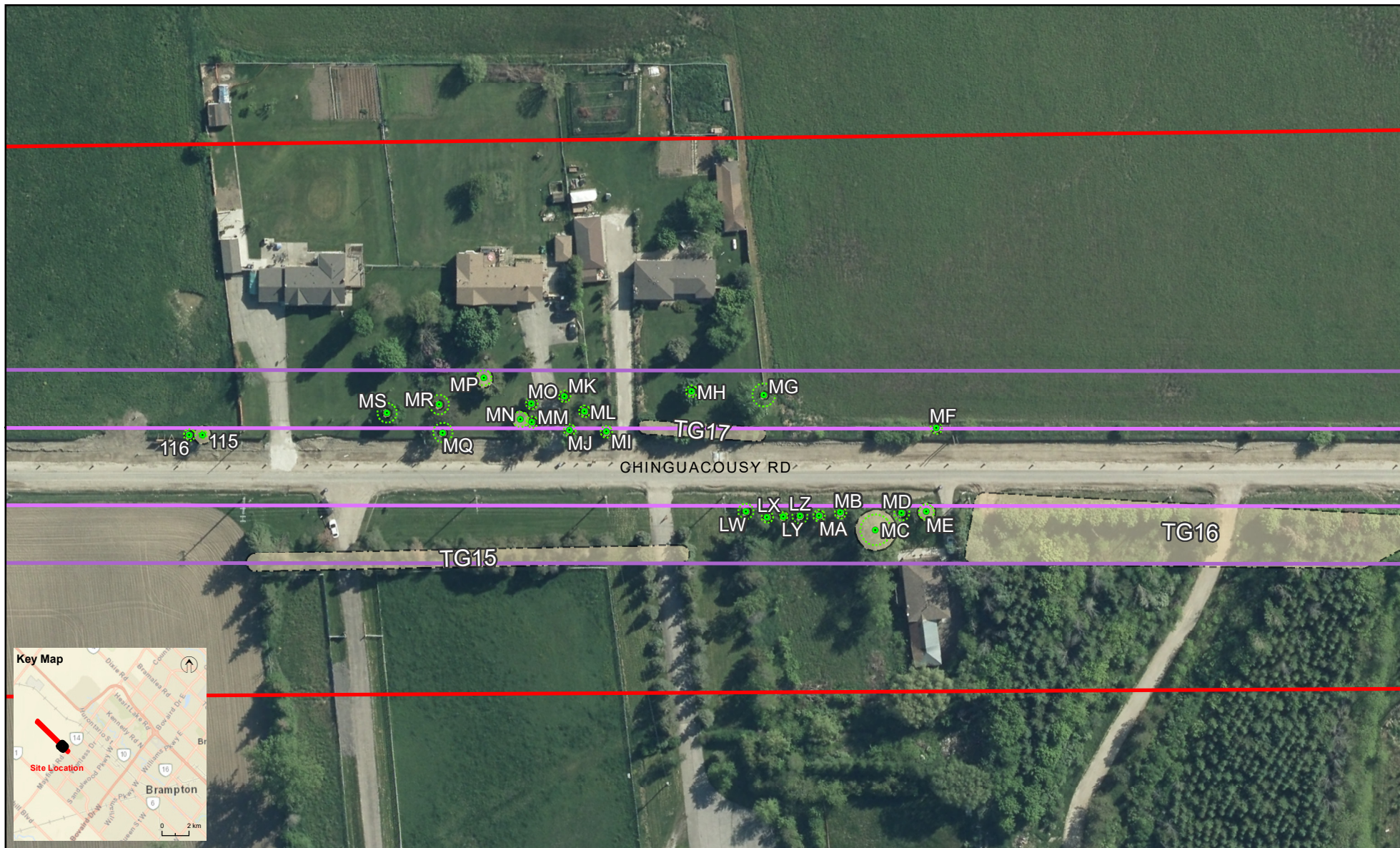
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<div><div><div><div><div></div><div>Honey Locust</div></div><div><div><div></div><div>Ohio Buckeye</div></div><div><div><div></div><div>Inventory Tree</div></div><div><div><div></div><div>Dripline</div></div><div><div><div></div><div>Tree Protection Zone (TPZ)</div></div><div><div><div></div><div>Study Area</div></div></div><div><div><div><div><div></div><div>Greenbelt - Protected Countryside</div></div><div><div><div></div><div>Credit Valley Conservation</div></div><div><div><div></div><div>Toronto and Region Conservation Authority</div></div><div><div><div></div><div>ROW (Approximate)</div></div><div><div><div></div><div>Tree Assessment Limit</div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div>	PROJECT		Caldeon Growth Roads		
TITLE			Tree Inventory		
<div><div><div><div></div><div>Palmer</div><div>TM</div></div></div></div>			REF. NO.	1705612-2-4	
		Figure 2-E			



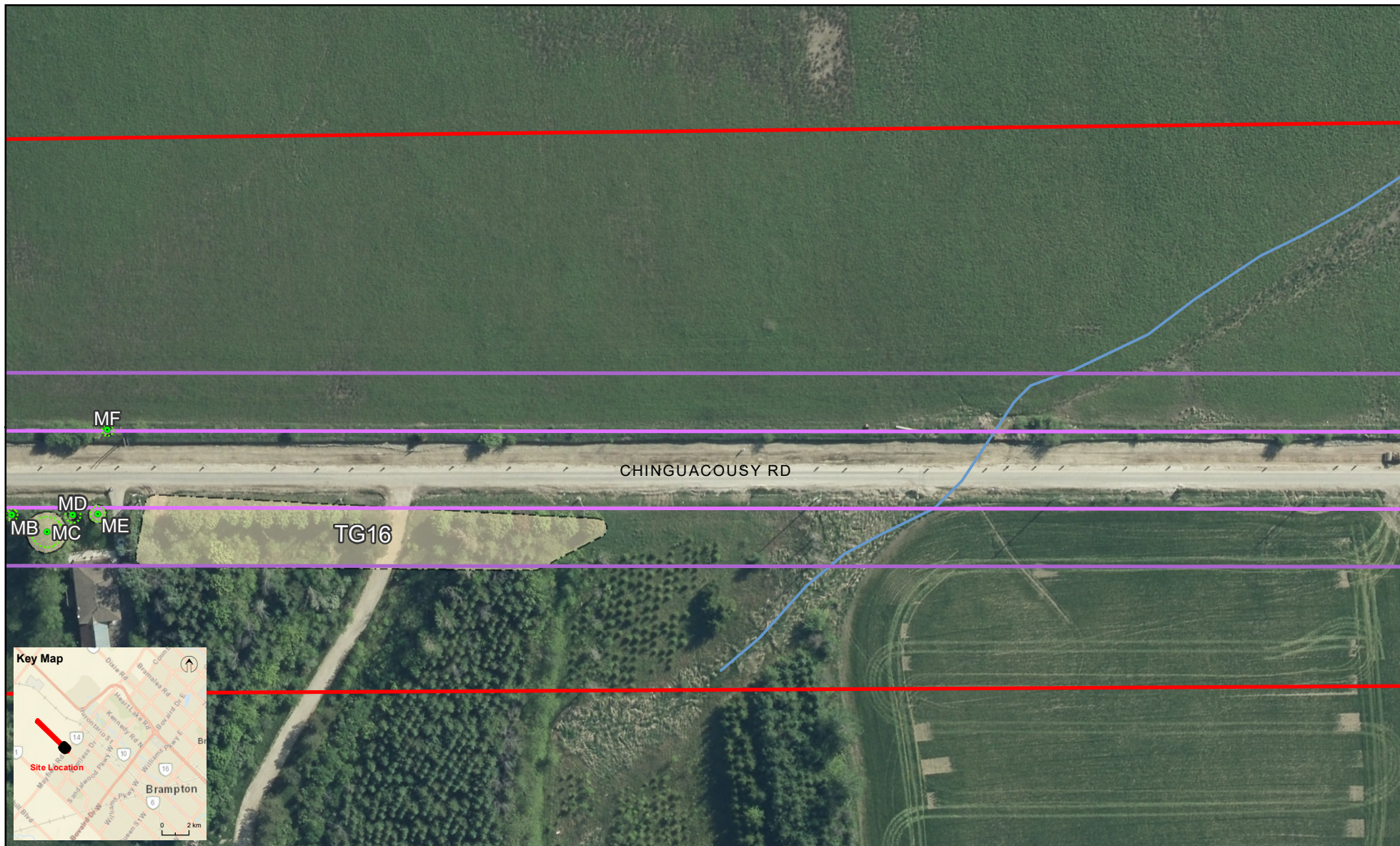
LEGEND		<div><div><div>01020304050</div><div>METRE SCALE</div></div><div>North American Datum 1983 Universal Transverse Mercator Projection Zone 17</div><div>Scale: 1:1,400 Page Size: Letter (8.5 x 11 inches)</div><div>Drawn: SM Checked: AA Date: Oct 12, 2022</div><div>Source Notes: Basemap imagery (2020) provided by Peel Region web map service.</div></div>	CLIENT	Ainley Group	
<div><div><div><div><div></div></div><div>Honey Locust</div></div><div><div><div></div></div><div>Ohio Buckeye</div></div><div><div><div></div></div><div>Inventory Tree</div></div><div><div><div></div></div><div>Dripline</div></div><div><div><div></div></div><div>Tree Protection Zone (TPZ)</div></div><div><div><div></div></div><div>Study Area</div></div></div><div><div><div><div></div></div><div>Greenbelt - Protected Countryside</div></div><div><div><div></div></div><div>Credit Valley Conservation</div></div><div><div><div></div></div><div>Toronto and Region Conservation Authority</div></div><div><div><div></div></div><div>ROW (Approximate)</div></div><div><div><div></div></div><div>Tree Assessment Limit</div></div></div></div>	PROJECT		Caldeon Growth Roads		
			TITLE	Tree Inventory	
			<div><div><div>Palmer</div><div>TM</div></div></div>	REF. NO.	1705612-2-4
			Figure 2-F		



LEGEND		<div><div><div>01020304050</div><div>METRE SCALE</div></div><div>North American Datum 1983 Universal Transverse Mercator Projection Zone 17</div><div>Scale: 1:1,400 Page Size: Letter (8.5 x 11 inches)</div><div>Drawn: SM Checked: AA Date: Oct 12, 2022</div><div>Source Notes: Basemap imagery (2020) provided by Peel Region web map service.</div></div>	CLIENT	Ainley Group	
<div><div><div><div><div></div></div><div>Honey Locust</div></div><div><div><div></div></div><div>Ohio Buckeye</div></div><div><div><div></div></div><div>Inventory Tree</div></div><div><div><div></div></div><div>Dripline</div></div><div><div><div></div></div><div>Tree Protection Zone (TPZ)</div></div><div><div><div></div></div><div>Study Area</div></div></div><div><div><div><div><div></div></div><div>Greenbelt - Protected Countryside</div></div><div><div><div></div></div><div>Credit Valley Conservation</div></div><div><div><div></div></div><div>Toronto and Region Conservation Authority</div></div><div><div><div></div></div><div>ROW (Approximate)</div></div><div><div><div></div></div><div>Tree Assessment Limit</div></div></div></div></div>	PROJECT		Caldeon Growth Roads		
			TITLE	Tree Inventory	
			<div><div><div><div><div></div></div></div><div><div>Palmer</div><div>TM</div></div></div></div>	REF. NO.	1705612-2-4
			Figure 2-G		



<div>LEGEND</div> <div><div><div><div><div></div></div><div>Honey Locust</div></div><div><div><div></div></div><div>Ohio Buckeye</div></div><div><div><div></div></div><div>Inventory Tree</div></div><div><div><div></div></div><div>Dripline</div></div><div><div><div></div></div><div>Tree Protection Zone (TPZ)</div></div><div><div><div></div></div><div>Study Area</div></div></div><div><div><div><div></div></div><div>Greenbelt - Protected Countryside</div></div><div><div><div></div></div><div>Credit Valley Conservation</div></div><div><div><div></div></div><div>Toronto and Region Conservation Authority</div></div><div><div><div></div></div><div>ROW (Approximate)</div></div><div><div><div></div></div><div>Tree Assessment Limit</div></div></div></div>		<div><div><div><div>01020304050</div><div></div></div><div>METRE SCALE</div><div>North American Datum 1983 Universal Transverse Mercator Projection Zone 17</div><div>Scale: 1:1,400 Page Size: Letter (8.5 x 11 inches)</div><div><div><div>Drawn: SM Checked: AA Date: Oct 12, 2022</div><div><div><div></div></div><div>NORTH</div></div></div></div></div><div><div>Source Notes: Basemap imagery (2020) provided by Peel Region web map service.</div></div></div>
		<div>CLIENT</div> <div>Ainley Group</div>
		<div>PROJECT</div> <div>Caldeon Growth Roads</div>
		<div>TITLE</div> <div>Tree Inventory</div>
		<div><div><div><div>Palmer</div><div>TM</div></div></div><div><div>REF. NO.</div><div>1705612-2-4</div></div><div><div>Figure 2-H</div></div></div>



LEGEND		<div><div><div><div>01020304050</div><div></div></div><div>METRE SCALE</div><div>North American Datum 1983 Universal Transverse Mercator Projection Zone 17</div><div>Scale: 1:1,400 Page Size: Letter (8.5 x 11 inches)</div><div>Drawn: SM Checked: AA Date: Oct 12, 2022</div><div>Source Notes: Basemap imagery (2020) provided by Peel Region web map service.</div></div><div><div><div></div><div></div></div><div>NORTH</div></div></div>	CLIENT	Ainley Group	
<div><div><div></div><div>Honey Locust</div></div><div><div></div><div>Ohio Buckeye</div></div><div><div></div><div>Inventory Tree</div></div><div><div></div><div>Dripline</div></div><div><div></div><div>Tree Protection Zone (TPZ)</div></div><div><div></div><div>Study Area</div></div></div> <div><div><div></div><div>Greenbelt - Protected Countryside</div></div><div><div></div><div>Credit Valley Conservation</div></div><div><div></div><div>Toronto and Region Conservation Authority</div></div><div><div></div><div>ROW (Approximate)</div></div><div><div></div><div>Tree Assessment Limit</div></div></div>	PROJECT		Caldeon Growth Roads		
			TITLE	Tree Inventory	
			<div><div><div>Palmer</div><div>TM</div></div></div>	REF. NO.	1705612-2-4
		Figure 2-I			

## 5. Conclusion

The tree inventory included 187 individuals and 6 groupings (comprised of approximately 151 individuals), for a total of approximately 338 recorded trees within the Project's Study Area. The Tree Inventory, as detailed on **Figures 2** is to be used to create a Tree Preservation Plan at project Detailed Design, including tree-specific and overall construction method recommendations.

This report was prepared, reviewed and approved by the undersigned:

Prepared By:



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Austin Adams, M.Sc., EP  
Senior Ecologist, Certified Arborist ON-2000A

## 6. References

- City of Brampton. (2018). *Tableland Tree Assessment Guidelines*. Retrieved July 5, 2018, from [http://www.brampton.ca/EN/Business/planning-development/guidelines-manuals/Documents/Tableland\\_Tree\\_Assessment\\_Guidelines.pdf](http://www.brampton.ca/EN/Business/planning-development/guidelines-manuals/Documents/Tableland_Tree_Assessment_Guidelines.pdf)
- City of Toronto. (2016). *Tree Protection Policy and Specifications for Construction Near Trees*. Toronto. Retrieved from <https://www.toronto.ca/data/parks/pdf/trees/tree-protection-specs.pdf>
- Government of Ontario. (1997). *Fish and Wildlife Conservation Act, 1997, S.O. 1997, c. 41*. Retrieved from ontario.ca: <https://www.ontario.ca/laws/statute/97f41>
- Government of Canada. (1994). *Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22)*. Retrieved from <http://laws-lois.justice.gc.ca/eng/acts/m-7.01/>
- Government of Ontario. (2007). *Endangered Species Act, 2007, S.O. 2007, c. 6*. Retrieved from <https://www.ontario.ca/laws/statute/07e06>
- Ministry of Natural Resources and Forestry. (2022). *Natural Heritage Information Centre Species Lists*. Retrieved from Ministry of Natural Resources and Forestry: <https://www.ontario.ca/page/get-natural-heritage-information>
- Toronto and Region Conservation Authority. (2018, June). *Guideline for Determining Ecosystem Compensation*. Retrieved from Toronto and Region Conservation Authority: <https://laserfiche.trca.ca/WebLink/0/edoc/1499894/Guideline%20for%20Determining%20Ecosystem%20Compensation,%20June%202018.pdf>
- Town of Caledon. (2000). *Woodland Bylaw 2000-100*. Retrieved from caledon.ca: [https://www.caledon.ca/uploads/14/Doc\\_635016160599217804.pdf](https://www.caledon.ca/uploads/14/Doc_635016160599217804.pdf)
- Town of Caledon. (2019). *Caledon Development Standards Manual - Version 5.0*. Retrieved from caledon.ca: <https://www.caledon.ca/en/town-services/resources/Documents/business-planning-development/Development-Standards-Manual.pdf>
- Watson, G. (1985). Tree size affects root generation and top growth after transplanting. *Journal of Arboriculture*, 11, 37-40.

## Chinguacousy Road - Individual Trees

Tag #/ Letter	Common Name	Scientific Name	DBH (cm)	Effective DBH (cm)	Dripline (m)	TPZ (m)	Condition Rating
113	Manitoba Maple	<i>Acer negundo</i>	19,17	25	2	1.2	Poor
JT	Weeping Willow	<i>Salix babylonica</i>	50,35,38,35	80	4.5	4.8	Fair
JU	Norway Maple	<i>Acer platanoides</i>	30	30	3	2.4	Fair
JV	Norway Maple	<i>Acer platanoides</i>	30	30	3	2.4	Fair
JW	Norway Maple	<i>Acer platanoides</i>	25	25	3	1.2	Fair
JX	Ash Species	<i>Fraxinus</i> sp.	20,22	29	2	1.2	Dead
JY	Green Ash	<i>Fraxinus pennsylvanica</i>	45	45	4	3	Fair
JZ	White Spruce	<i>Picea glauca</i>	32	32	2	2.4	Fair
KA	White Spruce	<i>Picea glauca</i>	20	20	1.5	1.2	Fair
KB	Scots Pine	<i>Pinus sylvestris</i>	20	20	1.5	1.2	Fair
KC	White Spruce	<i>Picea glauca</i>	50	50	2.5	3	Fair
KD	White Spruce	<i>Picea glauca</i>	25	25	1.5	1.2	Fair
KE	White Spruce	<i>Picea glauca</i>	30	30	2	2.4	Fair
KF	Scots Pine	<i>Pinus sylvestris</i>	22	22	2	1.2	Fair
KG	White Spruce	<i>Picea glauca</i>	22	22	1.5	1.2	Fair
KH	White Spruce	<i>Picea glauca</i>	24	24	2	1.2	Fair
KI	Green Ash	<i>Fraxinus pennsylvanica</i>	30	30	1.5	2.4	Poor
KJ	Green Ash	<i>Fraxinus pennsylvanica</i>	30	30	1.5	2.4	Poor
KL	Silver Maple	<i>Acer saccharinum</i>	30,10,10	33	2.5	2.4	Fair
KM	Black Locust	<i>Robinia pseudoacacia</i>	13	13	2	1.2	Fair
KN	Black Locust	<i>Robinia pseudoacacia</i>	38	38	2.5	2.4	Fair
KO	Horse Chestnut	<i>Aesculus hippocastanum</i>	52	52	4.5	3.6	Fair
114	White Oak	<i>Quercus alba</i>	54	54	4	3.6	Fair
KP	Green Ash	<i>Fraxinus pennsylvanica</i>	48	48	1.5	3	Poor
KQ	Ash Species	<i>Fraxinus</i> sp.	40	40	1.5	2.4	Dead
KR	Ash Species	<i>Fraxinus</i> sp.	50	50	2.5	3	Dead
KS	White Oak	<i>Quercus alba</i>	20	20	2.5	1.2	Fair
KT	Ash Species	<i>Fraxinus</i> sp.	50	50	2	3	Dead
KU	Green Ash	<i>Fraxinus pennsylvanica</i>	50	50	3.5	3	Dead
KV	Ash Species	<i>Fraxinus</i> sp.	55	55	2	3.6	Dead
KW	Ash Species	<i>Fraxinus</i> sp.	50	50	1.5	3	Dead
KX	Green Ash	<i>Fraxinus pennsylvanica</i>	45	45	2.5	3	Poor
KY	Ash Species	<i>Fraxinus</i> sp.	50	50	2.5	3	Dead
KZ	Green Ash	<i>Fraxinus pennsylvanica</i>	60	60	3.5	3.6	Poor
LA	White Oak	<i>Quercus alba</i>	22	22	2	1.2	Fair
LB	Green Ash	<i>Fraxinus pennsylvanica</i>	12	12	1.5	1.2	Fair
LC	Weeping Willow	<i>Salix babylonica</i>	70	70	5	4.2	Fair
LD	Ash Species	<i>Fraxinus</i> sp.	60	60	2.5	3.6	Dead
LE	Ash Species	<i>Fraxinus</i> sp.	50	50	2.5	3	Dead
LF	Green Ash	<i>Fraxinus pennsylvanica</i>	55	55	2	3.6	Poor
LG	Ash Species	<i>Fraxinus</i> sp.	60	60	2.5	3.6	Dead
LH	Green Ash	<i>Fraxinus pennsylvanica</i>	55	55	2.5	3.6	Poor
LI	Green Ash	<i>Fraxinus pennsylvanica</i>	55	55	2.5	3.6	Fair
LJ	Green Ash	<i>Fraxinus pennsylvanica</i>	48	48	2.5	3	Fair
LK	Green Ash	<i>Fraxinus pennsylvanica</i>	48	48	2.5	3	Fair
LL	Green Ash	<i>Fraxinus pennsylvanica</i>	35	35	2.5	2.4	Fair
LM	Green Ash	<i>Fraxinus pennsylvanica</i>	32	32	2.5	2.4	Fair

LN	Green Ash	<i>Fraxinus pennsylvanica</i>	35	35	2.5	2.4	Fair
LO	Scots Pine	<i>Pinus sylvestris</i>	20	20	2.5	1.2	Fair
LP	Crimson King Maple	<i>Acer platanoides</i> 'Crimson King'	20	20	2	1.2	Good
LQ	Scots Pine	<i>Pinus sylvestris</i>	18	18	1	1.2	Fair
LR	Scots Pine	<i>Pinus sylvestris</i>	20	20	2	1.2	Fair
LS	Scots Pine	<i>Pinus sylvestris</i>	20	20	2	1.2	Fair
LT	Scots Pine	<i>Pinus sylvestris</i>	20	20	2	1.2	Fair
LU	Green Ash	<i>Fraxinus pennsylvanica</i>	32	32	2	2.4	Poor
LV	Scots Pine	<i>Pinus sylvestris</i>	32	32	2	2.4	Poor
LW	Tamarack	<i>Larix laricina</i>	22	22	2	1.2	Fair
LX	Tamarack	<i>Larix laricina</i>	17	17	1.5	1.2	Fair
LY	Tamarack	<i>Larix laricina</i>	14	14	1	1.2	Fair
LZ	Tamarack	<i>Larix laricina</i>	20	20	2	1.2	Fair
MA	Tamarack	<i>Larix laricina</i>	16	16	1.5	1.2	Fair
MB	Tamarack	<i>Larix laricina</i>	20	20	1.5	1.2	Fair
MC	Weeping Willow	<i>Salix babylonica</i>	90	90	4	5.4	Fair
MD	White Oak	<i>Quercus alba</i>	20	20	2	1.2	Fair
ME	White Oak	<i>Quercus alba</i>	40	40	2	2.4	Poor
MF	Black Walnut	<i>Juglans nigra</i>	10	10	1.5	1.2	Good
MG	Silver Maple	<i>Acer saccharinum</i>	25,10,10	29	3	1.2	Good
MH	Norway Maple	<i>Acer platanoides</i>	25	25	1.5	1.2	Fair
MI	Blue Spruce	<i>Picea pungens</i>	14	14	1.5	1.2	Fair
MJ	Norway Maple	<i>Acer platanoides</i>	17	17	1.5	1.2	Fair
MK	Norway Spruce	<i>Picea abies</i>	14	14	1.5	1.2	Fair
ML	Scots Pine	<i>Pinus sylvestris</i>	15	15	1.5	1.2	Fair
MM	Norway Spruce	<i>Picea abies</i>	20	20	1.5	1.2	Fair
MN	Scots Pine	<i>Pinus sylvestris</i>	30	30	2	2.4	Fair
MO	Norway Spruce	<i>Picea abies</i>	16	16	1.5	1.2	Fair
MP	Blue Spruce	<i>Picea pungens</i>	30	30	2	2.4	Fair
MQ	Scots Pine	<i>Pinus sylvestris</i>	25	25	2.5	1.2	Fair
MR	Scots Pine	<i>Pinus sylvestris</i>	27	27	2.5	1.2	Fair
MS	Little-leaf Linden	<i>Tilia cordata</i>	18	18	2.5	1.2	Fair
115	White Oak	<i>Quercus alba</i>	32	32	1	2.4	Dead
116	White Oak	<i>Quercus alba</i>	20	20	1.5	1.2	Fair
117	White Oak	<i>Quercus alba</i>	62	62	5	4.2	Poor
118	White Oak	<i>Quercus alba</i>	48	48	4.5	3	Poor
119	White Oak	<i>Quercus alba</i>	68	68	6	4.2	Fair
120	White Elm	<i>Ulmus americana</i>	65	65	5	4.2	Fair
121	Pear Species	<i>Pyrus</i> sp.	32,22	39	2	2.4	Fair
MT	White Birch	<i>Betula papyrifera</i>	10,10	14	2.5	1.2	Fair
MU	Green Ash	<i>Fraxinus pennsylvanica</i>	25	25	2.5	1.2	Poor
122	Honey Locust	<i>Gleditsia triacanthos</i>	22,27	35	4.5	2.4	Fair
123	Green Ash	<i>Fraxinus pennsylvanica</i>	53	53	3	3.6	Poor
124	Green Ash	<i>Fraxinus pennsylvanica</i>	40	40	3	2.4	Poor
125	Green Ash	<i>Fraxinus pennsylvanica</i>	40	40	3.5	2.4	Poor
126	Honey Locust (cultivar)	<i>Gleditsia triacanthos</i> var. <i>inermis</i> 'Suncole'	15,25	29	2.5	1.2	Fair
MV	Ash Species	<i>Fraxinus</i> sp.	60	60	4	3.6	Dead
MW	Ash Species	<i>Fraxinus</i> sp.	45	45	2.5	3	Dead
127	Honey Locust	<i>Gleditsia triacanthos</i>	25	25	1.5	1.2	Fair
128	Honey Locust	<i>Gleditsia triacanthos</i>	52	52	3.5	3.6	Fair
129	Honey Locust	<i>Gleditsia triacanthos</i>	34	34	2	2.4	Fair
130	Honey Locust	<i>Gleditsia triacanthos</i>	30	30	4	2.4	Fair

131	Honey Locust	<i>Gleditsia triacanthos</i>	34	34	4	2.4	Fair
132	Honey Locust	<i>Gleditsia triacanthos</i>	44	44	4	3	Fair
133	Honey Locust	<i>Gleditsia triacanthos</i>	55	55	5.5	3.6	Fair
134	Honey Locust	<i>Gleditsia triacanthos</i>	58	58	6	3.6	Fair
135	Honey Locust	<i>Gleditsia triacanthos</i>	45	45	4.5	3	Fair
136	Honey Locust	<i>Gleditsia triacanthos</i>	50	50	5.5	3	Fair
137	Honey Locust	<i>Gleditsia triacanthos</i>	40	40	5.5	2.4	Fair
138	Honey Locust	<i>Gleditsia triacanthos</i>	22,38,17	47	5	3	Fair
139	Honey Locust	<i>Gleditsia triacanthos</i>	38	38	4.5	2.4	Fair
140	Honey Locust	<i>Gleditsia triacanthos</i>	36,29	46	5	3	Fair
141	Honey Locust	<i>Gleditsia triacanthos</i>	32	32	4	2.4	Fair
142	Honey Locust	<i>Gleditsia triacanthos</i>	21,44	49	4.5	3	Fair
143	Honey Locust	<i>Gleditsia triacanthos</i>	46	46	5	3	Fair
144	Honey Locust	<i>Gleditsia triacanthos</i>	32,30	44	4.5	3	Fair
145	Honey Locust	<i>Gleditsia triacanthos</i>	21,30,11,34	51	5	3.6	Fair
146	Honey Locust	<i>Gleditsia triacanthos</i>	22	22	5	1.2	Fair
147	Honey Locust	<i>Gleditsia triacanthos</i>	44,27	52	5	3.6	Fair
148	Honey Locust	<i>Gleditsia triacanthos</i>	28,25	38	3.5	2.4	Fair
149	Honey Locust	<i>Gleditsia triacanthos</i>	34,20	39	5.5	2.4	Fair
150	Honey Locust	<i>Gleditsia triacanthos</i>	50	50	6	3	Fair
151	Honey Locust	<i>Gleditsia triacanthos</i>	21,30	37	3.5	2.4	Fair
152	Honey Locust	<i>Gleditsia triacanthos</i>	50	50	4	3	Fair
153	Honey Locust	<i>Gleditsia triacanthos</i>	44	44	5	3	Fair
154	Honey Locust	<i>Gleditsia triacanthos</i>	60	60	5	3.6	Fair
155	Honey Locust	<i>Gleditsia triacanthos</i>	12,16	20	4	1.2	Fair
156	Honey Locust	<i>Gleditsia triacanthos</i>	30	30	4.5	2.4	Fair
157	Honey Locust	<i>Gleditsia triacanthos</i>	38,32	50	7	3	Fair
158	Honey Locust	<i>Gleditsia triacanthos</i>	38,48	61	6.5	4.2	Fair
159	Honey Locust	<i>Gleditsia triacanthos</i>	35	35	5	2.4	Fair
160	Honey Locust	<i>Gleditsia triacanthos</i>	38	38	5	2.4	Fair
161	Honey Locust	<i>Gleditsia triacanthos</i>	42	42	4.5	3	Fair
MX	Blue Spruce	<i>Picea pungens</i>	12	12	1.5	1.2	Poor
MY	Black Locust	<i>Robinia pseudoacacia</i>	38	38	2	2.4	Poor
MZ	Ash Species	<i>Fraxinus</i> sp.	25	25	2	1.2	Dead
NA	Ash Species	<i>Fraxinus</i> sp.	25	25	2	1.2	Dead
NB	Silver Maple	<i>Acer saccharinum</i>	40	40	3	2.4	Good
162	Green Ash	<i>Fraxinus pennsylvanica</i>	15	15	1.5	1.2	Poor
163	Green Ash	<i>Fraxinus pennsylvanica</i>	12	12	1.5	1.2	Poor
164	Green Ash	<i>Fraxinus pennsylvanica</i>	20	20	1.5	1.2	Poor
165	Green Ash	<i>Fraxinus pennsylvanica</i>	12	12	1.5	1.2	Poor
NC	Weeping Willow	<i>Salix babylonica</i>	60	60	6.5	3.6	Good
ND	Silver Maple	<i>Acer saccharinum</i>	38	38	4.5	2.4	Fair
NE	Norway Spruce	<i>Picea abies</i>	40	40	2	2.4	Fair
166	Green Ash	<i>Fraxinus pennsylvanica</i>	12	12	1.5	1.2	Fair
167	Ash Species	<i>Fraxinus</i> sp.	10	10	1	1.2	Dead
168	Green Ash	<i>Fraxinus pennsylvanica</i>	18	18	2	1.2	Fair
169	Silver Maple	<i>Acer saccharinum</i>	70	70	5	4.2	Fair
170	Green Ash	<i>Fraxinus pennsylvanica</i>	10	10	1	1.2	Fair
NF	Green Ash	<i>Fraxinus pennsylvanica</i>	17	17	3	1.2	Poor
171	Silver Maple	<i>Acer saccharinum</i>	100	100	4.5	6	Fair
172	Green Ash	<i>Fraxinus pennsylvanica</i>	11	11	2	1.2	Fair
NG	Green Ash	<i>Fraxinus pennsylvanica</i>	13	13	1	1.2	Poor

NH	Ash Species	<i>Fraxinus</i> sp.	40	40	3	2.4	Dead
NI	Silver Maple	<i>Acer saccharinum</i>	50	50	5	3	Fair
NJ	Norway Maple	<i>Acer platanoides</i>	8,8	11	1.5	1.2	Fair
NK	Norway Maple	<i>Acer platanoides</i>	5,6,8,5	12	1.5	1.2	Fair
NL	Norway Maple	<i>Acer platanoides</i>	10,10,8,6	17	1.5	1.2	Fair
NM	Norway Maple	<i>Acer platanoides</i>	12,8	14	1.5	1.2	Fair
NN	Norway Maple	<i>Acer platanoides</i>	12	12	2	1.2	Fair
NO	Green Ash	<i>Fraxinus pennsylvanica</i>	25	25	2	1.2	Fair
173	Green Ash	<i>Fraxinus pennsylvanica</i>	52	52	4	3.6	Poor
NP	Green Ash	<i>Fraxinus pennsylvanica</i>	54	54	5	3.6	Fair
174	Apple Species	<i>Malus</i> sp.	30	30	1.5	2.4	Fair
175	Ash Species	<i>Fraxinus</i> sp.	38	38	4.5	2.4	Dead
176	Ash Species	<i>Fraxinus</i> sp.	30,15	34	2.5	2.4	Dead
177	Ash Species	<i>Fraxinus</i> sp.	50	50	4.5	3	Dead
178	Silver Maple	<i>Acer saccharinum</i>	10,24,22	34	3	2.4	Fair
NQ	Black Walnut	<i>Juglans nigra</i>	17	17	1.5	1.2	Fair
179	Silver Maple	<i>Acer saccharinum</i>	16,18,20,17	36	2	2.4	Poor
180	Ash Species	<i>Fraxinus</i> sp.	60	60	5	3.6	Dead
181	White Elm	<i>Ulmus americana</i>	11	11	1.5	1.2	Fair
182	Sugar Maple	<i>Acer saccharum</i>	13	13	1.5	1.2	Fair
183	Ash Species	<i>Fraxinus</i> sp.	12	12	1.5	1.2	Dead
184	Green Ash	<i>Fraxinus pennsylvanica</i>	20	20	1.5	1.2	Poor
NR	Green Ash	<i>Fraxinus pennsylvanica</i>	12	12	1.5	1.2	Poor
NS	Green Ash	<i>Fraxinus pennsylvanica</i>	15	15	1.5	1.2	Poor
NT	Green Ash	<i>Fraxinus pennsylvanica</i>	10	10	1.5	1.2	Poor
NU	Green Ash	<i>Fraxinus pennsylvanica</i>	13	13	1.5	1.2	Poor
NV	Green Ash	<i>Fraxinus pennsylvanica</i>	15	15	1.5	1.2	Poor
185	Green Ash	<i>Fraxinus pennsylvanica</i>	10	10	1.5	1.2	Fair
NW	Black Walnut	<i>Juglans nigra</i>	13	13	2	1.2	Fair
NX	White Ash	<i>Fraxinus americana</i>	60	60	4	3.6	Dead
NY	Silver Maple	<i>Acer saccharinum</i>	55	55	4.5	3.6	Good
NZ	Ash Species	<i>Fraxinus</i> sp.	15	15	2	1.2	Dead
OA	Norway Maple	<i>Acer platanoides</i>	25	25	3	1.2	Good
OB	Little-leaf Linden	<i>Tilia cordata</i>	48	48	2.5	3	Fair
OC	Silver Maple	<i>Acer saccharinum</i>	32	32	2.5	2.4	Fair
OD	Ash Species	<i>Fraxinus</i> sp.	15,20	25	2	1.2	Dead

### Chinguacousy Road - Tree Groups

Tree Group	Common Name	Scientific Name	Approximate Tree Count
TG15	White Spruce	<i>Picea glauca</i>	3
	Scots Pine	<i>Pinus sylvestris</i>	32
	Blue Spruce	<i>Picea pungens</i>	4
TG16	Norway Maple	<i>Acer platanoides</i>	16
	Scots Pine	<i>Pinus sylvestris</i>	2
TG17	White Spruce	<i>Picea glauca</i>	8
	Norway Maple	<i>Acer platanoides</i>	1
TG18	Blue Spruce	<i>Picea pungens</i>	14
TG19	Ash Species	<i>Fraxinus</i> sp.	50
	Silver Maple	<i>Acer saccharinum</i>	20

TG20	Black Walnut	<i>Juglans nigra</i>	1
Approximate Total of Trees within Groups			151



# **Appendix C**

## **Species at Risk Screening**

Appendix B: Species at Risk Screening

NAME	Provincial Status (ESA)	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
<b>AVIFAUNA</b>						
Bald Eagle ( <i>Haliaeetus leucocephalus</i> )	SC	The bald eagle is a species of special concern, is found throughout North America, and nest in throughout northern Ontario, with a large numbers found near Lake of the Woods. Bald eagles nest in a variety of habitats and forest types, almost always near a major lake or river where they do most of their hunting. While fish are their main source of food, Bald eagles can easily catch prey up to the size of ducks, and frequently feed on dead animals, including White-tailed Deer. They usually nest in large trees such as pine and poplar. During the winter, bald eagles sometimes congregate near open water such as the St. Lawrence River, or in places with a high deer population where carcasses might be found. The Bald eagle was relatively common in Southern Ontario near Lake Erie, but the population was wiped out in the 1960's related to increased development of the shoreline and introduction of DDT. An intensive re-introduction program and environmental clean-up efforts have caused a rebound in population and may be frequently seen throughout southern Ontario (Ministry of Natural Resources and Forestry, 2015).	OBBA	N	Lack of sufficient forest habitat adjacent to large water bodies.	None
Bank Swallow ( <i>Riparia riparia</i> )	THR	The bank swallow is threatened by loss of breeding and foraging habitat, destruction of nesting habitat and widespread pesticide use. Bank swallows are small songbirds with brown upperparts, white underparts and a distinctive dark breast band. It averages 12 cm long and weighs between 10 and 18 grams. The swallow can be distinguished in flight from other swallows by its quick, erratic wing beats and its almost constant buzzy, chattering vocalizations. They nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposit, including banks of rivers and lakes, active sand and gravel pits or former ones where the banks remain suitable. The birds breed in colonies ranging from several to a few thousand pairs (Ministry of Natural Resources and Forestry, 2014).	OBBA	N	Lack of suitable banks or other vertical faces on the Study Area.	None
Barn Swallow ( <i>Hirundo rustica</i> )	THR	The barn swallow is a threatened species, is found throughout southern Ontario, and can range into the north as long as suitable nesting locations can be found. These birds prefer to nest within human made structures such as barns, bridges, and culverts. Barn swallow nests are cup-shaped and made of mud; they are typically attached to horizontal beams or vertical walls underneath an overhang. A significant decline in populations of this species has been documented since the mid-1980s, which is thought to be related to a decline in prey. Since the barn swallow is an aerial insectivore, this species relies on the presence of flying insects at specific times during the year. Changes in building practices and materials may also be having an impact on this species (Ministry of Natural Resources and Forestry, 2015).	OBBA	Y	Barn Swallows were observed foraging within the Study Area. No nests were recorded on the culvert structures.	None. No nests were observed on culverts. The disturbance of the ROW will not impact foraging habitat for this species.
Bobolink ( <i>Dolichonyx oryzivorus</i> )	THR	The bobolink is found in grasslands and hayfields, and feeds and nests on the ground. This species is widely distributed across most of Ontario; however, are designated at risk because of rapid population decline over the last 50 years (Ministry of Natural Resources and Forestry, 2014). The historical habitat of the bobolink was tallgrass prairie and other natural open meadow communities; however, as a result of the clearing of native prairies and the post-colonial increase in agriculture, bobolinks are now widely found in hayfields. Due to their reproductive cycle, nesting habits, and use of agricultural areas, bobolink nests and young are particularly vulnerable to loss as a result of common agricultural practices (i.e. first cut hay).	OBBA	Y	A Bobolink was observed in a cultural meadow community.	None. The proposed works will not require the removal of meadow habitat.
Canada Warbler ( <i>Cardellina canadensis</i> )	SC	The Canada warbler is found in a variety of forest types, but is most abundant in moist, mixed forests with a well-developed, dense shrub layer. This species can also be locally abundant in regenerating forests following natural or anthropogenic disturbances. Nests are usually located on or near the ground on mossy logs, and along stream banks. In Canada, habitat loss due to conversion of swamp forests, agricultural activities and road development have contributed to the species' significant long-term decline, and its special concern designation. A reduction in forests with a well-developed shrub-layer has also likely impacted Canada warblers throughout their breeding range in Ontario (Committee on the Status of Endangered Wildlife in Canada, 2008).	OBBA	N	Lack of a well-developed shrub layer in forest communities within the Study Area.	None
Cerulean Warbler ( <i>Setophaga cerulea</i> )	THR	Cerulean Warbler is a small wood-warbler that breeds in a few areas in southern Ontario. A general continental decline of this species has been observed, possibly greater than that of any other wood-warbler. The cerulean warbler requires relatively large tracts of forest, and as such, the main threat to this species is habitat loss due to forest degradation and fragmentation. In Ontario, the cerulean warbler 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. The species is considered area-sensitive and have demonstrated edge effects up to 340 metres in the forest, with abundance positively correlated to the distance from the edge. Trees that leaf late (Bitternut Hickory; oaks) provide singing posts in its Ontario range (Environment Canada, 2011).	OBBA	N	Lack of large, continuous tracts of forest within the Study Area.	None

NAME	Provincial Status (ESA)	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Chimney Swift ( <i>Chaetura pelagica</i> )	THR	The Chimney Swift is a threatened species which breeds in Ontario and winters in northwestern South America. It is found mostly near urban areas where the presence of chimneys or other manmade structures provide nesting and roosting habitat. Prior to settlement, the chimney swift would mainly nest in cave walls and hollow tress. The chimney swift initially benefitted from human settlement; however, recent declines in flying insects and the modernization of chimneys are factors attributed to their current population declines. As a threatened species, the chimney swift receives protection for both species and habitat under the ESA (Ministry of Natural Resources and Forestry, 2014).	OBBA	Y	The residential houses within the Study Area have the potential to provide nesting habitat in chimneys.	None. The proposed works will not require the removal of residential or commercial buildings.
Eastern Meadowlark ( <i>Sturnella magna</i> )	THR	The eastern meadowlark is a bird that prefers pastures and hayfields, but is also found to breed in orchards, shrubby fields and human use areas such as airports and roadsides. Eastern meadowlarks 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. The decline in population of these species is thought to be at least partially related to habitat destruction and agricultural practices (Ministry of Natural Resources and Forestry, 2014).	NHIC, OBBA	N	Cultural meadows were dominated by forb species that do not provide suitable habitat for this species.	None
Eastern Wood-Pewee ( <i>Contopus virens</i> )	SC	The eastern wood-pewee is classified as a species of special concern by COSSARO. Their population has been gradually declining since the mid-1960's (The Cornell Lab of Ornithology, 2015). The eastern wood-pewee is a "flycatcher", a bird that eats flying insects, that 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. Threats to the population are largely unknown; however, causes may include loss of habitat due to urban development and decreases in the availability of flying insect prey (Ministry of Natural Resources and Forestry, 2014).	OBBA	Y	The FOD communities may provide potential habitat for this species. None were recorded during the 2021 field investigations.	Low impacts expected. <b>Mitigation:</b> Minimize extent of forest removal. Habitat for this species is well represented locally and in the surrounding area and therefore the primary mitigation is for the protection of nesting birds. Vegetation clearing in suitable forest habitat areas of the development shall occur between late August and late April, which is outside of the breeding and nesting season (note: restrictive windows for other species apply).
Least Bittern ( <i>Ixobrychus exilis</i> )	THR	The least bittern prefers marshes and swamps dominated by emergent vegetation, preferably cattails, interspersed with patches of woody vegetation and open water. The smallest member of the heron family, least bitterns nest in marshes south of the Precambrian Shield in Ontario. Due to the location of the nests close to the water surface, least bittern nests are susceptible to damage as a result of wakes cast by recreational boats (Government of Canada, 2015).	OBBA	N	Lack of large suitable marsh habitat within the Study Area	None
Red-headed Woodpecker ( <i>Melanerpes erythrocephalus</i> )	SC	The Red-headed Woodpecker is a medium-sized bird, with black and white colouring and a bright red head, neck, and breast. Adults often return to the same nesting site year after year. Between May and June, adults often return to the same nesting site and females lay from three to seven eggs. Habitat for the birds includes open woodland and woodland edges, often near man-made landscapes such as parks, golf courses and cemeteries. The red-headed woodpecker is widespread across southern Ontario but rare (Ministry of Natural Resource and Forestry, 2014).	OBBA	Y	The Study Area contains woodland edge habitat that this species may potentially utilize.	Low impacts expected. <b>Mitigation:</b> Minimize extent of forest removal. Habitat for this species is well represented locally and in the surrounding area and therefore the primary mitigation is for the protection of nesting birds. Vegetation clearing in suitable forest habitat areas of the development shall occur between late August and late April, which is outside of the breeding and nesting season (note: restrictive windows for other species apply).
Short-eared Owl ( <i>Asio flammeus</i> )	SC	The short-eared owl is a medium-sized owl with a brown back, light coloured chest, and visible feather tufts on the round head that can be mistaken for small ears. This well-camouflaged bird is mostly seen during flight when the long wings and short tail are readily apparent. The short-eared owl is found in scattered pockets across the province where suitable open habitat, including grassland, tundra and marsh, can be found in sufficient quantities. Adults build nests on the ground in grassy areas and feed primarily at dawn and dusk on rodents and other small mammals in the surrounding area. Habitat loss is currently the greatest threat to the recovery of this species as prairie, savannah, and marsh ecosystems are modified or developed. Intensive grazing and early harvesting on farmlands can also affect this species by exposing or destroying nests during breeding season (Ontario Ministry of Natural Resources and Forestry, 2015).	OBBA	N	There are no suitable grassland communities for this species to occur.	None
Wood Thrush ( <i>Hylocichla mustelina</i> )	SC	The wood thrush is a species of Special Concern because of habitat degradation or destruction by anthropogenic development. The wood thrush is a medium-sized songbird, generally rusty-brown on the upper parts with white under parts and large blackish spots on the breast and sides, and about 20 cm long. The wood thrush forages for food in leaf litter or on semi-bare ground, including larval and adult insects as well as plant material. They seek moist stands of trees with well-developed undergrowth in large mature deciduous and mixed (conifer-deciduous) forests. The wood thrush flies south to Mexico and Central America for the winter (Ministry of Natural Resources and Forestry, 2014).	OBBA	N	The FOD communities within the Study Area are not large enough to provide suitable interior habitat for this species.	None

NAME	Provincial Status (ESA)	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Jefferson Salamander ( <i>Ambystoma jeffersonianum</i> )	END	Adult Jefferson Salamanders, throughout their range, are found within deciduous or mixed upland forests containing, or adjacent to, suitable breeding ponds. Breeding ponds are normally ephemeral, or vernal, woodland pools that dry in late summer. Terrestrial habitat is in mature woodlands that have small mammal burrows or rock fissures that enable adults to over-winter underground below the frost line.	ORAA	N	No suitable breeding ponds were observed on the Study Area.	None
Snapping Turtle ( <i>Chelydra serpentina</i> )	SC	The snapping turtle is a species of special concern in Ontario due to the potential for the species to become threatened or endangered as a result of biological factors or other identified threats. While not presently protected by law, the snapping turtle has been recognized as a species of special concern by COSSARO. Snapping turtles spend the majority of their lives in water and travel slightly upland to gravel or sandy embankments or beaches to lay their eggs (Ontario Ministry of Natural Resources and Forestry, 2014).	ORAA	Y	The MAS communities may provide suitable habitat for this species.	None. With appropriate mitigation measures such as exclusion and sediment fencing, no impacts are anticipated.
<b>VASCULAR PLANTS</b>						
Butternut ( <i>Juglans cinerea</i> )	END	The butternut is designated as endangered by COSSARO and is tracked by the NHIC as a species at risk. The tree is federally regulated by the Species at Risk Act (2002). Butternut belongs to the walnut family and produces edible nuts which are a preferred food source for wildlife. The range of butternut trees is south of the Canadian Shield on soils derived from calcium rich limestone bedrock. Butternut trees, which at one time were much more common to the south extending to the northern aspect of zone 6E, have been declining due to factors including forest loss and disease. Butternut trees suffer from a highly transmissible fungal disease called butternut canker. Butternut canker is causing very rapid decline in this tree species across its native range. The fungal disease is easily transmitted by wind and is very difficult to prevent. Trees often die within a few years of infection by butternut canker (Ministry of Natural Resource and Forestry, 2014).	Professional Experience	N	No Butternuts were observed during field 2021 investigations.	None
<b>MAMMALS</b>						
Tri-colored Bat (Eastern Pipistrelle) ( <i>Perimyotis subflavus</i> )	END	The eastern pipistrelle is a small bat that is widely distributed in eastern North America and whose range extends north to southern Ontario. The eastern pipistrelle is rare in this region of Ontario which is at the northernmost limit of the natural range for the species. These bats prefer to nest in foliage, tree cavities and woodpecker holes, and are occasionally found in buildings; though this is not their preferred habitat. Winter hibernation takes place in caves, mines and deep crevices. Eastern pipistrelles feed primarily on small insects and prefer an open forest habitat type in proximity to water (University of Michigan Museum of Zoology, 2004).	Professional Experience	Y	Potential suitable forest habitat with occasional snags exists within the Study Area, however, large snags with ideal peeling bark/cavities are occur in limited quantities.	Low impacts expected. <b>Mitigation:</b> Minimize extent of forest removals. As SAR bats are typically active between early April and late October, and hibernate in caves outside of that period, tree removal should be carried out between September 1 and April 1. This will avoid harm or impacts to individuals.
Eastern Small-footed Myotis ( <i>Myotis leibii</i> )	END	The eastern small-footed myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Eastern small-footed bat's fur has black roots and shiny light brown tips, giving it a yellowish-brown appearance. Its face mask, ears and wings are black, and its underside is grayish-brown, about 8 cm long in size and weighs 4-5 grams. In the spring and summer, eastern small-footed bats 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 to eat, including beetles, mosquitos, moths, and flies. They hibernate in winter, often in caves and abandoned mines. They can be found from south of Georgian Bay to Lake Erie and east to the Pembroke area, and choose colder and drier sites (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Y	Potential suitable forest habitat with occasional snags exists within the Study Area, however, large snags with ideal peeling bark/cavities are occur in limited quantities.	Low impacts expected. <b>Mitigation:</b> Minimize extent of forest removals. As SAR bats are typically active between early April and late October, and hibernate in caves outside of that period, tree removal should be carried out between September 1 and April 1. This will avoid harm or impacts to individuals.
Little Brown Myotis ( <i>Myotis lucifugus</i> )	END	Little brown myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Little brown bats have glossy brown fur and usually weigh between four and 11 grams. Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young. Little brown bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing – an ideal environment for the fungus to grow and flourish. The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Y	Potential suitable forest habitat with occasional snags exists within the Study Area, however, large snags with ideal peeling bark/cavities are occur in limited quantities.	Low impacts expected. <b>Mitigation:</b> Minimize extent of forest removals. As SAR bats are typically active between early April and late October, and hibernate in caves outside of that period, tree removal should be carried out between September 1 and April 1. This will avoid harm or impacts to individuals.

NAME	Provincial Status (ESA)	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Northern Myotis ( <i>Myotis septentrionalis</i> )	END	The northern long-eared myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Northern long-eared bats have dull yellow-brown fur with pale grey bellies. They are approximately eight cm long, with a wingspan of about 25 cm, and usually weigh six to nine grams. Northern long-eared bats can be found in boreal forests, roosting under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April, most often in caves or abandoned mines (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Y	Potential suitable forest habitat with occasional snags exists within the Study Area, however, large snags with ideal peeling bark/cavities are occur in limited quantities.	Low impacts expected. <b>Mitigation:</b> Minimize extent of forest removals. As SAR bats are typically active between early April and late October, and hibernate in caves outside of that period, tree removal should be carried out between September 1 and April 1. This will avoid harm or impacts to individuals.
OTHER						
Monarch Butterfly ( <i>Danaus plexippus</i> )	SC	The monarch is an orange and black butterfly with small white spots and is classified as a species of special concern by COSSARO. 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. The greatest threat to the monarch is loss of overwintering habitat in Mexico. Other threats include use of pesticides and herbicides throughout its range (Ministry of Natural Resources and Forestry, 2014).	OBA	Y	Open areas containing Common Milkweed are present on site, providing potential foraging habitat for this species.	Loss of Common Milkweed (considered to be widespread in Ontario), as a result of the proposed work, is not anticipated to impact this species.

Notes:  
SC - Special Concern  
THR - Threatened  
END - Endangered



# **Appendix D**

## **Significant Wildlife Habitat Screening**

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
<b>Seasonal Concentration Areas of Animals</b>					
Waterfowl Stopover and Staging Areas (Terrestrial)	Ducks	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May	N	Suitable habitat/sheet water areas are absent within the Study Area.
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, Swamps, Shallow Water Ecosites	Sewage & SWM ponds <b>not</b> SWH. Reservoir managed as a large wetland or pond/lake qualifies.	N	Suitable habitat is absent within the Study Area.
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Sewage treatment ponds and storm water ponds <b>not</b> SWH.	N	Suitable habitat is absent within the Study Area.
Raptor Wintering Area	Eagles, Hawks, Owls	<b>Hawks/Owls:</b> Combination of both Forest and Cultural Ecosites <b>Bald Eagle:</b> Forest or swamp near open water (hunting ground)	<b>Raptors:</b> >20ha, with a combo of forest and upland. Meadow (>15ha) with adjacent woodlands. <b>Eagles:</b> open water, large trees & snags for roosting.	N	Suitable habitat is absent within the Study Area. The forest and meadow communities do not meet the minimum size requirements.
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites <b>not</b> SWH.	N	Suitable habitat is absent within the Study Area.
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Deciduous or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	N	Only a limited quantity of quality snag trees (<25 /ha) were observed during the field investigations.
Turtle Wintering Area	<b>Turtles</b> (Midland, N. Map, Snapping)	SW, MA, OA, SA, FEO, BOO (requires open waters)	<b>Free water beneath ice.</b> Soft mud substrate. Permanent water bodies, large wetlands, bogs, fens with adequate DO.	P	The MAS communities found throughout the Study Area may provide soft mud substrate suitable for wintering.
Reptile Hibernaculum	Snakes	<b>Snakes:</b> Any ecosite (esp. w/ rocky areas), other than very wet ones. <b>Five-lined Skink:</b> FOD and FOM, FOC1, FOC3 - with rock outcrops	<b>Access below frost line:</b> burrows; <b>rock</b> crevices, piles or slopes, <b>stone</b> fences or foundations. Conifer/shrubby swamps/swales, poor fens, depressions in bedrock w/ accumulations of sphagnum moss or sedge hummock ground cover.	N	No suitable hibernaculum structures observed.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	Cliff Swallow, N. Rough-winged Swallow	Banks, sandy hills/piles, pits, slopes, cliff faces, bridge abutments, silos, barns.	Exposed soil banks, <b>not</b> a licensed/permitted aggregate area or new man-made features (2 yrs).	N	Suitable habitat is absent within the Study Area.
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	Great Blue Heron, Black-crowned NightHeron, Great Egret, Green Heron	SWM2, SWM3, SWM5, SWM6, SWD1 to SWD7, FET1	Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and emergents may be used. Nests in trees are 11 - 15 m from ground, near tree tops.	N	Suitable habitat is absent within the Study Area.
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer's Blackbird	<b>Gulls/Terns:</b> Rocky island or peninsula in lake or river. <b>Brewer's Blackbird:</b> close to watercourses in open fields or pastures with scattered trees or shrubs.	<b>Gulls/Terns:</b> islands or peninsulas with open water or marshy areas. <b>Brewers Blackbird colonies:</b> on the ground in low bushes close to streams and irrigation ditches.	N	Suitable habitat is absent within the Study Area.
Migratory Butterfly Stopover Area	Painted Lady, Red Admiral, <b>Special Concern:</b> Monarch	Combination of open (CU) and forested (FO) ecosites (need one from each).	≥10 ha, located within 5 km of Lake Ontario. Undisturbed sites, with preferred nectar species.	N	Suitable habitat is absent within the Study Area.
Landbird Migratory Stopover Areas	All migratory songbirds. All migrant raptor species.	Forest (FO) and Swamp (SW) ecosites	Woodlots >10 ha within 5 km of Lake Ontario. If multiple woodlands are along the shoreline, those <2 km from L. Ontario are more significant.	N	Woodlots are <10 ha and the Study Area is not within 5 km of Lake Ontario.
Deer Yarding Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	No Yarding Area mapped by the MNRF within the Study Area
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	No Deer Winter Congregation Areas mapped by the MNRF within the Study Area
<b>Rare Vegetation Communities</b>					
Cliffs and Talus Slopes		TAO, TAS, CLO, CLS, TAT, CLT e.g., Niagara Escarpment (contact NEC)	<b>Cliff:</b> near vertical bedrock >3m <b>Talus Slope:</b> coarse rock rubble at the base of a cliff	N	Suitable habitat is absent within the Study Area.
Sand Barren		SBO1, SBS1, SBT1	Sand Barrens >0.5 ha. Vegetation can vary from patchy and barren to tree covered, but <60%. <50% vegetation cover are exotic species.	N	Suitable habitat is absent within the Study Area.
Alvar	<i>Carex crawei</i> , <i>Panicum philadelphicum</i> , <i>Eleocharis compressa</i> , <i>Scutellaria parvula</i> , <i>Trichostema brachiatum</i> , Loggerhead Shrike	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Alvar >0.5 ha. <b>Need 4 of the 5 Alvar Indicator Spp.</b> <50% vegetation cover are exotic species.	N	Suitable habitat is absent within the Study Area.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N)	Additional Notes and Species Observations
Old Growth Forest	Trees >140 yrs; heavy mortality = gaps. Multi-layer canopy, lots of snags and downed logs	FOD, FOC, FOM, SWD, SWC, SWM	Woodland areas ≥30 ha with a ≥10 ha interior habitat, assuming a 100 m buffer at edge of forest.	N	Suitable habitat is absent within the Study Area.
Savannah	Prairie Grasses w/ trees	TPS1, TPS2, TPW1, TPW2, CUS2	A Savannah is a <u>tallgrass prairie</u> habitat that has tree cover of 25 – 60%. <50% cover of exotic species.	N	Suitable habitat is absent within the Study Area.
Tallgrass Prairie	Prairies Grasses dominate	TPO1, TPO2	An <u>open Tallgrass Prairie</u> habitat has < 25% tree cover. Less than 50% cover of exotic species.	N	Suitable habitat is absent within the Study Area.
Other Rare Vegetation Communities		Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	N	Suitable habitat is absent within the Study Area.
<b>Specialized Habitat for Wildlife</b>					
Waterfowl Nesting Area	Ducks	Upland habitats adjacent to: MAS1 to MAS3, SAS1, SAM1, SAF1, MAM1 to MAM6, SWT1, SWT2, SWD1 to SWD4 (>0.5 ha open water wetlands, alone or collectively).	Extends 120 m from a wetland or wetland complex. Upland areas should be at least 120 m wide. Wood Ducks and Hooded Mergansers use cavity trees (>40 cm dbh).	N	Suitable habitat is absent within the Study Area.
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat	Osprey, Bald Eagle	FOD, FOM, FOC, SWD, SWM, SWC directly adjacent to riparian areas	Nesting areas are associated with waterbodies along forested shorelines, islands, or on structures over water.	N	The Study Area lacks large waterbodies to support prey for Osprey and Bald Eagles.
Woodland Raptor Nesting Habitat	Barred Owl. <b>Hawks:</b> N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations	>30 ha with > 10 ha interior habitat.	N	Woodlands within the Study Area are <30 ha in size. No stick nests were observed during the 2021 surveys.
Turtle Nesting Areas	Midland Painted Turtle <b>Special Concern:</b> Snapping Turtle, Northern Map Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within: MAS1 to MAS3, SAS1, SAM1, SAF1, BOO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	N	No sand or gravel beaches were observed within the Study Area.
Seeps and Springs	Wild Turkey, Ruffed Grouse, Spruce Grouse, White-tailed Deer, Salamander spp.	Seeps/Springs are areas where ground water comes to the surface.	Any forested area within the headwaters of a stream/river system. <b>(2 or more confirms SWH type).</b>	N	No seeps or springs observed within the Study Area.
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders	FOC, FOM, FOD, SWC, SWM, SWD	Open water wetlands, pond or woodland pool of >500 m <sup>2</sup> within or adjacent to wooded areas. Permanent ponds or holding water until mid-July preferred.	N	Though amphibian breeding habitat was confirmed throughout the Study Area, high species diversity was not observed.
Amphibian Breeding Habitat (Wetlands)	Toads, Frogs, and Salamanders	SW, MA, FE, BO, OA and SA. Typically isolated (>120m) from woodland ecosites, however larger wetlands may be adjacent to woodlands.	Open water wetland ecosites >500m <sup>2</sup> isolated from woodland ecosites with high species diversity. Permanent water with abundant vegetation for bullfrogs.	N	Suitable habitat is absent within the Study Area.
Woodland Area-Sensitive Bird Breeding Habitat	Birds (area-sensitive species)	FOC, FOM, FOD, SWC, SWM, SWD	Large mature (>60 years) forest stands/woodlots >30 ha. Interior forest habitat >200m from forest edge.	N	Forest stands within the Study Area are <30 h.
<b>Habitat of Species of Conservation Concern</b>					
Marsh Bird Breeding Habitat	Wetland Birds	MAM1 to MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 <b>Green Heron:</b> SW, MA and CUM1	Wetlands with shallow water and emergent vegetation. Gr. Heron @ edges of these types w/ woody cover.	N	Suitable habitat is absent within the Study Area.
Open Country Bird Breeding Habitat	Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, N. Harrier, Savannah Sparrow, <b>Short-eared Owl (SC)</b>	CUM1, CUM2	Grassland/meadow >30 ha. Not being actively used for farming. Habitat established for 5 years or more.	N	Suitable habitat is absent within the Study Area. Meadow communities are smaller than 30 ha.
Shrub/Early Successional Bird Breeding Habitat	<b>Brown Thrasher + Clay-coloured Sparrow (indicators)</b> , Field Sparrow, Black-billed Cuckoo, E. Towhee, Willow Flycatcher, Yellow-breasted Chat, Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2	Large field areas succeeding to shrub and thicket habitats > 10 ha. Areas not actively used for farming in the last 5 years.	N	Suitable habitat is absent within the Study Area. Thicket communities within the Study Area are smaller than 10 ha.
Terrestrial Crayfish	Chimney or Digger Crayfish; Devil Crayfish or Meadow Crayfish	MAM1 to MAM6, MAS1 to MAS3, SWD, SWT, SWM. CUM1 sites with inclusions of the aforementioned.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish (typc. protected by wetland setbacks).	N	Suitable habitat is absent within the Study Area.
Special Concern and Rare Wildlife Species	Any species of concern or rare wildlife species	Any ELC code.	Presence of species of concern or rare wildlife species.	P	Potential habitat for Eastern Wood-pewee, Red-headed Woodpecker.
<b>Animal Movement Corridors</b>					
Amphibians	Amphibians	all ecosites assoc. w/ water	When Breeding Habitat - wetland confirmed	N	Suitable habitat is absent within the Study Area.
Deer Movement	White-tailed Deer	all forested ecosites	When Deer Wintering Habitat confirmed	N	Suitable habitat is absent within the Study Area.
<b>Exceptions for Ecoregion 6E</b>					
Mast Producing: 6E-14	Black Bear	Forested Ecosites	>30 ha w/ mast producing species: Cherry (berries), Oak, Beech (nuts).	N	Suitable habitat is absent within the Study Area.
Leks: 6E-17	Sharp-tailed Grouse	CUM, CUS, CUT	Grassland/meadow >15 ha adjacent to shrublands, >30 ha adjacent to woodlands. Low agricultural intensity.	N	Suitable habitat is absent within the Study Area.