

EXISTING ENVIRONMENTAL CONDITIONS REPORT



Municipal Class Environmental Assessment Study, Glasgow Road, Caledon, Ontario

MP Project No.: CCO-22-3677

Prepared for:



Town of Caledon
6311 Old Church Rd
Caledon ON L7C 1J61

Prepared by:

McINTOSH PERRY

McIntosh Perry Consulting Engineers Ltd.
115 Walgreen Road
R.R. 3 Carp, ON K0A 1L0

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December 19, 2022

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1.0 INTRODUCTION

To address challenges associated with infrastructure and population growth, the Town of Caledon (referred to as “the Town”) has established a Growth-Related Roads program, which includes the following segment of Glasgow Road, and an additional segment including Deer Valley Drive (**Figure 1**):

- Glasgow Road from Chickadee Lane to Deer Valley Drive located in Ward 5 (910 m)
- Deer Valley Drive from Glasgow Road to Bambi Trail (287 m)

The intent of the project is to reconstruct/upgrade the existing rural road segments in accordance with the Town’s Development Charges Study which recommends improvements to Glasgow Road including a two-lane roadway with 3.5 m wide lanes and 1.5 m paved shoulders, for a total length of 910 m of reconstruction. For Deer Valley Drive, the works proposed include the design of a sidewalk along the west side of Deer Valley Drive. Specifically, the project will consist of road reconstruction, resurfacing, widening for a paved shoulder, and drainage improvements. Typically, for this type of rural road improvement, several constraints will pose challenges during design and construction. The roadway in both segments has a narrow platform with varied gradient side slopes with some steep profile grades and significant trees along portions of the road corridor.

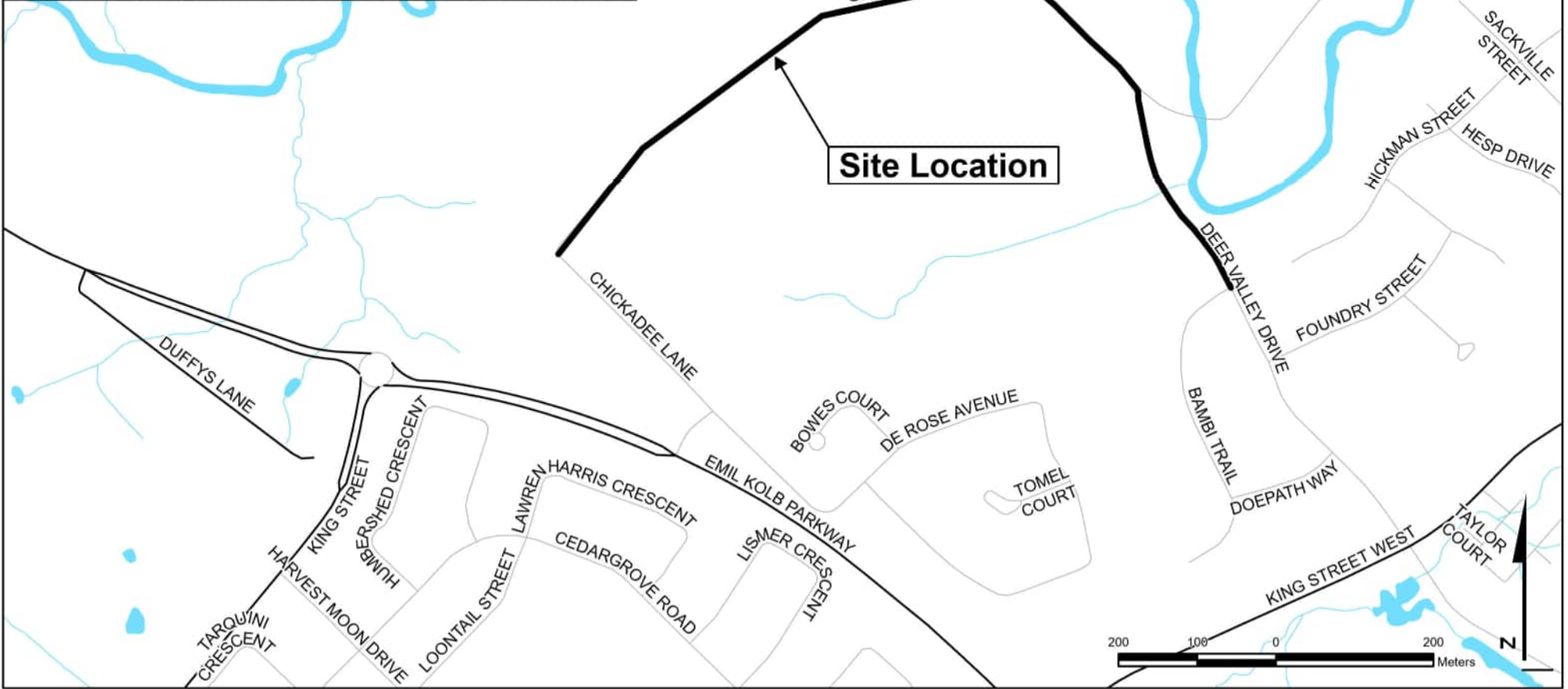
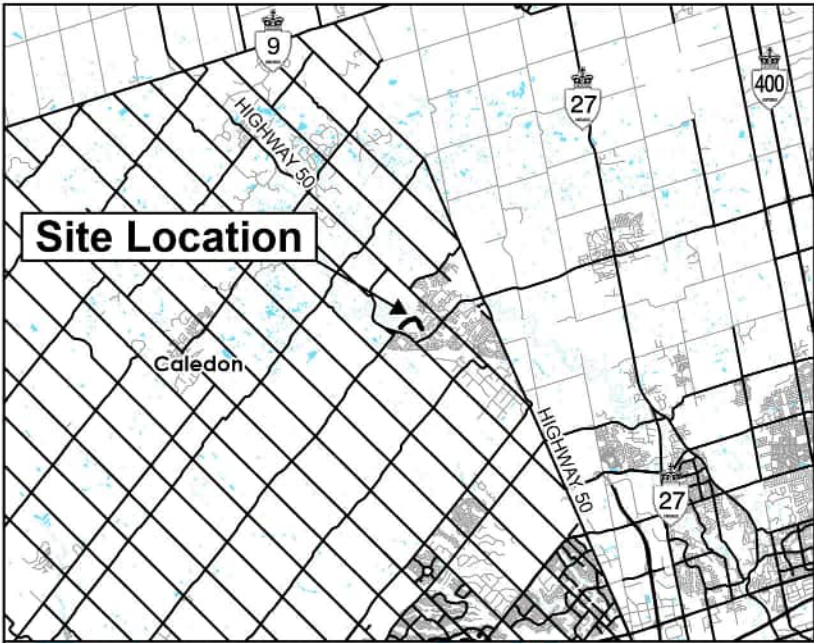
The Town of Caledon has retained the services of McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) to complete a Municipal Class B Environmental Assessment Study (Class EA) for the project that will include addressing the environmental concerns that the proposed road reconstruction will have on the surrounding natural heritage features. The Glasgow Road project was initiated as a Schedule A+ Municipal Class Environmental Assessment, however, has since been elevated to a Schedule “B” project in accordance with the Municipal Class Environmental Assessment (October 2000, as amended in 2007, 2011 & 2015), approved under the *Ontario Environmental Assessment Act*.

1.1 Purpose

This *Existing Environmental Conditions Report* has been prepared to provide an overview of the existing environmental conditions of the study area. Environmental information used in the production of this report has been assembled from existing background data for the general study area in addition to data generated from a field survey completed by McIntosh Perry.

1.2 Study Area

The study area is located within the Ministry of Environment Conservation and Parks (MECP) – Central Region, the Toronto Regional Conservation Authority area, the Halton - Peel District, the Ministry of Natural Resources and Forestry (MNRF) - Aurora District, and within the Ministry of Transportation (MTO) – Central Region.



2.0 POLICY AND REGULATORY OVERVIEW

The following sections provide an overview of applicable policy and legislation relating to the proposed works.

2.1 Federal Context

The following federal legislation, regulations, and policy are applicable to the proposed project works.

2.1.1 *Species at Risk Act, 2002*

The *Species at Risk Act, 2002* (SARA) is a federal Act that strives to "prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened." SAR that are classified as 'Endangered' or 'Threatened' are provided species and habitat protection if there is a critical habitat definition (SARA, 2002).

2.1.2 *Migratory Birds Convention Act, 1994*

The *Migratory Birds Convention Act, 1994* (MBCA) prohibits the inadvertent harm, killing, disturbance or destruction (known as incidental take) of migratory birds, their nests, and eggs and provides protection for migratory birds and their nests wherever they occur in Canada.

2.2 Provincial Context

The following provincial legislation, regulations, and policy are applicable to the proposed project works.

2.2.1 *Provincial Policy Statement, 2020*

The *Provincial Policy Statement, 2020* (PPS), establishes clear direction on the adoption of an ecosystem approach and the protection of resources that have been identified as significant. The Natural Heritage Reference Manual (NHRM, MNRF, 2010) and the Significant Wildlife Habitat Technical Guide (SWHTG, MNRF, 2000) provide guidance on identifying natural features and interpreting the Natural Heritage sections of the PPS.

2.2.2 *Endangered Species Act, 2007*

The *Endangered Species Act, 2007* (ESA), affords protection to 'Threatened' and 'Endangered' SAR and their habitat. Due to the sensitivity of SAR habitat and the protection afforded to this habitat by the ESA, there are certain obligations that must be met in order to ensure the protection of SAR and their associated habitat. In addition, Section 9 of the ESA states that "*no person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species*".

2.2.3 *Fish and Wildlife Conservation Act, 1997*

The *Fish and Wildlife Conservation Act, 1997* (FWCA), administered by the MNRF, governs the lawful hunting and trapping of fish and wildlife (mammals, birds, reptiles, and amphibians) to facilitate the conservation and protection of wildlife and their environment (FWCA, 1997).

2.2.4 Invasive Species Act, 2015

The *Invasive Species Act, 2015* <https://www.ontario.ca/laws/statute/s15022> is a provincial act which contains a comprehensive array of inspection powers, minister powers and other provisions that are intended to prevent invasive species from entering Ontario, to control the spread of invasive species in Ontario and to remove and eradicate the invasive species from Ontario. The regulations associated with this Act, define which species are considered "*prohibited invasive species*" and which species are considered "*restricted invasive species*" as well as prohibitions surrounding these species.

2.2.5 Weed Control Act, 1990

The *Weed Control Act, 1990* <https://www.ontario.ca/laws/statute/90w05> is a provincial act that specifies under Section 3 that "*every person in possession of land shall destroy all noxious weeds on it*." The definition of "*noxious weed*" as per the act means a plant that is deemed to be a noxious weed under subsection 10 (2) or designated as a noxious weed under clause 24 (a) (i.e., under the Regulations). The act also specifies that "*For the purposes of section 3, every road authority within the meaning of the Public Transportation and Highway Improvement Act shall be deemed to be the person in possession of the land under its jurisdiction*

2.2.6 Conservation Authorities Act, 1990

The *Conservation Authorities Act (1990)* provides for the organization and delivery of programs and services that further the conservation, restoration, development, and management of natural resources in watersheds within Ontario. The study area falls under the jurisdiction of the Toronto and Region Conservation Authority (TRCA). Through the *Conservation Authorities Act*, the TRCA has the responsibility to regulate activities in natural and hazardous areas (i.e., areas in and near rivers, streams, floodplains, wetlands, and slopes). The TRCA regulates Ontario Regulation 153/06, which prohibits or restricts development and site alterations near water and wetlands in order to protect from flooding, erosion, and other hazards. Lands that fall within 120 m of a wetland or watercourse requires that an EIS be completed to ensure that there are no negative impacts on these natural features. Two (2) unevaluated wetland features and one (1) regulatory floodplain identified by the TRCA, is present within the study area. There are also three (3) Provincially Significant Wetlands (PSW) identified within approximately 2 km of the study area.

2.3 Municipal Context

The following municipal legislation, regulations, and policy are applicable to the proposed project works.

2.3.1 Region of Peel Official Plan, 2022

Under The Region of Peel Official Plan (2022) The Greenlands System is identified that comprises natural heritage features. Some of these natural heritage features have been identified within and surrounding the study area as Natural Area Sites, including:

- PSW's and Other Wetlands
- Greenbelt Plan: Natural Heritage System.

2.3.2 Town of Caledon Official Plan, 2018

The Town of Caledon Official Plan (2018) identifies the significance of Natural Core Areas and Natural Corridors as well as significant woodlands, habitat for threatened and endangered species, wetlands, and Areas of Natural and Scientific Interest (ANSI). These areas are designated as Environmental Policy Areas and where development is proposed within 120 m require an Environmental Impact Assessment to be completed to assess impacts. Some of the features, have been identified within and surrounding the study area including:

- Greenbelt Plan: Natural Heritage System

3.0 METHODOLOGY

3.1 Background Data Collection

In order to acquire current information on habitat present within the study area, a comprehensive desktop review was completed. The desktop review of the available information sources listed below, provided data on the following: Vegetation characteristic of the area, Species at Risk (SAR) that have been found or have the potential to be found in the vicinity of the study area, local habitat conditions in the vicinity of the subject property, the location of any Natural Heritage features inclusive of Provincially Significant Wetlands (PSW), ANSI, Significant Woodlands in vicinity of the study area and any significant wildlife habitat and fish habitat.

In addition to the above, local agencies were consulted to confirm desktop study findings and to provide any additional information with respect to the presence of SAR, related habitats, or fish habitat within the study area as defined herein. The review was conducted using the sources provided below:

- Wildlife atlases for birds and herpetofauna, (Bird Studies Canada et al. 2006, Ontario Nature, 2019);
- Ontario Ministry of Natural Resources and Forestry (MNRF) Land Information Ontario (LIO) database;
- The Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature, 2020);
- The Ontario Geological Survey Earth (OGS Earth) geoscience database (MNRF, 2020);
- MNRF Make a Map: Natural Heritage Areas mapping application;
- DFO Aquatic Species at Risk Mapping Tool;
- Fish Online;
- Region of Peel Official Plan (2022);
- Township of Caledon Official Plan (2018); and
- Correspondence with the Ministry of Environment Conservation and Parks (MECP) and the Toronto Region Conservation Authority (TRCA) (**Appendix B**).

3.2 Field Investigations

A field survey was conducted first on July 26th, 2022, by Jessica Abernethy, and Patrick Gilhooly of MP, and again on November 10, 2022, by J. Abernethy in order to gather information on existing conditions, inventories, and habitats present within the study area as detailed in **Table 1** below inclusive of site conditions. Fieldwork was conducted 120 metres (m) from, as well as including the proposed project footprint (**Figure 1**). A photographic record of the study area can be found in **Appendix A**.

Table 1: Summary of Field Investigation Activities				
Date	Personnel Involved	Time of Survey	Weather Conditions	Purpose of Visit
July 26, 2022	J. Abernethy and P. Gilhooly	7:15 a.m. to 11:00 a.m.	17 °C, sunny, calm	Existing terrestrial conditions within the study area (Glasgow Road)
November 10, 2022	J. Abernethy	2:00 p.m to 3:00 p.m	21 °C, partially cloudy, calm	Existing terrestrial conditions within the study area (Deer Valley Drive)

The field investigations included identification of the following, where applicable:

- Existing vegetation communities;
- Wetland areas;
- Reptiles, amphibians and associated habitat;
- SAR and their habitat;
- Resident or migrant bird and wildlife species;
- Wildlife corridors and Concentration areas;
- Critical habitat areas;
- Existing land uses surrounding the study area; and
- Fish Habitat and aquatic environment.

Relevant Protocols utilized to collect field data are provided in the following Sections **3.2.1 – 3.2.5**.

3.2.1 *Vegetation Community Field Surveys*

A botanical inventory of the study area was conducted, with field staff listing all observed terrestrial plant species. Vegetation communities were mapped consistent with protocols as defined in the MNRF Ecological Land Classification (ELC) guidelines for Southern Ontario (Lee, 2009).

3.2.2 *Wildlife and Wildlife Habitat Field Survey Methods (Including Reptiles / Amphibians)*

Wildlife habitat assessments were conducted simultaneously with vegetation surveys, based on procedures provided in the *Significant Wildlife Habitat Technical Guide* (SWHTG, MNRF 2000), the *Ecoregion Criteria Schedules* (MNRF, 2015), and the *Natural Heritage Reference Manual* (NHRM, MNRF 2010).

Wildlife species (e.g., mammals, birds and nests on structures, and herpetofauna) noted during the investigations were identified by signs, visual observations, and vocalizations. The extent of the study area used for wildlife species observations was within the existing Township right-of-way (ROW) and adjacent lands for 120 m unless a sensitive receptor greater than 120 m was likely to be adversely affected. For the purpose of this assessment, any species observed within and adjacent to the study area were identified and considered to be residents of, or visitors to, the study area.

3.2.3 Aquatic Environment Field Survey Methods

Aquatic field investigations were conducted, to an extent practical, to identify and map any aquatic habitat features and values present within or adjacent to, the study area.

3.2.4 Species At Risk Targeted Field Survey Protocols

Butternut Tree Survey

As part of the vegetation assessment prepared for this site, MP field staff surveyed the study area for Butternut trees, as the location is within the species general range.

Bat Leaf-on Survey

The subject area was assessed for presence of suitable bat habitat and snags consistent with bat survey protocols (MNRF, 2017) for treed habitats, inclusive of deciduous or mixed wooded ecosites, and trees at least 10cm diameter-at-breast height (DBH) for suitability as maternity roost sites.

3.2.5 Wetlands

An assessment of the presence of wetlands within or adjacent to the study area was conducted to a degree practical as a part of the field investigations utilizing accepted field protocols, and in order to verify desktop information and map any identified features.

4.0 EXISTING CONDITIONS

The following sections summarize the existing physical and biological conditions within the study area and surrounding lands.

4.1 Ecozone / Ecoregion Physiography

4.1.1 Mixed Wood Plains Ecozone

Ecozones are described as areas of the earth's surface which are representative of large generalized ecological units and are characterized by interactive abiotic and biotic factors.

The study area is located within the Mixedwood Plains Ecozone which accounts for roughly over 8% of Ontario. This ecozone encompasses southern portions of Ontario and extends into the southern sections of Quebec bordering the St Lawrence lowlands. Lake Huron, Lake Erie, Lake Ontario, and the St Lawrence River bound the ecozone to the south and to the west.

4.1.2 Lake Simcoe-Rideau Ecoregion

Ecoregions are defined as parts of a province which are characterized by distinctive regional ecological factors including climatic, fauna, physiography, vegetation, soil, water, and land use.

The study area is located in the Lake Simcoe-Rideau Ecoregion (6E). This area extends from Lake Huron in the west to the Ottawa River in the east. It includes various shores on Lake Ontario and continues through to the Ontario portion of the St. Lawrence River Valley (Crins et al., 2009).

4.1.3 Ecoregion Physiography

The study area consists of three main geological deposits of Older Alluvium, Modern Alluvium, and Halton Till. These deposits are made up of sand and gravel including areas of brown loam to silt loam till as well as elevated terrace remnants. The bedrock underlying the Glasgow Road study area consists of shale, siltstone, dolostone, and limestone from the Georgian Bay formation of the Ordovician with thick drift (Ontario Geological Survey, 2011).

4.2 Terrestrial Ecosystems

4.2.1 Vegetation Communities and Flora

4.2.1.1 Ecoregion Vegetation

The Lake Simcoe-Rideau Ecoregion (6E) is dominated by croplands (57%), followed by pasture lands (44.4%), and abandoned fields (12.8%). Forested areas of the ecoregion are composed primarily of deciduous forest (16.0%) with some addition of coniferous and mixed forests. Forest stands within the ecoregion typically contain green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), Eastern white cedar (*Thuja occidentalis*), yellow birch (*Betula alleghaniensis*), balsam fir (*Abies balsamea*), black ash (*Fraxinus nigra*), black spruce (*Picea mariana*), and tamarack (*Larix laricina*) (Crins et al., 2009).

4.2.1.2 Vegetation Survey

The vegetation survey for the project area was completed on July 26th, and November 10, 2022. **Table 2** lists the vegetation species identified during the 2022 field investigation along Glasgow Rd and Deer Valley Drive. Vegetation species found within the study area are representative of roadside corridors in southern Ontario, with some non-native species. One (1) species at risk vegetation species (i.e., Butternut) was documented by McIntosh Perry staff (**Figure 2**).

A botanical inventory of the study area was conducted, with field staff listing all observed terrestrial plant species. Vegetation communities were mapped consistent with protocols as defined in the MNRF Ecological Land Classification (ELC) guidelines for Southern Ontario (Lee, 2009). The following ecologically distinct areas were mapped including; Cattail Mineral Shallow Marsh Type (MASM1-1), Goldenrod Forb Meadow Type (MEFM1-1), Sumac Deciduous Shrub Thicket Type (THDM2-1), Dry - Fresh Manitoba Maple Deciduous Forest Type (FODM4-5), Fresh – Moist Willow Lowland Deciduous Forest Type (FODM7-3), Dry - Fresh Black Walnut Deciduous Woodland Type (WODM4-4), Fresh – Moist Lowland Deciduous Forest Ecosite- Manitoba Maple and Black Walnut (FODM7), Dry - Fresh Black Locust Deciduous Forest Type (FODM4-11), Dry - Fresh Coniferous Woodland Ecosite (WOCM1), Native Deciduous Regeneration Thicket Type (THDM4-1), and Dry – Fresh Sugar Maple – Hardwood Deciduous Forest Type (FODM5-9). All communities have been mapped, see **Figure 3** for vegetation mapping.

4.2.1.3 Invasive Species

The following species listed as ‘restricted’ under the *Invasive Species Act, 2015* were observed within the study area during the 2022 field investigations:

- Phragmites (*Phragmites australis subsp. australis*).

The following species classified as ‘noxious weeds’ under the *Weed Control Act, 1990* were observed within the study area during the 2022 field investigations:

- bull thistle (*Cirsium vulgare*);
- coltsfoot (*Tussilago farfara*), and
- European Buckthorn (*Rhamnus cathartica*).

An additional species, garlic mustard (*Alliaria petiolata*) is listed under the Ontario Invasive Plant Council (OIPC, 2022) as an invasive species. Although no legal action is required for this species, it has been known to colonize quickly and outcompete native plants. As a result, this species is important to take into consideration during project works and implement a management plan to prevent its continued spread.

4.2.1.4 Endangered Species

The following species classified as “Endangered” under the Ontario *Endangered Species Act (2007)* were observed within the study area during the 2022 field investigations:

- Butternut (*Juglans cinerea*).

The individuals observed within the study area have been identified and mapped on **Figure 2**. Two butternut trees to be in fair/ poor health were observed to be within the potential impact area of the project works (6-8m from the roads edge). Additional butternut trees were observed further down the ravine feature (approximately 4 individuals) located outside the impact area. A Butternut Health assessment (BHA) was not completed as part of this project.

Table 2: Vegetation Identified within the Glasgow Road Study Area

Tree Species			
Common Name	Scientific Name	Common Name	Scientific Name
American elm	<i>Ulmus americana</i>	Scots pine	<i>Pinus sylvestris</i>
American basswood	<i>Tilia americana</i>	Trembling aspen	<i>Populus tremuloides</i>
Black walnut	<i>Juglans nigra</i>	Tamarack	<i>Larix laricina</i>
Black cherry	<i>Prunus serotina</i>	White spruce	<i>Picea glauca</i>
Butternut ***	<i>Juglans cinerea</i>	White ash	<i>Fraxinus americana</i>
Eastern white cedar	<i>Thuja occidentalis</i>	White birch	<i>Betula papyrifera</i>
Honey locust	<i>Gleditsia triacanthos</i>	Willow spp.	<i>Salix</i>
Large-toothed aspen	<i>Populus grandidentata</i>	White poplar	<i>Populus alba</i>
Manitoba maple	<i>Acer negundo</i>	White pine	<i>Pinus strobus</i>
Sugar maple	<i>Acer saccharum</i>		
Shrub Species			
Common Name	Scientific Name	Common Name	Scientific Name
European buckthorn*	<i>Rhamnus cathartica</i>	Red Osier dogwood	<i>Cornus sericea</i>
Blackberry	<i>Rubus ursinus</i>	Riverbank grape	<i>Vitis riparia</i>
Hawthorn sp.	<i>Crataegus sp.</i>	Staghorn sumac	<i>Rhus typhina</i>
Honeysuckle sp.	<i>Caprifoliaceae sp.</i>	Virginia creeper	<i>Parthenocissus quinquefolia</i>
Herb Species			
Common Name	Scientific Name	Common Name	Scientific Name
Asparagus	<i>Asparagus officinalis</i>	Garlic mustard	<i>Alliaria petiolata</i>
Bull thistle*	<i>Cirsium vulgare</i>	Goldenrod sp.	<i>Solidago sp.</i>
Blackberry	<i>Rubus ursinus</i>	Orchardgrass	<i>Dactylis glomerata</i>
Blue-bead lily	<i>Clintonia borealis</i>	Phragmites**	<i>Phragmites australis subsp. australis</i>
Cattail	<i>Typha latifolia</i>	Queen Anne's lace	<i>Daucus carota</i>
Coltsfoot*	<i>Tussilago farfara</i>	Smooth brome grass	<i>Bromus inermis</i>
Common burdock	<i>Arctium minus</i>	Teasel	<i>Dipsacus sp.</i>
Common milkweed	<i>Asclepias syriaca</i>	Woodland sunflower	<i>Helianthus divaricatus</i>
Common mullein	<i>Verbascum thapsus</i>	Woodland horsetail	<i>Equisetum sylvaticum</i>
Common soapwort	<i>Saponaria officinalis</i>	Zigzag goldenrod	<i>Solidago flexicaulis</i>

False Salomon's-seal	<i>Maianthemum racemosum</i>		
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*Listed under the *Weed Control Act*, 1990

**Listed as Restricted under the *Invasive Species Act*, 2015

*** Listed as an endangered vascular plant under the Ontario *Endangered Species Act*, 2007

4.2.2 Wetland Habitat

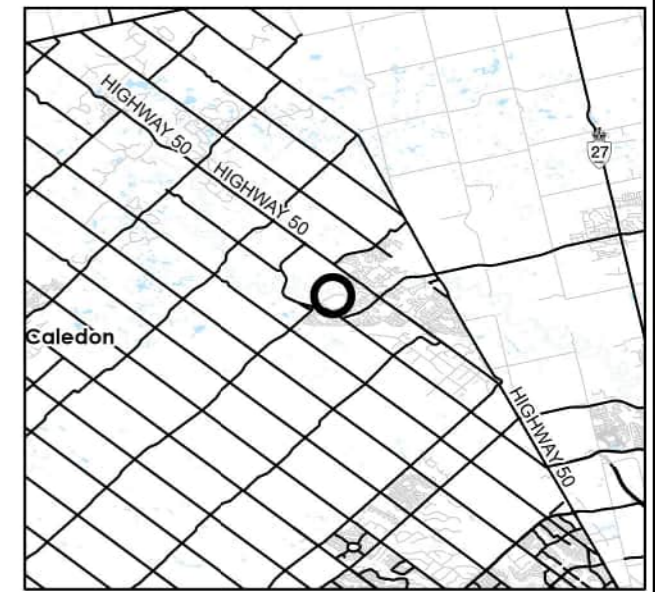
The Glasgow Road study area falls within the boundaries of two (2) unevaluated wetlands identified and mapped (**Figure 2**). The first unevaluated wetland is classified as a marsh and is located south of Glasgow Road and encircles Edelweiss Park. This wetland falls in proximity (within 10 m) of Deer Valley Drive. The second unevaluated wetland is classified as a swamp wetland is located north of Glasgow Road and adjacent to the north side of the Humber River. Three PSW's fall within 2 km of the study area but are not located within the project works limits. They are the Bolton Wetland Complex (swamp/ marsh) located approximately 1 km west of Glasgow Rd, the West Humber River Headwater Wetland Complex (marsh) located 1.2 km southwest of Deer Valley Drive, and the Castlederg Wetland Complex (marsh) located approximately 1.75 km northeast from Glasgow Rd.

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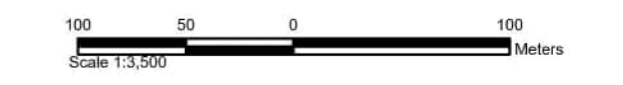


LEGEND

- Snag Trees
- Butternut Trees
- Right-of-way
- Glasgow Road Study Area
- Blanding's Turtle (NHIC Grid)
- Wetlands (Not Evaluated)
- Aquatic Resource Area
- Aquatic Resource Area
- Regulated Area 2021 (large scale)



REFERENCE
 GIS data provided by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, 2022.



CLIENT:	TOWN OF CALEDON	
PROJECT:	EXISTING ENVIRONMENTAL CONDITIONS REPORT	
TITLE:	NATURAL HERITAGE FEATURES	

McINTOSH PERRY <small>115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com</small>	PROJECT NO: CCO-22-3677	FIGURE:
	Date: Dec., 07, 2022	2
	GIS: AH	
	Checked By: PG	

4.2.3 Wildlife

4.2.3.1 Ecoregion Wildlife

Characteristic wildlife of the Lake Simcoe Rideau Ecoregion area includes white-tailed deer (*Odocoileus virginianus*), northern raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), woodchuck (*Marmota monax*), red-spotted newt (*Notophthalmus viridescens*), Snapping Turtle (*Chelydra serpentina*), Eastern garter snake (*Thamnophis sirtalis sirtalis*), and common watersnake (*Nerodia sipedon*). Representative bird species include field sparrow (*Spizella pusilla*), Grasshopper Sparrow (*Ammodramus sarnnarum*), and Eastern Meadowlark (*Sturnella magna*) (Crins et al., 2009).

4.2.3.2 Wildlife Survey

Table 3 lists the wildlife species observed in the study area during the 2022 field investigation. Species identified consisted primarily of birds, with a total of 12 species observed within the study area, including one (1) bird SAR: Barn Swallow (*Hirundo rustica*). Based on the habitat observed within the study area, the timing of observation, and details of the observation, the individual was likely a resident or visiting bird.

An assessment of significant wildlife habitat to an extent possible due to the existing timing window was carried out based on a review of available resources inclusive of the *Significant Wildlife Habitat Technical Guide* (SWHTG, MNRF 2000), the *Ecoregion Criteria Schedules* (MNRF 2015), and the *Natural Heritage Reference Manual* (NHRM, MNRF 2010). Significant wildlife habitat is described under four main categories provided below.

- Seasonal concentrations of animals
- Rare vegetation communities or specialized habitats for wildlife
- Wildlife movement corridors
- Habitats of species of conservation concern

A Blanding's Turtle (*Emydoidea blandingii*) grid was identified outside 120 m from the project area boundaries but within 2 kms of the study area. No Blanding's turtles were identified during the field investigation. It is likely this species is present within the study area due to the proximity of the Humber River and may cross Deer Valley Drive and Glasgow Road during migration to the surrounding wetlands or in search of nesting grounds.

Two Great Blue Heron Nesting Site/Colonies (ANSI) are located in proximity to the study area approximately 900 m to the west within the Bolton Wetland Complex.

Table 3: Wildlife Observed at the Glasgow Road Study Area

Birds			
Common Name	Scientific Name	Common Name	Scientific Name
American Crow	<i>Corvus brachyrhynchos</i>	Eastern Kingbird	<i>Tyrannus tyrannus</i>
American Goldfinch	<i>Spinus tristis</i>	Gray Catbird	<i>Dumetella carolinensis</i>
American Robin	<i>Turdus migratorius</i>	Northern Cardinal	<i>Cardinalis cardinalis</i>
Barn Swallow*	<i>Hirundo rustica</i>	Northern Flicker	<i>Colaptes auratus</i>
Blue Jay	<i>Cyanocitta cristata</i>	Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Common Yellowthroat	<i>Geothlypis trichas</i>	Song Sparrow	<i>Melospiza melodia</i>
Wildlife			
American Toad	<i>Anaxyrus americanus</i>	Red Squirrel	<i>Tamiasciurus hudsonicus</i>

*Identified as a Species at Risk (SARA, 2002)

4.2.4 Fisheries and Aquatic Ecosystems

The watercourses associated with the Glasgow Road study area include the Humber River and five (5) unnamed tributaries. Glasgow Road falls within 50 m whereas Deer Valley Drive falls within 20 m of the Humber River. Land Information Ontario (LIO) and Aquatic Resource Area (ARA) mapping has identified the Humber River as cold-water and its tributaries as warm-water watercourses and are known to contain fish species listed in **Table 4**.

The Humber River within the study area does not occur within the identified project works limits. However, the proximity of this watercourse to Deer Valley Drive, as well as presence of the work limits occurring within floodplain regulatory area warrants consideration for the protection of this feature. Watercourse observations within the study area were restricted to terrestrial observations, due to the presence of abundant available data on this watercourse. Therefore, no in-water aquatic investigations such as electrofishing were conducted at this site. The aquatic environment surrounding the Humber River was observed to be comprised of floodplain, with abundant aquatic and riparian vegetation surrounding the channel banks. The vegetation included golden rod, cattails, Joe-Pye weed, staghorn sumac, and riverbank grape. Riparian trees were primarily willow and Manitoba Maples. The channel morphology was characterised as a wide flat and riffle fast-moving watercourse, with abundant gravels, cobbles and boulders. The banks of the Humber River closest to Deer Valley Drive appear to have been stabilized with rip rap reinforcements.

Table 4: Existing Fish Conditions		
Waterbody	Thermal Regime	Fish Species
Humber River	Cold	<p><u>Species observed:</u> Not fished</p> <p><u>Fish species know to occur in river:</u> Alewife, Banded Killifish, Black Crappie, Blackchin Shiner, Blacknose Dace, Blackside Darter, Bluegill, Bluntnose Minnow, Bowfin, Brassy Minnow, Brook Stickleback, Brown Bullhead, Brown Trout, Central Stoneroller, Chinook Salmon, Common Carp, Common Shiner, Creek Chub, Emerald Shiner, Fantail Darter, Fathead Minnow, Freshwater Drum, Gizzard Shad, Golden Shiner, Goldfish, Green Sunfish, Hornyhead Chub, Iowa Darter, Johnny Darter, Largemouth Bass, Logperch, Longnose Dace, Longnose Gar, Mimic Shiner, Mottled Sculpin, Northern Hog Sucker, Northern Pike, Northern Redbelly Dace, Pumpkinseed, Rainbow Darter, Rainbow Smelt, Rainbow Trout, Redfin Shiner, River Chub, Rock Bass, Rosyface Shiner, Round Goby, Sand Shiner, Sea Lamprey, Smallmouth Bass, Spotfin Shiner, Spottail Shiner, Stonecat, Threespine Stickleback, Walleye, White Bass, White Crappie, White Perch, White Sucker, Yellow Bullhead, and Yellow Perch.</p>
Five (5) Unnamed Watercourses – Tributary to Humber River	Warm	<p><u>Species observed:</u> Not fished</p> <p><u>Fish species know to occur in tributaries:</u> Blacknose Dace, Bluntnose Minnow, Brook Trout, Brown Trout, Common Shiner, Creek Chub, Fantail Darter, Fathead Minnow, Longnose Dace, Northern Hog Sucker, Rainbow Darter, Rock Bass, Stonecat, and White Sucker.</p>

4.3 Species at Risk

Ontario wildlife atlases were reviewed for species at risk (SAR) Element Occurrence (EO) records within 5 km of the study area. The Ontario Reptile and Amphibian Atlas (Ontario Nature, 2021) identified records of:

- Eastern Ribbonsnake (*Thamnophis sauritus*);
- Eastern Milksnake (*Lampropeltis Triangulum*);
- Blanding’s Turtle;
- Midland Painted Turtle (*Chrysemys picta marginata*); and
- Snapping Turtle (*Chelydra serpentina*).

One (1) Blanding's Turtle occurrence record (1 km grid) is present approximately 250 m south of the subject property (square ID: 17PJ0058; Atlas Nad83 ID; **Figure 2**).

The Ontario Breeding Bird Atlas (Bird Studies Canada et al., 2006) identified 13 SAR birds known to occur within 10 km of the study area:

- Bank Swallow (*Riparia riparia*);
- Barn Swallow (*Hirundo rustica*);
- Bobolink (*Dolichonyx oryzivorus*);
- Canada Warbler (*Cardellina canadensis*);
- Chimney Swift (*Chaetura pelagica*);
- Common Nighthawk (*Chordeiles minor*);
- Eastern Meadowlark (*Sturnella magna*);
- Eastern Whip-poor-will (*Antrostomus vociferus*);
- Eastern Wood-Pewee (*Contopus virens*);
- Grasshopper Sparrow (*Ammodramus savannarum*); and
- Golden-winged Warbler (*Vermivora chrysoptera*);
- Red-headed Woodpecker (*Melanerpes erythrocephalus*); and
- Wood Thrush (*Hylocichla mustelina*).

MNRF Make a Map: Natural Heritage Areas (Natural Heritage Information Centre) mapping application identified the following SAR within 5 km of the study area:

- American Bumble Bee (*Bombus pensylvanicus*);
- Barn Swallow;
- Black Ash (*Fraxinus nigra*);
- Blanding's Turtle;
- Bobolink;
- Butternut;
- Canada Warbler;
- Eastern Meadowlark;
- Eastern Milksnake;
- Eastern Wood-pewee;
- Golden-winged Warbler;
- Loggerhead Shrike (*Lanius ludovicianus*);
- Louisiana Waterthrush (*Parkesia motacilla*),
- Midland Painted Turtle;
- Red-headed Woodpecker;
- Redside Dace (*Clinostomus elongatus*);
- Snapping Turtle; and
- Wood Thrush.

The study area is in the general range of the following SAR species:

- Eastern Small-footed Myotis (*Myotis leibii*);
- Tri-coloured Bat (*Perimyotis subflavus*);
- Little Brown Myotis (*Myotis lucifugus*); and
- Northern Myotis (*Myotis septentrionalis*).

Background research identified the potential for various SAR to be present within the study area. **Table 5** outlines potential SAR to exist within the study area based on habitat suitability and the possibility of using the study area as a migratory corridor.

Table 5: Potential SAR within the Vicinity of Glasgow Road Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Suitable Habitat Present within Study Area
Fish					
Redside Dace ¹	<i>Clinostomus elongatus</i>	Endangered	Yes	Endangered	No.
Silver Lamprey ^{1,6}	<i>Ichthyomyzon unicuspis</i>	Special Concern	No	Special Concern	No.
Birds					
Bank Swallow ^{1, 2, 5}	<i>Riparia riparia</i>	Threatened	Yes	Threatened	No. Suitable habitat is not present within the study area.
Barn Swallow ^{1, 2, 5}	<i>Hirundo rustica</i>	Threatened	Yes	Threatened	Yes. Potential suitable habitat is found in meadows/agricultural fields adjacent to study area. A single individual was observed flying over the study area, however, based on the date and lack of nests within the study area, suitable nesting habitat is not present.
Bobolink ^{1, 2, 5}	<i>Dolichonyx oryzivorus</i>	Threatened	Yes	Threatened	Yes, Potential suitable habitat is found in meadows/agricultural fields adjacent to study area.
Canada Warbler ^{1, 2, 5}	<i>Cardellina canadensis</i>	Special Concern	Yes	Threatened (under consideration)	Yes, suitable habitat is found in a variety of forest types, such as wet, mixed deciduous-coniferous forest with a well-developed shrub layer, some of which may be found within the study area.
Chimney Swift ²	<i>Chaetura pelagica</i>	Threatened	Yes	Threatened	No. Suitable habitat is not present within the study area.

Table 5: Potential SAR within the Vicinity of Glasgow Road Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Suitable Habitat Present within Study Area
Common Nighthawk ²	<i>Chordeiles minor</i>	Special Concern	No	Threatened	Yes. Potential suitable habitat is present in surrounding areas adjacent to the study area (e.g., pastures, grasslands, river banks).
Eastern Meadowlark ^{2,5}	<i>Sturnella magna</i>	Threatened	Yes	Threatened	Yes, Potential suitable habitat is found in meadows/agricultural fields adjacent to study area.
Eastern Wood-Pewee ^{1,2}	<i>Contopus virens</i>	Special Concern	No	Special Concern	Yes, found in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests, some of this habitat occurs within the study area.
Eastern Whip-poor-will ²	<i>Antrostomus vociferus</i>	Threatened	Yes	Threatened	No. Suitable habitat not present
Golden-winged Warbler ^{2,5}	<i>Vermivora chrysoptera</i>	Special Concern	No	Threatened	No. Suitable habitat not present
Grasshopper sparrow ^{2,5}	<i>Ammodramus savannarum</i>	Special Concern	No	Special Concern	Yes, potential suitable habitat is found in meadows/agricultural fields adjacent to study area.
Louisiana Waterthrush ^{1,2}	<i>Parkesia motacilla</i>	Threatened	Yes	Threatened	No. Suitable habitat not present
Loggerhead Shrike ¹	<i>Lanius ludovicianus</i>	Endangered	Yes	Endangered	Yes, potential suitable habitat is found in meadows/agricultural fields adjacent to study area.
Red-headed Woodpecker ^{1,2}	<i>Melanerpes erythrocephalus</i>	Endangered	Yes	Endangered	Yes. Suitable habitat is present in surrounding woodlands, grasslands, forest edges, pastures, roadsides, and urban parks adjacent to the study area.

Table 5: Potential SAR within the Vicinity of Glasgow Road Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Suitable Habitat Present within Study Area
Wood Thrush ^{1, 2, 5}	<i>Hylocichla mustelina</i>	Special Concern	No	No Status	Yes. Suitable habitat is present in surrounding woodlands adjacent to the study area.
Insects					
American Bumble Bee ¹	<i>Bombus pensylvanicus</i>	No Listing	No	Special Concern	Yes. Suitable habitat is potentially present in fields and ditches with abundant wildflowers within the study area.
Monarch ^{4, 5}	<i>Danaus plexippus</i>	Special Concern	No	Special Concern	Yes. Suitable habitat is present within the study area in open habitats, where milkweed was identified.
Mammals					
Eastern Small-footed Myotis ⁵	<i>Myotis leibii</i>	Endangered	Yes	Special Concern	Potential in adjacent forests.
Little Brown Myotis ⁵	<i>Myotis lucifugus</i>	Endangered	Yes	Endangered	Potential in adjacent forests.
Northern Myotis ⁵	<i>Myotis septentrionalis</i>	Endangered	Yes	Endangered	Potential in adjacent forests.
Tri-colored Bat ⁵	<i>Perimyotis subflavus</i>	Endangered	Yes	Endangered	Potential in adjacent forests.
Reptiles and Amphibians					
Blanding's Turtle ^{1, 3, 5}	<i>Emydoidea blandingii</i>	Threatened	Yes	Endangered	Yes, species is known to occur in the general vicinity of the study area. No individuals observed during field investigations.
Eastern Milksnake ^{1, 3}	<i>Lampropeltis triangulum</i>	No Status	No	Special Concern	Yes, may be found throughout the study area as they can live in a variety of habitats.
Eastern Ribbonsnake ^{1, 3}	<i>Thamnophis sauritus</i>	Special concern	No	Special Concern	Yes, may be found in wetland habitats within the study area.

Table 5: Potential SAR within the Vicinity of Glasgow Road Study Area

Common Name	Scientific Name	Provincial Status	Provincial Habitat Protection	Federal Status	Suitable Habitat Present within Study Area
Midland Painted Turtle ^{1,3}	<i>Chrysemys picta marginata</i>	No Status	No	Special Concern	No, lack of adequate gravels and sand bars for nesting are present within the study area. May use study area as migratory corridor.
Snapping Turtle ^{1,3,5}	<i>Chelydra serpentina</i>	Special Concern	No	Special Concern	No, lack of adequate gravels and sand bars for nesting are present within the study area. May use study area as migratory corridor.
Plants					
Black Ash ^{1,3}	<i>Fraxinus nigra</i>	Endangered	Yes	No Status	Yes, species is known to occur in the general vicinity of the study area. No individuals observed during field investigations.
Butternut ^{1,5}	<i>Juglans cinerea</i>	Endangered	Yes	Endangered	Yes, species is known to occur in the general vicinity of the study area. Individuals were found within the study area.

This table was assembled from various sources of background information. The following information sources were consulted to compile background information.

1. Land Information Ontario – NHIC database (NHIC) (MNR, 2020)
2. Ontario Breeding Bird Atlas (OBBA) (Bird Studies Canada, 2006)
3. Ontario Reptile and Amphibian Atlas (ORAA) (Ontario Nature, 2020)
4. Ontario Butterfly Atlas (OBA) (Toronto Entomologists’ Association, 2020)
5. Within Species General Range (GR)
6. Department of Fisheries and Oceans (DFO) Aquatic Species at Risk Mapping Tool

4.3.1 Habitat for Species at Risk

SAR Birds

The Barn Swallow is listed as 'Threatened' under the *Endangered Species Act* (ESA, 2007) and is therefore afforded Habitat protection. An individual Barn Swallow was observed foraging within the meadow area adjacent to Edelweiss Park. No suitable nesting structures for this species were observed within the study area. Therefore, the study area likely only supports contributing habitat for this species.

The Canada Warbler is listed as 'Special Concern' under the ESA (2007) and is not afforded habitat protection. Suitable habitat for this species may be found within a variety of forest types, such as wet, mixed deciduous-coniferous forest with a well-developed shrub layer, some of which may be found within the study area. No individuals however were observed in the study area.

The Common Nighthawk is listed as 'Special Concern' under the ESA (2007) and is therefore not afforded habitat protection. This species prefers to nest on exposed gravels and bare earth, most of which do not exist within the zone of impact for project works. Potential suitable habitat is present in surrounding habitats adjacent to the study area (e.g., pastures, grasslands, river banks).

The Eastern Wood-pewee is listed as 'Special Concern' under the ESA and *Species At Risk Act* (SARA). The habitat for this species is not afforded protection under the ESA or SARA. However, individuals of this species, their eggs, nest and fledglings are protected under the *Migratory Birds Convention Act* (MBCA) (1994). The Eastern Wood-pewee is a habitat generalist which will utilize a variety of habitats for nesting and foraging, however it prefers edge habitat near water. The study area contains such habitats within the forest (FOD) communities adjacent to the Humber River.

The Eastern Meadowlark is listed as 'Threatened' under the ESA and is therefore afforded habitat protection. Numerous habitats exist within the study area that may be suitable for Eastern Meadowlarks, such as the meadows occurring in proximity to Deer Valley Drive and the western most section of Glasgow Road. These habitats may also be suitable for additional grassland bird species such as the Bobolink, Grasshopper Sparrow and Loggerhead Shrike that may occur within the study area. The Bobolink is listed as 'Threatened' under the ESA (2007) and is afforded habitat protection. The Grasshopper Sparrow is listed as 'Special Concern' under the ESA (2007) and is therefore not afforded habitat protection. The Loggerhead Shrike is listed as 'Endangered' under the ESA (2007) and is afforded habitat protection. This species has specialized habitat preferences including open meadows with low shrub cover including hawthorn and buckthorn species. This species may have potential suitable habitat within in regeneration area as well as meadows/agricultural fields adjacent to study area. None of the above species were observed during field surveys.

Red-headed Woodpecker is listed as 'Endangered' on the ESA (2007) and is afforded habitat protection. Suitable habitat is present in surrounding woodlands, grasslands, forest edges, pastures, roadsides, and urban parks adjacent to the study area. Snag trees showing woodpecker evidence were identified within the study area.

The Wood Thrush is listed as ‘Special Concern’ under the ESA (2007) and is not afforded habitat protection. This species prefers mature deciduous and mixed forest communities with well developed undergrowth and tall trees. Due to the presence of multiple forest communities within the study area fitting this description, this species may be present within the forest (FOD) communities.

SAR Insects

The American Bumble Bee is not listed under the ESA (2007) and is therefore not afforded habitat protection. As a habitat generalist, this species may be encountered within the study area due to the diversity of habitats present that may be able to support this individual. Found in habitats such as mixed woodlands, and farmlands with abundant wildflowers all of which occur within the study area. No species observations were made.

Monarchs may be encountered throughout the study area along the Glasgow Road and Deer Valley Drive ROW in association with milkweed species which serve as host plants for this species. Monarchs are listed as ‘Special Concern’ under the *Endangered Species Act* (ESA) (2007) and the *Species at Risk Act* (SARA) (2002) and do not receive habitat protection. The host species Milkweed has been observed within the study area, and therefore provides habitat for all life stages of the species.

SAR Mammals

The potential to encounter SAR Bats exists within the study area, as surrounding forests may provide adequate habitats. Suitable snags for roosting were observed in proximity to Glasgow Road (see **Figure 2**), but no snags adequate for supporting maternity roosts were observed. No visible features suitable as hibernacula sites appear to be associated with the study area limits.

Reptiles and Amphibians

Migratory habitat for Blanding’s Turtle, Midland painted turtle, and Common Snapping Turtle is available within the study area within the watercourse features. The Midland Painted Turtle is listed as ‘No Status’, and the Common Snapping Turtle is listed as ‘Special Concern’ under the ESA (2007) and do not receive habitat protection under the ESA but do receive protection under the *Fish and Wildlife Conservation Act* (FWCA). The Blanding’s Turtle is listed as ‘Threatened’ under the ESA and SARA and receives habitat protection. Based on the *General Habitat Description for the Blanding’s Turtle (Emydoidea blandingii)* by MNRF (2013a), Category 2 Habitat for Blanding’s Turtle is available in any connected wetland and waterbody complex extending up to 2 km from the Blanding’s Turtle occurrences as well as 30 m around these suitable wetlands/waterbodies. Category 3 Blanding’s Turtle Habitat is any area from 30 m to 250 m around Category 2 Habitat. These habitats are present within study area (**Figure 3**), as a Blanding’s turtle occurrence square (ORAA, 2020) is located approximately 200 m south of the Humber River, making it likely this species could be encountered within the study area. The majority of habitat within the study area provides the function of a migration corridor to more suitable habitat. However, gravel shoulders adjacent to Edelweiss Park at the corner of Glasgow Road and Deer Valley may provide suitable nesting conditions for these species of turtles, given the proximity of the Humber River.

The Eastern Milksnake may be present within the study area for foraging, breeding, and/or overwintering. This species is considered a habitat generalist and may utilize a variety of habitats within the study area. This species

is listed as ‘Special Concern’ under the SARA and does not receive habitat protection. No individuals of this species were observed during the field investigations.

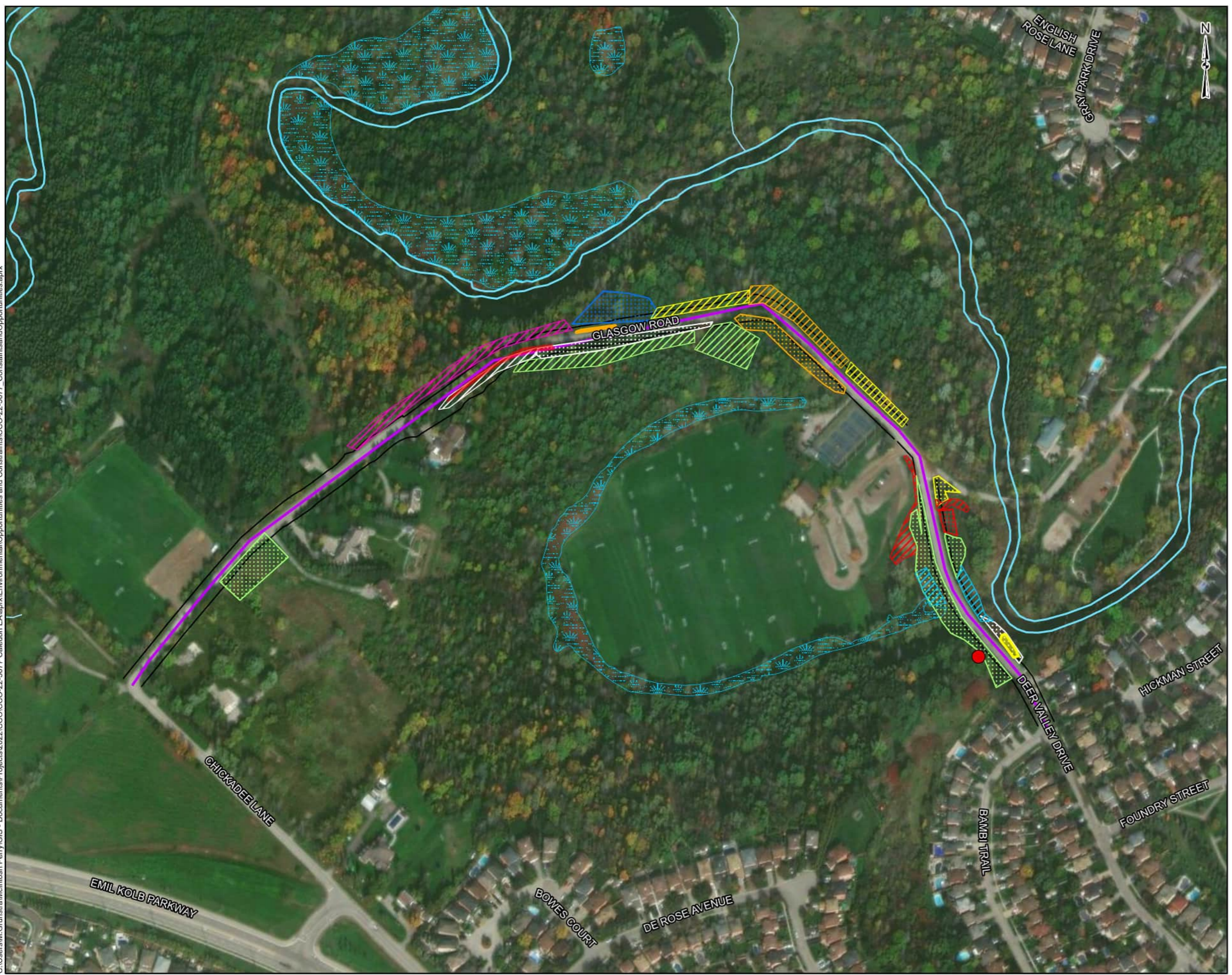
The Eastern Ribbonsnake is listed as ‘Special Concern’ under the ESA (2007) and is therefore not afforded habitat protection. The species may be encountered within the study area, as this species prefers wet meadows and wetlands, some of which may be identified within the study area.

SAR Plants

The Black Ash is listed as ‘Endangered’ under the ESA (2007) and is therefore afforded habitat protections. A temporary suspension on the protection of this species exists for two (2) years after it’s addition to the ESA (2007). This species is primarily found in swamps, floodplains and fens. No individuals of this species were observed during the 2022 field investigations.

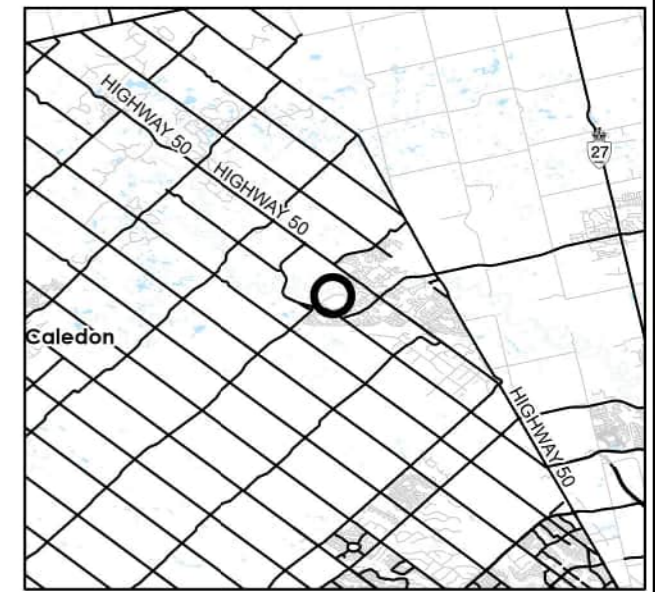
The Butternut is listed as ‘Endangered’ under the ESA (2007) and SARA (2002). Habitat for this species and individuals of this species are afforded protection. Habitat is available within the study area due to the wide range of habitat preferences for Butternuts. Butternuts are shade intolerant and prefer open areas but often become crowded out by other pioneer species (i.e. regenerating areas). Two Butternut trees were observed within the study area, as well as multiple other individuals observed beyond the project footprint.

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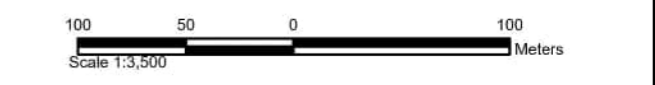


LEGEND

Invasive Species	Dry - Fresh Sugar Maple - Hardwood Deciduous Forest Type (FODM5-9)
Coltsfoot	Fresh - Moist Manitoba Maple Lowland Deciduous Forest Type (FODM7-7)
Garlic Mustard	Fresh - Moist Lowland Deciduous Forest Ecosite- Manitoba Maple and Black Walnut (FODM7)
Phragmites	Fresh - Moist Willow Lowland Deciduous Forest Type (FODM7-3)
European Buckthorn	Goldenrod Forb Meadow Type (MEFM1-1)
ELC Communities	Native Deciduous Regeneration Thicket Type (THDM4-1)
Cattail Mineral Shallow Marsh Type (MASM1-1)	Sumac Deciduous Shrub Thicket Type (THDM2-1)
Dry - Fresh Black Locust Deciduous Forest Type (FODM4-11)	Right-of-way
Dry - Fresh Black Walnut Deciduous Woodland Type (WODM4-4)	Glasgow Road Study Area
Dry - Fresh Coniferous Woodland Ecosite (WOCM1)	Wetlands (Not Evaluated)
Dry - Fresh Manitoba Maple Deciduous Forest Type (FODM4-5)	Aquatic Resource Area
Dry - Fresh Sugar Maple - Hardwood Deciduous Forest Type (FODM5-9)	Aquatic Resource Area



REFERENCE
 GIS data provided by the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, 2022.



CLIENT:	TOWN OF CALEDON	
PROJECT:	EXISTING ENVIRONMENTAL CONDITIONS REPORT	
TITLE:	CONSTRAINTS AND OPPORTUNITIES	
McINTOSH PERRY 115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com	PROJECT NO: CCO-22-3677	FIGURE:
	Date	Dec., 07, 2022
	Checked By	JA
		3

4.4 Groundwater

Forty-five (45) MECP wells, were identified within 500 m of the study area. The wells were constructed between 1954 and 2018 for a variety of purposes including domestic, monitoring, and municipal use (MECP, 2019).

4.5 Designated Areas

The Glasgow Road study area falls within the boundaries (i.e., 2 km), but are outside of the study area, of the following:

- Provincially Significant Wetlands (PSW):
 - Castleberg Wetland Complex;
 - Bolton Wetland Complex; and
 - West Humber River Headwater Wetland Complex.

No other ANSI or PSW features occur within the Glasgow study area (i.e., 120 m) that may be affected by works. A Great Blue Heron Nesting Site/Colony (ANSI) is located in proximity to the study area approximately 900 m to the west within the Bolton Wetland Complex.

The study area is located within the Toronto Region Conservation Authority regulated area, which includes the following regulated areas:

- Meander Belt;
- Flood Hazard (Engineered);
- Wetlands (Area of Interference);
- Regulated Area 2020; and
- TRCA Unevaluated Wetlands.

The Study area was identified to be a part of the TRCA's Bolton Resource Management Tract. A study of this area was conducted in 2008 the *Bolton Resource Management Tract Study Area - Terrestrial and Biological Assessment* (TRCA, 2008).

5.0 CONCLUSION

This *Existing Environmental Conditions Report* has been prepared to provide an overview of the existing environmental conditions of the study area on behalf of the Town of Caledon. The segments of road proposed to be reconstructed and widened at Glasgow Rd from Chickadee Lane to Deer Valley Drive, as well as Deer Valley Drive from Glasgow Rd to Bambi Trail were assessed and found to contain the following natural features:

- Habitat for resident or migrant bird and wildlife species;
- SAR and SAR Habitat;
- Wetlands;
- ANSI, and PSW features;
- Reptiles, amphibians and associated habitat;

- Wildlife corridors and Concentration areas, and fish habitat.

The proposed project works have not yet been confirmed and therefore an impact assessment and mitigation measures will be completed, following design details. Once the project details have been determined an accurate assessment of potential impacts and effects will be evaluated and assessed.

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Appendix A – Study Area Photographs



Photo 1: View of Glasgow Road from Deer Valley Drive facing northwest. July 26, 2022.



Photo 2: View of snag tree along Glasgow Road north of the Bolton Tennis Club courts. July 26, 2022.



Photo 3: View of Glasgow Road facing southeast and facing Deer Valley Drive. July 26, 2022.



Photo 4: View of Glasgow Road condition, south side and facing towards Deer Valley Drive. July 26, 2022.

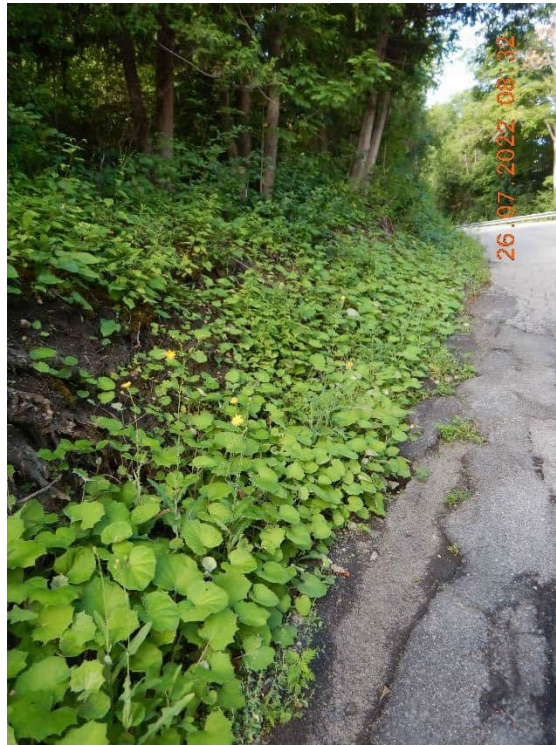


Photo 5: View of Coltsfoot (Weed Control Act, 1990), south side and facing towards Chickadee Lane. July 26, 2022.



Photo 6: Site of Barn Swallow (SAR) observation, south side and facing towards Chickadee Lane. July 26, 2022.



Photo 7: View of two (2) Butternut trees (SAR) observed along the north side of Glasgow Road and within 10 m of the ROW. July 26, 2022.



Photo 8: View of American Toad, north side of Glasgow Road and within 10 m of the ROW. July 26, 2022.

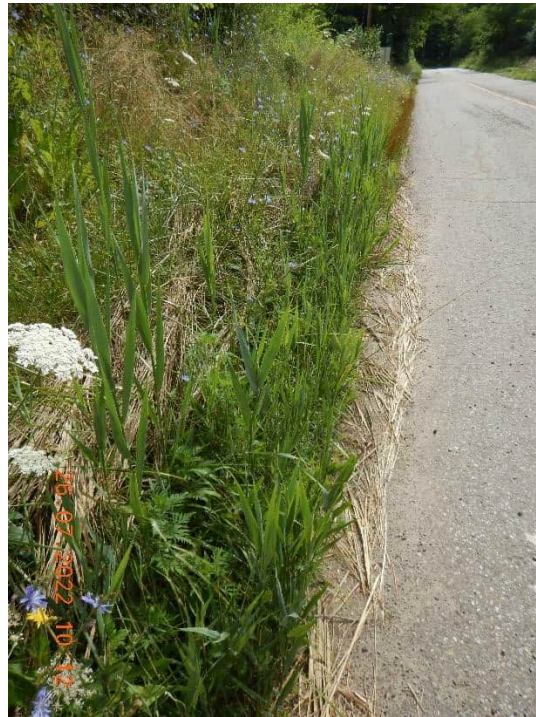


Photo 9: View of Phragmites (Invasive Species Act, 2015) on the north side of Glasgow Road. July 26, 2022.



Photo 10: View southbound along the western shoulder of Deer Valley Drive. November 10, 2022.



Photo 11: View northbound along the eastern shoulder of Deer Valley Drive. November 10, 2022.



Photo 12: View of invasive Garlic Mustard (dead seed stalks) along Deer Valley Drive. November 10, 2022.



Photo 13: View of Glasgow Road and Deer Valley Drive intersection and gravel shoulders that may be turtle nesting habitat (proximity to Humber River). November 10, 2022

Appendix B – Agency Correspondence

Patrick Gilhooly

From: Patrick Gilhooly
Sent: August 2, 2022 8:56 AM
To: SAROntario@ontario.ca
Cc: Kenneth Jobity; Kerry Reed
Subject: SAR Information Request - Glasgow Road (Caledon)
Attachments: MECP Info Request_Glasgow Road Caledon.pdf

To whom it may concern,

Our Clients, the Town of Caledon has proposed the Glasgow Road Rehabilitation and Improvements project from Chickadee Lane to Deer Valley Drive (LOT 9 & 10, Con 06), Geographic Township of Albion, Caledon. The proposed rehabilitation is located within the Aurora (Southern) District of the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF). Please see the attached Information Request Letter which contains UTM coordinates (Table 1) and a keymap (Figure 2) representing the study area limits subsequent to the letter.

McIntosh Perry has conducted a preliminary review of publicly available environmental background information for the study area using various resources such as the Land Information of Ontario database, Aquatic Resource Area data, etc. Publicly available information has been summarized in the attached request.

McIntosh Perry is requesting confirmation of the attached Natural Heritage Features, Species at Risk, and any further site-specific environmental information from MECP regarding the proposed road rehabilitation.

We look forward to the MECP's response and appreciate any assistance you can provide with this project. Feel free to contact the undersigned if you require any additional information.

Thank you,

Patrick Gilhooly, M.Sc. Ecology

Biologist

T. 365-527-2687 | C. 647-212-7748

p.gilhooly@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

Patrick Gilhooly

From: Patrick Gilhooly
Sent: August 2, 2022 9:36 AM
To: andrea.terella@trca.ca
Cc: Kerry Reed
Subject: Town of Caledon - Glasgow Road Info Request
Attachments: Glasgow Rd KeyMap.JPG

Good Morning Andrea,

I am opening a line of communication via email regarding the subject line information request.

Our Client, the Town of Caledon, has proposed the Glasgow Road Rehabilitation and Improvements project from Chickadee Lane to Deer Valley Drive (LOT 9 & 10, Con 06), Geographic Township of Albion, Caledon. The proposed rehabilitation is located within the Aurora (Southern) District of the Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNR). See attached keymap and some NHIC features (wetlands and watercourses) for context; UTM (17 T): 600045 m E | 4859340 m N.

As per the Town of Caledon Official Plan (2018) - **Schedule C** Bolton Land Use Plan designates the study area as *Environmental Policy Area* and *Open Space Policy Area*. **Schedule S** The Greenbelt in Caledon designates the study area as *Greenbelt Plan Natural Heritage System*. The study area also appears to be regulated under the TRCA, Ontario Regulation 166/06.

Please let me know if there is any information I have omitted or if the TRCA has additional recommendations or requests. We have also reached out to MECP for further information regarding Species at Risk and NHIC features in proximity to the study area.

Regards,

Patrick Gilhooly, M.Sc. Ecology

Biologist

T. 365-527-2687 | C. 647-212-7748

p.gilhooly@mcintoshperry.com | www.mcintoshperry.com

McINTOSH PERRY

Turning Possibilities Into Reality

Confidentiality Notice – If this email wasn't intended for you, please return or delete it. Click [here](#) to read all of the legal language around this concept.



Platinum
member

Appendix C – Clean Equipment Protocol for Industry

Clean Equipment Protocol for Industry

Inspecting and cleaning equipment for the purposes of invasive species prevention



Catalyst for research and response



Publication Information

Halloran, Joe, Anderson, Hayley and Tassie, Danielle. 2013. Clean Equipment Protocol for Industry. Peterborough Stewardship Council and Ontario Invasive Plant Council. Peterborough, ON.

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Peterborough, Ontario

ISBN: (to be confirmed)

This document was prepared for the Canada-Ontario Invasive Species Centre and the Ontario Ministry of Natural Resources by the Peterborough Stewardship Council and the Ontario Invasive Plant Council.

Inquiries regarding this document can be directed to the Ontario Invasive Plant Council

PO Box 2800, 4601 Guthrie Drive

Peterborough, ON

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Phone: (705) 748-6324

Email: info@ontarioinvasiveplants.ca

For more information on invasive plants in Ontario, visit www.ontario.ca/invasivespecies, www.ontarioinvasiveplants.ca, www.invadingspecies.com, or www.invasivespeciescentre.ca.

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Introduction

Why Invasive Plants are a Problem

Invasive alien species are “a growing environmental and economic threat to Ontario. Alien species are plants, animals and microorganisms that have been accidentally or deliberately introduced into areas beyond their normal range. Invasive species are defined as harmful alien species whose introduction or spread threatens the environment, the economy, or society, including human health (Government of Canada 2004).” (Ontario Invasive Species Strategic Plan, 2012). The great majority of plant invasions occur in habitats that have been disturbed either naturally or by humans (Rejmanek 1989; Hobbs and Huenneke 1992; Hobbs 2000).

The ecological effects of invasive species are often irreversible and, once established, they are extremely difficult and costly to control or eradicate. According to Pimental et al. (1999), invasive species in the U.S. cause economic and environmental damages totalling over \$138 billion per year, with agricultural weed control and crop losses totalling approximately \$34 billion per year. Exact figures for the total economic and environmental damages are not available for Canada. In Ontario however, the costs of dealing with just one invasive species is astonishing; Zebra Mussels cost Ontario power producers who draw water from the lake \$6.4 million per year in increased control/operating costs and about \$1 million per year in research costs (Colautti et al. 2006).

Invasive species can spread to new areas when contaminated mud, gravel, water, soil and plant material are unknowingly moved by equipment used on different sites. This method of spread is called an unintentional introduction, and is one of the four major pathways for invasive species introduction into a new area of Ontario (Ontario Invasive Species Strategic Plan, 2012).



Buckthorn removal, Lynde Shores Conservation Area.

Photo by: Central Lake Ontario Conservation Authority

Invasive plant seed and other propagules (plant material, i.e. rhizomes) have the ability to travel sight unseen in mud attached to or lodged in various parts and spaces between parts of vehicles, machinery and other mechanical equipment. A recent study at Montana State University found that most seeds (99% on paved roads and 96% on unpaved roads) stayed attached to the vehicle after traveling 160 miles (257 km) under dry conditions.

Invasive plant species are commonly transported on or in vehicles and construction equipment when they are moved to new locations. Those vehicles include four-wheel drives, excavators, tractors, loaders, water trucks and all-terrain vehicles. Failure to properly clean vehicles and machinery of soils, mud, and contaminated water that may contain invasive species seed and propagules can result in permanent, irreversible environmental impacts. These impacts can mean substantial cost to the landowner, land manager and/or the user. Businesses may also face liability issues for activities and operations that result in the introduction of invasive species.

Some of the invasive species in Ontario which have been known to spread through equipment transfer include:

- **Common Buckthorn** (*Rhamnus cathartica*)
- **Dog-strangling Vine** (*Cynanchum rossicum*)
- **Garlic Mustard** (*Alliaria petiolata*)
- **Giant Hogweed** (*Heracleum mantegazzianum*)
- **Glossy Buckthorn** (*Frangula alnus*)
- **Japanese Knotweed** (*Polygonum cuspidatum*)
- **Miscanthus or Chinese Silver Grass** (*Miscanthus sinensis*)
- **Invasive Phragmites or Common Reed** (*Phragmites australis subsp. australis*)
- **Reed Canary Grass** (*Phalaris arundinacea*)
- **Wild Parsnip** (*Pastinaca sativa*)
- **Wild Chervil** (*Anthriscus sylvestri*)



Dog-strangling Vine
(*Cynanchum rossicum*)
Photo by: Hayley Anderson



Garlic Mustard
(*Alliaria petiolata*)
Photo by: Ken Towle



Invasive Phragmites
(*Phragmites australis subsp. australis*)
Photo by: Michael Irvine

These plants impact biodiversity by out-competing native species for space, sunlight, and nutrients. They can also have impacts on road and driver safety by physically blocking intersection sightlines, and in the case of invasive *Phragmites* and *Miscanthus*, may fuel intense grass fires if ignited, which can damage utility stations and hydro lines.

The harmful effects of invasive species include:

- Physical and structural damage to infrastructure
- Human health hazards (i.e. giant hogweed and wild parsnip exposure)
- Delays and increased cost in construction activities
- Environmental damage (i.e. erosion)
- Aesthetic degradation
- Loss of biodiversity
- Reduced property values
- Loss of productivity in woodlots and agriculture

Why Cleaning Vehicles and Equipment is Important

Passenger and recreational vehicles as well as heavy machinery are major vectors for spreading terrestrial invasive species into new areas.

Preventing the spread of invasive species has proven to be considerably more cost effective than controlling established populations. The spread of invasive species through unintentional introduction can be minimized significantly by the diligent cleaning of vehicles and equipment when leaving one site and moving to the next. In the case of large properties, cleaning before moving to a new site is recommended, even if it is within the same property.

This guide has been developed for the construction, agriculture, forestry, and other land management industries, to provide equipment operators and practitioners with tools and techniques to identify and prevent the unintentional introduction of invasive species. It establishes a standard for cleaning vehicles and equipment and provides a guide where current codes of practice, industry standards or other environmental management plans are not already in place.

Passenger and recreational vehicles include:

- 2WD and 4WD cars
- 2WD and 4WD trucks
- All Terrain Vehicles (ATV's)
- Motorbikes
- Snowmobiles

Heavy machinery includes:

- Trucks
- Tractors
- Mowers
- Slashers
- Trailers
- Backhoes
- Graders
- Dozers
- Excavators
- Skidders
- Loaders
- Water Tankers and Trucks



Dog-strangling Vine plants attached to ATV.

Photo by: Francine Macdonald



Plant material attached to bobcat.

Photo by: TH9 Outdoor Services

Impacts of Invasive Species on Industry

Construction

In the UK, Japanese Knotweed (*Polygonum cuspidatum* or *Fallopia japonica*) is classified as a hazardous material. When construction occurs in established Japanese Knotweed stands workers sift the soil to remove root fragments and institute treatment plans to ensure that the Knotweed does not re-sprout, as it can damage housing foundations by growing through concrete and asphalt. The contractors must also thoroughly clean their equipment, and dispose of the contaminated soil at biohazard waste sites. While we do not have these requirements in Ontario, Japanese Knotweed is present here.

Invasive plant species can also increase site preparation and weed control costs, and reduce property values. For example, in Vermont the presence of the aquatic invasive plant Eurasian Watermilfoil (*Myriophyllum spicatum*) depressed shoreline residence property value by as much as 16.4% (Zhang and Boyle, 2010).

Forestry/Agriculture

Invasive plant species which become established in forests will out-compete native species and prevent forest re-generation after logging or natural disturbance. Dog-strangling Vine (*Cynanchum rossicum*) is of particular concern in conifer plantations. This species thrives in the filtered light and open soils of mature plantations, and suppresses seedling establishment of native hardwoods. If its invasion continues, very few juvenile trees will survive to fill the shrinking canopy of over-mature pines. Reforestation sites are also susceptible; the thick mats of vegetation and aggressive competition from Dog-strangling Vine decrease available planting space and increase costs as more mature vegetation needs to be planted in order to ensure the new vegetation can outcompete the invasive plant. As a result, expensive control programs are often required.

Land Management (Trail Use/Maintenance)

Recreational trail use and the maintenance of trails can facilitate the transport of invasive plant material and seeds, and create open and disturbed sites that are prime locations for the establishment of invasive species. Studies have proven that trails act as corridors which assist in the spread of invasive plant species. Humans, their pets, and vehicles such as ATV's can be vectors of invasion along trails because seeds and plant pieces can be carried on equipment and clothing. In addition, frequent trampling along trails alters soil properties, limits the growth of some native species, and creates conditions that may favour the growth of non-native species (Kuss et al. 1985; Marion et al. 1985; Yorks et al. 1997).

Roadsides/Utilities

Invasive species can increase the cost of roadside and utility maintenance by requiring additional maintenance and control efforts. The presence of invasive species can also provide a safety hazard. In the case of Phragmites and Miscanthus (invasive grass species), along with interrupting sight lines, the dead stalks which remain standing each autumn also provide combustible material. Fires in these stands burn intensely, and can damage utilities and hydro lines. Phragmites along roadsides is generally assumed to be spread through the transport and burial of rhizome fragments through ditching, ploughing, and other human activities that transport rhizomes on machinery. Studies have shown that vehicles and road-fill operations can transport invasive plant seeds into uninfested areas, and road construction and maintenance operations provide optimal disturbed sites for seed germination and seedling establishment (Schmidt 1989; Lonsdale & Lane 1994; Greenberg et al. 1997; Trombulak & Frissell 2000).

Steps to Prevent the Unintentional Introduction of Invasive Species from Equipment

Inspection and cleaning of all machinery and equipment should be performed in accordance with the procedures, checklists and diagrams provided in this protocol.

When visiting more than one site, always schedule work in the sites that are the least disturbed and free of known invasive species first, and visit sites with known invasive species infestations last. This will greatly reduce the risk of transferring plants to new locations.

When to Inspect

Inspection should be done before:

- Moving vehicles out of a local area of operation
- Moving machinery between properties or sites within the same property where invasive species may be present in one area, and not in another
- Using machinery along roadsides, in ditches, and along watercourses
- Vehicles using unformed dirt roads, trails or off road conditions
- Using machinery to transport soil and quarry materials
- Visiting remote areas where access by vehicles is limited

Inspection should be done after:

- Operating in areas known to have terrestrial invasive plants or are in high risk areas (i.e. recently disturbed areas near known invaded areas)
- Transporting material (i.e. soil) that is known to contain, or has the potential to contain, invasive species
- Operating in an area or transporting material that you are uncertain contain invasive species
- In the event of rain. If mud contains seeds, they can travel indefinitely until it rains or the road surface is wet, allowing for long distance transport. This may result in transporting seeds to areas where those species did not previously exist

How to Inspect

- Inspect the vehicle thoroughly inside and out for where dirt, plant material and seeds may be lodged or adhering to interior and exterior surfaces.
- Remove any guards, covers or plates that are easy to remove.
- Attention should be paid to the underside of the vehicle, radiators, spare tires, foot wells and bumper bars.

If clods of dirt, seed or other plant material are found, removal should take place immediately, using the techniques outlined below.

When to Clean

Vehicles and heavy equipment that stay on formed and sealed roads have a low risk of spreading invasive species. Cleaning is only required when inspection identifies visible dirt clods and plant material or when moving from one area to another.

Depending on the invasive species present, vehicles may need to be cleaned even when deep snow is present. Invasive *Phragmites*, for example, can still be spread, even in packed snow because the seed heads are usually above the surface of the snow. Other plants, such as dog-strangling vine, will be contained beneath deep snow.

**Regular inspection of vehicles and machinery will identify if any soil or plant material has been collected on or in vehicles and machinery.*

Where to Clean

Clean the vehicle/equipment in an area where contamination and seed spread is not possible (or limited). 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.
- At least 30m away from any watercourse, water body and natural vegetation.
- Large enough to allow for adequate movement of larger vehicles and equipment.

**Safely locate the vehicle and equipment away from any hazards. If mechanized, ensure engine is off and the vehicle or equipment is immobilized.*

How to Clean Inside

Clean the interior of the vehicle by sweeping, vacuuming or using a compressed air device. Particular attention should be paid to the floor, foot wells, pedals, seats, and under the seats.

How to Clean Outside

Knock off all large clods of dirt. Use a pry bar or other device if necessary.

Identify areas that may require cleaning with compressed air rather than water such as radiators and grills. Clean these areas first prior to using water.

Clean the vehicle with a high pressure hose in combination with a stiff brush and/or pry bar to further assist the removal of dirt clods.

Start cleaning from the top of the vehicle and work down to the bottom.

Emphasis should be placed on the undersides, wheels, wheel arches, guards, chassis, engine bays, radiator, grills, and other attachments.

When the cleaning is finished avoid driving through the waste water when removing the vehicle or equipment from the cleaning site.

For equipment such as water trucks that may be exposed to aquatic invasive species, trucks should be disinfected with bleach solution before conducting work in a new area. For further information please refer to the Invading Species Awareness Program's Technical Guidelines listed under Contacts and Resources.



Hosing down a vehicle in Queensland, Australia

Photo by: TH9 Outdoor Services

Final Inspection Checklist

Conduct a final inspection to ensure the following general clean standard has been achieved:

- No clods of dirt should be visible after wash down.
- Radiators, grills, and the interiors of vehicles should be free of accumulations of seed, soil, mud and plant material parts including seeds, roots, flowers, fruit, and or stems.

Diagrams have been provided to assist in quickly identifying key areas to inspect and clean on a variety of vehicles associated with the targeted industries. These can be used in combination with vehicle checklists to ensure all areas of the vehicles have been inspected and cleaned.

Equipment Required

- A pump and high pressure hose OR high pressure water unit
- Minimum water pressure for vehicle cleaning should be at least 90 pounds per square inch. Water can be supplied as high volume/low pressure or low volume/high pressure (NOAA Fisheries Service).
- Air compressor and blower OR vacuum
- Shovel
- Pry bar
- Stiff brush or broom



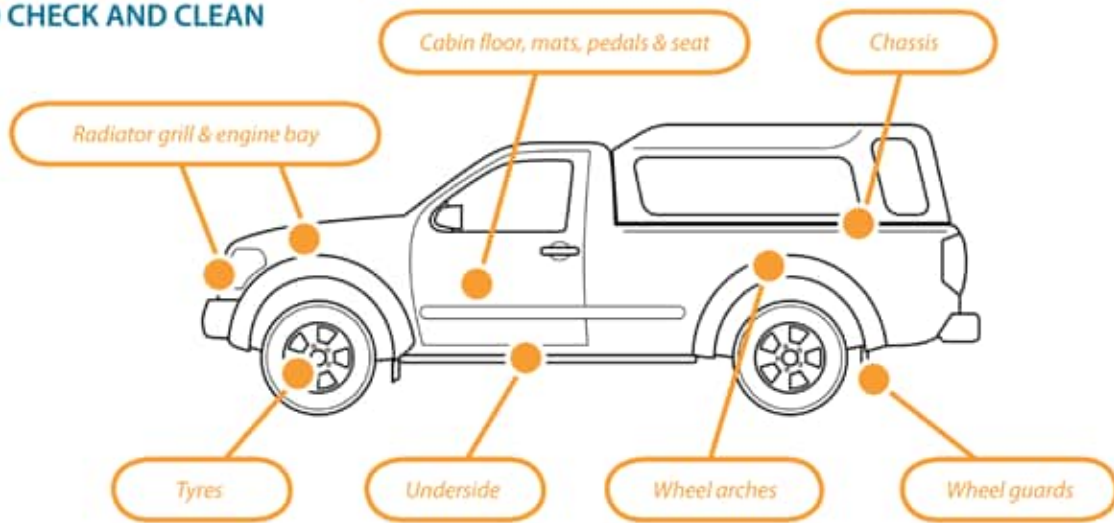
Cleaning station at construction site.

Photo by: Mark Heaton, OMNR

Inspection and Cleaning Diagrams and Checklists

2WD and 4WD Vehicles

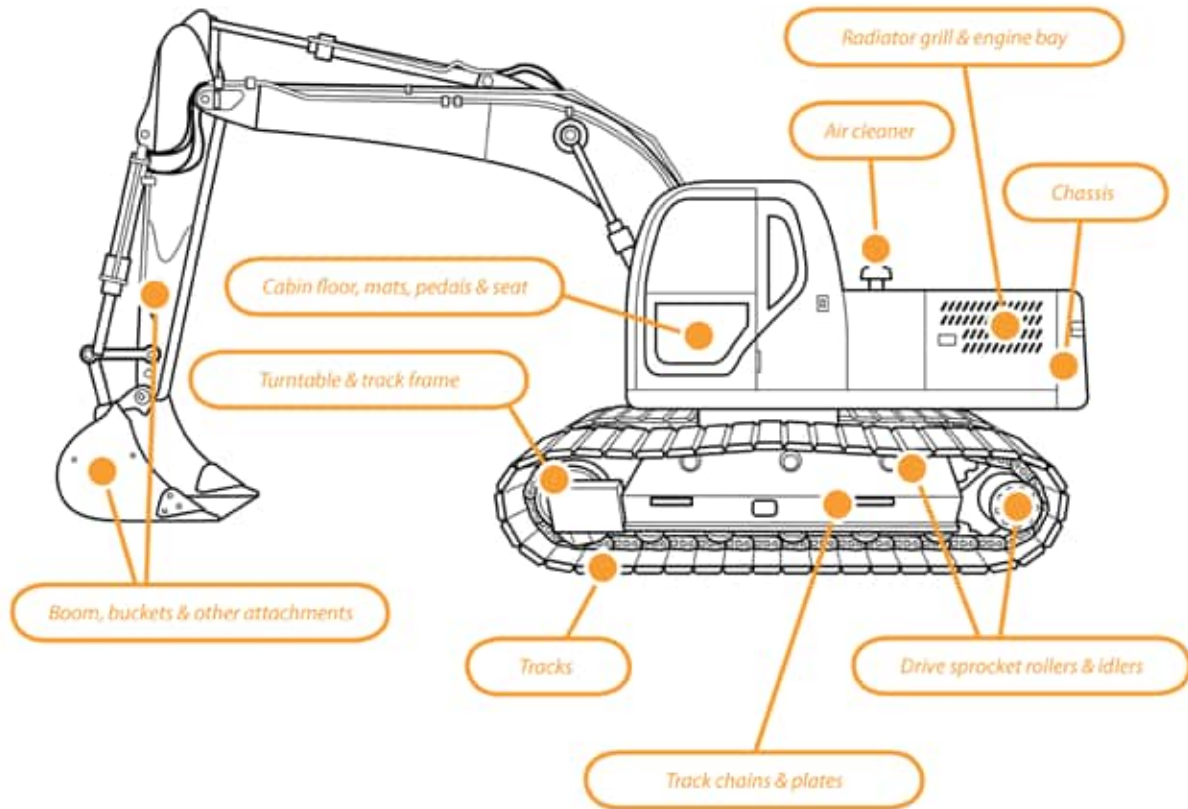
4WD VEHICLE WITH KEY SPOTS TO CHECK AND CLEAN



		✓
Cabin	Floor, mats, pedals, seats	
Engine	Radiators, engine bay, grill	
Body	Underside, chassis, crevices, ledges, bumper bars	
Wheels	All wheels (including spare), wheel arches, guards	
Tray	Floor, canopy (if included)	

Excavator

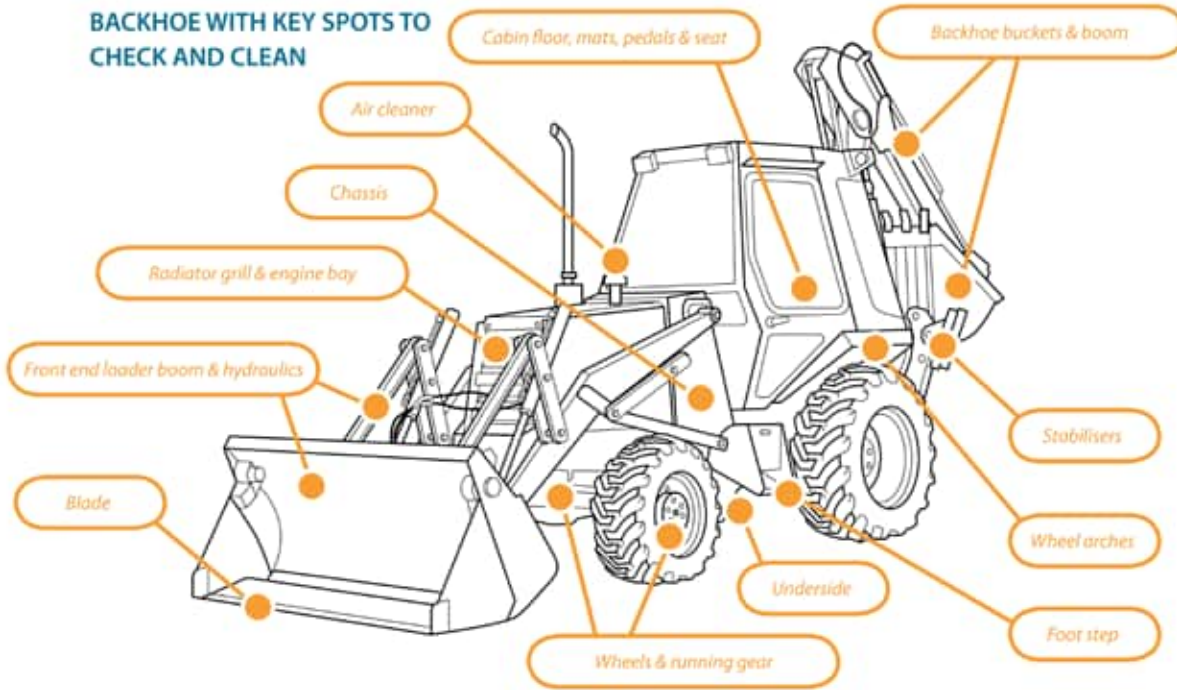
EXCAVATOR WITH KEY SPOTS TO CHECK AND CLEAN



		✓
Cabin	Floor, mats, pedals, seats	
Engine	Radiators, engine bay, grill, air cleaner	
Tracks	Tracks, track frame, drive sprocket rollers, idlers	
Body Plates	Plates of cabin	
Body	Ledges, channels	
Bucket		
Booms		
Turret Pivot		

Backhoe

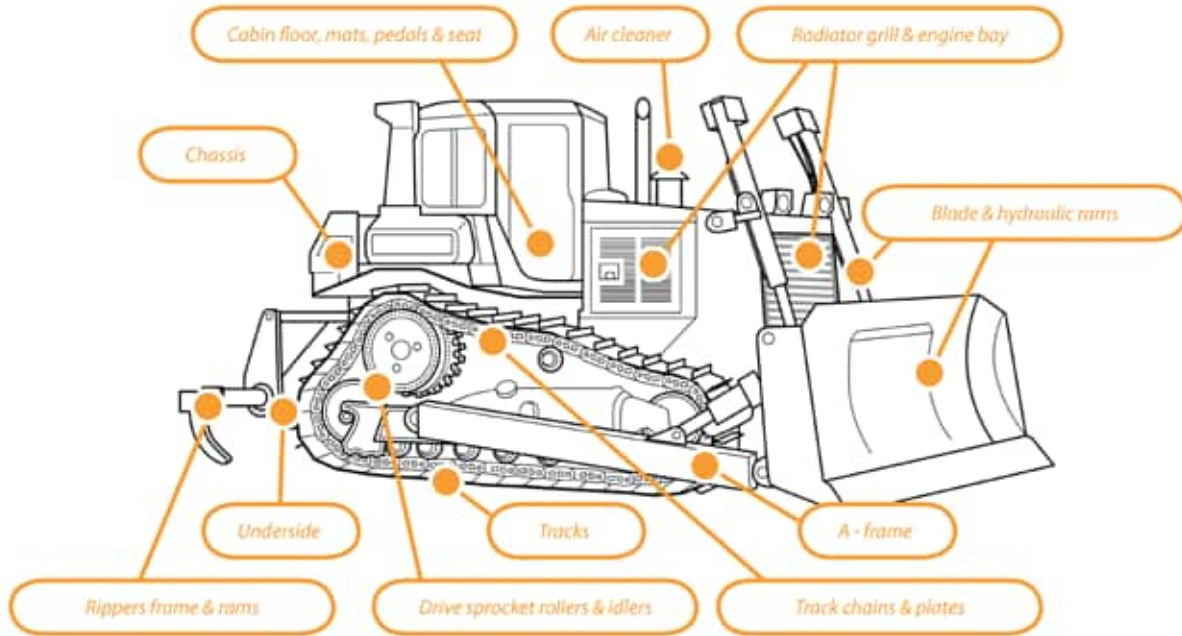
BACKHOE WITH KEY SPOTS TO CHECK AND CLEAN



		✓
Cabin	Floor, mats, pedals, seats, foot step	
Engine	Radiators, engine bay, grill, air cleaner	
Wheels	All wheels (including spare), wheel arches, guards	
Front end loader	Blade, hydraulics, booms	
Backhoe	Buckets, boom, hydraulics, stabilisers	

Bulldozer

BULLDOZER WITH KEY SPOTS TO CHECK AND CLEAN



		✓
Cabin	Floor, mats, pedals, seats	
Engine	Radiators, engine bay, grill, air cleaner	
Tracks	Tracks, track frame, drive sprocket rollers, idlers	
Body Plates	Belly plates, rear plates	
Body	Ledges, channels	
Blade	Pivot points, hydraulic rams, a-frame	
Ripper	Ripper frame, ripper points	

Contacts and Resources

Ontario Invasive Species Strategic Plan 2012. Government of Ontario. Online, accessed May 8, 2012.

http://www.mnr.gov.on.ca/stdprodconsume/groups/lr/@mnr/@biodiversity/documents/document/stdprod_097634.pdf

Invasive Species Management for Infrastructure Managers and the Construction Industry 2008. Wade, M. Booy, O. and White, V. Online, accessed April 27, 2012.

http://www.ciria.org/service/Web_Site/AM/ContentManagerNet/ContentDisplay.aspx?Section=Web_Site&ContentID=9001

T.I.P.S (Targeted Invasive Plant Solutions) Highway Operations. British Columbia Invasive Species Council. Online, accessed May 8, 2012.

http://www.bcinvvasiveplants.com/iscbc/publications/TIPS/Highways_Operations_TIPS.pdf

Invading Species Awareness Program Workshop Manual: Aquatic Invasive Species: An Introduction to Identification, Collection and Reporting of Aquatic Invasive Species in Ontario Waters (includes information on decontaminating equipment).

<http://www.invadingspecies.com/download/publications/manuals/WorkshopManual.pdf>

Reporting Invasive Species

To report invasive species, or view maps of existing records, visit the Invading Species Awareness Program website www.invadingspecies.com/report/ or www.eddmaps.org/Ontario.

Or call the OFAH/MNR Invading Species Awareness Program Hotline at **1-800-563-7711**.

Acknowledgements

We gratefully acknowledge NRM South (Tasmania, Australia) for allowing the use of their artwork and text from their “Keeping it Clean – A Tasmanian Field Hygiene Manual to Prevent the Spread of Freshwater Pests and Pathogens”.

We also sincerely thank the Clean Equipment Protocol Working Group and the Ontario Invasive Plant Council Committees and Board of Directors for their ongoing support and valuable input into this document, and the Canada-Ontario Invasive Species Centre and Ontario Ministry of Natural Resources for the support in creating this protocol.

Clean Equipment Protocol Working Group:

Diana Shermet, Central Lake Ontario Conservation Authority; Paula Berketo, Ontario Ministry of Transportation; Travis Cameron, Ontario Ministry of Natural Resources; Jennifer Hoare, Ontario Parks; Michael Irvine, Ontario Ministry of Natural Resources; Alison Kirkpatrick, OFAH/MNR Invading Species Awareness Program; Erika Weisz, Ontario Ministry of Natural Resources; Amanda Chad, Ontario Power Generation; Nancy Vidler, Lambton Shores Phragmites Community Group; Nigel Buffone, Du Pont Canada Company; Ewa Bednarczuk, Lower Trent Conservation Authority

We also gratefully acknowledge the input and direction from Francine MacDonald, James Rockwood, Anne-Marie Roussy, Stephen Smith, Caroline Mach, Patricia Lowe, John Bowen, Karen Hartley, and the Southern Ontario Community Forest Managers group.

More Information:

Ontario Invasive Plant Council: www.ontarioinvasiveplants.ca

Appendix A: Identification of Invasive Plants Found in Ontario

- **Common Buckthorn** (*Rhamnus cathartica*) and **Glossy Buckthorn** (*Frangula alnus*)
- **Dog-strangling Vine** (*Cynanchum rossicum*)
- **Garlic Mustard** (*Alliaria petiolata*)
- **Japanese Knotweed** (*Polygonum cuspidatum*)
- **Phragmites or Common Reed** (*Phragmites australis subsp. australis*)
- **Giant Hogweed** (*Heracleum mantegazzianum*)

common & glossy buckthorn

(*Rhamnus cathartica* & *R. frangula*)



Plant type: Shrub/small tree

Arrangement: Common buckthorn are sub-opposite (almost opposite). Glossy buckthorn are alternate.

Leaf: The common buckthorn leaf is egg shaped, edge of the leaf is “pebbled” (small rounded teeth). Veins converging toward leaf top. The glossy buckthorn leaf is more slender (tear drop shaped) and smooth margined.

Bark: Smooth, young bark with prominent raised patches or lenticels; rough texture and peeling bark when mature.

Seed/Flowers: Flowers are green-yellowish, small and inconspicuous. Green berries becoming purplish/black in late summer, berry > 1 cm in diameter.

Buds/Twigs: Common buckthorn has thorn-like tip on many twigs. Glossy buckthorn buds have no bud scales and lack thorny tips to twigs.

Habitat: Various - forest, thickets, meadows, dry to moist soils.

Similar native species: Native dogwoods, which lack the thorny “tip”. Native dogwoods are truly opposite in arrangement of twigs; only alternate leaved (pagoda) dogwood has alternate branching.



dog-strangling vine

(*Cynanchum rossicum* & *C. nigrum*)



Plant type: Herb, twining vine

Arrangement: Opposite

Leaf: Lance shaped, smooth margin (edge)

Bark: n/a

Seed/Flowers: Bean shaped seed pod with seeds attached to downy 'umbrellas'. Flowers - pink (*C. rossicum*) or purple (*C. nigrum*) with five petals.

Buds/Twigs: n/a

Habitat: Dry to moist soils; more dominant in meadows and woodland edges.

Similar native species: Swamp milkweed (*Asclepias incarnata* spp.), is an upright plant, typically found in wetland habitats.

garlic mustard

(*Alliaria petiolata*)



Plant type: Herb

Arrangement: Alternate

Leaf: Saw tooth like edge, elongated heart shape. Garlic/onion smell when crushed. Leaves are kidney shaped with prominent veins.

Bark: n/a

Seed/Flowers: Cluster of small white flowers with four petals. Small black < 1 mm rounded seed found in elongated 'tube-like' seed pods (similar to a bean pod).

Buds/Twigs: n/a

Habitat: Various – dry to moist soils, in all habitat types, less often in meadows.

Similar native species: n/a

japanese knotweed

(*Polygonum cuspidatum*)



Plant type: Herb, 2 - 4 m in height.

Arrangement: Alternate

Leaf: Tear drop shaped, sharp pointed, dark green, flattened at base.

Bark: n/a

Seed/Flowers: Flowering stalk of many small greenish-white flowers.

Buds/Twigs: Large plant with a 'bamboo-like' stem. Stem light green maturing to tan colour.

Habitat: Moist to wet soils found in wetlands, water-courses and roadside ditches.

Similar native species: None.

common reed

(*Phragmites australis*)



Plant type: Grass

Arrangement: Alternate

Leaf: Broad leaf > 1 cm wide.

Bark: n/a

Seed/Flowers: Dense cascading 'broom-like' flower head. 'Cottony' in appearance when mature.

Buds/Twigs: Stems rough and ridged, ligule a densely hairy band. Mature plants > 3 m tall.

Habitat: Moist to wet soils. Found in wetlands, water-courses and road side ditches.

Similar native species: Species of mannagrass (*Glyceria* sp) including tall northern, eastern and rattlesnake grass. A native common reed exists but has a smooth stem and the ligule is not hairy. It is also quite rare.

giant hogweed

(*Heracleum mantegazzianum*)



Plant type: Herb. Mature plants can be over 3m tall.

Arrangement: Alternate

Leaf: Lobed leaf 1-2 m wide, lobes sharp-pointed.

Bark: n/a

Seed/Flowers: Small, white flowers in a large umbrella-shaped cluster, .75 m wide.

Buds/Twigs: Hairy stem with purple spots.

Habitat: Fresh to wet soils in forests, swamps, meadows, marshes.

Similar native species: Cow parsnip (*Heracleum maximum*) – has smaller flowers, no purple spots on stems. Angelica (*Angelica atropurpurea*) has a rounded-topped flower cluster and leaves divided into many leaflets.

Do not touch this plant because it is poisonous. If you do, wash your skin immediately in cool soapy water and do not expose the area to sunlight.

Seek professional advice before removing.

Identification of Invasive Plants found in Ontario Photos by:

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