

Baseline Natural Features Assessment Report

Etobicoke Creek Trunk Sewer Improvements and Upgrades Class Environmental Assessment

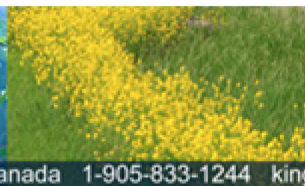
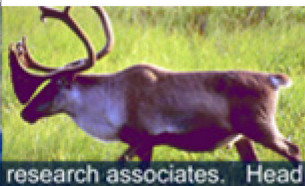
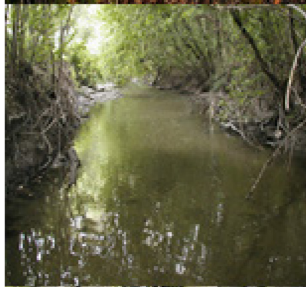
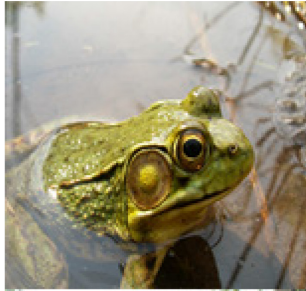
for:

Jacobs

by:

**LGL Limited
environmental research associates**

**September 2019
LGL File TA8907**



Etobicoke Creek Trunk Sewer Improvements and Upgrades

Class Environmental Assessment

Baseline Natural Features Assessment Report

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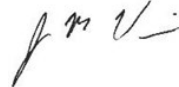
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1.0 Introduction

LGL Limited (LGL) has been retained by Jacobs to provide natural sciences support for the Municipal Class Environmental Assessment (EA) for improvements and upgrades to the Etobicoke Creek Trunk Sewer in Brampton, Ontario. As the project may involve a realignment of the existing sewer, a Natural Heritage Investigation will be required to evaluate alternatives make recommendations for mitigation of impacts at the preferred location. The project will proceed as a Schedule C Class EA.

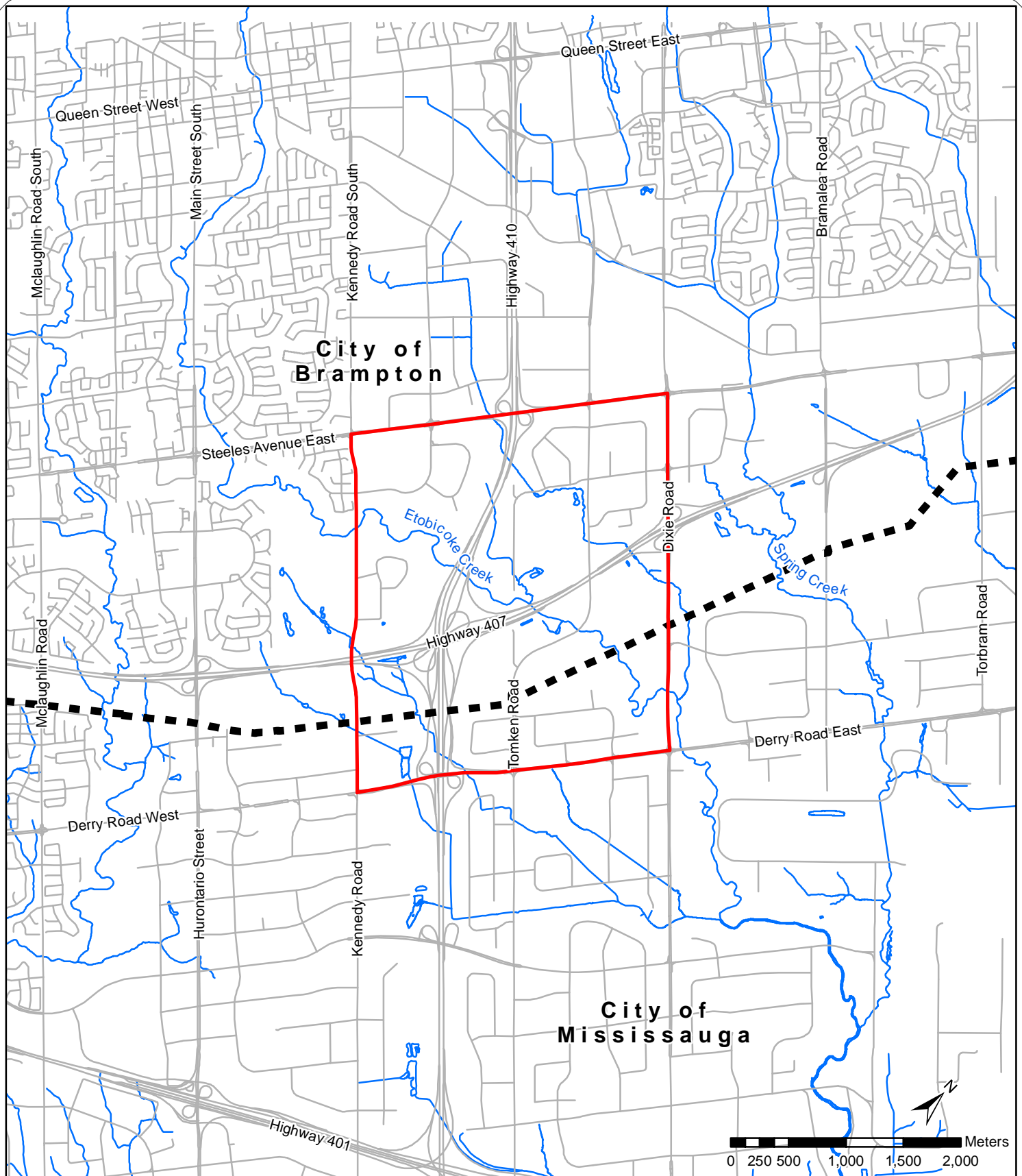
The study area in Brampton, Ontario, is in the vicinity of the intersection of Highway 410 and the 407 ETR. The study area is generally bounded by Kennedy Road to the west, Dixie Road to the east, Steeles Avenue to the north, and Derry Road to the south (Figure 1). The main natural heritage feature in the study area is the Etobicoke Creek, which flows in a southeasterly direction through the study area.

LGL's Baseline Natural Features Assessment Report (BNFAR) provides a summary of the environmental sensitivities present within the study area as determined through a records review, as well it provides preliminary guidance for selection of alternatives and mitigation recommendations to protect these features for use by the Project Team.

Once further details of the preferred alternative are available to LGL the alignment will be assessed to identify potential impacts and appropriate mitigation and management measures to protect natural heritage features such as fish habitat, wetlands, Species at Risk (SAR) and vegetation. This assessment will be included in the Technical Memorandum that will follow in September 2019. The BNFAR provides info on the natural features in the study area based on a background review and preliminary site visit. Details on features and species identified during the LGL site visits that were not able to be included herein, and the potential for impacts will be further detailed in the Technical Memorandum.

1.1 Project Summary

The Region of Peel (Region) intends to address future capacity needs and alleviate issues with the current alignment of the Etobicoke Creek Trunk Sewer. Issues include sewer surcharging, hydraulic restrictions, and aged infrastructure in the vicinity of the abandoned Wastewater Treatment Plant.



Etobicoke Creek Trunk Sewer Improvements and Upgrades Key Map

- Study Area
- Road
- Watercourse



Project	TA8907	Figure	1
Date	June 2019	Prepared By	KC
Scale	1:45,000	Verified By	AHF

2.0 Background Information Records Review

To characterize the study area, LGL has gathered information from available background sources. Information where available was requested or collected from:

- Region of Peel;
- City of Brampton;
- City of Mississauga;
- Toronto Region Conservation Authority (TRCA) (TRCA database review and consultation with S. Lingertat, Planner, June 14, 2019);
- Land Information Ontario (LIO) database;
- Ministry of the Environment, Conservation, and Parks (MECP);
- Natural Heritage Information Centre (NHIC);
- Ministry of Natural Resources and Forestry (MNRF);
- Ontario Breeding Bird Atlas (OBBA); and,
- Ontario Nature.

This background review was used to identify the known constraints present within the study area as summarized in the following sections. From there, field surveys were completed to verify the limits and extent of features identified through background review in relation to the subject property.

3.0 Natural Heritage Existing Conditions

3.1 Physiography, Soils, Hydrogeology

The study area is found within the Peel Plain physiographic region and surficial geology (TRCA 2010). This plain is a level to undulating beds of clay soils that extends from the Niagara Escarpment, through the central portion of the Regional Municipalities of Halton, Peel and York (Chapman and Putnam, 1984). Groundwater recharge in the area is relatively low due to the predominantly clay and silt substrate (TRCA 2010) and the removal of forests for agriculture and land development (Chapman and Putnam, 1984).

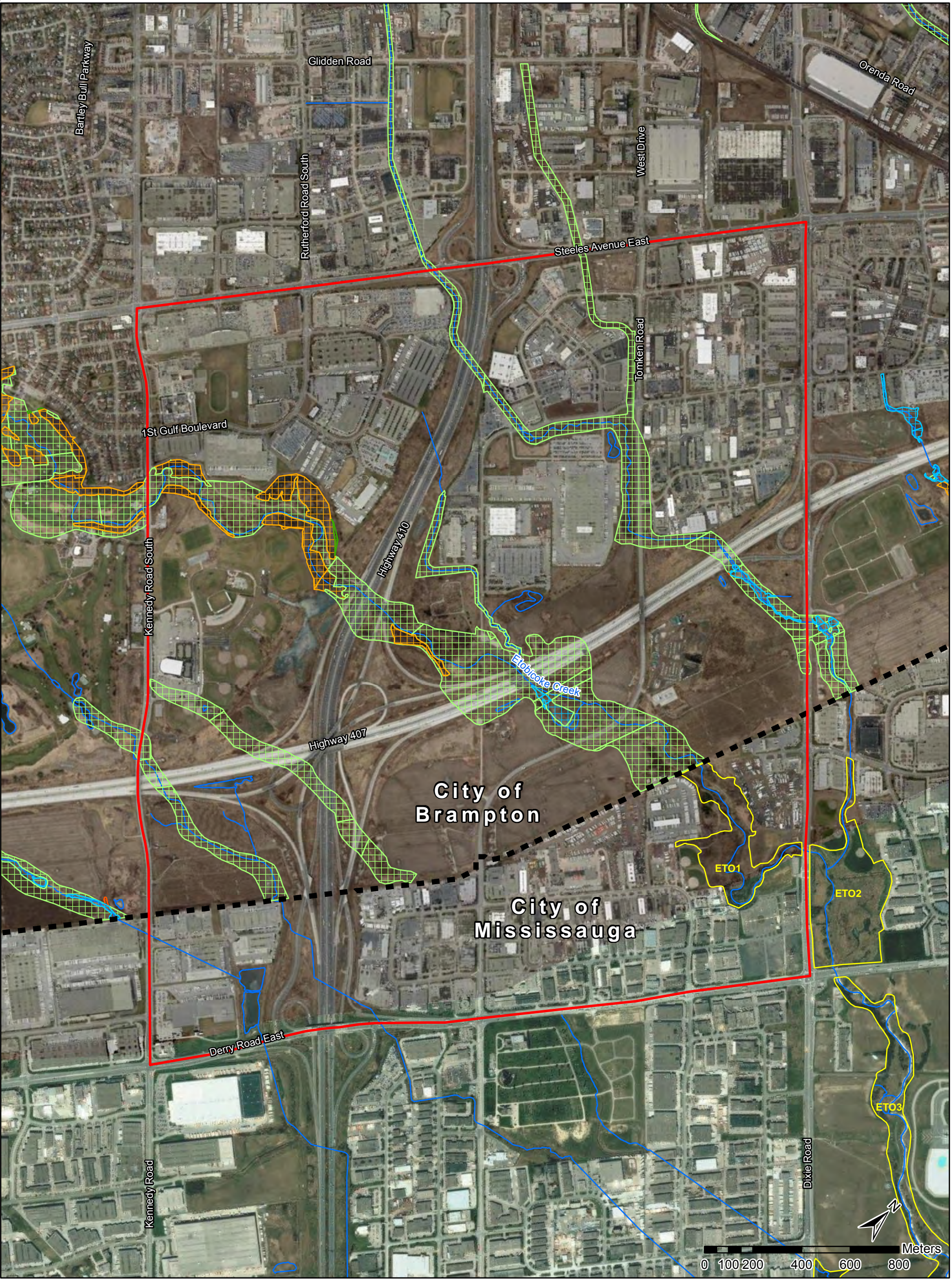
Soils within the study area are dominated by Peel Clay with a small portion near Kennedy Road being composed of Fox Sandy Loam (Hoffman and Richards, 1953). Peel clay is formed from stone-free lacustrine material and contains fairly high organic matter. Fox sandy loam soils have developed on well sorted sandy outwash materials of medium lime content and occur on smooth gently sloping topography. Etobicoke Creek consist of lacustrine soils that are variable and poorly defined. Cashel clay occurs in the south western limits of the study area near Mount Charles Park and is characterized by lacustrine soils over heavy till.

The TRCA has set up a Regional Watershed Monitoring Program to monitor the geomorphic processes in the watershed. Etobicoke Creek Site A is within our study area. Migration of 0.13 m per year was observed, with a maximum of 0.41m/yr. (TRCA 2010).

The Mississauga Natural Areas Survey Natural Areas Fact Sheet for ET01 (City of Mississauga 2015) indicates the bedrock geology of the area consists of grey shales of the Georgian Bay Formation overlain with soils and glacial deposits Cashel clay.

3.2 Designated Natural Areas

Etobicoke Creek and its associated valleylands are mapped as "Valleyland/Watercourse Corridor on Schedule D of the City of Brampton's Official Plan (City of Brampton (2006) (See Figure 2). Schedule D also identifies woodlands and wetlands within the study area. Schedule A maps the Etobicoke Creek valley as Open Space.



Etobicoke Creek Trunk Sewer Improvements and Upgrades
Background Data Review (Brampton & Mississauga)

- Study Area

Municipal Boundary

Watercourse

Waterbody

Significant Natural Area (Natural Areas Survey, City of Mississauga)
- Natural Heritage System (City of Brampton)

Valleyland

Valleyland / Wetland

Valleyland / Wetland / Woodland

Valleyland / Woodland
- Wetland

Woodland

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Project	TA8907	Figure	2
Date	July 2019	Prepared By	KC
Scale	1:15,000	Verified By	AHF

The southern portion of the study area is within the City of Mississauga. In Mississauga, Etobicoke Creek and its associated valleylands are designated as Significant Natural Area and Natural Green Spaces on Schedule 3 as well as Greenlands and Natural Hazard on Schedule 10. The Mississauga Natural Areas Survey (City of Mississauga 2014) identifies natural area ET01 in the study area, and ET02 just west of the study area.

Schedule A of the Regional Official Plan (2016) identifies the valleylands as part of the core area of the Greenlands System. Figure 2 of the Regional Official Plan indicates Etobicoke Creek is a river valley connection outside of the greenbelt.

No areas of Provincial significance (such as an Area of Natural or Scientific Interest, Provincially Significant Wetland or Significant Wildlife Habitat) were identified within the study area.

3.3 Vegetation and Vegetation Communities

According to the TRCA's Etobicoke Creek and Mimico Creek Watersheds Technical Update Report (TRCA 2010) only 12.4% of the Etobicoke Creek watershed has natural cover. The project area is well vegetated, and likely comprises a good portion of the natural cover in the watershed. In 2008, the Kennedy Valley Restoration Project was initiated to add a trail in the vicinity the Kennedy Road Crossing and Highway 410 Crossing as well as restore some of the natural areas along the route. Wetlands and wildlife habitat features were created to enhance the natural heritage system and corridor.

The composition, structure and function of vegetation communities within the study area were identified through a combination of background Ecological Land Classification (ELC) by TRCA, air photo interpretation and field investigation. A field investigation of the vegetation communities within the study area, with concentration on the proposed routes, was conducted on May 27, 2019. The survey included adjacent habitat, to the extent possible. The field investigation was carried out to ground truth the boundaries of the vegetation communities and to conduct a botanical survey. Natural vegetation features identified within the study area were classified according to the Ecological Land Classification for Southern Ontario: First Approximation and Its Application (Lee et al. 1998) and TRCA Community nomenclature. The results of this survey will be included in the Technical Memorandum that will follow in September 2019. The following sections summarize the background ELC and vegetation information available through searches of TRCA data, City of Mississauga Natural Areas Survey information, and NHIC database.

3.3.1 Vegetation Communities

The ELC for the study area was available from TRCA (See Figure 3). Of the various communities present, many are cultural. A few pockets of forest communities exist along the valley slopes as well as some marsh wetland pockets within the floodplain. The ELC communities for the study area will be updated by LGL in the Technical Memorandum in September 2019. At that time a full species list for the study area will also be provided.

Table 1: Summary of TRCA Ecological Land Classification Vegetation Communities.

Terrestrial Community	ELC Code	ELC Vegetation Community
Cultural Meadow	CUM1-b	Exotic Cool-season Grass Graminoid Meadow
Cultural Meadow	CUM1-c	Exotic Forb Meadow
Cultural Plantation	CUP3-3	Scotch Pine Coniferous Plantation
Cultural Thicket	CUT1-c	Exotic Deciduous Thicket
Cultural Thicket	CUT1-A1	White Cedar Successional Woodland
Cultural Woodland	CUW1-A3	Native Deciduous Successional Woodland
Cultural Woodland	CUW1-B	Exotic Successional Woodland
Cultural Woodland	CUW1-D	Hawthorn Successional Woodland
Deciduous Forest	FOD5-1	Dry-Fresh Sugar Maple Deciduous Forest
Deciduous Forest	FOD5-4	Dry-Fresh Sugar Maple – Ironwood Deciduous Forest
Deciduous Forest	FOD6-5	Fresh-Moist Sugar Maple – White Elm Deciduous Forest
Deciduous Forest	FOD7-a	Fresh-Moist Manitoba Maple Lowland Deciduous Forest
Deciduous Forest	FOD7-2	Fresh-Moist Ash Deciduous Forest
Deciduous Forest	FOD7-4	Fresh-Moist Black Walnut Lowland Deciduous Forest
Mineral Meadow Marsh	MAM2-a	Common Reed Mineral Meadow Marsh
Mineral Meadow Marsh	MAM2-2	Reed Canary Grass Mineral Meadow Marsh
Mineral Shallow Marsh	MAS2-1b	Cattail Mineral Shallow Marsh
Open Aquatic	OA01	Open Water Aquatic
Open Aquatic	OA01-T	Turbid Open Aquatic

The City of Mississauga Natural Areas Survey Natural Areas Fact Sheet for ET01 (2015) was reviewed for the background screening. The ELC for this study differs from that of the TRCA and is considered to be more current and a high level of detail than the TRCA ELC data. Information available is only for the southern portion of the study area south of the Highway 407 within the municipal boundary of Mississauga. The Natural Areas Survey indicates the community types are Dry-fresh Sugar Maple-Beech Deciduous Forest (FOD5-2), Dry-fresh Deciduous Forest Ecosite (FOD4), Fresh-moist Willow Lowland Deciduous Forest Type (FOD7-3), Dry-moist Black Walnut Lowland Deciduous Forest Type (FOD7-4), and Dry-moist Old Field Meadow Type (CUM1-1).

3.3.2 Flora

A total of 19 species were found in the background search of TRCA flora data. These plant species are listed in Table 2. All species listed are native, and relatively common.

Table 2: List of Flora available for Study Area from TRCA Database.

Common Name	Scientific Name	Local Status
American beech	<i>Fagus grandifolia</i>	L4
barber-pole bulrush	<i>Scirpus microcarpus</i>	L5
bitternut hickory	<i>Carya cordiformis</i>	L4
bur oak	<i>Quercus macrocarpa</i>	L4
common arrowhead	<i>Sagittaria latifolia</i>	L4
eastern hemlock	<i>Tsuga canadensis</i>	L4
great bur-reed	<i>Sparganium eurycarpum</i>	L3
large-toothed aspen	<i>Populus grandidentata</i>	L4
May-apple	<i>Podophyllum peltatum</i>	L5
Michigan lily	<i>Lilium michiganense</i>	L4
ninebark	<i>Physocarpus opulifolius</i>	L3
red maple	<i>Acer rubrum</i>	L4
red oak	<i>Quercus rubra</i>	L4
running strawberry-bush	<i>Euonymus obovatus</i>	L3
silver maple	<i>Acer saccharinum</i>	L4
soft-stemmed bulrush	<i>Schoenoplectus tabernaemontani</i>	L4
tall wood reed	<i>Cinna arundinacea</i>	L3
Torrey's rush	<i>Juncus torreyi</i>	L4
white baneberry	<i>Actaea pachypoda</i>	L4

Legend

Rank Level of Conservation Concern in TRCA Region

L5 Able to withstand high levels of disturbance; generally secure throughout the jurisdiction, including the urban matrix. May be of very localized concern in highly degraded areas.

- L4 Able to withstand some disturbance; generally secure in rural matrix; of concern in urban matrix.
- L3 Able to withstand minor disturbance; generally secure in natural matrix; considered to be of regional concern.
- L2 Unable to withstand disturbance; some criteria are very limiting factors; generally occur in high-quality natural areas, in natural matrix; probably rare in the TRCA jurisdiction; of concern regionally.
- L1 Unable to withstand disturbance; many criteria are limiting factors; generally occur in high-quality natural areas in natural matrix; almost certainly rare in the TRCA jurisdiction; of concern regionally.
- LX Extirpated from our region with remote chance of rediscovery. Presumably highly sensitive.
- LH Hybrid between two native species. Usually not scored unless highly stable and behaves like a species (e.g. *Equisetum x nelsonii*)
- L+ Exotic. Not native to TRCA jurisdiction. Includes hybrids between a native species and an exotic
- L+? Origin uncertain or disputed, i.e. may or may not be native.

The City of Mississauga's Natural Areas Survey (2015) indicates there are a total of 196 floral species identified at the southeastern portion of our study area. They estimate that 41.33% of the flora are introduced plant species with a native FQI of 35.19 and native mean coefficient of 3.28, which are low values.

3.3.2.1 Locally Rare Flora and Species

No locally rare flora were found in the TRCA database. All species were L3 to L5. The City of Mississauga's Natural Areas Survey (NAS) (2015) indicates that 32 of the flora species in ET01 are Species of Conservation Concern in the Credit Valley Conservation (CVC) district (tier 1-3). Note the study area is in TRCA jurisdiction, not CVC, however the Mississauga NAS lists the CVC flora and fauna codes. Common Hop (*Humulus lupulus*), found in ET01 is a plant species considered rare in Mississauga.

3.3.2.2 Species at Risk

No plant species at risk were found in the TRCA flora data. No species at risk were identified during the field investigation on May 27, 2019.

Butternut (*Juglans cinerea*), an endangered tree species, is identified in the City of Mississauga's Natural Areas Survey (2015) as being in ET01 located in the vegetation communities south of highway 407 and hydro corridor. This is a species commonly encountered in the urban areas of the Region.

3.4 Wildlife and Wildlife Habitat

Wildlife communities and habitat are described through a combination of background data and through observations made on site by LGL.

3.4.1 Background Information

Available background information from TRCA, Ontario Nature Reptile and Amphibian Atlas (Ontario Nature 2019), and, the Ontario Breeding Bird Atlas (OBBA) (Bird Studies Canada 2006) was reviewed for the broader project area (Appendix B). A summary of the TRCA fauna, Ontario Nature Atlas and OBBA data is provided in Appendix B. Background data from the TRCA is from within the study area. Data from the atlases contains bird, reptile, and amphibian data for an area 10km², therefore, while these species have some potential to be found in a larger area, there may not be available habitat for them on site.

A total of 11 reptile and amphibian species were identified in the greater study area based on data from TRCA, OBBA, Ontario Nature Reptile Atlas and LGL surveys. A total of 64 bird species were noted by TRCA and LGL. An additional 20 bird species were noted on eBird, however they may be up to 10km away and are not confirmed in the study area. A total of 8 mammal species were noted in the study area by TRCA and LGL.

The City of Mississauga's Natural Areas Survey (2015) indicates there are a total of 47 birds, 3 mammals, 2 dragonflies, and 4 butterfly species present in Natural Area ET01. The fauna is considered typical for urban natural areas.

3.4.2 Field Investigation

A breeding bird survey was conducted within the study area on May 27, 2019 and on June 7, 2019, with a focus on the alternative routes proposed in the feasibility study. Weather conditions were optimal, with low winds, clear skies, and temperatures around 15°C. In addition to the bird survey, incidental wildlife observations were completed through visual and auditory observations as well as indirect incidental observations (i.e. tracks, scat, and scents). A list of all species documented by LGL within the study area is provided in Appendix B. A summary of LGL field observations and wildlife habitat characterization available at the time of this report are included in the following sections.

3.4.2.1 Wildlife

A total of 59 wildlife species were documented during the field investigation by LGL, including five mammal species, one amphibian species, 52 bird species, and one invertebrate.

Most of the bird species observed are considered migratory and are regulated under the Migratory Birds Convention Act (MBCA), while Blue Jay (*Cyanocitta cristata*) is regulated under the Fish and Wildlife Conventions Act (FWCA). The Beaver (*Castor canadensis*), Muskrat (*Ondatra zibethica*) and Raccoon (*Procyon lotor*) are considered furbearers under the FWCA. Gray Squirrel (*Sciurus carolinensis*), and White-tailed Deer (*Odocoileus virginianus*) are game species under the FWCA. Some of the observed species are not under any legislative protection: American Crow (*Corvus brachyrhynchos*); House Sparrow (*Passer domesticus*); and, Red-winged Blackbird (*Agelaius phoeniceus*).

3.4.2.2 Wildlife Habitat

With the study area being located in a predominantly industrial setting, the natural areas associated with Etobicoke Creek provide some of the main habitat for wildlife in the area. The Etobicoke Creek valley and its associated natural areas provide a good wildlife corridor through the area with the movement of mammal species evident through tracks under the bridge structures. The structures themselves provide nesting habitat for Cliff Swallow (*Petrochelidon pyrrhonota*) and Eastern Phoebe (*Sayornis phoebe*), with several active nests of both species observed during field investigations. While the structures are also suitable for other species, such as Barn Swallow (*Hirunda rustica*), none were observed. The Etobicoke Creek valley provides a variety of habitat types including mature deciduous forest, secondary forest, open riparian habitats and wetlands. There are two constructed wetlands between the 407 ETR and Tomken Road that are being used by a variety of wildlife including amphibians, birds and mammals. In several areas, the habitat has been enhanced/restored through tree plantings, wetland construction and invasive species removal. Several bat boxes were noted attached to large trees in the forested area in the study area, south of Etobicoke Creek. Several trees with cavities suitable for roosting bats were also located within the forested areas throughout the study area, as well as along Kennedy Road. Two large Red Oak (*Quercus rubra*) on the south west side of the Kennedy Road bridge over Etobicoke Creek had candidate bat habitat cavities (see Appendix A for photos).

In addition to the natural habitats associated with the creek valley, open, human-made habitats exist for species that prefer edges and/or open field habitats. These were a golf course located to the west of Kennedy Road, sports fields located to the south of the Etobicoke Creek valley, fallow industrial lands associated with the old wastewater treatment plant north of the creek valley and active and inactive agricultural lands.

3.4.3 Species at Risk and Locally Rare Species

Two wildlife species at risk was noted during LGL's field investigations, Eastern Wood-pewee (*Contopus virens*) and Monarch (*Danaus plexippus*) are both species of Special Concern in Ontario. A review of TRCA fauna data, Ontario Nature and OBBA eBird data identifies the potential presence of the following species at risk in a 10 km square that includes our study area (Table 3).

Table 3: Species at Risk in the Greater Study Area.

Common Name	Scientific Name	Status under ESA	Source
Bank Swallow	<i>Riparia riparia</i>	Threatened	TRCA
Barn Swallow	<i>Hirundo rustica</i>	Threatened	EBird
Bobolink	<i>Dolichonyx orzivorus</i>	Threatened	TRCA
Chimney Swift	<i>Chaetura pelagica</i>	Threatened	TRCA
Eastern Meadowlark	<i>Sturnella magna</i>	Threatened	TRCA
Eastern Wood-pewee	<i>Contopus virens</i>	Special Concern	LGL, TRCA, EBird
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	Endangered	Reptile Atlas
Monarch	<i>Danaus plexippus</i>	Special Concern	LGL
Snapping Turtle	<i>Chelydra serpentina</i>	Special Concern	Reptile Atlas
Wood Thrush	<i>Hylocichla mustelina</i>	Special Concern	EBird

City of Mississauga's Natural Areas Survey (2015) indicates that 22 of the bird species in ET01 are Species of Conservation Concern in the Credit Valley Conservation district (Tier 1-3).

A summary of all potential species at risk identified through this screening, their habitat requirements, and further discussion of their potential to be onsite is provided in Section 4.0.

3.5 Aquatic Habitat and Communities

3.5.1 Background Information

Etobicoke Creek Flows through the study area. The current sewer alignment follows its length through the study area. Etobicoke Creek is an urban creek that has been degraded (TRCA 2010) and efforts have been made to restore the creek in recent years. The Etobicoke Creek watershed drains an area of approximately 211km². Its headwaters are in the Oak Ridges Moraine and it flows through Brampton and Mississauga eventually flowing into Lake Ontario. The creek flows through a series of riffles and pools through the study area. While the watershed has many barriers to fish movement, the West Branch is relatively well connected. Table 4 provides a summary of fish species in the vicinity of the study area and Figure 4 indicates locations of fish surveys. A total of 21 fish species are present within Etobicoke Creek in the study area. Species include mainly warmwater baitfish such as Bluntnose Minnow (*Pimephales notatus*) and Fathead Minnow (*P. promelas*). Etobicoke Creek is managed as a warmwater system.

The Etobicoke Creek Watershed Report Card (TRCA 2018) rated the water quality a D, which is poor. The grade is based on benthic invertebrate sampling, and concentrations of Total Phosphorus as well as *Escherichia coli* levels. While chloride levels aren't used as a measurement in the water quality rating, they are known to be high in the watershed.

3.5.2 Species at Risk

Etobicoke Creek and its tributaries do not support any aquatic species at risk. Etobicoke Creek was once habitat for Redside Dace (*Clinostomus elongatus*) however the species is considered extirpated from the area (DFO 2019).

Table 4: Summary of Fish Species – Background Review.

Common Name	Scientific Name	Thermal Regime/Tolerance ¹	Status	SARO/ SARA	Etobicoke Creek in study area (AU-006-ETO) ⁷	Etobicoke Creek downstream of study area (AU-007-ETO) ⁸	Tributaries of Etobicoke Creek along Kennedy Road (AU005-ETO) ⁹	Etobicoke Creek in study area northwest of 410 and 407 (EC008WM) ¹⁰	Etobicoke Creek in study area northeast of 410 and 407 (EC-KV1) ¹¹	Etobicoke Creek downstream of study area, south of Derry Road (EC007WM) ¹²
Bluntnose Minnow	<i>Pimephales notatus</i>	warmwater/intermediate	G5, S5		X	X	X	X	X	X
Brook Stickleback	<i>Culaea inconstans</i>	coolwater/intermediate ²	G5, S5		X	X		X		X
Brown Bullhead	<i>Ameiurus nebulosus</i>	warmwater/intermediate	G5, S5							X
Central Stoneroller	<i>Campostoma anomalum</i>	warmwater/intermediate	G5, S5					X	X	X
Common Shiner	<i>Luxilus cornutus</i>	coolwater/intermediate ⁴	G5, S5		X	X	X		X	X
Creek Chub	<i>Semotilus atromaculatus</i>	coolwater/intermediate ⁵	G5, S5		X	X	X	X	X	X
Western Blacknose Dace	<i>Rhinichthys obtusus</i>	coolwater/intermediate	G5, SNR		X	X	X	X	X	X
Emerald Shiner	<i>Notropis atherinoides</i>	coolwater/intermediate ⁴	G5, S5		X					
Fantail Darter	<i>Etheostoma flabellare</i>	coolwater/intolerant	G5, S4		X					
Fathead Minnow	<i>Pimephales promelas</i>	warmwater/tolerant	G5, S5		X	X		X		X
Golden Shiner	<i>Notemigonus crysoleucas</i>	coolwater/intermediate ⁴	G5, S5				X			X
Green Sunfish	<i>Lepomis cyanellus</i>	warmwater/tolerant	G5, S5					X		X
Johnny Darter	<i>Etheostoma nigrum</i>	coolwater/tolerant ⁶	G5, S5		X	X	X	X	X	X
Longnose Dace	<i>Rhinichthys cataractae</i>	coolwater/intermediate	G5, S5		X	x	X	X		X
Northern hog Sucker	<i>Hypentelium nigricans</i>	warmwater/intermediate	G5, S4		X			X		
Pumpkinseed	<i>Lepomis gibbosus</i>	warmwater/intermediate	G5, S5							X
Rainbow Darter	<i>Etheostoma caeruleum</i>	coolwater/intolerant	G5, S4		X			X	X	X
Rock Bass	<i>Ambloplites rupestris</i>	coolwater/intermediate	G5, S5		X	X				x

Common Name	Scientific Name	Thermal Regime/Tolerance ¹	Status	SARO/ SARA	Etobicoke Creek in study area (AU-006-ETO) ⁷	Etobicoke Creek downstream of study area (AU-007-ETO) ⁸	Tributaries of Etobicoke Creek along Kennedy Road (AU005-ETO) ⁹	Etobicoke Creek in study area northwest of 410 and 407 (EC008WM) ¹⁰	Etobicoke Creek in study area northeast of 410 and 407 (EC-KV1) ¹¹	Etobicoke Creek downstream of study area, south of Derry Road (EC007WM) ¹²
Spotfin Shiner	<i>Cyprinella spiloptera</i>	warmwater/intermediate	G5, S4				X			
Spottail Shiner	<i>Notropis hudsonius</i>	coolwater/intermediate	G5, S5		X					
White Sucker	<i>Catostomus commersonii</i>	coolwater/tolerant	G5, S5		X	X	X		X	

¹ Eakins, R. J. 2012. Ontario Freshwater Fishes Life History Database. Version 4.24. On-line database. (<http://www.ontariofishes.ca>), accessed 31 May 2019

² Tolerant of low DO but intolerant of turbidity. Usually only species found in marginal environments.

³ Intolerant of turbidity, siltation, pollution

⁴ Tolerant of turbidity

⁵ Tolerant of pollution, low DO, moderately intolerant of turbidity

⁶ Tolerant of many organic/inorganic pollutants, but moderately tolerant of turbidity

⁷ AU-006-ETO in Figure 4, Source: MNRF LIO data

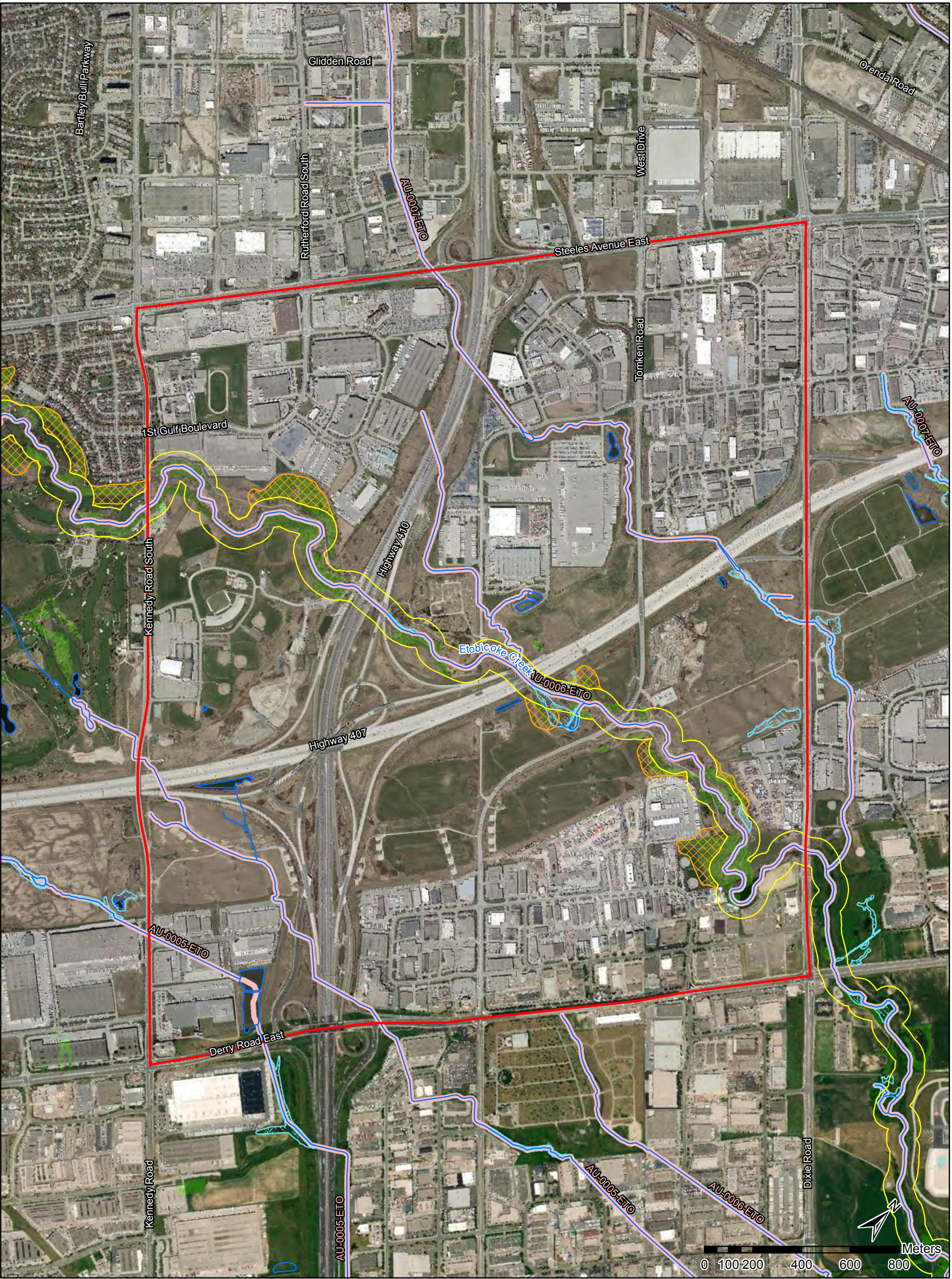
⁸ AU-007-ETO in Figure 4, Source: MNRF LIO data

⁹ AU-005-ETO in Figure 4, Source: MNRF LIO data

¹⁰ EC008WM in Figure 4, Source: TRCA data

¹¹ EC-KV1 in Figure 4, Source: TRCA data

¹² EC007WM in Figure 4, Source: TRCA data



Etobicoke Creek Trunk Sewer Improvements and Upgrades
Background Data Review (LIO)

- Study Area
- Greenbelt - Urban River Valley
- NHS (Undifferentiated) - Growth Plan for the Greater Golden Horseshoe
- Unevaluated Wetland
- Wooded Area
- Watercourse
- Waterbody
- Aquatic Resource Area Summary Thermal Regime
- Warm

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Project	TA8907	Figure	4
Date	June 2019	Prepared By	KC
Scale	1:15,000	Verified By	AHF

4.0 Species at Risk Summary

The *Endangered Species Act* (2007) was administered by the MNRF when this project was initiated. It is now administered by the MECP (as of April 1, 2019). A project screening was sent to the MECP on May 10th, 2019. No response has been received for the request at the time of this report. A table of potential SAR species (see Table 5) has been compiled using information from various sources such as TRCA database, NHIC, OBBA, Ontario Nature, DFO Aquatic SAR Mapping as well as LGL's spring 2019 surveys.

Table 5: Species at Risk Screening for the Project.

Type	Species	LGL Surveys Spring 2019	MNRF NHIC (May 2019)	TRCA data	DFO SAR Mapping (2019)	Ontario Reptile and Amphibian Atlas	OBBA (2001-2005)	eBird (2 stations near study area)	MNRF Screening (List for Mississauga)	ESA Designation	Habitat	Potential for Habitat/Screening Conducted by LGL	Results of Screening	Mitigation Recommendations for Detailed Design
Vegetation	American Chestnut (<i>Castanea dentata</i>)							X		SARO – Endangered	Generally found in deciduous or mixed forests with well drained soils. Most often found in the Carolinian zone in Ontario.	No habitat found in study area. ELC and arborist survey conducted within the vicinity of the worksite. No known background records for this species.	LGL did not observe any specimens within the study area.	No further recommendations.
	Butternut (<i>Juglans cinerea</i>)							X		SARO – Endangered	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldom, on dry, rocky and sterile soils. In Ontario, the Butternut Generally grows alone or in small groups in deciduous forests as well as in hedgerows	Potential habitat found in study area. ELC and arborist survey conducted within the vicinity of the worksite. Reported to occur in study area.	LGL did not observe any specimens within the study area. High potential to occur.	This stage of project review may not detect individuals of the species. Project solutions should continue to consider this species as potentially present under the study area is assessed at detailed design. It cannot be ruled out at this time. It would be detected at the permitting and approvals phasing such as through a site specific arborist assessment, tree protection plan or environmental impact study in support of TRCA permits.
Bird	Barn Swallow (<i>Hirundo rustica</i>)						X	X		SARO – Threatened	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc.	No nesting sites were observed in study area, nor were any barn swallows observed foraging in the area.	Breeding bird survey conducted, none observed.	No removal of built structures with the potential to function as nesting habitat are anticipated at this time. No further recommendations.

Type	Species	LGL Surveys Spring 2019	MNRF NHIC (May 2019)	TRCA data	DFO SAR Mapping (2019)	Ontario Reptile and Amphibian Atlas	OBBA (2001-2005)	eBird (2 stations near study area)	MNRF Screening (List for Mississauga)	ESA Designation	Habitat	Potential for Habitat/Screening Conducted by LGL	Results of Screening	Mitigation Recommendations for Detailed Design
	Bank Swallow (<i>Riparia riparia</i>)			X					X	SARO – Threatened	Nests in the vertical surfaces of silt and sand substrates. Often these surfaces are found on the banks of waterbodies or gravel pits.	Potential nesting site in the study area on bank of Etobicoke Creek just downstream of the pedestrian bridge. Bank at this location is vertical and composed of silt, clay, and shale. No nest excavations or species documented in area.	Breeding bird survey conducted, no Bank Swallows observed. Observed by TRCA in study area.	Mitigation measures during construction may include recommendations on soil stockpile height to be kept to 2.5m or lower to reduce potential for cavity nesters. No further action recommended at this time.
	Bobolink (<i>Dolichonyx oryzivorus</i>)			X					X	SARO – Threatened	This species occurs in tallgrass prairies, open meadows, and fallow agricultural fields. It’s also often found in hay fields.	Suitable habitat for this species found in study area in agricultural fields and meadows.	Breeding bird survey conducted, none observed. Recorded by TRCA in study area in data dated 2002-2005.	No further recommendations at this time.
	Chimney Swift (<i>Chaetura pelagica</i>)								X	SARO – Threatened	Historically found in deciduous and coniferous, usually wet forest types, all with a well-developed, dense shrub layer; now most are found in urban areas in large uncapped chimneys.	No buildings with chimneys suitable for nesting found in study area.	Breeding bird survey conducted, none observed.	No removal of built structures with the potential to function as habitat are anticipated. No further recommendations.

Type	Species	LGL Surveys Spring 2019	MNRF NHIC (May 2019)	TRCA data	DFO SAR Mapping (2019)	Ontario Reptile and Amphibian Atlas	OBBA (2001-2005)	eBird (2 stations near study area)	MNRF Screening (List for Mississauga)	ESA Designation	Habitat	Potential for Habitat/Screening Conducted by LGL	Results of Screening	Mitigation Recommendations for Detailed Design
	Common Nighthawk (<i>Chordeiles minor</i>)							X		SARO – Special Concern	Open habitats with little to no plants. Examples included rock barrens, forest clearings, and logged areas.	No suitable habitat for this species found in study area. No background records in eBird for the study area.	Breeding bird survey conducted, none observed although a crepuscular species and not detected during standard surveys.	No further recommendations at this time.
	Eastern Meadowlark (<i>Sturnella magna</i>)		X	X				X		SARO – Threatened	This species occurs in tallgrass prairies, open meadows, and fallow agricultural fields.	Suitable habitat for this species found in study area in agricultural fields and meadows.	Breeding bird survey conducted, none observed. Recorded by TRCA in study area in data dated 2002-2005.	No further recommendations at this time.
	Eastern Wood-Pewee (<i>Contopus virens</i>)	X		X				X	X	SARO – Special Concern	Mixed and deciduous forests in the mid-canopy layer near forest clearings and edges. The forests usually have little understory vegetation.	Suitable habitat for this species found in forests in study area.	Breeding bird survey conducted, observed by LGL in 2019 and considered present in study area. Also recorded by TRCA, and noted in eBird.	Tree and vegetation clearing shall ensure compliance of the Migratory Bird Convention Act which identifies timing restrictions for clearing during breeding bird season (April 1- August 31) for nesting Zone C2.
	Least Bittern (<i>Ixobrychus exilis</i>)							X		SARO – Threatened	Found in wetland habitats with open water. They prefer cattail marshes.	No habitat for this species found in the study area. The wetlands in the area are not large enough and do not provide suitable habitat.	Breeding bird survey conducted, none observed. None recorded on E-bird for the study area.	No further recommendations.

Type	Species	LGL Surveys Spring 2019	MNRF NHIC (May 2019)	TRCA data	DFO SAR Mapping (2019)	Ontario Reptile and Amphibian Atlas	OBBA (2001-2005)	eBird (2 stations near study area)	MNRF Screening (List for Mississauga)	ESA Designation	Habitat	Potential for Habitat/Screening Conducted by LGL	Results of Screening	Mitigation Recommendations for Detailed Design
	Peregrine Falcon (<i>Falco peregrinus</i>)								X	SARO – Special Concern	Nesting sites include cliff faces and ledges as well as the ledges on tall buildings, bridges, and other anthropogenic structures. They have also been found nesting in quarries and open pit mines	No suitable habitat for this species found in study area.	Breeding bird survey conducted, none observed.	No further recommendations.
	Red-headed Woodpecker (<i>Melanerpes erythrocephalus</i>)								X	SARO – Special Concern	Open woodlands and woodland edges. Sometimes found in cemeteries, parks and golf courses.	Suitable habitat for this species found in forests and woodlands in study area	Breeding bird survey conducted, none observed.	Tree and vegetation clearing shall ensure compliance of the Migratory Bird Convention Act which identifies timing restrictions for clearing during breeding bird season (April 1- August 31) for nesting Zone C2.
	Short-eared Owl (<i>Asio flammeus</i>)								X	SARO – Special Concern	Open areas like grasslands, and marshes. Nests on the ground.	Suitable habitat for this species found in study area in meadows, though potentially too small.	Breeding bird survey conducted, none observed.	No further recommendations.
	Wood Thrush (<i>Hylocichla mustelina</i>)							X	X	SARO – Special Concern	Mature deciduous and mixed woods. Nests regularly in Sugar Maple and American Beech.	Suitable habitat for this species found in forests in study area.	Breeding bird survey conducted, none observed.	Tree and vegetation clearing shall ensure compliance of the Migratory Bird Convention Act which identifies timing restrictions for clearing during breeding bird season (April 1- August 31) for nesting Zone C2.
Reptile and amphibian	Eastern Ribbonsnake (<i>Thamnophis sauritus</i>)								X	SARO – Special Concern	They are a semi aquatic species. Their habitat is forests near water, particularly marsh habitat within a forest.	Habitat for this species found in the study area, in Etobicoke Creek and associated woodlands and wetlands.	None found	Recommend using ESCs as wildlife fencing to keep wildlife out of construction area.

Type	Species	LGL Surveys Spring 2019	MNRF NHIC (May 2019)	TRCA data	DFO SAR Mapping (2019)	Ontario Reptile and Amphibian Atlas	OBBA (2001-2005)	eBird (2 stations near study area)	MNRF Screening (List for Mississauga)	ESA Designation	Habitat	Potential for Habitat/Screening Conducted by LGL	Results of Screening	Mitigation Recommendations for Detailed Design
	Jefferson Salamander (<i>Ambystoma jeffersonianum</i>)					X			X	SARO – Endangered	They are found in woodland and forest habitats and breed in vernal pools.	Habitat for this species not found in the study area. This record may be from up to 10km away.	None found	Recommend using ESCs as wildlife fencing to keep wildlife out of construction area.
	Northern Map Turtle (<i>Graptemys geographica</i>)								X	SARO – Special Concern	They inhabit rivers and lakes that support molluscs (for prey).	Habitat for this species not found in the study area.	None found	Recommend using ESCs as wildlife fencing to keep wildlife out of construction area.
	Snapping Turtle (<i>Chelydra serpentina</i>)					X			X	SARO – Special Concern	Aquatic setting such as lakes, ponds, bays and inlets. This is a highly aquatic species but may leave the water to seek out new aquatic habitats or to lay eggs.	Habitat for this species found in the study area, in Etobicoke Creek and associated wetlands.	None found	Recommend using ESCs as wildlife fencing to keep wildlife out of construction area.
Mammal	Eastern Small-footed Bat (<i>Myotis leibii</i>)								X	SARO – Endangered	Overwintering habitat: Caves and mines Maternal Roosts: Caves, tree cavities, rock outcrops, bridges and buildings	No potential for hibernacula identified. Potential for maternal roosts in forests and open grown trees.	Candidate roost trees identified in forest community and along Kennedy Road	Recommend targeted bat and bat habitat surveys to be completed in areas with potential tree removals at the Detailed Design Stage to confirm site specific mitigation requirements. Apply timing window for tree clearing to protect maternity roosting.
	Little Brown Bat (<i>Myotis lucifugus</i>)								X	SARO – Endangered	Overwintering habitat: Caves and mines that remain above 0. Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh).	No potential for hibernacula identified. Potential for maternal roosts in forests and open grown trees.	Candidate roost trees identified in forest community and along Kennedy Road	Recommend targeted bat and bat habitat surveys to be completed in areas with potential tree removals at the Detailed Design Stage to confirm site specific mitigation requirements. Apply timing window for tree clearing to protect maternity roosting.

Type	Species	LGL Surveys Spring 2019	MNRF NHIC (May 2019)	TRCA data	DFO SAR Mapping (2019)	Ontario Reptile and Amphibian Atlas	OBBA (2001-2005)	eBird (2 stations near study area)	MNRF Screening (List for Mississauga)	ESA Designation	Habitat	Potential for Habitat/Screening Conducted by LGL	Results of Screening	Mitigation Recommendations for Detailed Design
	Northern Long Eared Bat (<i>Myotis septentrionalis</i>)								X	SARO – Endangered	Overwintering habitat: Caves and mines that remain above 0. Maternal Roosts: Often associated with cavities of large diameter trees (25-44 cm dbh) with cavities and crevices. Occasionally found in structures (attics, barns etc.)	No potential for hibernacula identified. Potential for maternal roots in forests and open grown trees.	Candidate roost trees identified in forest community and along Kennedy Road	Recommend targeted bat and bat habitat surveys to be completed in areas with potential tree removals at the Detailed Design Stage to confirm site specific mitigation requirements. Apply timing window for tree clearing to protect maternity roosting.
	Tri-Coloured Bat (<i>Perimyotis subflavus</i>)								X	SARO – Endangered	Overwintering habitat: Caves and mines that remain above 0. Maternal Roosts: Often associated with clusters of dead leaves in large diameter Oak or Maple trees	No potential for hibernacula identified. Potential for maternal roots in forests and open grown trees.	Candidate roost trees identified in forest community and along Kennedy Road	Recommend targeted bat and bat habitat surveys to be completed in areas with potential tree removals at the Detailed Design Stage to confirm site specific mitigation requirements. Apply timing window for tree clearing to protect maternity roosting.
Invertebrates	Monarch (<i>Danaus plexippus</i>)	X								SARO – Special Concern	Summer habitat in Ontario includes meadows and open areas where Milkweed grows. Caterpillars feed on milkweed, while adults feed on a variety of wildflowers	Suitable habitat found in study area for nectaring and breeding. No staging habitat identified. No overwintering habitat in Canada.	Adult Monarch observed in study area.	Minimize milkweed removals. Include milkweed in restoration plantings. No additional mitigation recommended at this time.

5.0 Potential Impacts

Potential impacts identified are in the form of vegetation and tree removals and aquatic habitat impacts for construction along and/or in the vicinity of the Etobicoke Creek Trunk Sewer. For the purposes of the Baseline Natural Features assessment Report, the alternatives identified in the Feasibility Study were considered. It is understood that these will form the basis of alternatives to be assessed in the Class EA and may be supplemented or revised as part of the Class EA process (see Table 6 and Figure 5). These include:

- Alternative 1: Twinning of existing sewer alignment
- Alternative 2: Installation of the new sewer within Etobicoke Creek valley to south of Tomken Road
- Alternative 3: Installation of new sewer along Kennedy Road to Derry Road.

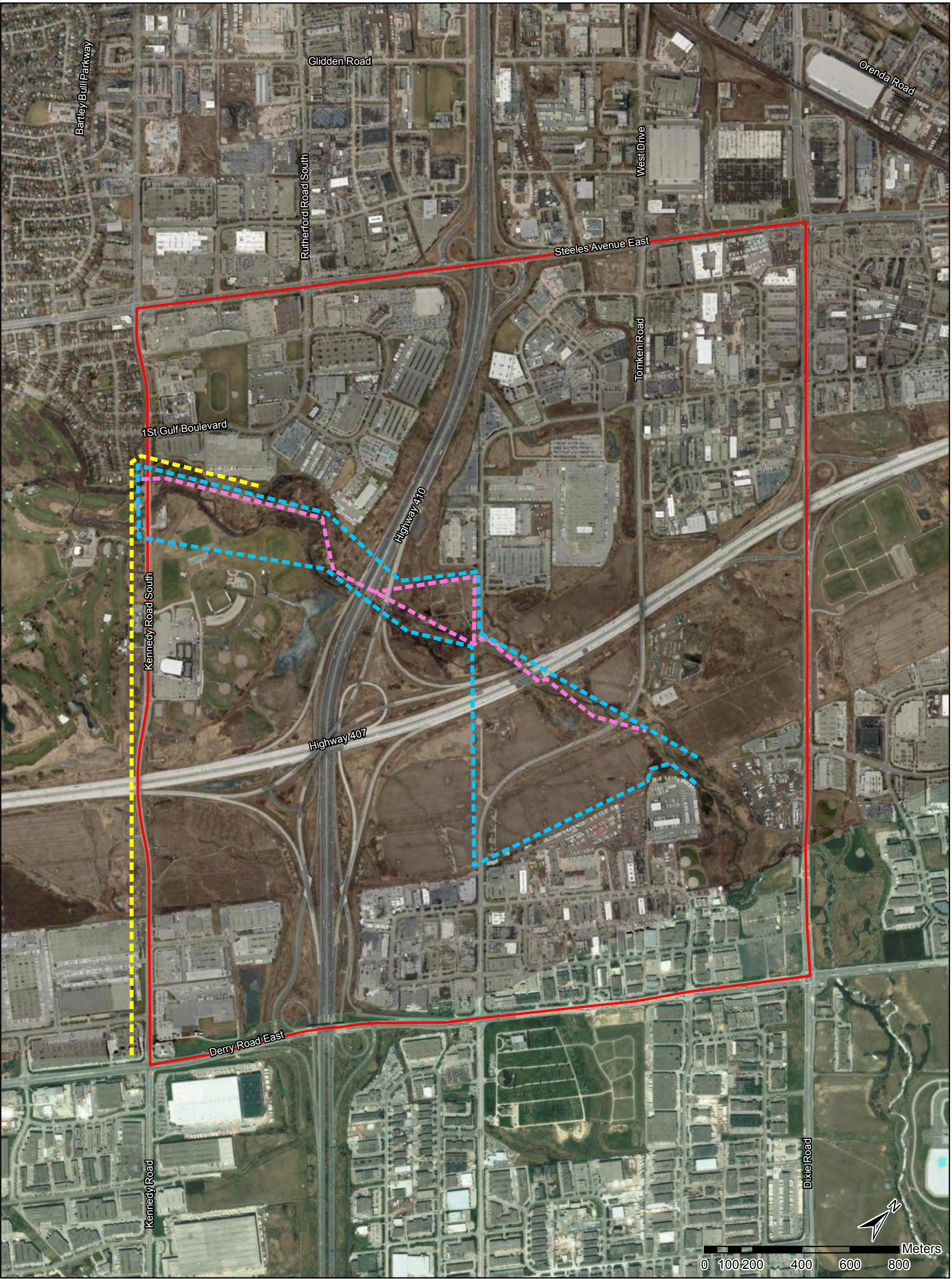
As described in Section 3.4 above, wildlife and wildlife habitat in the project area is considered tolerant to human disturbance given the proximity to and ongoing influence of urban landscapes. There are potential direct impacts to wildlife habitat from vegetation removal within the construction disturbance limits sewer alignment for all three alternatives, and preliminary mitigation measures are recommended accordingly.

Impacts to aquatic habitat are also identified as all three alignments have crossings of Etobicoke Creek. Potential impacts can be mitigated through appropriate mitigation measures such as erosion and sediment control measures and use of tunneling technologies.


Based on previous consultation with the MNRF and MECP on similar projects, the potential for SAR bat impacts can be mitigated through the application of timing windows for tree clearing activities, minimizing the extent of tree removals on the project and bat habitat enhancement included in restoration efforts.

Table 6: Evaluation of Alternatives from a Natural Heritage Perspective.

Alternative	1	2	3
Vegetation Impacts	Vegetation impacts and tree removals anticipated.	Vegetation impacts and tree removals anticipated.	Potential for impacts to or removal of some street trees.
Wildlife Impacts	Impacts to wildlife habitat from vegetation and tree removals.	Impacts to wildlife habitat from vegetation and tree removals.	Impacts to wildlife habitat from tree removals.
Aquatic Impacts	2 crossings of Etobicoke Creek and at least 750m of pipe installed along banks.	Approximately 5 crossings of Etobicoke Creek	One crossing of Etobicoke Creek, Two crossings of tributaries
SAR Impacts	Potential to impact Eastern Wood-Pewee Habitat. Potential to impact bat maternal roosting habitat.	Potential to impact Eastern Wood-Pewee Habitat. Potential to impact bat maternal roosting habitat.	Potential to impact bat maternal roosting habitat.



Etobicoke Creek Trunk Sewer Improvements and Upgrades
Feasibility Study Alternative Alignments

-  Study Area
-  Alternative 1
-  Alternative 2
-  Alternative 3

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Project	TA8907	Figure	5
Date	July 2019	Prepared By	KC
Scale	1:15,000	Verified By	AHF

5.1 Proposed Mitigation

LGL has reviewed the information available for the project against the natural heritage information compiled to date above to make the following recommendations to reduce impacts on natural features through project design. LGL notes that ELC updates have not been completed at this time, and will be completed for the preferred alternative and considered further at subsequent stages of the project. As additional project information is provided and additional details are understood, this mitigation is subject to be changed or updated.

A standalone ESC Plan should be developed and the Detailed Design stage and implemented for the site that minimizes risk of sediment transport into adjacent retained vegetation communities or to the aquatic habitat of Etobicoke Creek during all phases of the project. This plan should include these mitigation measures:

- Use of tunneling technologies to cross watercourses;
- Methods to isolate the construction area;
- Effective ESC measures shall be installed before starting work to prevent the entry of sediment into the watercourse or adjacent areas. Inspect regularly during the course of construction and conduct regular maintenance and repairs as necessary;
- Clearly identify stockpiling and staging areas; and,
- A plan to dispose of any water accumulated onsite from dewatering or pooled stormwater.

Other mitigation measures should include:

- Minimize vegetation and tree removals through facility design;
- Minimize construction area to the extent possible;
- Use appropriate tree protection measures for any work around tree resources within the project area to help protect trees identified to be retained;
- Use previously disturbed areas for construction laydown and staging to the extent possible;

- No vegetation removal should occur between April 1 and August 30 (for zone C2) of any given year in order to protect birds afforded protection under the Migratory Birds and Convention Act;
- No tree removal or pruning within the plantation should occur during the bat maternal roosting period for bats. Note, this timing window is weather dependant and should be confirmed by MECP once further project details are known;
- Locate site maintenance, vehicle washing and refuelling stations where contaminants are handled of site at least 30 m away from any watercourses or wetlands; and,
- Ensure that a Spills Management Plan (including materials, instructions regarding their use, education of contract personnel, emergency contact numbers) is on-site at all times for implementation in event of an accidental spill during construction. An emergency spill kit shall be kept on site. A response plan shall also be developed that is to be implemented immediately in the event of a sediment release.

6.0 Recommendations for Next Steps

Etobicoke Creek and its floodplain are regulated by the TRCA under Ontario Regulation 166/06 Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Most of the study area along alternatives 1 and 2 are within TRCA regulated areas (Table 7).

Table 7: Summary of Permitting Requirements.

Agency	Potential Permits and Approvals
TRCA	Permit under Ontario Regulation 166/06: Development, Interference with Wetlands and Alterations to Shorelines and Watercourses. Compensation for impacts in regulated areas may be required according to TRCA policies.
MECP	Permits or approvals may be required under the ESA (2007). Confirm timing windows for tree removal/pruning to avoid maternal roosting period for SAR bats.
DFO	Fisheries Act Authorization may be required for any in water works. A Self-Assessment process can be followed if in water works are avoided. The Fisheries Act recently has undergone some changes, and those changes are not yet reflected in regulations. The project will be subject to the updated Fisheries Act requirements, when available.
Municipality	City of Brampton and City of Mississauga Tree By-laws (Brampton Tree Preservation By-law 317-2012, Brampton Woodland Conservation by-law 316-2012, Mississauga Private Tree Protection By-law 254-12, etc.). Tree protection planning should be considered for trees to ensure trees that are to be retained are suitably protected during construction.

7.0 Summary and Conclusion

This report summarizes that background review and LGL field work done to date, where timeframes allowed for incorporation of site specific information. The preliminary review of alternatives is based on a graphic for the alternatives as GIS layers were not available to LGL.

As the project progresses, some information is expected to be updated from this report. In particular, information on vegetation communities (polygons and vascular plant lists) is still being compiled and will be updated specific to the preferred alternative when selected. In addition, LGL is still awaiting background records review information on SAR from the MECP. The potential for SAR and SAR habitat to date has been based on a variety of background data sources and direct field observation by LGL.

It is evident that Etobicoke Creek corridor represents the largest natural heritage constraint in the project area. Alternatives that utilize road right of ways would minimize the potential for impacts to the creek corridor. Despite its urban influence, it supports a surprising number of urban tolerant species that are important to the natural heritage of the watershed. TRCA has noted several areas of restoration works that have been undertaken along the creek corridor, and if feasible, the natural and restored areas of the creek are recommended for avoidance for the long term protection of natural heritage system.

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Appendix A Photo Appendix.

Photo Appendix



Photo 1: High exposed banks southeast of pedestrian bridge, potential for Bank Swallow habitat.



Photo 2: Monarch Butterfly.



Photo 3: Bat houses attached to Trees in Forested area.



Photo 4: Street trees on Kennedy Road with cavities suitable for bat maternal roosting.



Photo 5: Etobicoke Creek at 407.



Photo 6: Etobicoke Creek downstream of Tomken Road.

Appendix B Wildlife Species List.

Appendix B Wildlife Species List

Type	Scientific Name	Common Name	TRCA Fauna data	Nature Counts Ebird	OBBA (2001-2005)	Ontario Nature Reptile Atlas	LGL Data (Visit 1)	LGL Data (Visit 2)	LGL Data (both visits)	G-Rank	S-Rank	Schedule	COSEWIC	SARA	SARO	FWCA	MBCA	TRCA
Amphibian	<i>Bufo americanus</i>	American Toad				X		X		G5	S5							L4
Amphibian	<i>Plethodon cinereus</i>	Eastern Red-backed Salamander				X				G5	S5					P		L3
Amphibian	<i>Hyla versicolor</i>	Gray Treefrog				X				G5	S5					P		L2
Amphibian	<i>Lithobates clamitans</i>	Green Frog				X			X	G5	S5							L4
Amphibian	<i>Ambystoma jeffersonianum</i>	Jefferson Salamander				X				G4	S2	Schedule 1	END	THR	END	P		L1
Amphibian	<i>Lithobates pipiens</i>	Northern Leopard Frog				X				G5	S5		NAR					L3
Amphibian	<i>Pseudacris crucifer</i>	Spring Peeper				X				G5	S5							L2
Bird	<i>Anas rubripes</i>	American Black Duck						X		G5	S4						X	L3
Bird	<i>Corvus brachyrhynchos</i>	American Crow		X					X	G5	S5B							L5
Bird	<i>Carduelis tristis</i>	American Goldfinch		X					X	G5	S5B						X	L5
Bird	<i>Falco sparverius</i>	American Kestrel		X						G5	S4					P		L4
Bird	<i>Setophaga ruticilla</i>	American Redstart							X	G5	S5B						X	L4
Bird	<i>Turdus migratorius</i>	American Robin		X	X				X	G5	S5B						X	L5
Bird	<i>Scolopax minor</i>	American Woodcock	X	X			X			G5	S4B						X	L3
Bird	<i>Icterus galbula</i>	Baltimore Oriole		X	X				X	G5	S4B						X	L5
Bird	<i>Riparia riparia</i>	Bank Swallow	X							G5	S4B	No Schedule	THR		THR		X	L3
Bird	<i>Hirundo rustica</i>	Barn Swallow		X						G5	S4B	No Schedule	THR		THR		X	L4
Bird	<i>Ceryle alcyon</i>	Belted Kingfisher	X				X			G5	S4B					P		L4
Bird	<i>Mniotilta varia</i>	Black and White Warbler							X	G5	S5B						X	L2
Bird	<i>Dendroica fusca</i>	Blackburnian Warbler						X		G5	S5B						X	L3
Bird	<i>Poecile atricapillus</i>	Black-capped Chickadee		X					X	G5	S5						X	L5
Bird	<i>Dendroica caerulescens</i>	Black-throated Blue Warbler		X						G5	S5B						X	L3
Bird	<i>Cyanocitta cristata</i>	Blue Jay		X					X	G5	S5					P		L5
Bird	<i>Polioptila caerulea</i>	Blue-gray Gnatcatcher							X	G5	S4B						X	L4
Bird	<i>Dolichonyx oryzivorus</i>	Bobolink	X							G5	S4B	No Schedule	THR		THR		X	L3
Bird	<i>Certhia americana</i>	Brown Creeper		X						G5	S5B						X	L4
Bird	<i>Molothrus ater</i>	Brown-headed Cowbird		X					X	G5	S4B							L5
Bird	<i>Branta canadensis</i>	Canada Goose		X			X			G5	S5						X	L5
Bird	<i>Bombycilla cedrorum</i>	Cedar Waxwing		X					X	G5	S5B						X	L5
Bird	<i>Chaetura pelagica</i>	Chimney Swift		X						G5	S4B,S4N	Schedule 1	THR	THR	THR		X	L4
Bird	<i>Spizella passerina</i>	Chipping Sparrow		X					X	G5	S5B						X	L5
Bird	<i>Petrochelidon pyrrhonota</i>	Cliff Swallow							X	G5	S4B						X	L5
Bird	<i>Quiscalus quiscula</i>	Common Grackle		X	X				X	G5	S5B							L5
Bird	<i>Geothlypis trichas</i>	Common Yellowthroat	X	X					X	G5	S5B						X	L4
Bird	<i>Accipiter cooperii</i>	Cooper's Hawk		X						G5	S4		NAR			P		L4
Bird	<i>Junco hyemalis</i>	Dark-eyed Junco		X						G5	S5B						X	
Bird	<i>Phalacrocorax auritus</i>	Double-crested Cormorant		X						G5	S5B		NAR					L3
Bird	<i>Picoides pubescens</i>	Downy Woodpecker							X	G5	S5						X	L5
Bird	<i>Tyrannus tyrannus</i>	Eastern Kingbird	X	X					X	G5	S4B						X	L4
Bird	<i>Sturnella magna</i>	Eastern Meadowlark	X							G5	S4B	No Schedule	THR		THR		X	L3
Bird	<i>Sayornis phoebe</i>	Eastern Phoebe							X	G5	S5B						X	L5
Bird	<i>Contopus virens</i>	Eastern Wood Pewee	X	X			X			G5	S4B	No Schedule	SC		SC		X	L4
Bird	<i>Sturnus vulgaris</i>	European Starling		X	X				X	G5	SNA							L+
Bird	<i>Regulus satrapa</i>	Golden-crowned Kinglet		X						G5	S5B						X	L3
Bird	<i>Dumetella carolinensis</i>	Gray Catbird	X	X					X	G5	S4B						X	L4
Bird	<i>Ardea herodias</i>	Great Blue Heron		X						G5	S4						X	L3
Bird	<i>Myiarchus crinitus</i>	Great Crested Flycatcher	X	X						G5	S4B						X	L4
Bird	<i>Bubo virginianus</i>	Great Horned Owl		X						G5	S4					P		L4
Bird	<i>Butorides virescens</i>	Green Heron							X	G5	S4B							L4
Bird	<i>Larus argentatus</i>	Herring Gull		X				X		G5	S5B, S5N						X	L4
Bird	<i>Eremophila alpestris</i>	Horned Lark	X					X		G5	S5B						X	L3
Bird	<i>Carpodacus mexicanus</i>	House Finch		X			X			G5	SNA						X	L+
Bird	<i>Passer domesticus</i>	House Sparrow		X	X				X	G5	SNA							L+
Bird	<i>Troglodytes aedon</i>	House Wren							X	G5	S5B						X	L5
Bird	<i>Charadrius vociferus</i>	Killdeer		X	X				X	G5	S5B,S5N						X	L4
Bird	<i>Empidonax minimus</i>	Least Flycatcher							X	G5	S4B						X	L4
Bird	<i>Anas platyrhynchos</i>	Mallard		X					X	G5	S5						X	L5
Bird	<i>Falco columbarius</i>	Merlin		X						G5	S5B		NAR			P		L3

Type	Scientific Name	Common Name	TRCA Fauna data	Nature Counts Ebird	OBBA (2001-2005)	Ontario Nature Reptile Atlas	LGL Data (Visit 1)	LGL Data (Visit 2)	LGL Data (both visits)	G-Rank	S-Rank	Schedule	COSEWIC	SARA	SARO	FWCA	MBCA	TRCA
Bird	<i>Zenaida macroura</i>	Mourning Dove		X	X				X	G5	S5						X	L5
Bird	<i>Oporornis philadelphia</i>	Mourning Warbler		X			X			G5	S4B						X	L3
Bird	<i>Cardinalis cardinalis</i>	Northern Cardinal		X	X				X	G5	S5						X	L5
Bird	<i>Colaptes auratus</i>	Northern Flicker		X			X			G5	S4B						X	L4
Bird	<i>Mimus polyglottos</i>	Northern Mockingbird	X	X						G5	S4						X	L4
Bird	<i>Stelgidopteryx serripennis</i>	Northern Rough-winged Swallow	X	X					X	G5	S4B						X	L4
Bird	<i>Seiurus aurocapilla</i>	Ovenbird		X						G5	S4B						X	L2
Bird	<i>Carduelis pinus</i>	Pine Siskin		X						G5	S4B						X	L4
Bird	<i>Vireo olivaceus</i>	Red-eyed Vireo	X	X					X	G5	S5B						X	L4
Bird	<i>Buteo jamaicensis</i>	Red-tailed Hawk		X						G5	S5		NAR			P		L5
Bird	<i>Agelaius phoeniceus</i>	Red-winged Blackbird		X					X	G5	S4							L5
Bird	<i>Larus delawarensis</i>	Ring-billed Gull		X				X		G5	S5B,S4N						X	L4
Bird	<i>Columba livia</i>	Rock Dove (Pigeon)		X					X	G5	SNA							L+
Bird	<i>Pheucticus ludovicianus</i>	Rose-breasted Grosbeak					X			G5	S4B						X	L4
Bird	<i>Grus canadensis tabida</i>	Sandhill Crane		X						G5	S5B		NAR				X	
Bird	<i>Passerculus sandwichensis</i>	Savannah Sparrow	X						X	G5	S4B						X	L4
Bird	<i>Piranga olivacea</i>	Scarlet Tanager					X			G5	S4B						X	L3
Bird	<i>Bubo scandiaca</i>	Snowy Owl		X						G5	SNA					P		
Bird	<i>Melospiza melodia</i>	Song Sparrow		X					X	G5	S5B						X	L5
Bird	<i>Actitis macularius</i>	Spotted Sandpiper	X	X					X	G5	S5						X	L4
Bird	<i>Catharus ustulatus</i>	Swainson's Thrush					X			G5	S4B						X	
Bird	<i>Melospiza georgiana</i>	Swamp Sparrow	X				X			G5	S5B						X	L4
Bird	<i>Tachycineta bicolor</i>	Tree Swallow	X						X	G5	S4B						X	L4
Bird	<i>Cathartes aura</i>	Turkey Vulture		X						G5	S5B					P		L4
Bird	<i>Vireo gilvus</i>	Warbling Vireo							X	G5	S5B						X	L5
Bird	<i>Sitta carolinensis</i>	White-breasted Nuthatch						X		G5	S5						X	L4
Bird	<i>Zonotrichia leucophrys</i>	White-crowned Sparrow		X						G5	S4B						X	
Bird	<i>Empidonax traillii</i>	Willow Flycatcher	X	X					X	G5	S5B						X	L4
Bird	<i>Wilsonia pusilla</i>	Wilson's Warbler					X			G5	S4B						X	
Bird	<i>Troglodytes troglodytes</i>	Winter Wren		X						G5	S5B						X	L3
Bird	<i>Aix sponsa</i>	Wood Duck	X							G5	S5						X	L4
Bird	<i>Hylocichla mustelina</i>	Wood Thrush		X						G5	S4B	No Schedule	THR		SC		X	L3
Bird	<i>Dendroica petechia</i>	Yellow Warbler		X					X	G5	S5B						X	L5
Invertebrates	<i>Danaus plexippus</i>	Monarch					X			G5	S4B, S2N	Schedule 1	SC		SC	P		
Mammals	<i>Castor canadensis</i>	Beaver							X	G5	S5					F		L4
Mammals	<i>Tamias striatus</i>	Eastern Chipmunk						X		G5	S5					P		L4
Mammals	<i>Sylvilagus floridanus</i>	Eastern Cottontail	X							G5	S5					G		L4
Mammals	<i>Sciurus carolinensis</i>	Eastern Gray Squirrel							X	G5	S5					G		L5
Mammals	<i>Marmota monax</i>	Groundhog	X							G5	S5							L5
Mammals	<i>Ondatra zibethica</i>	Muskrat	X						X	G5	S5					F		L4
Mammals	<i>Procyon lotor</i>	Northern Raccoon							X	G5	S5					F		L5
Mammals	<i>Odocoileus virginianus</i>	White-tailed Deer	X						X	G5	S5					G		L4
Reptile	<i>Storeria dekayi</i>	Dekay's Brown Snake				X				G5	S5		NAR					L4
Reptile	<i>Thamnophis sirtalis</i>	Eastern Gartersnake				X				G5T5	S5							L4
Reptile	<i>Storeria occipitomaculata occipitomaculata</i>	Northern Red-bellied Snake				X				G5T5	S5							L3
Reptile	<i>Chelydra serpentina</i>	Snapping Turtle				X				G5	S3	Schedule 1	SC	SC	SC	G		L2