

Metrolinx / City of Mississauga

Environmental Project Report

Dundas Bus Rapid Transit Mississauga East

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Authors

Report Prepared By:

A handwritten signature in black ink, appearing to read "Ken Burrell".

Ken Burrell, MES
Senior Biologist
McIntosh Perry Consulting Engineers Ltd.

Report Reviewed By:

A handwritten signature in black ink, appearing to read "K. Jobity".

Kenneth Jobity
Manager, Natural Sciences
McIntosh Perry Consulting Engineers Ltd.

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1. Introduction

1.1 Background

In 2020, Metrolinx completed the Dundas Bus Rapid Transit Initial Business Case, which recommends a preferred Bus Rapid Transit alignment, and supportive service concept along Dundas Street between Kipling Station, in the City of Toronto, through the City of Mississauga and Halton Region, to Highway 6 in the City of Hamilton.

A Transit Project Assessment Process is a focused environmental impact assessment process created specifically for transit projects. The process involves a pre-planning phase followed by a regulated (up to 120 days) consultation and documentation period. These phases include consultation, assessment of impacts, development of measures to mitigate negative impacts, and documentation. Consultation occurs with the public, stakeholders and Indigenous Nations throughout the process. Following these phases, there is a 30-day public review period where the public has the opportunity to review the Environmental Project Report and provide additional comments, followed by a 35-day Minister's review period.

The preliminary design phase will build upon the pre-planning completed as part of the Transit Project Assessment Process. In this phase, the project team will utilize the environmental impact assessment from the Transit Project Assessment Process to refine the Bus Rapid Transit design to a 30% design level. The Preliminary Design Business Case analyzes the Dundas Bus Rapid Transit corridor against strategic objectives, financial and economic impacts and operations considerations. The Preliminary Design Business Case will compare the corridor against a business-as-usual scenario (i.e., without the Project).

In 2018, the Dundas Connects Master Plan (Dundas Connects) was completed by the City of Mississauga. It guides future development and intensification along the Dundas Street Corridor in the City of Mississauga. Bus Rapid Transit, cycling infrastructure, and an enhanced public realm for pedestrians were among the recommendations in the Plan. Dundas Connects is being implemented through various studies and initiatives, including this Transit Project Assessment Process.

The Dundas Bus Rapid Transit Mississauga East Project (the Project) includes the planning and design of a 7-kilometre Bus Rapid Transit corridor from Confederation Parkway to the City of Toronto boundary at Etobicoke Creek, within the City of Mississauga.

Metrolinx retained McIntosh Perry Consulting Engineers Ltd. (McIntosh Perry) to carry out natural sciences investigations and associated reporting for integration into the Natural Environment Report for the Project.

1.2 Study Area

The Project Area is the area of direct disturbance required for the construction and operation of the Project. It includes the proposed alignment for the Project. The Project Area and Natural Environment Report Study Area is shown in **Figures 1I to 1L**. The Study Area boundary includes the Project Area and extends 120 metres in all directions from the Project Area. The Study Area identifies the area to be investigated as part of the Natural Environment Study. The Study Area boundary extends east to fully encompass the Dundas Street and Neilson Drive intersection, which is within City of Toronto limits. The purpose of extending the Study Area is to incorporate all construction works required for the implementation of the Project.

2. Existing Conditions

2.1 Natural Environment

This existing conditions component of the Natural Environment Report for the Project, as defined above, provides an overview of the significant and sensitive natural features known from the study area, and has been prepared in accordance with agency guidance. The following natural sciences information specific to the study area is provided:

- A summary of the methodology used for collecting data;
- An overview of the existing aquatic resources, terrestrial vegetation and wildlife communities, environmentally significant areas, identification of potential species at risk and their habitat found within the study area; and
- Results of field investigations to verify background data and previous assessments with regards to the terrestrial vegetation communities, associated wildlife, including migratory birds and species at risk features of the study area.

Environmental information used in the production of this report has been assembled from background data in addition to field data specifically collected for this project. The intent of summarizing background and field data is to set the baseline conditions of existing terrestrial and aquatic ecosystem sensitivities.

Utilizing the above existing conditions data in concert with 10% preliminary design information currently available for the project, an impact assessment is provided in Section 3.0 of the report. This evaluates potential impacts on significant natural features and species known to be present in the study area and associated recommended mitigations.

2.1.1 Methodology

2.1.1.1 Background Data and Agency Consultation

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 and Ecoregion, Species at Risk 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, fish species and habitat type present within identified watercourses, the location of any Natural Heritage features inclusive of Provincially Significant Wetlands, Areas of Natural and Scientific Interest, Significant Woodlands in vicinity of the study area and any significant wildlife habitat. In addition to the above, any project specific information provided by Metrolinx was reviewed and local agencies were consulted to confirm desktop study findings and to provide any additional information with respect to the presence of Species at Risk, related habitats, and fish habitat within the study area. The overall review was conducted using the sources provided below:

Information Resources:

- The Land Information Ontario was consulted for natural heritage information in the vicinity of the study area (Ministry of Natural Resources and Forestry, 2020a);
- The Ontario Geological Survey Earth geoscience database (Ministry of Northern Development and Mines, 2020);
- The Natural Heritage Information System database (Ministry of Natural Resources and Forestry, 2020b);
- The Atlas of the Breeding Birds of Ontario (Bird Studies Canada et al., 2006);
- The Ontario Reptile and Amphibian Atlas (Ontario Nature, 2020);
- The Ontario Butterfly Atlas (Toronto Entomologists' Association, 2020);
- The Ministry of Natural Resources and Forestry Natural Heritage Information Centre database (Ministry of Natural Resources and Forestry, 2020);
- Readily available information from interest groups and the general public; and
- Region of Peel Official Plan (Region of Peel, 2018);
- Environment Canada Climate database 2020;
- Fisheries and Oceans Canada Species at Risk Mapping; and
- Fish Online.

To determine if any bird, reptile, or amphibian Species at Risk were known to occur in the general vicinity, the Atlas of the Breeding Birds of Ontario and Ontario Reptile and Amphibian Atlas were examined based on 10 kilometres x 10 kilometres grid squares that encompass the study area. A query of the Land Information Ontario geodatabase (Natural Heritage Information System dataset) was also completed, which yielded a list of Species at Risk Element Occurrence records. The Land Information Ontario geodatabase review also defined the location of Areas of Natural and Scientific Interests and Provincially Significant Wetlands within and adjacent to the study area, if present.

2.1.1.2 Field Data Collection

Field investigations to collect current information related to terrestrial and aquatic ecosystem conditions within the study area were carried out by McIntosh Perry staff. C. Heffernan and E. Jolin completed field investigations on May 28 and July 14, 2020. Additionally, K. Burrell and J. Abernethy completed field investigations on June 17 and June 23, 2021.

Fieldwork was conducted 120 metres from, as well as including the proposed project footprint. Fieldwork completed during the surveys was consistent with the requirements as defined in the Metrolinx Request for Proposal. The investigations included assessments of the following:

- Existing vegetation communities;
- *Invasive* and/or *noxious* plant species;
- Existing wetland areas;
- Observations of Species at Risk and their habitat (including suitable habitat);
- Resident or migrant bird and wildlife species;
- Wildlife corridors;
- Significant habitat areas or vegetation communities;
- Current land uses surrounding the study area; and
- Aquatic habitat characterization of Etobicoke Creek.

Vegetation Communities and Floristic Field Survey Method

A detailed site vegetation inventory was undertaken as a part of this assignment. Assessed vegetation communities were characterized and mapped using the Ministry of Natural Resources and Forestry guidelines for Ecological Land Classification for Southern Ontario (Lee, 2009). Ecological Land Classification polygons representative of distinct communities identified were then delineated on an aerial photograph of the study area. A full botanical inventory of the site was also conducted, with field staff listing all observed terrestrial plant species.

Wildlife and Wildlife Habitat Field Survey Methods

Wildlife habitat assessments were conducted simultaneously with vegetation surveys, based on procedures provided in the Significant Wildlife Habitat Technical Guide (Ministry of Natural Resources and Forestry 2000), the Ecoregion Criteria Schedules (Ministry of Natural Resources and Forestry, 2015), and the Natural Heritage Reference Manual (Ministry of Natural Resources and Forestry 2010). Natural corridors for species moving through the study area were also identified.

Wildlife species (e.g., mammals, birds and nests on structures, and herpetofauna) noted during the investigations were identified by signs, visual observations, and vocalizations. For the purposes of this assessment, any species observed within and adjacent to the study area, within 120 metres of the study boundaries, were identified and considered to be a resident of or visitor to the area.

Aquatic Environment Field Survey Methods

Aquatic field investigations were conducted, to an extent practical, to evaluate the aquatic habitat features and values present within the study area. Comprehensive assessments were carried out consistent with the Ministry of Transportation Environmental Guide for Fish and Fish Habitat (2006). Data recorded included, but was not limited to, in-stream cover, riparian and aquatic vegetation, watercourse condition, substrate information, flow characteristics, sedimentation and pollution point sources. As there was sufficient fisheries data available from local resources, Fisheries and Oceans Canada and Ministry of Natural Resources and Forestry, for the main study area watercourses, in-water fisheries surveys were not performed by McIntosh Perry field staff.

Species At Risk Targeted Field Survey Protocols

Butternut Tree Survey

As part of the botanical inventory prepared for this site, McIntosh Perry field staff surveyed the study area for Butternut trees, as the location is within the species general range. In the event that a butternut tree was discovered, a qualified Butternut Health Assessor was available on site to determine the condition of the tree as per the Ministry of Natural Resources and Forestry Butternut Health Assessment Guidelines (2011).

Bat Leaf-on Survey

Leaf-on surveys, using protocols developed by the Ministry of Natural Resources and Forestry (2017), were conducted within the study area to assess the presence of suitable roosting habitat for Species at Risk bats. As per the Ministry of Natural Resources and Forestry Bat Survey Protocol (Ministry of Natural Resources and Forestry, 2017) for treed habitats, the site was assessed for any coniferous, deciduous or mixed wooded ecosite, for trees at least 10 centimetres diameter-at-breast height for the suitability for maternity roost sites.

2.1.2 Description of Existing Conditions

2.1.2.1 Aquatic Environment

Several permanent watercourses occur within the study area. Background information indicates that the aquatic species listed below in **Table 1** have the potential to be present in the vicinity of, or within the study area.

Table 1: Potential Aquatic Species within the Section B, Dundas Street Study Area

Watercourse Name	Watercourse Classification (i.e., warm water, cold-water)	Historical Data in Fish Species Present
Cooksville Creek	Warm water	Blacknose Dace, Brown Trout, Creek Chub, Longnose Dace, Rainbow Trout, White Sucker
Little Etobicoke Creek	Unknown	Rock Bass, White Sucker
Etobicoke Creek	Warm water	Black Crappie, Blacknose Dace, Bluegill, Bluntnose Minnow, Brook Stickleback, Brown Bullhead, Coho Salmon, Common Carp, Common Shiner, Creek Chub, Fathead Minnow, Freshwater Drum, Johnny Darter x Tesselated Darter, Largemouth Bass, Longnose Dace, Pumpkinseed, Rainbow Smelt, Rock Bass, Round Whitefish, Smallmouth Bass, Threespine Stickleback, Walleye, White Perch, White Sucker, Yellow Perch

Of the three watercourses identified in the study area, a more comprehensive assessment of Etobicoke Creek was conducted due to both the relatively undisturbed nature of the area, and the presence of natural features adjacent to the creek both upstream and downstream.

Field investigations of Etobicoke Creek were conducted. The main channel associated with the Dundas Street bridge structure was comprised of runs with a large riffle present approximately 30 metres downstream of the bridge crossing. Substrate within the study area section was comprised primarily of cobble and boulders with some fine sediment such as silt and sand present in some portions of the channel between the boulders and cobble. Habitat associated with the Dundas Street bridge crossing appears suitable to support the spawning of several species of specialized spawning baitfish within the study area (i.e., upstream, downstream and under the structure). Species which either broadcast their eggs over cobble substrates or use interstitial spaces between cobbles and boulders are anticipated to spawn directly within the study area. Though a

comprehensive fisheries review including fish sampling was not completed, large numbers of juvenile and young of year baitfish were observed within Etobicoke Creek during the field investigations on May 28 and July 14, 2020.

The pictures below comprise a part of the photographic field record completed for Etobicoke Creek.

Photo 1: View of Etobicoke Creek directly downstream of the bridge structure, May 28, 2020. Substrate directly downstream of the crossing was comprised primarily of cobble and boulders.



Photo 2: View of Etobicoke Creek looking downstream (south) from the bridge structure, May 28, 2020. A riffle exists downstream of the structure.



Photo 3: View of Etobicoke Creek looking upstream (north) from the bridge structure, May 28, 2020. Substrate upstream of the crossing was comprised primarily of cobble and boulders.



Photo 4: View of the main channel of Etobicoke Creek under the bridge crossing looking downstream May 28, 2020. Cobble and boulders are present under much of the structure, which appears suitable to provide suitable spawning habitat for a variety of specialized spawning baitfish species.



2.1.2.2 Terrestrial Environment

2.1.2.2.1 Vegetation

The study area is situated in the Lake Erie-Lake Ontario Ecoregion (7E) and in general is dominated by cropland and pasture (78%), with over 7% of the ecoregion converted to developed lands, making it the most urbanized ecoregion in Ontario. Remnant forests consist primarily of dense deciduous forest (10.3%), with the addition of sparse deciduous forests (1.0%) and mixed deciduous forests (0.8%). These forests contain characteristic species, such as Sugar Maple (*Acer saccharum*), American Beech (*Fagus grandifolia*), White Ash (*Fraxinus americana*), Eastern Hemlock (*Tsuga canadensis*), and Eastern White Pine (*Pinus strobus*). Remnant tall-grass prairie and oak savannah ecosystems also occur in this ecoregion (Crins et al., 2009).

The study area consists of a variety of largely heavily disturbed vegetation communities, including cultural and mixed meadow, deciduous woodland, open and treed bluffs, and

mixed forest. Given the highly urban nature of the study area, many of the vegetation communities are disturbed. Some remnant natural communities are found, primarily in proximity to Etobicoke Creek. No rare vegetation communities or species were observed in association with the study area. Ecological Land Classification mapping is provided on map 1. As well, plant species are provided in **Table 2**.

Table 2: Vegetation Species Observed within the Dundas Bus Rapid Transit Study Area

Vegetation Type	Common Name	Scientific Name
Woody Vegetation	Austrian Pine	<i>Pinus nigra</i>
Woody Vegetation	Basswood	<i>Tilia americana</i>
Woody Vegetation	Bur Oak	<i>Quercus macrocarpa</i>
Woody Vegetation	Common Apple	<i>Malus domestica</i>
Woody Vegetation	Common Buckthorn	<i>Rhamnus cathartica</i>
Woody Vegetation	Common Hackberry	<i>Celtis occidentalis</i>
Woody Vegetation	Common Pear	<i>Pyrus communis</i>
Woody Vegetation	Colorado Blue Spruce	<i>Picea pungens</i>
Woody Vegetation	Honey Locust	<i>Gleditsia triacanthos</i>
Woody Vegetation	Lilac	<i>Syringa vulgaris</i>
Woody Vegetation	Manitoba Maple	<i>Acer negundo</i>
Woody Vegetation	Norway Spruce	<i>Picea abies</i>
Woody Vegetation	Norway Maple	<i>Acer platanoides</i>
Woody Vegetation	Eastern Poison-ivy (noxious)	<i>Toxicodendron radicans</i>
Woody Vegetation	Red Oak	<i>Quercus rubra</i>
Woody Vegetation	Red-osier Dogwood	<i>Cornus sericea</i>
Woody Vegetation	White Elm	<i>Ulmus americana</i>
Woody Vegetation	Riverbank Grape	<i>Vitis riparia</i>
Woody Vegetation	Scot's Pine	<i>Pinus sylvestris</i>
Woody Vegetation	Shrub Willow	<i>Salix spp.</i>
Woody Vegetation	Siberian Elm	<i>Ulmus pumila</i>
Woody Vegetation	Silky Dogwood	<i>Cornus obliqua</i>
Woody Vegetation	Staghorn Sumac	<i>Rhus typhina</i>
Woody Vegetation	Sugar Maple	<i>Acer saccharum</i>
Woody Vegetation	Tamarack	<i>Larix laricina</i>
Woody Vegetation	Tatarian Honeysuckle	<i>Lonicera tatarica</i>
Woody Vegetation	Virginia Creeper	<i>Parthenocissus quinquefolia</i>
Woody Vegetation	White Birch	<i>Betula papyrifera</i>
Herbaceous Vegetation	Bittersweet Nightshade	<i>Solanum dulcamara</i>
Herbaceous Vegetation	Black Medick	<i>Medicago lupulina</i>
Herbaceous Vegetation	Blue Vervain	<i>Verbena hastata</i>
Herbaceous Vegetation	Boneset	<i>Eupatorium perfoliatum</i>
Herbaceous Vegetation	Broad-leaved Cattail	<i>Typha latifolia</i>
Herbaceous Vegetation	Birdfoot Trefoil	<i>Lotus corniculatus</i>
Herbaceous Vegetation	Bull Thistle (noxious)	<i>Cirsium vulgare</i>
Herbaceous Vegetation	Canada Goldenrod	<i>Solidago canadensis</i>

Vegetation Type	Common Name	Scientific Name
Herbaceous Vegetation	Canada thistle (noxious)	<i>Cirsium arvense</i>
Herbaceous Vegetation	Chicory	<i>Cichorium intybus</i>
Herbaceous Vegetation	Coltsfoot (noxious)	<i>Tussilago farfara</i>
Herbaceous Vegetation	Common Milkweed	<i>Asclepias syriaca</i>
Herbaceous Vegetation	Common Mullein	<i>Verbascum thapsus</i>
Herbaceous Vegetation	Common Ragweed (noxious)	<i>Ambrosia artemisiifolia</i>
Herbaceous Vegetation	Common Sow-thistle (noxious)	<i>Sonchus oleraceus</i>
Herbaceous Vegetation	Cow Vetch	<i>Vicia cracca</i>
Herbaceous Vegetation	Curly Dock	<i>Rumex crispus</i>
Herbaceous Vegetation	Narrow-leaved Cattail	<i>Typha angustifolia</i>
Herbaceous Vegetation	New England Aster	<i>Symphyotrichum novae-angliae</i>
Herbaceous Vegetation	Nodding Thistle	<i>Carduus nutans</i>
Herbaceous Vegetation	Foxtail Barley	<i>Hordeum jubatum</i>
Herbaceous Vegetation	Kentucky Bluegrass	<i>Poa pratensis</i>
Herbaceous Vegetation	Pale Smartweed	<i>Persicaria lapathifolia</i>
Herbaceous Vegetation	Philadelphia Fleabane	<i>Erigeron philadelphicus</i>
Herbaceous Vegetation	Narrow-leaved Cattail	<i>Typha angustifolia</i>
Herbaceous Vegetation	Phragmites (invasive)	<i>Phragmites australis subsp. australis</i>
Herbaceous Vegetation	Purple Loosestrife	<i>Lythrum salicaria</i>
Herbaceous Vegetation	Queen Anne's lace	<i>Daucus carota</i>
Herbaceous Vegetation	Reed Canary Grass	<i>Phalaris arundinacea</i>
Herbaceous Vegetation	Spotted Jewelweed	<i>Impatiens capensis</i>
Herbaceous Vegetation	Viper's Bugloss	<i>Echium vulgare</i>
Herbaceous Vegetation	White Sweet-clover	<i>Melilotus albus</i>

2.1.2.2.1.1 Invasive/Noxious Vegetation Species

The following species listed as '*restricted*' under the *Invasive Species Act, 2015* were observed within the study area during the 2020 to 2021 field investigations:

- Phragmites; and
- dog-strangling vine.

The following species classified as '*noxious weeds*' under the *Weed Control Act, 1990* were observed within the study area during the 2020 to 2021 field investigations:

- bull thistle;
- Canada thistle;
- coltsfoot;
- common ragweed;
- common sow-thistle; and
- dog-strangling vine.

These species do not exist in large numbers within the study area (i.e., no stands of the species but rather sporadic occurrence of individuals within the larger study area).

2.1.2.2.2 Wetlands

The study area is situated in a highly urbanized area. There are no wetlands within the study area. The closest wetlands to the study area (i.e., within 2 kilometres), include the following wetlands:

- The Credit River Marshes Wetland Provincially Significant Wetland Complex is located 1.3 kilometres from the study area at its nearest point.
- An unevaluated wetland associated with Stillmeadow Park is located 0.8 kilometres from the study area at its nearest point.
- The Cawthra Woods Provincially Significant Wetland Complex is 1.7 kilometres from the study area at its nearest point.

2.1.2.3 Wildlife

Observations made during the 2020 and 2021 field investigations by McIntosh Perry staff documented wildlife around the study area. Incidental species observed include:

- **Mammals:** eastern cottontail (*Sylvilagus floridanus*), coyote (*Canis latrans*), Virginia opossum (*Didelphis virginiana*), white-tailed deer (*Odocoileus virginianus*), striped skunk (*Mephitis mephitis*) and raccoon (*Procyon lotor*); and
- **Insects:** Cabbage White (*Pieris rapae*), Clouded Sulphur (*Colias philodice*).

The observed mammals and insects are typical of the study area and are common and secure in Ontario.

Table 3 outlines the bird species that were observed within the study area during the 2020 and 2021 field investigations and any applicable legislative protection for each species.

Table 3: Bird Species Observed Within the Study Area

Common Name	Scientific Name	Applicable Legislative Protection
American Crow	<i>Corvus brachyrhynchos</i>	N/A
American Goldfinch	<i>Spinus tristis</i>	<i>Migratory Birds Convention Act</i>
American Robin	<i>Turdus migratorius</i>	<i>Migratory Birds Convention Act</i>
American Woodcock	<i>Scolopax minor</i>	<i>Fish and Wildlife Conservation Act</i>
Barn Swallow	<i>Hirundo rustica</i>	<i>Migratory Birds Convention Act, Endangered Species Act, Species at Risk Act</i>
Brown-headed Cowbird	<i>Molothrus ater</i>	<i>Fish and Wildlife Conservation Act</i>

Common Name	Scientific Name	Applicable Legislative Protection
Blue Jay	<i>Cyanocitta cristata</i>	<i>Fish and Wildlife Conservation Act</i>
Canada Goose	<i>Branta canadensis</i>	<i>Migratory Birds Convention Act</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>	<i>Migratory Birds Convention Act</i>
Chimney Swift	<i>Chaetura pelagica</i>	<i>Migratory Birds Convention Act, Endangered Species Act, Species at Risk Act</i>
Chipping Sparrow	<i>Spizella passerina</i>	<i>Migratory Birds Convention Act</i>
Common Grackle	<i>Quiscalus quiscula</i>	N/A
Common Raven	<i>Ceryle alcyon</i>	<i>Fish and Wildlife Conservation Act</i>
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	<i>Migratory Birds Convention Act</i>
Eastern Phoebe	<i>Sayornis phoebe</i>	<i>Migratory Birds Convention Act</i>
European Starling	<i>Sturnus vulgaris</i>	N/A
Great Blue Heron	<i>Ardea herodias</i>	<i>Migratory Birds Convention Act</i>
Gray Catbird	<i>Dumetella carolinensis</i>	<i>Migratory Birds Convention Act</i>
Herring Gull	<i>Larus argentatus</i>	<i>Migratory Birds Convention Act</i>
House Sparrow	<i>Passer domesticus</i>	N/A
Horned Lark	<i>Eremophila alpestris</i>	<i>Migratory Birds Convention Act</i>
House Wren	<i>Troglodytes aedon</i>	<i>Migratory Birds Convention Act</i>
Indigo Bunting	<i>Passerina cyanea</i>	<i>Migratory Birds Convention Act</i>
Killdeer	<i>Charadrius vociferus</i>	<i>Migratory Birds Convention Act</i>
Mourning Dove	<i>Zenaida macroura</i>	<i>Migratory Birds Convention Act</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>	<i>Migratory Birds Convention Act</i>
Ring-billed Gull	<i>Larus delawarensis</i>	<i>Migratory Birds Convention Act</i>
Rock Pigeon	<i>Columba livia</i>	N/A
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	N/A
Savannah Sparrow	<i>Passerculus sandwichensis</i>	<i>Migratory Birds Convention Act</i>
Song Sparrow	<i>Melospiza melodia</i>	<i>Migratory Birds Convention Act</i>
Spotted Sandpiper	<i>Actitis macularius</i>	<i>Migratory Birds Convention Act</i>
Turkey Vulture	<i>Cathartes aura</i>	<i>Fish and Wildlife Conservation Act</i>
Yellow Warbler	<i>Setophaga petechia</i>	<i>Migratory Birds Convention Act</i>
Warbling Vireo	<i>Vireo gilvus</i>	<i>Migratory Birds Convention Act</i>

During the 2020 field investigation, several migratory birds were observed nesting on the underside of the Etobicoke Creek bridge. This included:

- Cliff Swallow – 36 nests (8 active), several partial or older nests also present
- Barn Swallow – eight active nests
- Eastern Phoebe – one active nest
- American Robin – one nest

Due to the wooded habitat found along the banks of the study area watercourses including Etobicoke Creek, a wide range of other migratory birds were identified within the corridors and are anticipated to nest within the riparian vegetation found along the watercourses within the study area.

Photo 5: Cliff Swallow nest under Etobicoke Creek bridge May 28, 2020.



Photo 6: Barn Swallow nest under Etobicoke Creek bridge May 28, 2020.



Photo 7: Pair of Eastern Phoebes observed nesting under the Etobicoke Creek bridge.



2.1.2.4 Significant Wildlife Habitat

Based on the criteria outlined in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E* (<https://www.ontario.ca/document/significant-wildlife-habitat-ecoregional-criteria-schedules-ecoregion-7e>), no significant wildlife habitat is known to occur within the study area:

A total of eight active (in addition to several partial or older) Cliff Swallow nests were documented under the Etobicoke Creek bridge. These nests were in close proximity to eight active Barn Swallow nests. Based on the SWH schedule this colony does not represent SWH Colonially – Nesting Bird Breeding Habitat (Cliff Swallow) as the colony is located on a man-made structure.

An overview of the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E and the assessment of these features is provided in more detail in Appendix 1.

2.1.2.5 Species at Risk

Field surveys carried out by McIntosh Perry biologists found the following Species at Risk within the study area: Barn Swallow and Chimney Swift. Additionally, suitable habitat for Species at Risk bats (i.e., Little Brown, Northern, and Eastern Small-footed Myotis, and Tricolored Bat) is present within the study area and it is presumed that these species may be present. Based on Fisheries and Oceans Canada Species at Risk mapping, no aquatic Species at Risk are known to occur within the study area. Etobicoke Creek and Little Etobicoke Creek are considered historic habitat of Redside Dace (*Clinostomus elongatus*); while this habitat is not currently protected, should Redside Dace be detected in these watercourses again, regulated habitat protections would apply.

Given that much of the study area is urban, industrial, or suburban in nature, habitat for Species at Risk is limited within the study area. Species at Risk and their habitats are afforded protection under the Endangered Species Act. Additional information for each species/group is provided below.

An overview of Species at Risk known from the study area and their assessment in relation to presence or absence within the study area is provided in more detail in Appendix 2.

2.1.2.5.1 Species at Risk Bats

Though not observed during the 2020 to 2021 field investigations, habitat associated with the study area does appear suitable for the following Endangered bat species: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, and Tri-colored Bat.

There is the potential to encounter the Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, and/or Tri-colored Bat within the treed portions of the study area (i.e., Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland Ecosite). These species may utilize forested habitat adjacent to the Dundas Street right-of-way as maternity colony habitat (i.e., snags, cavity trees, etc.). The design of the Dundas Bus Rapid Transit should have consideration for suitable habitat present within the study area (i.e., the Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland Ecosite).

2.1.2.5.2 Barn Swallow

Habitat within and adjacent to the study area appears suitable for the life processes of the Barn Swallow; a species considered threatened in Ontario. Field surveys documented the presence of eight active Barn Swallow nests under the Etobicoke Creek bridge. As such, the design of the Dundas Bus Rapid Transit should have

consideration with respect to Barn Swallow and is addressed in further detail under **Sections 3.1** and **3.2**. No other Barn Swallows were documented throughout the remainder of the study area.

2.1.2.5.3 Chimney Swift

Field surveys completed in 2020 documented the presence of several foraging Chimney Swift along the study area length. This species is considered threatened, however, no evidence of the species using the immediate study area (i.e., structures etc.) was observed (i.e., the species is anticipated to be nesting away from Dundas Street in chimneys of other structures).

2.1.2.6 Significant Natural Heritage Features

Several designated natural areas are located within the broader vicinity of the Section B, Dundas Street study area. However, the only Areas of Natural and Scientific Interest located within or adjacent (within 2 kilometres) to the study area is the Cawthra Woods Areas of Natural and Scientific Interest, located approximately 1.9 kilometres south of the study area.

The Cawthra Woods Areas of Natural and Scientific Interest is characterized as a 20 hectares mature deciduous forest, comprised primarily of Sugar Maple (*Acer saccharum*), American Beech (*Fragus grandifolia*), and Black Cherry (*Prunus serotina*).

2.1.2.7 Soils and Physiography

The Lake Erie-Lake Ontario Ecoregion (7E) is underlain by Silurian and Devonian limestone bedrock and substrate primarily characterized by calcareous mineral materials, with a secondary component composed of organic material (Crins et al., 2009). Data gathered from the OGS Earth database (Ministry of Northern Development and Mines, 2020) describes the physiography of the study area predominantly as sand plains, with smaller areas characterized by shale plains, till plains, and historic beaches. The surficial geology of the study area consists primarily of till, Paleozoic bedrock, and coarse-textured glaciolacustrine deposits, with smaller areas of fine-textured glaciolacustrine deposits. Modern alluvial deposits can also be found within several watercourse corridors in the study area. No significant soil or bedrock geology features were identified within or adjacent to the study area.

2.1.2.8 Study Area Ecological Functions

Based on information collected during the background information review, and field investigations, the study area provides several ecological functions. These include:

- Habitat for fish,
- Nesting habitat for several species of migratory birds,
- Wildlife travel corridors,
- Habitat for SAR bats (Tricolored Bat, Little Brown, Northern, and Eastern Small-footed Myotis), and
- Habitat for SAR birds (Barn Swallow and Chimney Swift).

As outlined in **Section 2.1.2.1**, watercourses (i.e., Cooksville, Little Etobicoke, and Etobicoke Creeks) within the study area provide habitat for a variety of fish species. While all three watercourses within the study area have experienced heavy anthropogenic influences, Etobicoke Creek has the best and most extensive remaining natural habitat.

Vegetative cover, associated with riparian corridors and other treed areas, provide habitat for several species of migratory birds (see **Section 2.1.2.3**). Habitat associated with the wooded communities found throughout the study area provide the best available nesting habitat for migratory bird species observed during field investigations and as outlined in the background information review.

The riparian corridors associated with the Cooksville, Little Etobicoke, and Etobicoke Creek corridors provide habitat that may be suitable for wildlife travel corridors (see **Map 1**). Mammalian species, in particular, typically use vegetated corridors, specifically in highly urbanized areas.

Habitat for SAR bats (i.e., Tricolored Bat, Little Brown, Northern, and Eastern Small-footed Myotis) is present within the Deciduous Woodland and Dry – Fresh Oak Deciduous Woodland Ecosite (see **Map 1** and **Section 2.1.2.5.1**).

Habitat for SAR birds (i.e., Barn Swallow and Chimney Swift) is present within the study area. A total of eight (8) active Barn Swallow nests were documented under the Etobicoke Creek bridge (see **Sections 2.1.2.3** and **2.1.2.5.2**). Foraging habitat is present throughout the study area for both Chimney Swift (see **Section 2.1.2.5.3**) and Barn Swallow, however, naturally vegetated areas typically provide the best available habitat, due to an increase in aerial insect abundance and diversity.

3. Potential Impacts, Mitigation Measures and Monitoring Activities

3.1 Natural Environment

3.1.1 Overview

The following sections outline possible impacts on various aquatic and terrestrial features in relation to the proposed project works. The assessment considers specific receptors (i.e., Species at Risk, migratory birds, designated areas, etc.) and potential stressors, which may impact the receptor at a spatial scale (i.e., time, duration, and intensity).

3.1.1.1 Aquatic Environment

Several permanent watercourses occur within the study area. Of the three watercourses identified in the study area, a more comprehensive assessment of Etobicoke Creek was conducted due to the size of the watercourse, the relatively undisturbed nature of the area, and the presence of natural features adjacent to the creek where it crosses Dundas Street.

Habitat associated with Etobicoke Creek at the Dundas Street bridge crossing appears suitable to support the spawning of several species of specialized spawning baitfish within the study area (i.e., upstream, downstream and under the structure). Species which either broadcast their eggs over cobble substrates or use interstitial spaces between cobbles and boulders are anticipated to spawn directly within the study area. Though a comprehensive fisheries review including fish sampling was not completed, large numbers of juvenile and young of year baitfish were observed within Etobicoke Creek during field investigations. No aquatic Species at Risk were observed or are known from the study area.

As part of the design, the existing bridge will be replaced with a new wider bridge that will also accommodate the new Dundas BRT infrastructure in the middle of the roadway and a 4 m wide MUP on each side of the bridge. Similar to the existing bridge, the new bridge will also be a 3-span structure with span lengths comparable to the span lengths of the existing bridge. Based on the preliminary design, in-water work is anticipated, however, this will need to be confirmed as the design progresses. It appears that the existing Etobicoke Creek bridge will be replaced to accommodate a proposed MUP

adjacent to both lanes. Additionally, based on the proposed design it appears that grading will occur within 30 metres of Etobicoke Creek and as such vegetation removals are anticipated. The current design outlines an approximately 25 metres vegetated buffer being maintained from the watercourse on all four quadrants of the bridge based on this grading limit. Though riparian vegetation removal will be required, this is not considered to be significant at this time based on the proposed grading limits and no larger individual trees (i.e., >35 centimetre diameter at breast height) are likely to be removed as part of this work. As such, the function of riparian vegetation is anticipated to remain based on the current design.

In water work is anticipated at the other two (2) watercourse crossings present within the study area (i.e., Little Etobicoke Creek and Cooksville Creek). The Little Etobicoke Creek culvert will be replaced with a new wider and longer bridge to accommodate the new Dundas BRT infrastructure, as well as address the insufficient hydraulic capacity of the existing culvert. The bridge is anticipated to be a single span structure, but has yet to be confirmed, as Matrix Solutions Inc. is still evaluating their alternatives as part of the Dixie-Dundas Flood Mitigation Study.

The Cooksville Creek culvert will be removed and replaced with a new single-span bridge that will also accommodate the new Dundas BRT infrastructure in the middle and a 4 m wide MUP on each side of the bridge. The length of the new bridge span has yet to be confirmed but is anticipated to be 20m±. Still to be confirmed is width of the bridge which could extend to the northern limits of the existing culverts or just wide enough to accommodate the widened roadway.

Grading is proposed within 30 metres of both Little Etobicoke Creek and Cooksville Creek, as required, both within and outside the exiting right-of-way. However, the final design should explore opportunities to reduce construction activities within the floodplain and watercourse. Minimum acceptable sidewalk and MUP widths will be implemented in proximity to all natural heritage features, in accordance with best management practices and the TRCA guidelines. The grading limits outlined in the current design will extend right up to the existing watercourse bank, which will require removal of riparian vegetation adjacent to the watercourse. The area of the removal and number of trees to be removed should be quantified before finalizing the design. Removal of vegetation within the grading limits will result in the removal of trees and shrubs which currently provide function as overhead cover (i.e., shading) and production of terrestrial insects etc. Given the highly urban area, removal of this vegetation is anticipated to result in impacts to these functions, however, they may be offset by the re-planting of suitable species within the limits of grading following construction (i.e., temporary provided site restoration to restore function is completed).

At this time in-water work is anticipated at the Etobicoke Creek, Little Etobicoke Creek, and Cooksville Creek crossings within the BRT route. General arrangement drawings outlining the proposed works required to construct the proposed crossings have not been completed at this time and additional assessment of impacts to fish and fish habitat will be required once more details regarding the footprint and associated works is detailed. Based on the existing proposed scope of work, it is anticipated that a Fisheries and Oceans Canada review will be required for all of the watercourse crossings where work will be undertaken. It is not anticipated that death of fish is likely to occur, provided that standard mitigation measures for isolation of the work zone, and fish rescue, in accordance with OPSS 182, are followed. At this time, it is not possible to assess impacts to fish habitat or fish passage, however, impacts to fish habitat or fish passage will need to be evaluated once a more detailed outline of the project works has been completed (i.e., drawings prepared etc.) and the anticipated footprint impacts, if any associated with the works can be determined. As such further review of the watercourse crossings is recommended to determine these impacts and if design considerations can be implemented to help reduce impacts to the existing function of fish and fish habitat associated with the crossings. It is recommended that the project not be submitted for review until additional details and drawings are available to complete the Request for Review form and assess anticipated impacts associated with these watercourse crossings. Terrestrial Environment

The study area was screened for the presence of Species at Risk or rare plants during field investigations. No Species at Risk or regionally rare plant species or communities were identified within or adjacent to the study area. Therefore, adverse impacts to Species at Risk or regionally rare plant or vegetation communities are not anticipated to result from the proposed project works. Limited vegetation and tree removal is anticipated with the widening / rehabilitation of the Etobicoke Creek bridge and Little Etobicoke Creek. These sites consist of typical urban roadside ecology. If re-seeding of these areas with native vegetation species is conducted along with proper grading, it is not anticipated that the proposed works at these sites will cause negative impacts.

3.1.1.2 Wildlife

Migratory birds are known to nest within vegetation present within the study area. Timing windows allow vegetation removal activities to avoid periods when birds are actively nesting. The period when a bird is actively nesting is considered its most critical life stage as many species are highly dependent on habitat around their nest site to supply food for nestlings and to conceal their nest, eggs, and young.

Cliff and Barn Swallows were observed nesting under the Etobicoke Creek bridge. These species are known to reuse nests and nesting locations. Barn Swallows are

protected under the provincial *Endangered Species Act* and the federal *Species at Risk Act*; in addition, both species and their nests, eggs, and fledglings are afforded protection under the *Migratory Birds Convention Act*.

Currently, at the existing design phase, it is unknown what impact the proposed works will have on the underside of the structure, however, assuming that bridge materials are conducive to the nests of Cliff and Barn Swallows, it is not anticipated that the works will significantly impact the colony in a long-term manner, as the structure will remain available to nesting Cliff and Barn Swallows and other migratory birds once construction activities are complete. Temporary intrusion and mitigation measures are discussed in greater detail in **Section 3.2**.

As detailed information on the bird species (migratory birds, provincially protected birds, and birds not afforded protection) is available for the study area based on the findings of the 2020/2021 field investigations, a nesting window reflective of the species known to occur within the study area has been recommended for this location. The Birds Canada *Nesting Calendar Query Tool* was used to determine the most appropriate nesting period based on the individual bird species known to utilize the study area for the purposes of nesting. The nesting calendar query tool utilizes a large data set collected over decades by the Canadian Wildlife Service, Birds Canada, and other agencies to calculate the dates when individual species are most likely to be actively nesting within a given geographic area. The core nesting period for birds within the study area is approximately April 1 to August 31 (i.e., the period when most birds are anticipated to be actively nesting).

Any required removal of vegetation should be completed prior to or after the bird nesting period of April 1 to August 31 of any given year to ensure migratory birds or their nests are not adversely impacted. In the event that vegetation removal will be required prior to August 31, but later than April 1, a visual inspection of the areas to be cleared should be conducted by a qualified avian specialist before disturbance to ensure that no birds are using the area for the purposes of nesting. Vegetation removal within habitat suitable for Bat SAR (e.g., Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland) should not occur within the active bat season (i.e., April 30 – September 30). If migratory bird breeding and/or nesting activity is encountered at any time of year within the study area, an appropriate setback distance should be maintained from the nest/nesting birds. Works should not continue in the location of the nest until after it has been determined by an avian specialist that the young have fledged and vacated the nest and work areas. Provided that the appropriate mitigation measures are implemented during construction, it is not anticipated that the proposed works will negatively impact migratory birds or other wildlife species.

Though the full scope of proposed works associated with the structure have not been detailed, mitigation measures may be employed to minimize impacts to the species. The final design should be re-evaluated to determine the extent of anticipated impacts and final mitigation measures to be employed. The following is generally recommended to ensure killing, harm, and harassment to these species does not occur. If applicable based on project works it is recommended that exclusionary measures (i.e., MECP approved exclusionary bird netting) are installed on the structure to prevent nesting activities, if possible. The exclusionary measures must be installed prior to the bird nesting period. If nesting activity of this species occurs prior to installation of the exclusionary measures, then the project works for the bridge must be delayed until it has been determined that nesting is completed, and the species has vacated or under approval from the Ministry of the Environment, Conservation and Parks. If these mitigation measures are followed, the project works are not anticipated to cause negative impacts to individual nesting Barn and Cliff Swallows.

3.1.1.3 Significant Wildlife Habitat

Based on the criteria outlined in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E* (Ministry of Natural Resources and Forestry, 2015), no SWH is known to occur within the study area.

3.1.1.4 Species at Risk

Species at Risk and their habitats are afforded protection under the Endangered Species Act. McIntosh Perry field surveys documented the following Species at Risk within the study area: Barn Swallow and Chimney Swift. Additionally, suitable habitat for Species at Risk bats (i.e., Little Brown, Northern, and Eastern Small-footed Myotis, and Tricolored Bat) is present within the study area and it is presumed that these species may be present. Given that much of the study area is urban, industrial, or suburban in nature, habitat for Species at Risk is limited within the study area.

3.1.1.4.1 Species at Risk Bats

Habitat associated with the study area appears suitable for the following Endangered species: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, and Tricolored Bat.

There is the potential to encounter the Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, and/or Tri-colored Bat within the treed portions of the study area (i.e., Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland Ecosite). These species may utilize forested habitat adjacent to the Dundas Street right-of-way as maternity colony habitat (i.e., snags, cavity trees, etc.). The design of the Dundas Bus

Rapid Transit should have consideration for suitable habitat present within the study area (i.e., the Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland Ecosite) and avoid, where possible, any vegetation removal throughout suitable habitats. If vegetation removal is required, removals should occur outside of the active period for Species at Risk bats (i.e., April 30 to September 30). Adhering to removals occurring outside of this time period should avoid any potential negative impacts on these species. Should vegetation and tree removals occur within this period, consultation with the Ministry of the Environment, Conservation and Parks should occur to determine best paths forward.

3.1.1.4.2 Barn Swallow

Habitat within and adjacent to the study area appears suitable for the life processes of the Barn Swallow; a species considered threatened in Ontario. Field surveys documented the presence of eight active Barn Swallow nests under the Etobicoke Creek bridge. Given that Barn Swallows were documented to be nesting under the Etobicoke Creek bridge, and pending both the nature of finalized bridge works and usage confirmation prior to construction, the project works may require authorization to the Ministry of the Environment, Conservation and Parks under the *Endangered Species Act*. Based on the proposed project works it appears that the proposed project works (to be re-evaluated once the design is more complete) may be completed under an exemption outlined under Part III of Ontario Regulation 830/21 of the *Endangered Species Act* which applies to Barn Swallow.

Given the scope of the proposed work at this time, the removal of the existing nests will be required in association with the bridge replacement. The new bridge design should, where possible, incorporate opportunities for Barn Swallow nesting, including but not limited to nesting cups. Bridge construction and demolition activities have the potential to harm and harass Barn Swallows if the activities are performed during the nesting period of this species (i.e., May 20 to August 20). Impacts to individual Barn Swallows and other migratory birds that were observed nesting on the structure can be mitigated through the use of MECP approved bird exclusion netting installed prior to April 1 to and maintained until August 31 of any year to exclude Barn Swallows and other migratory birds from nesting on the structure. Following completion of the works, the structure is anticipated to be suitable as nesting habitat for the Barn Swallow. In addition, mitigation and sustainability measures outlined in the *Operational Guidance For Migratory Bird nests Under Bridges and in Culverts*, 2018 prepared by the Transportation Association of Canada should be considered as the design progresses and during construction.

During detailed design, prior to construction, any structure requiring work must be rescreened to determine if conditions have changed since the 2020/2021 field

investigations. Authorization would also be required if Barn Swallows are identified as nesting within any other structure that requires disturbance as part of the project works (e.g., structural culverts etc.).

3.1.1.4.3 Chimney Swift

Field surveys completed in 2020 documented the presence of several foraging Chimney Swift along the study area length. This species is considered threatened, however, no evidence of the species using the immediate study area (i.e., structures etc. found within the right-of-way) was observed (i.e., the species is anticipated to be nesting away from Dundas Street in chimneys of other structures). Therefore, no negative impacts are anticipated to the species in relation to the project works.

3.1.1.5 Significant Natural Features

No designated areas such as Areas of Natural and Scientific Interests or properties managed by the Toronto and Region Conservation Authority or Credit Valley Conservation are located within the study area. The proposed project works are not anticipated to have negative impacts to Areas of Natural and Scientific Interests or other designated areas outside of the study area.

3.1.1.6 Study Area Ecological Functions

3.1.1.6.1 Fish Habitat

As outlined in **Section 3.1.1.1**, at this time in-water work is anticipated at the Etobicoke Creek, Little Etobicoke Creek and Cooksville Creek crossings within the BRT route. General arrangement drawings outlining the proposed works required to construct the proposed crossings have not been completed at this time and additional assessment of impacts to fish and fish habitat will be required once more details regarding the footprint and associated works is detailed. Based on the existing proposed scope of work, it is anticipated that a Fisheries and Oceans Canada review will be required for all of the watercourse crossings where work will be undertaken. It is not anticipated that death of fish is likely to occur, provided that standard mitigation measures for isolation of the work zone, and fish rescue, in accordance with OPSS 182, are followed. At this time, it is not possible to assess impacts to fish habitat or fish passage, however, impacts to fish habitat or fish passage will need to be evaluated once a more detailed outline of the project works has been completed (i.e., drawings prepared etc.) and the anticipated footprint impacts, if any associated with the works can be determined. As such further review of the watercourse crossings is recommended to determine these impacts and if design considerations can be implemented to help reduce impacts to the existing function of fish and fish habitat associated with the crossings. It is recommended that

the project not be submitted for review until additional details and drawings are available to complete the Request for Review form and assess anticipated impacts associated with these watercourse crossings.

Minimum acceptable sidewalk and MUP widths will be implemented in proximity to all natural heritage features, in accordance with best management practices and the TRCA guidelines. Short-term impacts associated with potential in-water work and vegetation removal surrounding the preliminary designs will occur, however, mitigative measures, including, but not limited to implementing in-water timing windows, sediment and erosion controls and vegetation plantings will minimize these impacts and long-term impacts to this function is not anticipated.

3.1.1.6.2 Migratory Bird Nesting Habitat

Migratory bird nesting habitat is present throughout the study area, primarily within vegetated riparian corridors (i.e., Cooksville, Little Etobicoke, and Etobicoke Creeks). The core nesting period for migratory birds within the study area is approximately April 1 to August 31 (i.e., the period when most birds are anticipated to be actively nesting) (see **Section 3.1.1.3** for more details).

Any required removal of vegetation should be completed prior to or after the bird nesting period of April 1 to August 31 of any given year to ensure migratory birds or their nests are not adversely impacted. In the event that vegetation removal will be required prior to August 31, but later than April 1, a visual inspection of the areas to be cleared should be conducted by a qualified avian specialist before disturbance to ensure that no birds are using the area for the purposes of nesting. If migratory bird breeding and/or nesting activity is encountered at any time of year within the study area, an appropriate setback distance should be maintained from the nest/nesting birds. Works should not continue in the location of the nest until after it has been determined by an avian specialist that the young have fledged and vacated the nest and work areas. Provided that the appropriate mitigation measures are implemented during construction, it is not anticipated that the proposed works will negatively impact migratory birds and their nesting habitat.

Though the full scope of proposed works associated with the structures have not been detailed, mitigation measures may be employed to minimize impacts to the species. The final design should be re-evaluated to determine the extent of anticipated impacts and final mitigation measures to be employed.

Provided that mitigation measures outlined above and in **Section 3.1.1.3** are followed, there are no anticipated negative impacts associated with the function of migratory bird breeding habitat in either the short- or long-term.

3.1.1.6.3 Wildlife Travel Corridors

As outlined in **Section 3.1.1.1**, some vegetation removal will be required in support of the bridge designs. Though riparian vegetation removal will be required, this is not considered to be significant at this time based on the proposed grading limits and no larger individual trees (i.e., >35 centimetre diameter at breast height) are likely to be removed as part of this work. Vegetation removals will follow compensation requirements in accordance with Metrolinx's *Vegetation Guideline* (2020), as well minimum acceptable sidewalk and MUP widths will be implemented in proximity to all natural heritage features, in accordance with best management practices and the TRCA guidelines. Outside of Metrolinx properties, compensation trees should be inspected as per applicable tree bylaws enforced by the City of Mississauga, up to 2 years, following planting. The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning. As such, compensation plantings will ensure that the function of riparian vegetation, and specifically the function as wildlife travel corridors is not negatively impacted.

3.1.1.6.4 Habitat for SAR Bats

As outlined in **Section 3.1.1.5.1**, habitat associated with the study area appears suitable for the following Endangered species: Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, and Tri-colored Bat.

These species may utilize forested habitat adjacent to the Dundas Street right-of-way as maternity colony habitat (i.e., snags, cavity trees, etc.). The design of the Dundas Bus Rapid Transit should have consideration for suitable habitat present within the study area (i.e., the Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland Ecosite) and avoid, where possible, any vegetation removal throughout suitable habitats. If vegetation removal is required, removals should occur outside of the active period for Species at Risk bats (i.e., April 30 to September 30). Adhering to removals occurring outside of this time period should avoid any potential negative impacts on these species. Should vegetation and tree removals occur within this period, consultation with the Ministry of the Environment, Conservation and Parks should occur to determine best paths forward.

3.1.1.6.5 Habitat for SAR Birds

As outlined in **Section 3.1.1.5.2**, habitat for Barn Swallow is present within the study area. Field investigations documented the presence of eight (8) active nests on the Etobicoke Creek bridge. Following mitigative measures outlined in **Section 3.1.1.5.2**, and the completion of the proposed works, the Etobicoke Creek structure is anticipated

to be suitable as nesting habitat for the Barn Swallow in the long-term. In addition, mitigation and sustainability measures outlined in the *Operational Guidance For Migratory Bird nests Under Bridges and in Culverts*, 2018 prepared by the Transportation Association of Canada should be considered as the design progresses and during construction. No negative long-term impact is anticipated in association with the proposed design for habitat for the Barn Swallow.

As outlined in **Section 3.1.1.5.3**, field surveys completed in 2020 documented the presence of several foraging Chimney Swift along the study area length. However, no evidence of the species using the immediate study area (i.e., structures etc. found within the right-of-way) was observed (i.e., the species is anticipated to be nesting away from Dundas Street in chimneys of other structures). Therefore, no negative impacts are anticipated to the species and its habitat in relation to the project works.

3.2 Summary of Potential Effects, Mitigation Measures and Monitoring Requirements

Table 4 provides a summary of the effects, mitigation measures, and monitoring requirements¹ for each discipline over the course of project construction.

Table 4: Effects, Mitigation and Monitoring Requirements

Environment	Environmental Component	Potential Effect	General Considerations and Mitigation Measure(s)	Monitoring and Authorization Requirements
Wildlife and Wildlife Habitat	Wildlife	<ul style="list-style-type: none">Disturbance, displacement, or mortality of wildlife	<ul style="list-style-type: none">Prior to construction, investigation of the Project Footprint for all wildlife and wildlife habitat that may have established following the completion of previous surveys will be undertaken, as appropriate.Erect exclusionary fencing in linkage areas within close (i.e., 30m) proximity of wildlife habitat. Fencing will be designed prior to construction.If wildlife is encountered, conservation strategies will be implemented to avoid destruction, injury, or interference with the species, and/or its habitat.For example, construction activities will cease or be reduced, and wildlife will be encouraged to move offsite and away from the construction area on its own. A qualified biologist will be contacted to define the appropriate buffer required from wildlife. If wildlife is able to be handled safely (e.g., non-SAR herpetofauna), the qualified biologist will follow safe handling-techniques, as approved by the province, to relocate and move individuals out of harms way.	<ul style="list-style-type: none">On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts to all wildlife encountered.
Wildlife and Wildlife Habitat	Migratory Breeding Birds and Nests	<ul style="list-style-type: none">Disturbance or destruction of migratory birds and/or nests.	<ul style="list-style-type: none">All works must comply with the <i>Migratory Birds Convention Act</i>, including timing windows for the general nesting period (April 1st to August 31st in Ontario).Vegetation removals should occur outside of the bird breeding season (i.e., April 1 – August 31), if possible, to ensure incidental take or harm to migratory birds and their nests does not occur.Mitigation and sustainability measures outlined in the Operational Guidance For Migratory Bird nests Under Bridges and in Culverts, 2018 prepared by the Transportation Association of Canada should be implemented during construction.If activities are proposed to occur during the general nesting period a breeding bird and nest survey will be undertaken prior to required activities. Nest searches by a qualified biologist with experience conducting nest searches will be required no more than 48 hours prior to vegetation removal.If a nest of a migratory bird is found outside of this nesting period (including a ground nest) it still receives protection.	<ul style="list-style-type: none">Regular monitoring will be undertaken to confirm that activities do not encroach into nesting areas or disturb active nesting sites.If vegetation removal occurs during the bird breeding season (i.e., April 1 – August 31), a visual inspection of the proposed removals is required by a qualified avian biologist to ensure that no birds are using the area for the purposes of nesting. If migratory bird breeding and/or nesting activity is encountered at any time of year within the study area, an appropriate setback distance should be maintained from the nest/nesting birds. Works should not continue in the location of the nest until after it has been determined by an avian specialist that the young have fledged and vacated the nest and work areas.
Species at Risk	General	<ul style="list-style-type: none">Habitat loss, disturbance and/or mortality to Species at Risk.	<ul style="list-style-type: none">All requirements of the <i>Endangered Species Act</i> and <i>Species at Risk Act</i> will be met. Species-specific mitigation measures will be implemented based on any recommended studies undertaken prior to construction, and in consultation with Ministry of the Environment, Conservation and Parks/ Ministry of Natural Resources and Forestry.If Species at Risk is present and conservation strategies have been developed by Ministry of Natural Resources and Forestry/Ministry of the Environment, Conservation and Parks, the commitments in the recovery strategy will be followed.On-site personnel will be provided with information (e.g., factsheets) that address the existence of potential Species at Risk on-site, the identification of the Species at Risk species and the procedure(s) to follow if an individual is encountered or injured.	<ul style="list-style-type: none">On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.Species-specific monitoring activities will be developed in accordance with any authorization requirements under the <i>Endangered Species Act</i>.
Species at Risk	Barn Swallow	<ul style="list-style-type: none">Potential nest destruction and/or harm. Habitat loss, disturbance and/or mortality to Barn Swallow.	<ul style="list-style-type: none">Field surveys will be undertaken prior to construction to confirm the number of nests present at the known locations and whether the nests remain active.Where loss or disturbance cannot be avoided (e.g., due to work on bridges or banks), all requirements under the <i>Endangered Species Act</i> will be met, including any compensation, replacement structures, and/or authorization requirements.	<ul style="list-style-type: none">On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed

Environment	Environmental Component	Potential Effect	General Considerations and Mitigation Measure(s)	Monitoring and Authorization Requirements
			<ul style="list-style-type: none"> ■ If construction activities are scheduled during the nesting season for Barn Swallow (April 1st to August 31st), a nest search will be undertaken by a qualified biologist to confirm that no Barn Swallow are nesting on structures or banks that may be affected by construction activities on or near these areas. If possible, the area will be netted prior to nesting season to dissuade use of these areas for nesting, following MECP approved guidance. ■ Bridge works should be completed outside of the bird breeding season (i.e., April 1 – August 31), if possible, to ensure incidental take or harm to Barn Swallows and their nests does not occur. ■ Mitigation and sustainability measures outlined in the Operational Guidance For Migratory Bird nests Under Bridges and in Culverts, 2018 prepared by the Transportation Association of Canada should be implemented during construction. ■ The new bridge design should, where possible, incorporate opportunities for Barn Swallow nesting, including but not limited to placing nesting cups. 	<p>with the Ministry of the Environment, Conservation and Parks, if required.</p> <ul style="list-style-type: none"> ■ Authorization to the Ministry of the Environment, Conservation and Parks under Part III of the Ontario Regulation 830/21. ■ Authorization from the Ministry of the Environment, Conservation and Parks requires the preparation of a Barn Swallow mitigation and restoration record, which includes habitat compensation (if nests are removed and/or destroyed) and monitoring. ■ Authorization would also be required if Barn Swallows are identified as nesting within any other structure that requires disturbance as part of the project works (e.g., structural culverts etc.).
Species at Risk	Chimney Swift	<ul style="list-style-type: none"> ■ Habitat loss, disturbance and/or mortality to Chimney Swift. 	<ul style="list-style-type: none"> ■ If repair, maintenance or demolition of buildings/structures with suitable roosting/nesting habitat (e.g., chimneys) is to take place, targeted surveys for Chimney Swift will be completed by a qualified avian biologist as per the Bird Studies Canada Chimney Swift Monitoring Protocol (2009). ■ Repair, maintenance, or demolition of an identified roosting/nesting structure may constitute destruction of habitat and would be discussed in advance with the Ministry of the Environment, Conservation and Parks and requirements of the <i>Endangered Species Act</i> will be met. ■ Register activities for Chimney Swift under the <i>Endangered Species Act</i> and consult with Ministry of the Environment, Conservation and Parks to fulfil requirements the <i>Endangered Species Act</i> and its associated regulations. 	<ul style="list-style-type: none"> ■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the Ministry of the Environment, Conservation and Parks, if required.
Species at Risk	Species at Risk Bats	<ul style="list-style-type: none"> ■ Habitat loss, disturbance and/or mortality to Species at Risk Bats. 	<ul style="list-style-type: none"> ■ Disturbance to bat roosting habitat, with specific emphasis on the Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland Ecosite, will be avoided during the bat roosting period of April 30th to September 30th in accordance with Ministry of the Environment, Conservation and Parks requirements. 	<ul style="list-style-type: none"> ■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed with the Ministry of the Environment, Conservation and Parks, if required. ■ Should vegetation and tree removals occur within the active period for Species at Risk bats, discussion with the Ministry of the Environment, Conservation and Parks is required to ensure contravention of the Endangered Species Act does not occur. Sites documented as being used by SAR bats are not removable under the ESA.
Species at Risk	Aquatic Species at Risk ²	<ul style="list-style-type: none"> ■ Habitat loss, disturbance and/or mortality to aquatic Species at Risk. 	<ul style="list-style-type: none"> ■ Specific mitigation measures identified through the Aquatic Habitat and Fish Community Assessment, and/or any other studies, will be implemented. ■ If aquatic Species at Risk is present, design and construction will occur in accordance with Ministry of the Environment, Conservation and Parks requirements. ■ Register activities that fall under the notice of activity for aquatic species for works within habitat of certain fish or mussels. 	<ul style="list-style-type: none"> ■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts. Additional monitoring measures will be developed

Environment	Environmental Component	Potential Effect	General Considerations and Mitigation Measure(s)	Monitoring and Authorization Requirements
				with the Ministry of the Environment, Conservation and Parks, if required.
Aquatic Environment	Aquatic Environments	<ul style="list-style-type: none">■ Release of Sediment or other deleterious substances from the work zone and stabilization of riparian area during and after construction	<ul style="list-style-type: none">■ When possible, schedule work to avoid wet and rainy periods that may increase the risk of erosion and sedimentation.■ Plan access points to minimize the amount of riparian vegetation lost or disturbed.■ Uncured concrete and other materials used for grouting culverts shall be prevented from entering water bodies using appropriate barriers and should be stored a minimum of 30 metres from watercourses.■ Develop a spill response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance. All spills of deleterious substances (as defined by the Fisheries Act) must be reported to the Ontario Spill's Action Center (https://www.ontario.ca/page/report-pollution-and-spills) AND Fisheries and Oceans Canada (FisheriesProtection@dfo-mpo.gc.ca) if the spill results in <i>the Harmful Alteration, Damage or Destruction</i> to fish or fish habitat. An emergency spill kit shall be kept on-site at all times.■ Erosion and sediment control measures shall be installed prior to starting work to prevent sediment from entering the watercourse and will be removed at the completion of construction as per Ontario Provincial Standards 804 – Construction Specification for Temporary Erosion Control and Ontario Provincial Standards 805 – Construction Specification for Temporary Sediment Control.■ It is recommended that cover be utilized as per Ontario Provincial Standards 804 - Construction Specifications for Temporary Erosion Control, as a part of the contract for areas where seeding is required. Recommended covers included in Ontario Provincial Standards 804 –which should be considered for inclusion in the Contract Package include:<ul style="list-style-type: none">• Straw mulch (where conditions permit);• Bonded Fibre Matrix or Fibre Reinforced Matrix (where conditions permit), and or erosion control blankets which are constructed of 100% biodegradable materials with non-plastic biodegradable mesh or sewn together with biodegradable thread; and• Fibre rolls which consist of an open—weave, biodegradable mesh or netting that securely contains the fibres (i.e., biodegradable material such as shredded straw, wood fibres or compost).■ Alternatively, rock protection or rip-rap may also be used to stabilize highway embankments adjacent to the watercourse following completion of project works (anticipated to provide more rapid stabilization but little value to vegetation directly) as per Ontario Provincial Standards 804 and Ontario Provincial Standards 805.■ All stockpiles of erodible construction materials and excess or surplus materials within 30 metres of a waterbody shall be protected from erosion within 48 hours of being built until they are required for construction or removed from the site as per Ontario Provincial Standards 805 – Construction Specification for Temporary Sediment Control;■ Where grubbing is required adjacent to a watercourse, temporary cover shall be applied prior to any forecasted precipitation and less than 48 hours after any grubbing as per Ontario Provincial Standards 804 – Construction Specification for Temporary Erosion;■ Temporary sediment control shall be removed, and associated excavations backfilled and compacted when the area being protected has been completely stabilized by final cover placement. When the final cover is vegetated, and placement could not be advanced to allow establishment and stabilization of the site prior to Contract Completion, temporary sediment control shall be left in place as per Ontario Provincial Standards 805 – Construction Specification for Temporary Sediment Control;	<ul style="list-style-type: none">■ Erosion and sediment control measures shall be inspected for effectiveness regularly throughout construction and deficiencies corrected as per Ontario Provincial Standards 804 – Construction Specification for Temporary Erosion Control and Ontario Provincial Standards 805 – Construction Specification for Temporary Sediment Control;■ The installation, monitoring, maintenance, and removal of temporary erosion and sediment control measures shall be according to Ontario Provincial Standards 805 – Construction Specification for Temporary Sediment Control;■ Additional assessment of impacts to fish and fish habitat and DFO Request for Review are anticipated to be required for works associated with Etobicoke Creek, Little Etobicoke Creek and Cooksville Creek once details, including drawings etc. have been completed for these crossings.

Environment	Environmental Component	Potential Effect	General Considerations and Mitigation Measure(s)	Monitoring and Authorization Requirements
			<ul style="list-style-type: none">■ Equipment shall not enter the watercourse as per Ontario Provincial Standards 182 – General Specification for Environmental Protection for Construction in Waterbodies and on Waterbody Banks unless specified in the Contract Documents. All equipment shall be operated on or from dry land in a way that minimizes the disturbance of waterbody banks and riparian vegetation;■ Ensure mobile industrial equipment is stored/fueled at least 30 metres away from the watercourse. In circumstances where it is not possible (e.g., non-mobile equipment), fueling and maintenance must be carried out in a controlled manner to prevent any discharge of equipment fuels and fluids onto the ground or into water bodies as per Ontario Provincial Standards 182; and■ Ensure machinery is not leaking fuels or lubricants as per Ontario Provincial Standards 182.	
Aquatic Environment	Wetlands and Waterbodies	<ul style="list-style-type: none">■ Vegetation Removal and Site Rehabilitation - Removal or impacts to wetland, aquatic and riparian vegetation; erosion and sedimentation to wetlands/waterbodies from construction; risk of contamination to wetlands/waterbodies as a result of spills.	<ul style="list-style-type: none">■ Construction activities will maintain the buffers established during the design phase to minimize potential negative impacts to wetlands and waterbodies.■ Shorelines or banks disturbed by construction activities will be immediately stabilized by any activity associated with the project to prevent erosion and/or sedimentation, through re-vegetation with native species suitable for the site in adherence with the Metrolinx <i>Vegetation Guideline</i> (2020).■ An Erosion and Sediment Control Plan, in accordance with the <i>Erosion and Sediment Control Guide for Urban Construction</i> (Toronto and Region Conservation Authority 2019), as amended from time to time, will be prepared prior to and implemented during construction to minimize the risk of sedimentation to the wetland or waterbody.■ A Spill Prevention and Response Plan will be developed before work commences and implemented during construction to ensure procedures and policies are in place during construction to minimize impacts to wetlands or waterbodies.■ Design consideration will follow the TRCA's <i>Crossing Guideline for Valley and Stream Corridors</i> (2015), and will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.■ In wetland areas where vernal pooling occurs, prior to dewatering isolated work areas, wildlife will be captured and relocated to suitable habitat outside of the work area.■ Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a License to Collect Fish for Scientific Purposes from the Ministry of Natural Resources and Forestry.■ Removal of riparian vegetation shall be in accordance with Ontario Provincial Standards 182 and Ontario Provincial Standards 804 – Construction Specifications for Seed and Cover;■ Disturbance of riparian vegetation should be minimized;■ Herbicides will not be used unless for the control of Invasive/Noxious plants. Herbicides shall not be sprayed where invasive or noxious vegetation is located in standing water. Locations to be sprayed with herbicide as specified in the Contract Drawings shall be visually inspected for the presence of standing water on a weekly basis and documented for the life of the Contract until or until the standing water is no longer present and herbicide spraying can commence;■ Replace vegetative cover with topsoil and seed as per Ontario Provincial Standards – 803 – Construction Specification for Vegetative Cover and Ontario Provincial Standards 802 – Topsoil.■ Though the study area is located within an urban area, several “natural” areas exist adjacent to the study area watercourses, and these areas provide direct groundwater discharge to the study area watercourses. As such, it is recommended that a seed mix comprised of native species be utilized for all re-vegetation activities within the study area watercourses and riparian areas.■ The Northern Ontario Mix, as per Ontario Provincial Standards 803, offers similar qualities for re-establishment within a roadside environment (and reduced long-term maintenance). This	<ul style="list-style-type: none">■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include alteration of activities to minimize impacts and enhance mitigation measures.■ Equipment coming on-site shall be inspected as close to the site entrance as possible for debris, and if present debris shall be removed entirely and shall be collected and managed as specified prior to the equipment proceeding to the Working Area.■ Equipment shall also be inspected for debris prior to leaving the Working Area. Any debris shall be removed and managed as specified and in a manner that prevents equipment from coming into further contact with standing, sprayed or cut invasive or noxious vegetation.■ Vegetation re-seeding should be inspected during all applicable phases of the project, up to 2 years following project completion to ensure vegetation uptake.■ Compensation trees should be inspected as per applicable tree bylaws enforced by the City of Mississauga, up to 2 years, following planting.

Environment	Environmental Component	Potential Effect	General Considerations and Mitigation Measure(s)	Monitoring and Authorization Requirements
			<p>mix contains mostly native species with some non-native legumes included to help with the establishment of the planting; however, only native species should be used.</p> <ul style="list-style-type: none">■ Alternatively though not specified in Ontario Provincial Standards 803, a seed mix such as the Ontario Seed Company Rural Ontario Roadside Native Seed Mixture 8145 (https://www.oscseeds.com/product/rural-ontario-roadside-native-mixture-8145/) may also be utilized as this seed mix contains a variety of native plant species able to establish and grow within a roadside environment.■ It is recommended that cover be utilized as a part of the Contract for areas where seeding is required, given the sensitivities associated with the study area wetlands in particular. Recommended covers included in Ontario Provincial Standards 803 which should be considered for inclusion in the Contract Package include:<ul style="list-style-type: none">■ Straw mulch (where conditions permit);■ Bonded Fiber Matrix or Fiber Reinforced Matrix (where conditions permit), and or■ Erosion control blankets made of natural fiber (i.e., with no nylon or synthetic netting/materials, etc.).■ If there is insufficient time in the growing season for the seed to sprout, the site shall be stabilized with temporary erosion and sediment control measures and seeded in the following spring. It is important to note that many of the seed mixes outlined above are best established through fall seeding to allow normal dormancy and then germination the following spring as these species are adapted to the Ontario environment;■ Where clearing and grading is required within 30 metres of a watercourse a tree inventory should be completed prior to grading activities and any trees removed be replaced in accordance with applicable tree compensation ratios to ensure function of riparian habitat remains. Native species should be selected which are tolerant of the urban environment to ensure function of the riparian area is maintained.■ Planting of native shrubs is also recommended within riparian areas disturbed during construction. Use of native shrubs may be appropriate for areas close to the traveled portion of Dundas Street (i.e., newly regraded embankment) as they will generally stay smaller to avoid conflicts with utilities etc.■ Debris, including earth clods and invasive noxious vegetation material attached to the outside surfaces of the equipment, is prohibited from entering the Working Area.	
Aquatic Environment	Fish and Fish Habitat	<ul style="list-style-type: none">■ Potential for direct, in-water impacts to fish and fish habitat.	<ul style="list-style-type: none">■ All requirements of the <i>Fisheries Act</i> and the <i>Endangered Species Act</i> will be met.■ Additional assessment of impacts to fish and fish habitat and DFO Request for Review are anticipated to be required for works associated with Etobicoke Creek, Little Etobicoke Creek and Cooksville Creek once details including drawings etc. have been completed for these crossings.■ Prior to dewatering isolated work areas, fish will be captured and relocated to suitable habitat outside of the work area under a License to Collect Fish for Scientific Purposes from the Ministry of Natural Resources and Forestry.	<ul style="list-style-type: none">■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.
Terrestrial Environment	Wildlife Travel Corridors, Vegetation Removal, and Compensation Plans	<ul style="list-style-type: none">■ Temporary vegetation disturbance and limited vegetation removal	<ul style="list-style-type: none">■ Vegetation re-seeding with native vegetation, with specific emphasis on areas adjacent to Etobicoke and Little Etobicoke Creek.■ Sediment and erosion control fencing.■ Upgrades to the terrestrial corridor associated with the Little Etobicoke Creek valley should be consistent with the Dundas Connects project.■ Design consideration will follow the TRCA's <i>Crossing Guideline for Valley and Stream Corridors</i> (2015), and will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.	<ul style="list-style-type: none">■ Vegetation re-seeding should be inspected during all applicable phases of the project, up to 2 years following project completion to ensure vegetation uptake.■ Installation of sediment and erosion control fencing in areas requiring grading during construction. Sediment and erosion control fencing should be

Environment	Environmental Component	Potential Effect	General Considerations and Mitigation Measure(s)	Monitoring and Authorization Requirements
			<ul style="list-style-type: none">■ It is recommended that any ditch line which is constructed that is not part of a watercourse (i.e., does not convey permanent flow) should be seeded with an appropriate moisture tolerating seed mix. It is important to note that none of the seed mixes included in Ontario Provincial Standards 804 are suitable for re-seeding areas that are seasonally wet. Suitable seed mixes for this application include but are not limited to:■ Seed mix containing 100% Canada bluejoint. Canada bluejoint (a native grass species) is well adapted for growth within the Dundas Street right-of-way in areas where moist soils are present. As a native moisture (able to grow in areas of seasonal standing water) and salt-tolerant species, Canada bluejoint has many growth properties similar to invasive phragmites and is often considered an aggressive spreading native species able to colonize sites quickly. This may also provide benefits to minimize the establishment and spread of invasive phragmites within the study area. These properties make it an ideal candidate for use within the right-of-way to re-seed ditch line areas following ditch cleanout or other activities which disrupt the exiting vegetation cover;■ Creek Bank Native Seed Mixture (Wet Meadow Type) (https://www.oscseeds.com/product/bank-native-mixture-wet-meadow-type-8215/);■ Standard OBL Wetland Native Seed Mixture (https://www.oscseeds.com/product/standard-obl-wetland-native-mix-8185/), or■ Low Maintenance Retention Basin Native Seed Mixture 8220 (https://www.oscseeds.com/product/low-maintenance-retention-basin-native-mixture-8220/)	inspected weekly, or during precipitation events that are >10 mm.
Terrestrial Environment	Wildlife Travel Corridors, Vegetation Removal, and Compensation Plans	■ Tree / Vegetation removal, injury and protection	<ul style="list-style-type: none">■ If a tree requires removal or injury, compensation and registration approvals (as required) will be undertaken in accordance with Metrolinx's <i>Vegetation Guideline</i> (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties (e.g., City of Mississauga's Public and Private Tree Bylaws (0254-2012)).■ Pruning of branches will be conducted through the implementation of proper arboricultural techniques.■ Tree Protection Zone fencing will be established to protect and prevent tree injuries in accordance with local by-law requirements.■ Prior to the undertaking of tree removals, a Tree Removal Strategy, building upon the considerations and elements set out in the Metrolinx <i>Vegetation Guideline</i> (2020), will be developed and implemented in adherence with best practices, standards and regulations on safety, environmental and wildlife protections.■ Compensation for tree removals will be undertaken in accordance with provisions outlined in the Metrolinx <i>Vegetation Guideline</i> (2020). Adhere to all applicable bylaws for tree removals outside of Metrolinx properties (e.g., City of Mississauga's Public and Private Tree Bylaws (0254-2012)).■ Vegetation removals will also consider and mitigate potential impacts to sensitive species, e.g., migratory birds and Species at Risk, and features, e.g., Designated Natural Areas and Significant Wildlife Habitat.	<ul style="list-style-type: none">■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.■ The success of vegetation compensation activities will be monitored in accordance with Metrolinx's <i>Vegetation Guideline</i> (2020). Outside of Metrolinx properties, compensation trees should be inspected as per applicable tree bylaws enforced by the City of Mississauga, up to 2 years, following planting. The approach to compensation monitoring will be determined by property ownership, applicable governing bylaws/regulations and location with respect to ecological functioning.■ Monitoring requirements will be undertaken in accordance with conditions of permits and approvals.■ Monitoring and management of trees/vegetation within the corridor right-of-way will be undertaken in accordance with the Integrated Vegetation Management Program within the Metrolinx <i>Vegetation Guideline</i> (2020).
Terrestrial Environment	Vegetation Removal and	Disturbance, injury and/or removal of Species at Risk	<ul style="list-style-type: none">■ As part of the Arborist Report, all trees within or adjacent to the Project Study Area that will be removed or injured as part of the Project will be inventoried, including Butternut and any other	<ul style="list-style-type: none">● On-site inspection will be undertaken to confirm the implementation of the mitigation measures.

Environment	Environmental Component	Potential Effect	General Considerations and Mitigation Measure(s)	Monitoring and Authorization Requirements
	Compensation Plans	vegetation, including Butternut ¹ .	<p>Species at Risk vegetation. Species at Risk vegetation will be subject to authorization and approval requirements under Applicable Law, prior to the commencement of construction.</p> <ul style="list-style-type: none">■ Each Butternut that may potentially be removed or impacted must be assessed by a qualified Butternut Health Assessor, in accordance with Ministry of Natural Resources and Forestry <i>Butternut Assessment Guidelines</i> (2014). The Assessor will prepare a Health Assessment Report for submission to Ministry of the Environment, Conservation and Parks to determine the next course of action.	
Terrestrial Environment	Integrated Vegetation Management	Footprint Impacts and potential for the establishment of invasive species and other incompatible species.	<ul style="list-style-type: none">■ An Integrated Vegetation Management Plan will be developed and implemented that is in adherence with the Metrolinx <i>Vegetation Guideline</i> (2020) and the Integrated Vegetation Management Program. The Guideline’s selection criteria will be used to assess the vegetation present as compatible or incompatible, and manage it, if necessary, in a way which meets safety needs in a timely manner, is sensitive to environmental conditions, and maximizes cost-effectiveness.	<ul style="list-style-type: none">■ The presence, density, and location of compatible and incompatible species will be monitored as per the frequency and methodology established in the Bi-Annual Monitoring Program within the Metrolinx <i>Vegetation Guideline</i> (2020). The Bi-Annual Monitoring Program is made up of pre-treatment and post-treatment monitoring events that will be carried out via field, aerial, and high-rail vehicle or train surveys conducted by qualified specialists.
Terrestrial Environment	Tree Removal Strategy	Potential for the spread of emerald ash borer, <i>Agrilus planipennis</i> (Fairmaire) associated with removal, handling and transport of ash trees.	<ul style="list-style-type: none">■ Removal of ash trees, or portions of ash trees, will be carried out in compliance with the Canada Food and Inspection Agency Directive <i>D-03-08: Phytosanitary Requirements to Prevent the Introduction into and Spread within Canada of the Emerald Ash Borer, Agrilus planipennis (Fairmaire)</i> (2014), as amended from time to time. To comply with this Directive, all Ash trees requiring removal, including any wood, bark or chips, will be restricted from being transported outside of the emerald ash borer regulated areas of Canada.■ Ensure precautions are being taken to minimize the spread of invasive species by cleaning equipment prior to moving sites.	<ul style="list-style-type: none">■ On-site inspection will be undertaken to confirm the implementation of the mitigation measures and identify corrective actions if required. Corrective actions may include additional site maintenance and alteration of activities to minimize impacts.

¹Monitoring should be undertaken by a qualified biologist, as needed, when works are conducted in suitable wildlife habitat, including bird nest sweeps ahead of vegetation clearing. Daily discussion amongst environmental inspector and staff to determine if a biologist is needed on-site.

²Aquatic Species at Risk and terrestrial vegetation, including Butternut were not observed within the study area; however, because of their prevalence within the broader landscape have been included for comprehensiveness and should be appropriately mitigated.

4. Permits and Approvals

The following provides information pertaining to any federal, provincial, municipal, or other permits/approvals required to carry out the proposed project works based on the existing design.

4.1 Federal

Table 5 provides a summary of federal permits, the regulatory authority, legislation and a general description of the activities covered with respect to the natural heritage system. At this time an authorization from Fisheries and Oceans Canada is not anticipated, however, more detailed review of the proposed design work associated with any of the fish bearing watercourses present within the study area will be required as the design progresses. Pending the design, a review by Fisheries and Oceans Canada may be required.

Table 5: Federal Permits, the Regulatory Authority, Legislation, and a General Description with Respect to Natural Heritage Features

Permit Name	Regulatory Authority	Legislation	General Description
N/A	Environment and Climate Change Canada – Canadian Wildlife Service	Migratory Birds Convention Act, 1994	<ul style="list-style-type: none"> ■ Protects migratory birds, their eggs, and their nests from destruction, including incidental take. ■ Visual search and clearance required from a qualified avian biologist during the bird breeding window (i.e., April 1 – August 31).

4.2 Provincial

Table 6 provides a summary of provincial permits, the regulatory authority, legislation and a general description of the activities covered with respect to the natural heritage system.

Table 6: Provincial Permits, the Regulatory Authority, Legislation, and a General Description with Respect to Natural Heritage Features

Permit Name	Regulatory Authority	Legislation	General Description
Part III of Ontario Regulation 830/21 Barn Swallow	Ministry of Environment, Conservation and Parks	Endangered Species Act, 2007	<ul style="list-style-type: none"> ■ Required for construction and design of the Etobicoke Creek bridge, where Barn Swallow is known to be present. ■ Requires a mitigation plan which must be prepared by one or more persons with expertise in relation to every species that is the subject of the plan, using the best available information on steps that may help minimize or avoid adverse effects on the species.

4.3 Municipal

Metrolinx, as a Provincial Crown Agency, is not generally subject to municipal permitting and approval requirements; regardless, Metrolinx works in co-operation with local municipalities to adhere to the intent of the relevant permit/approval requirements to the extent possible.

Municipal by-laws and permitting requirements that fall under the City of Mississauga's mandate will be adhered to and followed, as outlined under the City's guidance documents and official plan.

4.4 Other

4.4.1 Timing Windows and Preventive Measures

There are several pertinent timing windows that must receive attention during the course of project works. An overview of these timing windows are outlined below.

Bird breeding window (April 1 to August 31):

- Vegetation and tree removals must have consideration for the bird breeding window (i.e., April 1 to August 31), as outlined under the Migratory Birds Convention Act.
- If vegetation and tree removals occur within this timing window, a visual inspection of the area proposed for clearing must be conducted by a qualified avian biologist.

Species at Risk Bat Active window (April 30 to September 30):

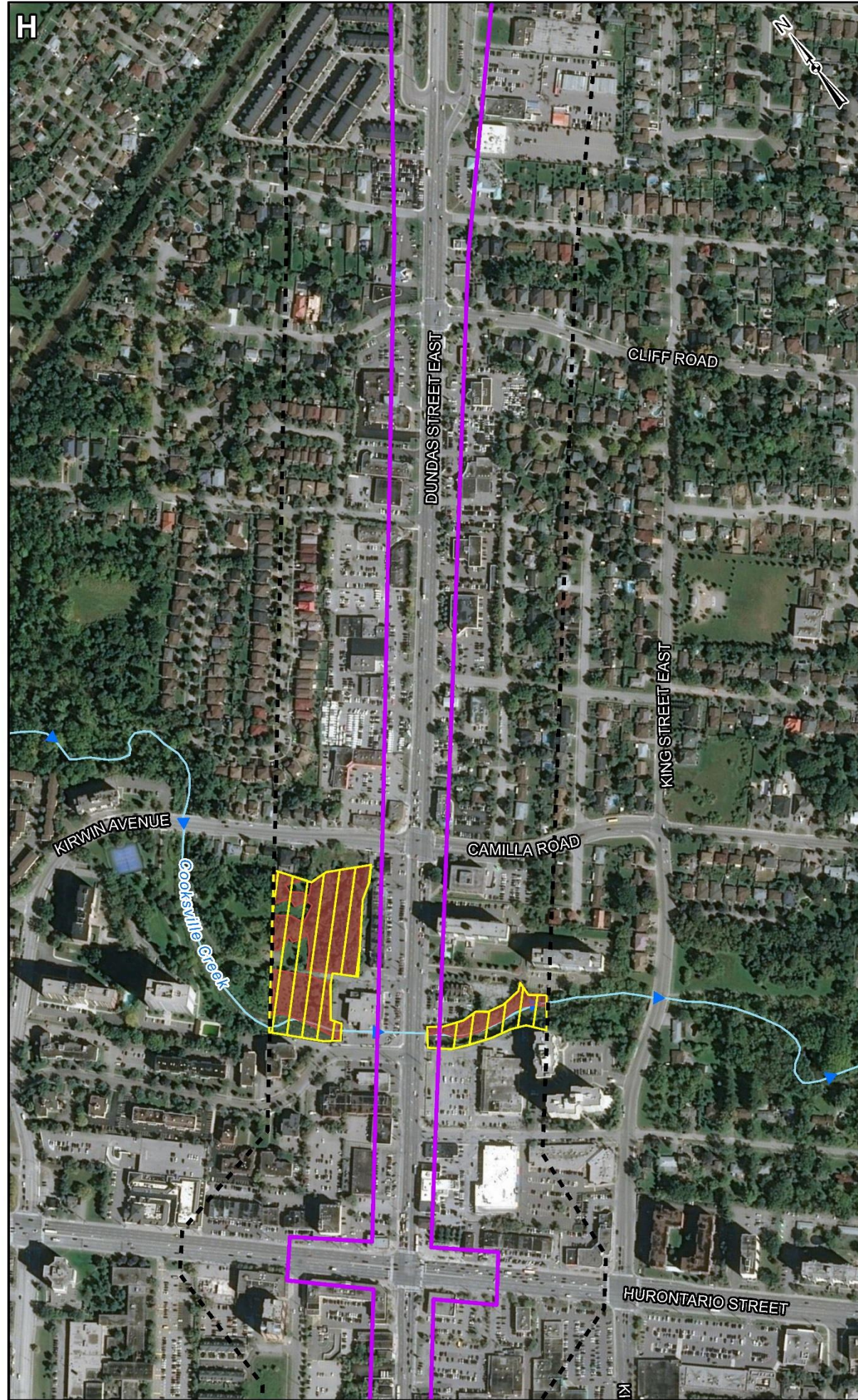
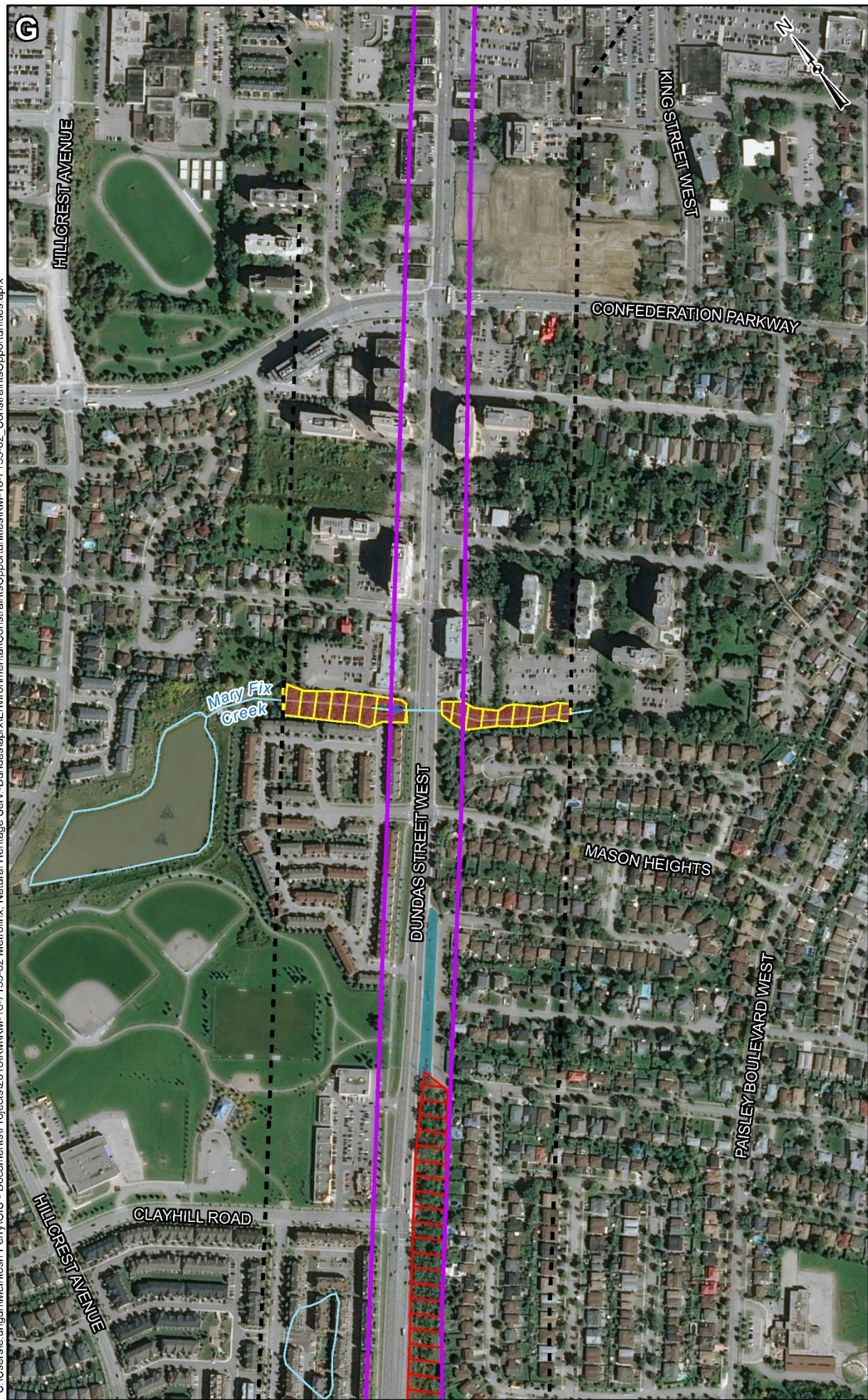
- Vegetation and tree removals within the Deciduous Woodland and the Dry – Fresh Oak Deciduous Woodland Ecosite must occur outside of the Species at Risk bat active window, as outlined under the Endangered Species Act.

4.4.2 Ecological Compensation

If compensation is required in association with approvals from the Toronto Region Conservation Authority (TRCA) as a result of construction activities, the TRCA's Guideline for Determining Ecosystem Compensation (2018) should be applied with respect to ecological compensation.

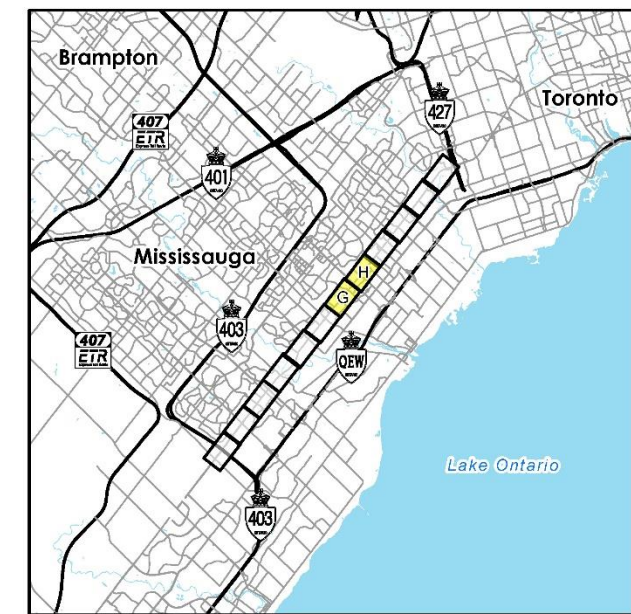
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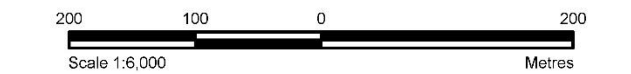


LEGEND

- Study Area
- 120m Buffer
- Watercourse
- Waterbody
- Wildlife Corridor**
 - Local Wildlife Travel Corridor
 - Local Wildlife Travel Corridor (Bats)
- ELC Communities**
 - Deciduous Woodland (WOD)
 - Dry - Fresh Oak Deciduous Woodland Ecosite
 - Mixed Meadow (MEM)
 - Thicket (TH)

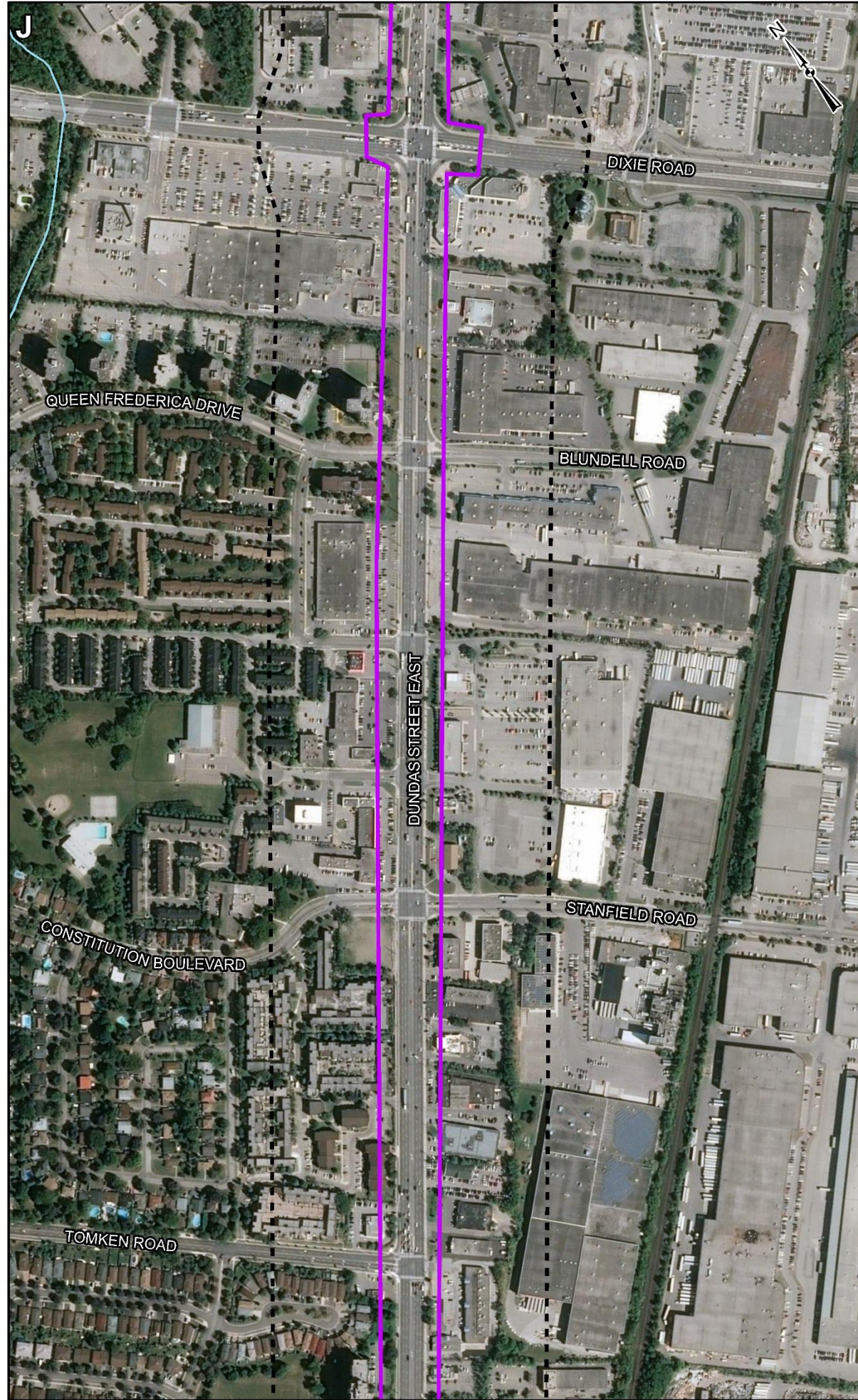
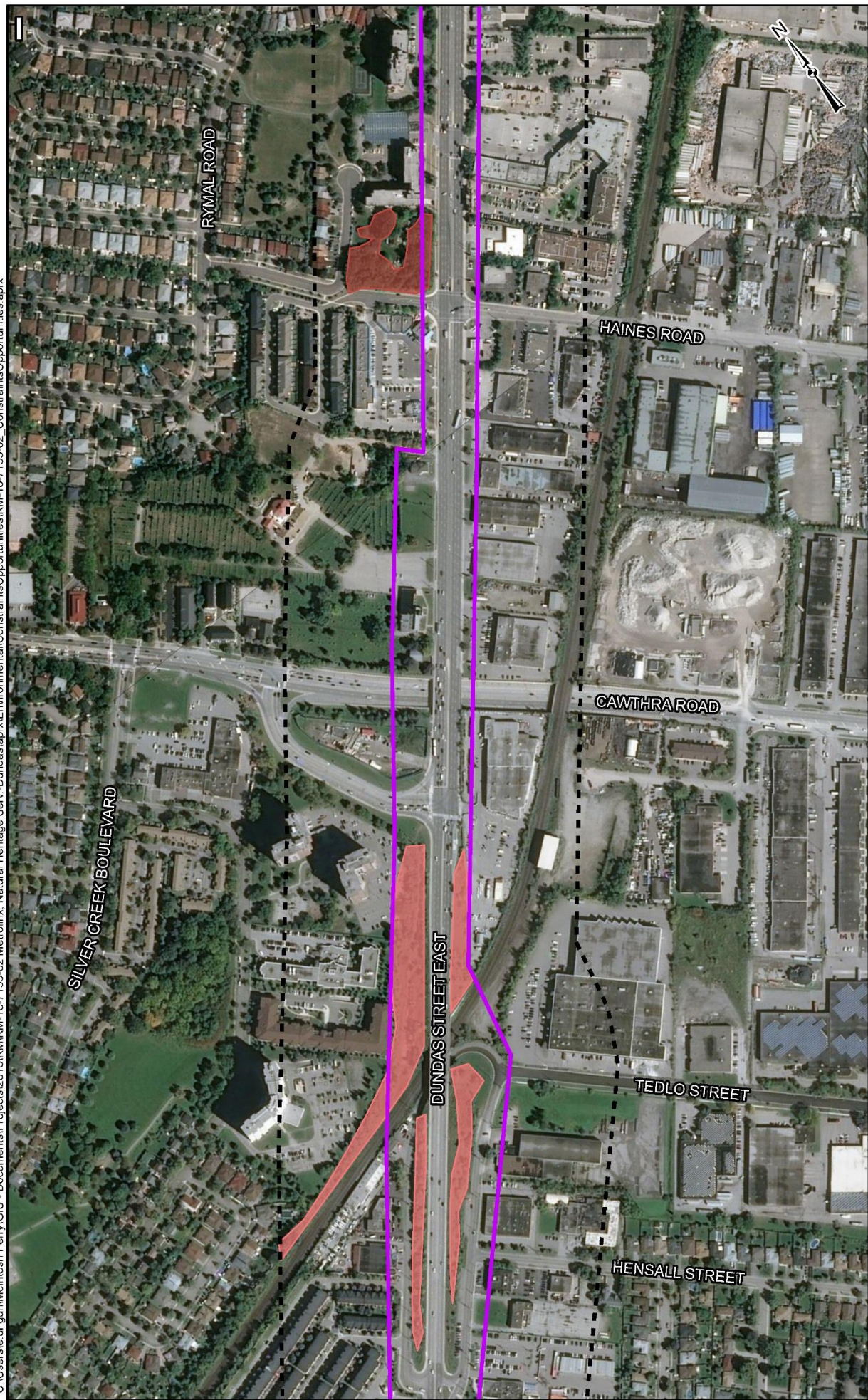


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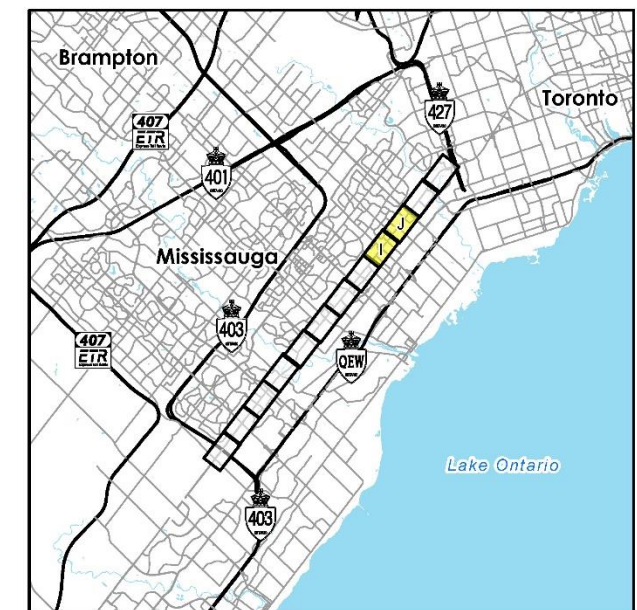
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PROJECT:	METROLINX DUNDAS BTR	
TITLE:	CONSTRAINTS OPPORTUNITIES	
McINTOSH PERRY 115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com	PROJECT NO: KM-18-7155-02	FIGURE:
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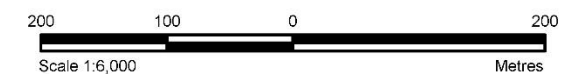
LEGEND

- Study Area
- 120m Buffer
- Watercourse
- ELC Communities**
- Deciduous Woodland (WOD)
- Thicket (TH)

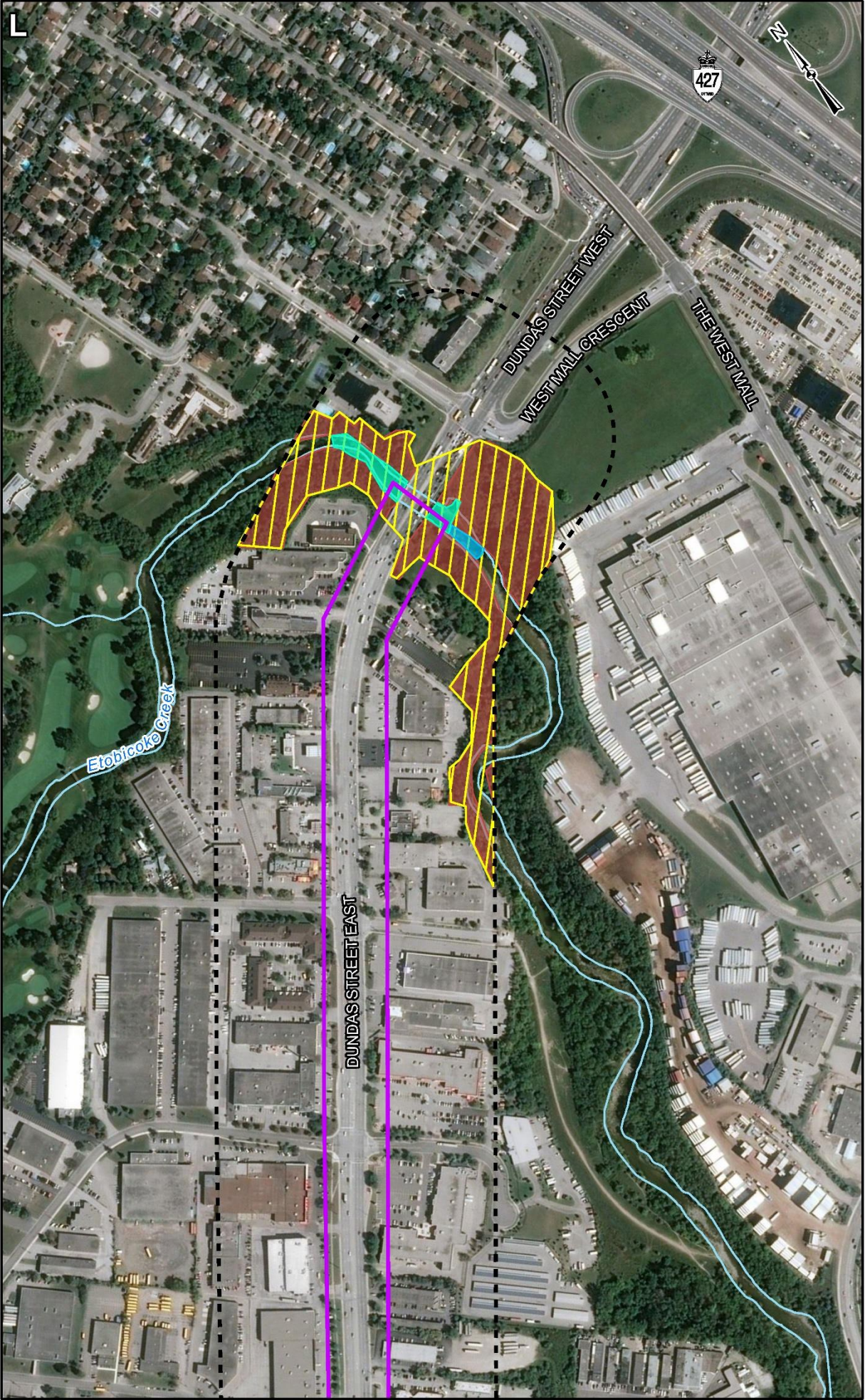
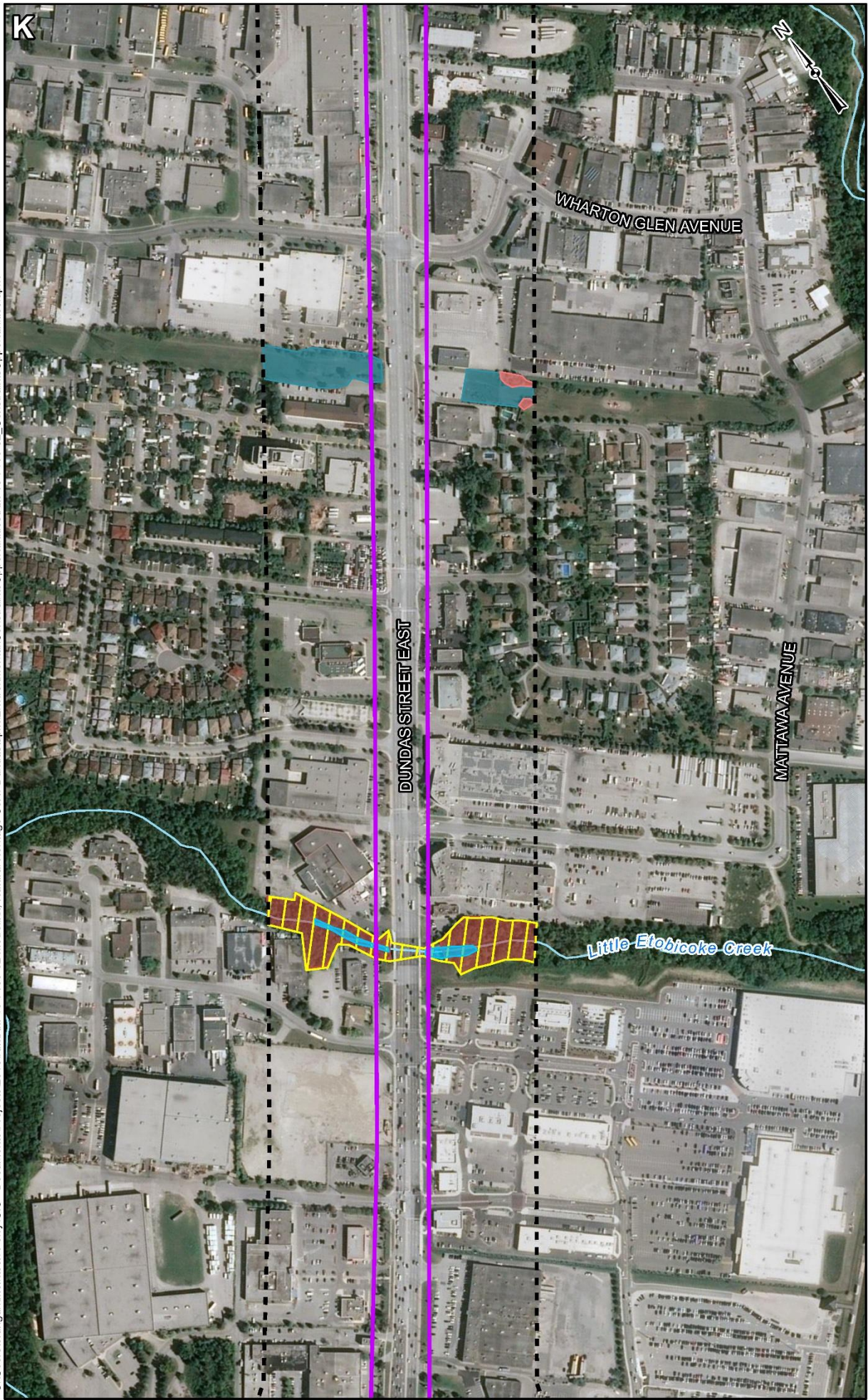


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GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2021.



CLIENT:	METROLINX		
PROJECT:	METROLINX DUNDAS BTR		
TITLE:	CONSTRAINTS OPPORTUNITIES		
McINTOSH PERRY 115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com	PROJECT NO: KM-18-7155-02	FIGURE:	11/J
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LEGEND

- Study Area
- 120m Buffer
- Watercourse
- Waterbody
- Riffle
- Run

Wildlife Corridor

- Local Wildlife Travel Corridor

ELC Communities

- Deciduous Woodland (WOD)
- Mixed Meadow (MEM)
- Thicket (TH)

REFERENCE

GIS data provided by the Ontario Ministry of Natural Resources and Forestry, 2021.

Scale 1:6,000

CLIENT:	METROLINX	
PROJECT:	METROLINX DUNDAS BTR	
TITLE:	CONSTRAINTS OPPORTUNITIES	
McINTOSH PERRY 115 Walgreen Road, RR3, Carp, ON K0A1L0 Tel: 613-836-2184 Fax: 613-836-3742 www.mcintoshperry.com	PROJECT NO: KM-18-7155-02	FIGURE:
	Date	Jun., 21, 2021
	GIS	EU
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Appendix 1

Significant Wildlife Habitat Assessment

Significant Wildlife habitat Assessment Tables

Table A1: Characteristics of Seasonal Concentration Areas for Ecoregion 7E

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Waterfowl Stopover and Staging Areas (Terrestrial)	Habitat important to migrating waterfowl	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. - Fields with seasonal flooding and waste grain in the Long Point, Rondeau, Lake. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	Fields with sheet water during Spring (mid March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available ^{cxlviii} <u>Information Sources</u> • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • Any mixed species aggregations of 100 ⁱ or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependant on local site conditions and adjacent land use is the significant wildlife habitat ^{cxlviii} . • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMIST ^{cxlix} Index #7 provides development effects and mitigation measures.	Suitable habitat of sufficient size is not present. Not SWH.
Waterfowl Stopover and Staging Areas (Aquatic)	Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district	Canada Goose Cackling Goose Snow Goose Green-winged Teal American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Blue-winged Teal Hooded Merganser Common Merganser Red-breasted Merganser Lesser Scaup Greater Scaup Common Goldeneye Bufflehead Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). <u>Information Sources</u> • Environment Canada • Naturalist clubs often are aware of staging/stopover areas • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature	Studies carried out and verified presence of: • Aggregations of 100 ⁱ or more of listed species for 7 days ⁱ , results in >700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH ^{cxlix} • The combined area of the ELC ecosites and a 100m radius area is the SWH ^{cxlviii} • Wetland area and shorelines associated with sites identified within the SWHTG ^{cxlviii} Appendix K ^{cxlix} are significant wildlife habitat. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys	

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
		Canvasback Redhead Ruddy Duck Brant White-winged Scoter Black Scoter		Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	with species numbers and dates recorded). • SWHMIST ^{cxlix} Index #7 provides development effects and mitigation measures.	
Shorebird Migratory Stopover Area	High quality shorebird stopover habitat is extremely rare and typically has a long history of use	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird’s Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. <u>Information Sources</u> • Western hemisphere shorebird reserve network • Canadian Wildlife Service (CWS) Ontario Shorebird Survey • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 ⁱ shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 ⁱ Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area ^{cxlviii} • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • SWHMIST ^{cxlix} Index #8 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.
Raptor Wintering Area	Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl <u>Special Concern:</u> Short-eared Owl Bald Eagle	<u>Hawks/Owls:</u> Combination of ELC Community Series; need to have present one Community Series from each land class. Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW <u>Bald Eagle:</u> Forest Community Series: FOD, FOM, FOC, SWD, SWM, or SWC, on shoreline areas adjacent to	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering (hawk/owl) sites need to be > 20ha ^{cxlviii, cxlix} with a combination of forest and upland ^{cxvi, xvii, xviii, xix, xx, xxi} . Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands ^{cxlix} Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water and large trees and snags aviable for roosting ^{cxlix}	Studies confirm the use of these habitats by: • One or more Short-eared Owls, or, One of more Bald Eagles or; at least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years) ^{cxlix} for a minimum of 20 days by the above number of birds ⁱ . • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • SWHMIST ^{cxlix} Index #10 and #11 provides development effects and mitigation measures.	Study area highly urbanized; criterion species are not tolerant to urban environment. Not SWH.

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
			large rivers or adjacent to lakes with open water (hunting area).	<u>Information Sources</u> <ul style="list-style-type: none">• OMNRF Districts• Natural clubs• Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area• Data from Bird Studies Canada• Reports and other information available from CAs• Results of Christmas Bird Counts		
Bat Hibernacula	Bat hibernacula, are rare habitats in all Ontario landscapes.	Big Brown Bat Eastern Pipistrelle/Tri-colored Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered The locations of bat hibernacula are relatively poorly known. <u>Information Sources</u> <ul style="list-style-type: none">• OMNRF for possible locations and contact for local experts• Natural Heritage Information Centre (NHIC) Bat Hibernaculum• Ministry of Northern Development and Mines for location of mine shafts• Clubs that explore caves (eg. Sierra Club)• University Biology Departments with bat experts	<ul style="list-style-type: none">• All sites with confirmed hibernating bats are SWH^í.• The area includes 200m radius around the entrance of the hibernaculum^{cxlviii, ccvii, í} for the development types and 1000m for wind farms^{ccv}.• Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the^{ccv} "Bats and Bat Habitats: Guidelines for Wind Power Projects"^{ccv}• SWHMIST^{cxlix} Index #1 provides development effects and mitigation measures.	Criteria unknoww. Not SWH.
Bat Maternity Colonies	Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in building ^{sxxii, xxv, xxvi, xxvii, xxxi} (buildings are not considered to be SWH). <ul style="list-style-type: none">• Maternity roosts are not found in caves and mines in Ontario^{xxii}.• Maternity colonies located in Mature deciduous or mixed forest stands^{ccix, ccx} with >10/ha large diameter (>25cm dbh) wildlife trees^{ccvii}.• Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3^{ccxiv} or class 1 or 2^{ccxii}.• Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred^{ccx}. <u>Information Sources</u>	Maternity Colonies with confirmed use by: <ul style="list-style-type: none">• >10 Big Brown Bats^í• >5 Adult Female Silver-haired Bats^í• The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies^í.• Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"^{ccv}.• SWHMIST^{cxlix} Index #12 provides development effects and mitigation measures.	

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
				<ul style="list-style-type: none">• OMNRF for possible locations and contact for local experts• University Biology Departments with bat experts		
Turtle Wintering Area	Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle <u>Special Concern:</u> Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles: ELC Community Classes: SW, MA, OA and SA ELC Community Series: FEO and BOO Northern Map Turtle: Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	<ul style="list-style-type: none">• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates.• Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen^{cix, cx, cxi, cxviii}.• Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH <u>Information Sources</u> <ul style="list-style-type: none">• EIS studies carried out by Conservation Authorities• Field naturalists clubs• OMNRF Ecologist or Biologist• Natural Heritage Information Centre (NHIC)	<ul style="list-style-type: none">• Presence of 5 over-wintering Midland Painted Turtles is significant^l.• One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant^l.• The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH.• Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – Apr)^{cvii}. Congregation of turtles is more common where wintering areas are limited and therefore significant^{+cix, cx, cxi, cxii}.• SWHMIST^{cxlix} Index #28 provides development effects and mitigation measures for turtle wintering habitat.	
Reptile Hibernaculum	Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	<u>Snakes:</u> Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake <u>Special Concern:</u> Milksnake Eastern Ribbonsnake	For all snakes, habitat may be found in any ecosite in southern Ontario other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. The existence of rock piles or slopes, stone fences, and crumbling foundations assist in identifying candidate SWH.	For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line ^{xliv, l, li, lii, cxii} . Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. <u>Information Sources</u> <ul style="list-style-type: none">• In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells).• Reports and other information available from CAs• Local naturalists and experts, as well as university herpetologists may also know	Studies confirming: <ul style="list-style-type: none">• Presence of snake hibernacula used by a minimum of five individuals of a snake sp., or, individuals of two or more snake spp.• Congregations of a minimum of five individuals of a snake sp., or, individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)^l.• Note: If there are Special Concern Species present, then site is SWH• Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in	Suitable habitat is not present within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
				where to find some of these sites. • Natural Heritage Information Centre (NHIC)	which the hibernacula is located plus a 30m buffer is the SWH ^l . • SWHMIST ^{cxlix} Index #13 provides development effects and mitigation measures for snake hibernacula.	
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. <u>Information Sources</u> • Reports and other information available from CAs • Ontario Breeding Bird Atlas ^{ccv} . • Bird Studies Canada: Nature Counts http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8 ^{cxlvix} or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests ^{ccvii} . • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} . • SWHMIST ^{cxlix} Index #4 provides development effects and mitigation measures.	Field studies documented the presence of 8 active Cliff Swallow nests under the Etobicoke Creek bridge. Not SWH.
Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)	Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. <u>Information Sources</u> • Ontario Breeding Bird Atlas ^{ccv} , colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from CAs • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of 2 or more active nests of Great Blue Heron or other list species. • The habitat extends from the the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH ^{cc, ccvii} . • Confirmation of active colonies must be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMIST ^{cxlix} Index #5 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.
Colonially - Nesting Bird Breeding Habitat (Ground)	Colonies are important to local bird population, typically sites are only known colony in	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map).	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close	Studies confirming: • Presence of >25 active nests for Herring Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern ^l . • Any active nesting colony of one or	Suitable habitat is not present within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
	area and are used annually.	Caspian Tern Brewer's Blackbird	<p>Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird)</p> <p>MAM1 – 6 MAS1 – 3 CUM CUT CUS</p>	<p>proximity to streams and irrigation ditches within farmlands.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none">• Ontario Breeding Bird Atlas^{ccv}, rare/colonial species records.• Canadian Wildlife Service• Reports and other information available from CAs• Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area• MNRF District Offices• Field naturalist clubs	<p>more Little Gull, and Great Black-backed Gull is significant^l.</p> <ul style="list-style-type: none">• Presence of 5 or more pairs for Brewer's Blackbird^l.• The edge of the colony and a minimum 150m radius area of the habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH^{cc, ccvii}.• Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"^{ccxi}.• SWHMIST^{cxlix} Index #6 provides development effects and mitigation measures.	
Migratory Butterfly Stopover Areas	Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter	<p>Painted Lady Red Admiral</p> <p><u>Special Concern:</u> Monarch</p>	<p>Combination of ELC Community Series; need to have present one Community Series from each landclass:</p> <p>Field: CUM CUT CUS</p> <p>Forest: FOC FOD FOM CUP</p> <p>Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.</p>	<p>A butterfly stopover area will be a minimum of 10ha in size with a combination of field and forest habitat present, and will be located within 5km of Lake Ontario and Erie^{cxlix}.</p> <ul style="list-style-type: none">• The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south^{xxxii, xxxiii, xxxiv, xxxv, xxxvi}.• The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat^{cxlviii, cxlix}.• Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes^{xxxvii, xxxviii, xxxix, xl, xli}. <p><u>Information Sources</u></p> <ul style="list-style-type: none">• MNRF District Offices• Natural Heritage Information Centre (NHIC)• Agriculture Canada in Ottawa may have list of butterfly experts.• Field Naturalist Clubs• Toronto Entomologists Association• Conservation Authorities	<p>Studies confirm:</p> <ul style="list-style-type: none">• The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)^{xliii}. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day^{xxxvii}, significant variation can occur between years and multiple years of sampling should occur^{xl, xlii}.• Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD• MUD of >5000 or >3000 with the presence of Painted Ladies or White Admiral's is to be considered significant^l.• SWHMIST^{cxlix} Index #16 provides development effects and mitigation measures.	Field studies did not document criterion species. Not SWH.

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Landbird Migratory Stopover Areas	Sites with a high diversity of species as well as high numbers are most significant	All migratory songbirds Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >5 ha ¹ in size and within 5km ^{iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv} of Lake Ontario and Erie. If woodlands are rare in an area of shoreline, woodland fragments 2-5ha can be considered for this habitat • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Erie or Ontario are more significant ^{cxlix} . • Sites have a variety of habitats: forest, grassland and wetland complexes ^{cxlix} . • The largest sites are more significant ^{cxlix} • Woodlots and forest fragments are important habitats to migrating birds ^{ccxviii} , these features located along the shore and located within 5km of Lake Ontario and Lake Erie are Candidate SWH ^{cxlviii} . <u>Information Sources</u> • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the habitat by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates ¹ . This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (March/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} . • SWHMIST ^{cxlix} Index #9 provides development effects and mitigation measures.	Study area is >2km from the Lake Ontario shoreline. Not SWH.
Deer Winter Congregation Areas	Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions ^{cxlviii}	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations (CUP) smaller than 50 ha may also be used.	• Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots>50ha ¹ . • Deer movement during winter in Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands ^{cxlviii} . • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha ^{ccxxiv} . • Woodlots with high densities of deer due to artificial feeding are not significant ¹ . <u>Information Sources</u> • MNRF District Offices • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF ^{cxlviii} . • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF ¹ . • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques ^{ccxxiv} , ground or road surveys, or a pellet count deer density survey ^{ccxxv} . • SWHMIST ^{cxlix} Index #2 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Table A2: Characteristics of Rare Vegetation Communities for Ecoregion 7E

Rare Vegetation Community ¹	Rationale	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Description ¹	Candidate SWH Detailed Information and Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Cliff and Talus Slopes	Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. <u>Information Sources</u> • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes ^{lxxviii} • SWHMIST ^{cxlix} Index #21 provides development effects and mitigation measures.	Field studies did not document this vegetation community within the study area. Not SWH.
Sand Barrens	Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	A sand barren area >0.5ha in size <u>Information Sources</u> • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens ^{lxxviii} • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp) ⁱ . • SWHMIST ^{cxlix} Index #20 provides development effects and mitigation measures.	Field studies did not document this vegetation community within the study area. Not SWH.
Alvar	Alvars are extremely rare habitats in Ecoregion 7E	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 7E ^{cxlix}	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover ^{lxxviii} .	An Alvar site > 0.5ha in size ^{lxxv} . Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie ^{cxix} . <u>Information Sources</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists ^{lxxvi} . • Ontario Nature – Conserving Great Lakes Alvars ^{ccviii} . • Natural Heritage Information Centre (NHIC) has location information available on their website • OMNRF Staff • Field Naturalist clubs • Conservation Authorities	Field studies identify four of the five Alvar indicator species ^{lxxv} at a candidate Alvar site is Significant • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses ^{lxxv} . • SWHMIST ^{cxlix} Index #17 provides development effects and mitigation measures.	Field studies did not document this vegetation community within the study area. Not SWH.
Old Growth Forest	Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old growth forests are characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland area is >0.5ha <u>Information Sources</u> • OMNRF Forest Resource Inventory mapping • OMNRF Districts • Field naturalist clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat ^{cxlviii} . • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities ^{cxlviii} (cut stumps will not be present) • Determine ELC Vegetation Type for forest area containing the old growth characteristics ^{lxxviii} . • SWHMIST ^{cxlix} Index #23 provides development effects and mitigation measures.	Field studies did not document this vegetation community within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Rare Vegetation Community ¹	Rationale	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Description ¹	Candidate SWH Detailed Information and Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Savannah	Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	<p>A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.</p> <p>In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)^{cc}.</p>	<p>No minimum size to site^l Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none">• OMNRF Districts• Natural Heritage Information Centre (NHIC) has location data available on their website• Field naturalists clubs• Conservation Authorities	<p>Field studies confirm one or more of the Savannah indicator species listed in^{lxxv} Appendix N should be present^l. Note: Savannah plant spp. list from Ecoregion 7E should be used.</p> <ul style="list-style-type: none">• Area of the ELC Vegetation type is the SWH^{lxxviii}.• Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).• SWHMIST^{cxlix} Index #18 provides development effects and mitigation measures.	Field studies did not document this vegetation community within the study area. Not SWH.
Tallgrass Prairie	Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	<p>A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover.</p> <p>In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)^{cc}.</p>	<p>No minimum size to site^l. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none">• Natural Heritage Information Centre (NHIC has location information available on their website• OMNRF Districts• Field naturalists clubs• Conservation Authorities	<p>Field studies confirm one or more of the Prairie indicator species listed in^{lxxv} Appendix N should be present^l. Note: Prairie plant spp. list from Ecoregion 7E should be used.</p> <ul style="list-style-type: none">• Area of the ELC Vegetation Type is the SWH^{lxxviii}.• Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics).• SWHMIST^{cxlix} Index #19 provides development effects and mitigation measures.	Field studies did not document this vegetation community within the study area. Not SWH.
Other Rare Vegetation Communities	Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG ^{cxlviii} . Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	<p>ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M^{cxlviii}.</p> <p>The OMNRF/NHIC will have up to date listing for rare vegetation communities.</p> <p><u>Information Sources</u></p> <ul style="list-style-type: none">• Natural Heritage Information Centre (NHIC) has location information available on their website• OMNRF Districts• Field naturalists clubs• Conservation Authorities	<p>Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG^{cxlviii}.</p> <ul style="list-style-type: none">• Area of the ELC Vegetation Type polygon is the SWH.• SWHMIST^{cxlix} Index #37 provides development effects and mitigation measures.	Field studies did not document other rare vegetation communities within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Table A3: Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Waterfowl Nesting Area	Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends: 120m ^{cxlix} from a wetland (>0.5ha) or a wetland (>0.5ha) with small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120m of each individual wetland where waterfowl nesting is known to occur ^{cxlix} . • Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. <u>Information Sources</u> • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards ⁱ , or, • Presence of 10 or more nesting pairs for listed species including Mallards ⁱ . • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m ^{cxlviii} from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMIST ^{cxlix} Index #25 provides development effects and mitigation measures.	Field studies documented Mallard, however, nesting was not suspected. Not SWH.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey <u>Special Concern:</u> Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree’s canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). <u>Information Sources</u> • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario • MNRF values information (LIO/NRVIS) will list known nesting locations, Note: data from NRVIS is provided as a point format and does not include all the habitat. • Nature Counts, Ontario Nest Records Scheme data • OMNRF Districts • Check the Ontario Breeding Bird Atlas ^{ccv} or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area ^{cxlviii} . • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWH ^{ccvii} , maintaining undisturbed shorelines with large trees within this area is important ^{cxlviii} . • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH ^{cvi} , ^{ccvii} . Area of the habitat from 400-800m is dependant on site lines from the nest to the development and inclusion of perching and foraging habitat ^{cvi} . • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥3 years or suspected of not being used for >5 years before being considered not significant ^{ccvii} . • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects” ^{ccxi} • SWHMIST ^{cxlix} Index #26 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Woodland Raptor Nesting Habitat	Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands combined >30ha or with >4ha of interior habitat ^{bxxxviii, bxxxix, xc, xci, xciii, xciv, xcv,xcvi, cxxxiii} . Interior habitat determined with a 200m buffer ^{cxlviii} . • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. <u>Information Sources</u> • OMNRF Districts • Check the Ontario Breeding Bird Atlas ^{ccv} or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • Presence of 1 or more active nests from species list is considered significant ^{cxlviii} . • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha of habitat is the SWH ^{ccvii} .(the 28ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH ^{ccvii} . • Broad-winged Hawk and Coopers Hawk – A 100m radius around the nest is the SWH ^{ccvii} . • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH ^{ccvii} . • Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMIST ^{cxlix} Index #27 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.
Turtle Nesting Area	These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle <u>Special Concern:</u> Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) ^{cxlviii} or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. <u>Information Sources</u> • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) Field naturalist clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles ⁱ • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH ⁱ • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH ^{cxlviii} . • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat ^{cxlix} . • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observation studies observing the turtles nesting is a recommended method. • SWHMIST ^{cxlix} Index #28 provides development effects and mitigation measures for turtle nesting habitat.	Field studies did not document criterion species. Suitable habitat is not present within the study area. Not SWH.
Seeps and Springs	Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system ^{cxvii, cxlix} . • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species ^{cxix, cxx, cxxi, cxxii, cxiii, cxiv} . <u>Information Sources</u> • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped	Field Studies confirm: • Presence of a site with 2 or more ⁱ seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation of the habitat ^{cxlviii} . • SWHMIST ^{cxlix} Index #30 provides development effects and mitigation measures.	Field studies did not document criterion species or suitable habitat within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Amphibian Breeding Habitat (Woodland)	These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	<ul style="list-style-type: none">• Presence of a wetland, pond or woodland pool (including vernal pools) >500m² (about 25m diameter)^{ccvii} within or adjacent (within 120m) to a woodland (no minimum size)^{clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx}. Some small wetlands may not be mapped and may be important breeding pools for amphibians.• Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat^{cxlviii}. <u>Information Sources</u> <ul style="list-style-type: none">• Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records• Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property.• OMNRF Districts and wetland evaluations• Field naturalist clubs• Canadian Wildlife Service Amphibian Road Call Survey• Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: <ul style="list-style-type: none">• Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3.• A combination of observational study and call count surveys^{cviii} will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands.• The habitat is the wetland area plus a 230m radius of woodland area^{lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi}. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.• SWHMIST^{cxlix} Index #14 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.
Amphibian Breeding Habitat (Wetland)	Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario Landscapes	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	<ul style="list-style-type: none">• Wetlands >500m² (about 25m diameter)^{ccvii} supporting high species diversity are significant: some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats^{clxxxiv}.• Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators.• Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> <ul style="list-style-type: none">• Ontario Herpetofaunal Summary Atlas (or other similar atlases)• Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count.• OMNRF Districts and wetland evaluations• Reports and other information available from CAs	Studies confirm: <ul style="list-style-type: none">• Presence of breeding population of 1or more of the listed newt/salamander species or 2 or more of the listed frog or toad species and with at least 20 breeding individuals (adults and eggs masses)^{lxxi, lxxiii} or 2 or more of the listed frog/toad species with Call Level of 3. or; Wetland with confirmed breeding Bullfrogs are significant^l.• The ELC ecosite wetland area and the shoreline are the SWH.• A combination of observational study and call count surveys^{cviii} to determine breeding/larval stages will be required during the spring (May March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands.• If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.• SWHMIST^{cxlix} Index #15 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.
Woodland Area-Sensitive Bird Breeding Habitat	Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker <u>Special Concern:</u> Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	<ul style="list-style-type: none">• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30ha^{cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxxv, cxxxvi, cxxxvii, cxxxviii, cxxxix, cxi, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix}.• Interior forest habitat is at least 200m from forest edge habitat^{clxiv}. <u>Information Sources</u> <ul style="list-style-type: none">• Local birder clubs• Canadian Wildlife Service (CWS) for the location of forest bird monitoring• Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species.• Reports and other information available from CAs	Studies confirm: <ul style="list-style-type: none">• Presence of nesting or breeding pairs of 3 or more of the listed wildlife species^l.• Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH^l.• Conduct field investigations in early summer when birds are singing and defending their territories.• Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi}• SWHMIST^{cxlix} Index #34 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Table A4: Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Marsh Bird Breeding Habitat	Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan <u>Special Concern:</u> Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites	<ul style="list-style-type: none">Nesting occurs in wetlandsAll wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present^{cxiv}.For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources</u> <ul style="list-style-type: none">OMNRF Districts and wetland evaluationsField naturalist clubsNatural Heritage Information Centre (NHIC)Reports and other information available from CAsOntario Breeding Bird Atlas^{ccv}	Studies confirm: <ul style="list-style-type: none">Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species^l.Note: any wetland with breeding of 1 or more Trumpeter Swans, Black Terns, Green Heron or Yellow Rail is SWH^l.Area of the ELC ecosite is the SWHBreeding surveys should be done in May/June when these species are actively nesting in wetland habitats.Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi}SWHMIST^{cxlix} Index #35 provides development effects and mitigation measures	Suitable habitat is not present within the study area. Not SWH.
Open Country Bird Breeding Habitat	This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow <u>Special Concern:</u> Short-eared Owl	CUM1 CUM2	<p>Large grassland areas (includes natural and cultural fields and meadows) >30ha^{clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix}. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years)^l.</p> <p>Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older.</p> <p>The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.</p> <u>Information Sources</u> <ul style="list-style-type: none">Agricultural land classification maps Ministry of AgricultureLocal birder clubsOntario Breeding Bird Atlas^{ccv}EIS Reports and other information available from CAs	Field Studies confirm: <ul style="list-style-type: none">Presence of nesting or breeding of 2 or more of the listed species^l.A field with 1 or more breeding Short-eared Owls is to be considered SWH.The area of SWH is the contiguous ELC ecosite field areas.Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories.Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi}SWHMIST^{cxlix} Index #32 provides development effects and mitigation measures	Field studies documented the presence of Savannah Sparrow, however, no other criterion species were documented. Not SWH.
Shrub/Early Successional Bird Breeding Habitat	This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher <u>Special Concern:</u> Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat such as woodland area for some bird species.	<p>Large natural field areas succeeding to shrub and thicket habitats >10ha^{clxiv} in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years)^l.</p> <p>Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species^{clxxiii}.</p> <p>Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.</p> <u>Information Sources</u> <ul style="list-style-type: none">Agricultural land classification maps, Ministry of Agriculture.Local bird clubsOntario Breeding Bird Atlas^{ccv}Reports and other information available from CAs	Field Studies confirm: <ul style="list-style-type: none">Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species^l.A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat^l.The area of the SWH is the contiguous ELC ecosite field/thicket area.Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territoriesEvaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”^{ccxi}SWHMIST^{cxlix} Index #33 provides development effects and mitigation measures.	Field studies did not document criterion species within the study area. Not SWH.

Significant Wildlife habitat Assessment Tables

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Terrestrial Crayfish	Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. ^{Ccii}	Chimney or Digger Crayfish (<i>Fallicambarus fodiens</i>) Devil Crawfish or Meadow Crayfish (<i>Cambarus Diogenes</i>)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. <u>Information Sources</u> • Information sources from “Conservation Status of Freshwater Crayfishes” by Dr. Premek Hamr for the WWF and CNF March 1998.	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites ^{cci} . • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the large ecosite area is the SWH • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult ^{cci} • SWHMIST ^{cxlix} Index #36 provides development effects and mitigation measures.	Field studies did not document crayfish chimneys. Suitable habitat is not present within the study area. Not SWH.
Special Concern and Rare Wildlife Species	These species are quite rare or have experienced significant population declines in Ontario	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites ^{lxxviii} . <u>Information Sources</u> • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists and element occurrences for these species. • NHIC Website: "Get Information" http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas ^{ccv} • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat for foraging habitat. • SWHMIST ^{cxlix} Index #37 provides development effects and mitigation measures.	Field studies did not document special concern or rare wildlife species. Not SWH.

Significant Wildlife habitat Assessment Tables

Table A5: Characteristics of Animal Movement Corridors for Ecoregion 7E

Wildlife Habitat	Rationale	Wildlife Species ¹	Candidate SWH ELC Ecosite Codes ¹	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
Amphibian Movement Corridors	Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Blue-spotted Salamander Spotted Salamander Four-toed Salamander Gray Treefrog Northern Leopard Frog Pickerel Frog Western Chorus Frog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	Movement corridors between breeding habitat and summer habitat ^{clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi} Movement corridors must be considered when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule ⁱ . <u>Information Sources</u> • MNR District Office • Natural Heritage Information Centre NHIC • Reports and other information available from CAs • Field naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant ^{cxlix} . • Corridors should have at least 15m of vegetation on both sides of waterway ^{cxlix} or be up to 200m wide ^{cxlix} of woodland habitat and with gaps <20m ^{cxlix} • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat ^{cxlix} . • SWHMIST ^{cxlix} Index #40 provides development effects and mitigation measures.	Suitable habitat is not present within the study area. Not SWH.

Table A6: Exceptions for Ecodistricts within Ecoregion 7E

EcoDistrict	Wildlife Habitat and Species	Candidate SWH Ecosites	Candidate SWH Habitat Description	Candidate SWH Habitat Criteria and Information Sources ¹	Confirmed SWH Defining Criteria ¹	Study Area Assessment Details
7E-2	Bat Migratory Stopover Area Rationale: Stopover areas for long distance migrant bats are important during fall migration. Hoary Bat Eastern Red Bat Silver-haired Bat	No specific ELC types		• Long distance migratory bats typically migrate during late summer and early fall migrating summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migration may concentrate these species of bats at stopover areas. • This is the only known bat migratory stopover habitats based on current information. <u>Information Sources</u> • OMNRF for possible locations and contact for local experts • University of Waterloo, Biology Department	• Long Point (42°35'N, 80°30'E, to 42°33'N, 80°03'E) has been identified as a significant stop-over habitat for fall migrating Silver-haired bats, due to significant increases in abundance, activity and feeding that was documented during fall migration ^{ccxv} . • The confirmation criteria and habitat areas for this SWH are still being determined. • SWHMIST ^{cxlix} Index #38 provides development effects and mitigation measures	

Appendix 2

Species at Risk Screening Assessment

Species at Risk Screening Assessment Table

Scientific Name Birds	Common Name	S-RANK ¹	SARO ²	SARA	Background Source	Habitat Preference ^{4,5}	Suitable Habitats within the Study Area?	Rationale
<i>Cardellina canadensis</i>	Canada Warbler	S4B	SC	Schedule 1	SAR Ontario	Interior forest habitats with a dense, well-developed shrub and vegetation understory; along riparian zones or wet bottomland habitat. Require tracts of land which are >30ha.	No	Suitable habitat is not present within the study area.
<i>Chaetura pelagica</i>	Chimney Swift	S4B, S4N	THR	Schedule 1	BSC et al. 2006	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	Yes	Suitable habitat is present within the study area. Field surveys documented several foraging individuals within the study area.
<i>Chordeiles minor</i>	Common Nighthawk	S4B	SC	Schedule 1	BSC et al. 2006	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	No	Suitable habitat is not present within the study area.
<i>Contopus cooperi</i>	Olive-sided Flycatcher	S4B	SC	Schedule 1	SAR Ontario	Semi-open, conifer forest, prefers spruce; near pond, lake or river; treed wetlands for nesting; burns with dead trees for perching.	No	Suitable habitat is not present within the study area.
<i>Contopus virens</i>	Eastern Wood-Pewee	S5	SC	Schedule 1	BSC et al. 2006	Found in deciduous and mixed forests; most abundant in intermediate-age mature forest stands with little understory vegetation.	No	Suitable habitat is not present within the study area.
<i>Ixobrychus exilis</i>	Least Bittern	S4B	THR	Schedule 1	SAR Ontario	Deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; intolerant of loss of habitat and human disturbance.	No	Suitable habitat is not present within the study area.
<i>Riparia riparia</i>	Bank Swallow	S4B	THR		SAR Ontario	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence.	No	Suitable habitat is not present within the study area.
<i>Hirundo rustica</i>	Barn Swallow	S4B	THR		BSC et al. 2006	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	Yes	Suitable habitat is present within the study area; field surveys documented 8 nests associated with the Little Etobicoke Creek bridge.
<i>Hylocichla mustelina</i>	Wood Thrush	S4B	SC		SAR Ontario	Carolinian and Great Lakes-St. Lawrence forest zones; undisturbed moist mature deciduous or mixed forest with deciduous sapling growth; near pond or swamp; hardwood forest edges; must have some trees higher than 12 m.	No	Suitable habitat is not present within the study area.
<i>Ammodramus henslowii</i>	Henslow's Sparrow	SHB	END	Schedule 1	NHIC 2020	Large, fallow, grassy area with ground mat of dead vegetation, dense herbaceous vegetation, ground litter and some song perches; neglected weedy fields; wet meadows; cultivated uplands; a moderate amount of moisture needed; requires a minimum tract of grassland of 40 ha, but usually in areas >100 ha.	No	Suitable habitat is not present within the study area.
<i>Dolichonyx oryzivorus</i>	Bobolink	S4B	THR	No Schedule	BSC et al. 2006	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	No	Suitable habitat is not present within the study area.

Species at Risk Screening Assessment Table

Scientific Name	Common Name	S-RANK ¹	SARO ²	SARA	Background Source	Habitat Preference ^{4,5}	Suitable Habitats within the Study Area?	Rationale
<i>Sturnella magna</i>	Eastern Meadowlark	S4B	THR	No Schedule	BSC et al. 2006	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	No	Suitable habitat is not present within the study area.
Herpetofauna								
<i>Graptemys geographica</i>	Northern Map Turtle	S3	SC	Schedule 1	Ontario Nature 2021	Large bodies of water with soft bottoms, and aquatic vegetation; basks on logs or rocks or on beaches and grassy edges, will bask in groups; uses soft soil or clean dry sand for nest sites; may nest at some distance from water.	No	Suitable habitat is not present within the study area. Study area is highly urbanized, with high traffic volumes, making persistence of populations highly unlikely.
<i>Chelydra serpentina serpentina</i>	Common Snapping Turtle	S3	SC	Schedule 1	Ontario Nature 2021	Permanent or semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddybanks or bottoms. The species often uses soft soil or clean dry sand on south-facing slopes for nest sites and may nest at some distance from water.	No	Suitable habitat is not present within the study area. Study area is highly urbanized, with high traffic volumes, making persistence of populations highly unlikely.
<i>Emydoidea blandingii</i>	Blanding's Turtle (Great Lakes/St Lawrence population)	S3	THR	Schedule 1	Ontario Nature 2021	Shallow water marshes, bogs, ponds or swamps, or coves in larger lakes with soft muddy bottoms and aquatic vegetation; basks on logs, stumps or banks; surrounding natural habitat is important in summer as they frequently move from aquatic habitat to terrestrial habitats; hibernates in bogs; not readily observed.	No	Suitable habitat is not present within the study area. Study area is highly urbanized, with high traffic volumes, making persistence of populations highly unlikely.
<i>Lampropeltis triangulum</i>	Eastern Milksnake	S4	NAR	Schedule 1	Ontario Nature 2021	Farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods; hides under logs, stones, or boards or in outbuildings; often uses communal nest sites.	No	Suitable habitat is not present within the study area. Study area is highly urbanized, with high traffic volumes, making persistence of populations highly unlikely.
<i>Ambystoma jeffersonianum</i>	Jefferson Salamander	S2	END	Schedule 1	SAR Ontario	Adults live in moist, loose soil, under logs or in leaf litter. Found in largely in-tact deciduous forests, with a range of topography, allowing small pools for breeding.	No	Suitable habitat is not present within the study area. Study area is highly urbanized, with high traffic volumes, making persistence of populations highly unlikely.
<i>Pseudacris triseriata</i>	Western Chorus Frog	S3	NAR	Schedule 1	Ontario Nature 2021	Roadside ditches or temporary ponds in fields; swamps or wet meadows; woodland or open country with cover and moisture; small ponds and temporary pools ponds and temporary pools	No	Suitable habitat is not present within the study area. Study area is highly urbanized, with high traffic volumes, making persistence of populations highly unlikely.
Mammals								
<i>Myotis leibii</i>	Eastern Small-footed Myotis	S5	END	Schedule 1	SAR Ontario	In the spring and summer, roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. In the winter, these bats hibernate, most often in caves and abandoned mines. They seem to choose colder and drier sites than similar bats and will return to the same spot each year.	Yes	Suitable habitat is present within the Deciduous Woodland Dry - Fresh Oak Decidous Woodland Ecosites.
<i>Myotis lucifungus</i>	Little Brown Myotis	S5	END	Schedule 1	SAR Ontario	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges	Yes	Suitable habitat is present within the Deciduous Woodland Dry - Fresh Oak Decidous Woodland Ecosites.

Species at Risk Screening Assessment Table

							Suitable Habitats within the Study Area?	
Scientific Name	Common Name	S-RANK ¹	SARO ²	SARA	Background Source	Habitat Preference ^{4,5}		Rationale
<i>Myotis septentrionalis</i>	Northern Myotis	S3?	END	Schedule 1	SAR Ontario	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, man-made structures but prefers hollow trees or under loose bark; hunts within forest, below canopy	Yes	Suitable habitat is present within the Deciduous Woodland Dry - Fresh Oak Decidious Woodland Ecosites.
<i>Perimyotis subflavus</i>	Tri-colored Bat	S3?	END	Schedule 1	SAR Ontario	During the summer, the Tri-colored Bat is found in a variety of forested habitats. It forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. Tri-colored Bats eat flying insects and spiders gleaned from webs. At the end of the summer they travel to a location where they swarm; it is generally near the cave or underground location where they will overwinter. They overwinter in caves where they typically roost by themselves rather than part of a group.	Yes	Suitable habitat is present within the Deciduous Woodland Dry - Fresh Oak Decidious Woodland Ecosites.
Plants								
<i>Castanea dentata</i>	American Chestnut	S2	END	Schedule 1	SAR Ontario	Moist to well drained forests on sand, occasionally heavy soils.	No	Suitable habitat is not present within the study area.
<i>Juglans cinerea</i>	Butternut	S2?	END	Schedule 1	SAR Ontario	In Ontario, Butternut usually grows alone or in small groups in deciduous forests. It prefers moist, well-drained soil and is often found along streams. It is also found on well-drained gravel sites and rarely on dry rocky soil. This species does not do well in the shade, and often grows in sunny openings and near forest edges.	No	Suitable habitat is not present within the study area.