DRAFT

REPORT

Region of Peel Stormwater Servicing Master Plan

Natural Environment Report

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Distribution List

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Acronym/Abbreviations Table List

Acronym/Abbreviations	Definition
Golder/GAL	Golder Associates Ltd.
ANSI	Areas of Natural and Scientific Interest
BCI	Bat Conservation International
CVC	Credit Valley Conservation
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
ECCC	Environment and Climate Change Canada
END	Endangered
ESA	Endangered Species Act
EXP	Extirpated
GHD	General Habitat Description
GMBP	GM BluePlan
LID	Low Impact Developments
LIO	Land Information Ontario
MECP	Ministry of the Environment, Conservation, and Parks
MMAH	Ministry of Municipal Affairs and Housing
MNDMNRF	Ministry of Northern Development, Mines, Natural Resources and Forestry
MNR	Ontario Ministry of Natural Resources
MNRF	Ministry of Natural Resources and Forestry
NHIC	Natural Heritage Information Centre
OBBA	Ontario Breeding Bird Atlas
ON	Ontario
OP/Ops	Official Plans
PPS	Provincial Policy Statement
PSW	Provincially Significant Wetlands
RFR	Request for Review
SAR	Species at Risk
SARA	Species at Risk Act
SARO	Species at Risk in Ontario

Acronym/Abbreviations	Definition
SC	Special Concern
SWH	Significant Wildlife Habitat
SWHTG	Significant Wildlife Habitat Technical Guide
SWHMiST	Significant Wildlife Habitat Mitigation Support Tool
THR	Threatened
TRCA	Toronto and Region Conservation Authority
WSP	WSP Canada Inc.

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APPENDICES

1.0 INTRODUCTION

Golder Associates Ltd. (Golder), member of WSP, has been retained by GM BluePlan Engineering Limited (GMBP) to conduct natural environment studies as part of the Region of Peel's (the Region) Stormwater Servicing Master Plan for Regional Road Infrastructure project (the Project), which is being developed in accordance with the Municipal Class Environmental Assessment (EA) process.

As part of the evaluation and selection of feasible alternatives for stormwater infrastructure improvements and Low Impact Developments (LID) that would be implemented through planned regional road infrastructure projects, GMBP requested that Golder complete a desktop assessment to identify potential natural environment constraints within the study area for each of nine selected priority sites. The study area for each short-listed site is defined as the site plus surrounding lands outward to 120 metres (m). The nine short-listed sites are (Figure 1):

- Site 1: Erin Mills Parkway north of Mississauga Road (Mississauga)
- Site 2: Derry Road West and McLaughlin Road (Mississauga)
- Site 3: Derry Road East and Tomken Road (Mississauga)
- Site 4: Derry Road East and Kennedy Road (Mississauga)
- Site 5: Mayfield Road and Bramalea Road (Border of Caledon and Brampton)
- Site 11: Erin Mills Parkway south of Mississauga Road (Mississauga)
- Site 13: Dixie Road south of Highway 401 (Mississauga)
- Site 16: Erin Mills Parkway between Highway 403 and Burnhamthorpe Road West (Mississauga)
- Site 17: Kennedy Road between Bovaird Drive East and Vodden Street East (Brampton)

This desktop-level report is intended to provide a preliminary assessment of sensitive natural features or functions present or potentially present in the study area defined for each short-listed site. The assessment can be used to present development constraints or areas of increased sensitivity to stormwater runoff and inform the selection of preferred locations for stormwater improvements and LID implementation.

2.0 POLICY CONTEXT

Sensitive natural features considered for this Project include designated features (provincial, regional and municipal), species at risk (SAR), conservation authority regulated areas, fish habitat, and significant wildlife habitat (SWH) as identified in the following Acts and policy documents:

- Provincial Policy Statement (PPS; MMAH 2020a)
- *Endangered Species Act* (ESA; Ontario 2007)
- *Species at Risk Act* (SARA; Canada 2002)
- *Fisheries Act* (Canada 1985)
- Region of Peel Official Plan (Peel 2016)

- Mississauga Official Plan (Mississauga 2019)
- Brampton Official Plan (Brampton 2006)
- Caledon Official Plan (Caledon 2018)
- Parkway Belt West Plan (Ontario 1978)
- Greenbelt Plan (MMAH 2017)
- Growth Plan for the Greater Golden Horseshoe (MMAH 2020b)
- O. Reg. 166/06 Toronto and Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses
- O. Reg. 160/06 Credit Valley Conservation: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses

3.0 METHODS

3.1 Background Review

The evaluation of existing conditions in the study area for each site included a background information search and literature review to gather data about the local area and provide context for the evaluation of the natural features. A number of resources were used, including:

- Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNRF) Natural Heritage Information Centre (NHIC) Biodiversity Explorer geographic query for information on SAR, S1-S3 species, and natural areas (NHIC 2021);
- Land Information Ontario (LIO) geospatial data (MNDMNRF 2021a);
- Species at Risk Public Registry (ECCC 2021);
- Species at Risk in Ontario (SARO) List (MECP 2021);
- Ontario Breeding Bird Atlas (OBBA) (Cadman et al. 2007; OBBA 2021);
- Atlas of the Mammals of Ontario (Dobbyn 1994);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2021);
- Bat Conservation International (BCI) range maps (BCI 2021);
- Ontario Butterfly Atlas (Jones et al. 2021);
- eBird species maps (eBird 2021);
- MNDMNRF LIO Aquatic Resources Area Layer (MNDMNRF 2021b);
- MNDMNRF Fish On-Line (MNDMNRF 2021c);
- Aquatic Species at Risk Maps (DFO 2021);

- iNaturalist species explorer (iNaturalist 2021);
- Vascular Plants at Risk in Ontario (Leslie 2018);
- all plans listed in Section 2.0; and,
- aerial imagery.

To develop an understanding of the ecological communities and potential natural heritage features that may be affected by the Project, MNDMNRF LIO data were used to create base layer mapping for the study areas. A geographic query of the NHIC database was conducted to identify element occurrences of any natural heritage features, including wetlands, areas of natural and scientific interest (ANSI), rare vegetation communities, rare species (i.e., species ranked S1-S3 by NHIC), species designated under the ESA or SARA, and other natural heritage features within the study area for each site.

3.2 Species at Risk Screening

Species at risk considered for this report include those species listed in the ESA and SARA. A desktop assessment was conducted to determine which SAR had potential habitat in the study area for each site. A screening of all SAR which have the potential to be found in the vicinity of the study area (~1 km buffer area) was conducted first as a desktop exercise using the sources listed in Section 3.1. Species with ranges overlapping the study area, or recent occurrence records in the vicinity, were screened by comparing their habitat requirements to habitat conditions in the study area as determined through air photo interpretation.

The potential for each species to occur was determined through a probability of occurrence. A low probability ranking indicates no suitable habitat availability for that species in the study area and no specimens identified. Moderate probability indicates more potential for the species to occur, as suitable habitat appears to be present in the study area, but no occurrence of the species has been recorded. Alternatively, a moderate probability could indicate an observation of a species, but there is no suitable habitat on the site or in the study area. High probability indicates a known species record in the study area and good quality habitat is present.

3.3 Constraints Analysis

Sensitive natural heritage features with potential to constrain future proposed development were identified on each site and in its respective study area based on the results of the background review and SAR screening and within the context of relevant legislation and policies.

4.0 SENSITIVE NATURAL HERITAGE FEATURES

The following sensitive natural heritage features were determined to occur or have potential to occur on one or more sites and/or in their respective study areas:

- habitat of threatened and endangered species;
- significant wildlife habitat (SWH);
- wetlands;
- surface water features;
- fish habitat;

- significant woodlands;
- significant valleylands;
- Official Plan designated features, including:
  - Core Areas of the Greenlands System;
  - Significant Natural Areas and Natural Green Spaces;
  - Special Management Areas;
  - Linkages;
  - Environmental Policy Areas; and,
  - Valleylands and Watercourse Corridors.

The following sensitive natural heritage features were determined to not occur in any of the sites or their respective study areas, and are not discussed further in this report:

- Provincially Significant Wetlands (PSW); and,
- ANSI.

Mapped sensitive natural heritage features within the study area of each site are shown on Figures 2A to 2I.

4.1 Habitat of Threatened and Endangered Species

General habitat protection is provided by the ESA to all threatened and endangered species. General habitat is defined as the area on which a species depends directly or indirectly to carry out life processes, including reproduction, rearing, hibernation, migration or feeding (Ontario 2007). Species-specific habitat protection is only afforded to those species for which a habitat regulation has been prepared and passed into law as a regulation of the ESA. A habitat regulation outlines specific habitat features and associated buffers that are protected, and also specifies the geographic area(s) of the province where the habitat regulation applies. In some cases, a General Habitat Description (GHD) may also be prepared to help define and refine the area of protected habitat in advance of a habitat regulation.

Development and site alteration in habitat of endangered and threatened species is prohibited, except in accordance with provincial requirements under the ESA. Policies in the applicable provincial and municipal plans align with and defer to provincial requirements under the ESA.

Potential as habitat for endangered or threatened species is provided in Table 1 below; however, field investigations need to be conducted to collect field data at each site to confirm the presence of potential habitat and its use by SAR. Only species with moderate potential to occur at one or more sites or within their respective study areas are discussed. A full evaluation of habitat potential for SAR and description of habitat preferences is provided in the SAR screening (Appendix A).

Table 1: Endangered and Threatened Species with Moderate or High Potential to Occur at Short-listed Sites

Common Name	Scientific Name	ESA[1]	Potential to Occur on the Site or in the Study Area[2]	Rationale for Potential to Occur on the Site or in the Study Area
Amphibians				
Jefferson salamander	Ambystoma jeffersonianum	END	Moderate at Site 5	The forests and wetlands in the study area may provide suitable habitat for Jefferson salamander. The last known record in the study area is from 2007.
Birds				
Bank swallow	Riparia riparia	THR	Moderate at Sites 1, 2, 3, 5, 11, and 16	Stream and riverbanks and roadcuts in the study areas may provide suitable habitat for bank swallow. There are recent occurrence records in the vicinity of Sites 1, 2, 3, 5, 11, and 16.
Barn swallow	Hirundo rustica	THR	Moderate at Sites 2 and 5	Numerous structures suitable for nesting, such as abandoned buildings, bridges, and culverts, are located within the study areas. There are recent occurrence records in the vicinity of Sites 2 and 5.
Bobolink	Dolichonyx oryzivorus	THR	Moderate at Site 5	Agricultural fields in the study area may provide suitable nesting habitat for bobolink. There are some occurrence records in the study area with unlisted dates.
Chimney swift	Chaetura pelagica	THR	Moderate at Sites 2, 5, 11, and 16	Chimneys and large-diameter cavity trees in the study areas may provide suitable habitat. There are recent occurrence records in the vicinity of Sites 2, 5, 11, and 16.
Eastern meadowlark	Sturnella magna	THR	Moderate at Site 5	Agricultural fields in the study area may provide suitable nesting habitat for eastern meadowlark. There are no occurrence records for the study area.
Fish				
Redside dace	Clinostomus elongatus	END	Moderate at Sites 2 and 5	Coolwater streams in the study areas may provide suitable habitat for redside dace. There are historical and current occurrence records in the study areas.
Mammals				
Eastern small-footed myotis	Myotis leibii	END	Moderate at Site 5	There may be suitable rock features for roosting in the study area. There are no known abandoned mine features in the vicinity of the study area that may provide hibernacula for this species.
Little brown myotis	Myotis lucifugus	END	Moderate at Sites 1, 2, 3, 4, 5, 11, 13, and 16	There may be suitable roosting trees and structures for this species in the study areas. There are no known abandoned mine features in the vicinity of the study areas that may provide hibernacula for this species.
Northern myotis	Myotis septentrionalis	END	Moderate at Sites 1, 2, 3, 4, 5, 11, 13, and 16	There may be suitable roosting trees preferred by this species in the study areas. There are no known abandoned mine features in the vicinity of the study areas that may provide hibernacula for this species.
Tri-colored bat	Perimyotis subflavus	END	Moderate at Sites 1, 2, 3, 4, 5, 11, 13, and 16	There may be suitable roosting trees preferred by this species in the study areas. There are no known abandoned mine features in the vicinity of the study area that may provide hibernacula for this species.
Reptiles				
Blanding's turtle - Great Lakes / St. Lawrence population	Emydoidea blandingii	THR	Moderate at Sites 1, 11, 13, and 16	The wetlands, marshes, and roadsides in the study areas may provide suitable habitat for this species. There are recent occurrence records in the vicinity of Sites 1, 11, 13, and 16.
Eastern hog-nosed snake	Heterodon platirhinos	THR	Moderate at Sites 2, 5, 11, and 16	Woodlands and wetlands may provide suitable habitat within the study areas. There are no occurrence records in the study areas.
Vascular Plants				
American chestnut	Castanea dentata	END	Moderate at Sites 11 and 16	Wooded areas in the study areas may provide suitable habitat. No records of occurrences were identified for American chestnut.
Butternut	Juglans cinerea	END	Moderate at Sites 2, 11, and 16	Wooded areas in the study areas may provide suitable habitat. There are recent occurrence records in the study area at Site 16; however, no occurrence records were identified for Sites 2 and 11.

1 Endangered Species Act (ESA), 2007. General (O.Reg 242/08 last amended 21 July 2020). Species at Risk in Ontario List (O.Reg 230/08 last amended 1 Aug 2018 as O. Reg 404/18, s. 1.); Schedule 1 (Extirpated - EXP), Schedule 2 (Endangered - END), Schedule 3 (Threatened - THR), Schedule 4 (Special Concern - SC)

2 Sites are only listed where habitat potential is moderate or high. Remaining sites can be assumed to have low habitat potential.

4.2 Significant Wildlife Habitat

There are four general categories of SWH: seasonal concentration areas; rare vegetation communities or specialized habitat for wildlife; habitat for species of conservation concern; and animal movement corridors. Each category is further broken down into specialized habitat types. The Natural Heritage Reference Manual (MNR 2010) includes criteria and guidelines for designating SWH. There are two other documents, the Significant Wildlife Habitat Technical Guide (SWHTG) and the Significant Wildlife Habitat Mitigation Support Tool (SWHMiST) (MNR 2000 and MNRF 2014), that can be used to help decide what areas and features should be considered SWH. These documents were used as reference material for this study. Significant wildlife habitat should be evaluated in the context of the entire planning authority's jurisdiction, and only the best examples are considered significant (MNR 2000).

Significant wildlife habitat is typically identified on a site-specific basis and is therefore not often mapped at a landscape level in municipal Official Plans (OPs), or is included in a broader designation that includes other sensitive natural heritage features. For example, the City of Mississauga OP defines a Significant Natural Areas designation to include SWH among other natural heritage features (Mississauga 2019). Development within or adjacent to a Significant Natural Area will not be permitted unless all reasonable alternatives have been considered and any negative impacts minimized. Permitted uses within Significant Natural Areas may include essential infrastructure, in accordance with an environmental assessment process (Mississauga 2019).

In Brampton, development is not permitted in SWH unless it is demonstrated that there are no negative impacts on these features or their functions. It is the City's goal to ensure that the associated impacts of municipal infrastructure that must occur within natural features are addressed through environmentally sensitive practices (Brampton 2006).

In Caledon, new development within SWH is prohibited with the exception of some permitted uses including essential infrastructure, subject to the appropriate environmental studies as determined by the Town and other relevant agencies.

Potential for SWH is provided in Table 2 below; however, field investigations need to be conducted to collect field data at each site to confirm the presence of SWH. Only SWH types with potential to occur at one or more sites or within their respective study areas are discussed.

Table 2: Significant Wildlife Habitat with Potential to Occur at Short-listed Sites

Significant Wildlife Habitat General Category	Specialized Habitat Type	Potential to Occur on the Site or in the Study Area[1]	Rationale for Potential to Occur on the Site or in the Study Area
Seasonal Concentration Areas	Bat maternity colonies	Sites 2, 11, and 16	There is potential for suitable roosting habitat within the wooded areas of these sites.
	Reptile hibernacula	Sites 2, 5, 11, and 16	There is potential for suitable features (e.g., rock piles, bridge foundations) to support reptile hibernacula within the study areas of these sites.
Rare Vegetation Communities	Other rare vegetation communities (communities assigned a provincial conservation rank of S1 to S3)	Sites 11 and 16	Woodland areas within the respective study areas that are relatively undisturbed may contain rare communities. Requires field verification to exclude.
Specialized Habitat for Wildlife	Amphibian breeding habitat (woodland and wetland)	Sites 5, 11, and 16	The wetland in the study area at Site 5 and depressions in the woodlands within the study areas at Sites 11 and 16 could provide suitable breeding habitat.
Habitat for Species of Conservation Concern	Habitat of special concern and rare wildlife species[2]	All sites	▪ Monarch (all sites) ▪ Common nighthawk, grasshopper sparrow, short-eared owl, northern map turtle, eastern musk turtle (Site 5) ▪ Eastern wood-pewee (Site 11) ▪ Peregrine falcon (Sites 1, 13, and 16) ▪ Red-headed woodpecker (Site 2) ▪ Wood thrush (Sites 11 and 16) ▪ Eastern ribbonsnake (Sites 2, 5, 11, and 16) ▪ Snapping turtle, Hill's pondweed (Sites 1, 2, 3, 5, 11, and 16)
Animal Movement Corridors	General	All sites except Site 4	Watercourse corridors and linkage areas offer movement opportunities for various species of wildlife.

1 Sites are only listed where there is potential occurrence of significant wildlife habitat. Remaining sites can be assumed to lack potential.

2 See Appendix A for detailed assessment of potential to occur.

4.3 Wetlands

Wetlands are present within the study areas at Sites 5 and 13, as depicted on Figures 2E and 2G, respectively. All of the mapped wetlands are unevaluated. The City of Brampton maps wetlands in its OP as PSW and other wetlands, with the latter designation including unevaluated wetlands (Brampton 2006). The unevaluated wetlands in the Site 13 study area are not mapped in the Brampton OP.

The Toronto and Region Conservation Authority (TRCA) and Credit Valley Conservation (CVC) regulate watercourses, waterbodies, and wetlands within their respective jurisdictional boundaries. Any development proposed within these features or their regulation limits will require authorization or a permit from the respective conservation authority. An evaluation of wetland significance could also be requested by reviewing agencies.

4.4 Surface Water Features

Watercourses that cross the sites or study areas are within the Credit River and Etobicoke Creek watershed. The following watercourses cross the sites and study areas:

- Mullett Creek – Site 1;
- Fletchers Creek – Site 2;
- Tributaries of Etobicoke Creek – Site 3;
- Tributaries of the West Humber River – Site 5;
- Tributaries of Mullett Creek – Site 11; and,
- Sawmill Creek – Site 16.

The TRCA and CVC regulate watercourses, waterbodies, and wetlands within their respective jurisdictional boundaries. Any development proposed within these features or their regulation limits will require authorization or a permit from the respective conservation authority.

4.5 Fish Habitat

All watercourses crossing the sites and associated study areas are considered warmwater features, apart from the tributaries of the West Humber River crossing Site 5, which are coldwater features. Warmwater features are generally considered to be more robust and tolerant to environmental pressures, including those from human development and/or urbanization.

There are numerous native and non-native fish species present in watercourses and waterbodies of the Credit River and Etobicoke Creek watersheds. Most fish in the Etobicoke Creek and Credit River watersheds are warmwater species such as largemouth bass (*Micropterus salmoides*) and white bass (*Morone chrysops*), with records of common carp (*Cyprinus carpio*), and invasive species (TRCA 2021; MNDMNRF 2021b). A few coldwater species are found near the mouth in Etobicoke Creek such as Chinook salmon (*Oncorhynchus tshawytscha*) (TRCA 2021).

There are historical records of redside dace (*Clinostomus elongatus*), a SAR designated as endangered federally and provincially, in watercourses in the study area. Based on the desktop review, redside dace was identified in watercourses at Sites 2 and 5.

Development and site alteration is not permitted within fish habitat except in accordance with provincial and federal requirements. Where development is proposed within or adjacent (i.e., within 30 m) to fish habitat, an assessment must be completed to demonstrate that development will not adversely affect the feature or its ecological function. In general, development should be designed to avoid or minimize adverse impacts to fish and fish habitat. Buffers to protect against soil erosion and sediment impacts may be required for development and site alteration adjacent to watercourses (Mississauga 2019).

In-water works, if required, will need to conform to applicable MNRF fish timing windows, and permitting may be required before Project activities commence. If impacts cannot be sufficiently mitigated to prevent harm to fish and fish habitat, a DFO Request for Review (RFR) and *Fisheries Act* authorization may be required. Further, any development proposed within watercourses or their regulation limits will require authorization or a permit from the respective conservation authority.

4.6 Significant Woodlands

Significant woodlands are areas which are: 1) ecologically important in terms of features such as species composition, age of trees and stand history; 2) functionally important due to their contribution to the broader landscape because of their location, size or due to the amount of forest cover in the planning area; or 3) economically important due to site quality, species composition, or past management history (MMAH 2021a).

Significant woodlands are contained within the Core Areas designation of the Greenlands System as mapped by the Region of Peel (2016). Core Areas of the Greenlands System containing woodlands are present within the study areas of Sites 5 and 11 and on Site 16 as well as within its respective study area (Figures 2E, 2F and 2H). Development and site alteration is prohibited within the Core Areas of the Greenlands System, except for minor development and essential infrastructure that is authorized under an environmental assessment process. In the event portions of the Core Areas are damaged or destroyed, the natural features in the area must be rehabilitated to restore ecological function (Peel 2016).

The City of Mississauga has identified significant woodlands in its jurisdiction under the Significant Natural Areas designation (Mississauga 2019). Significant Natural Areas containing woodlands are present within the study areas of Sites 11 and 16 (Figures 2F and 2H). Where development is proposed in or adjacent to a significant woodland, an assessment must be completed to demonstrate that all reasonable alternatives have been considered and development will not adversely affect the feature or its ecological function, to the satisfaction of the City (Mississauga 2019). Vegetated setbacks may be required from the woodland dripline of significant woodlands and are determined on a case-by-case basis (Mississauga 2019).

The City of Brampton has identified woodlands in its jurisdiction but defers to the provincial Natural Heritage Reference Manual (MNR 2010) for identification of significant woodlands. No mapped woodlands are present within any of the sites within City of Brampton jurisdiction.

South and east of the Niagara Escarpment and Oak Ridges Moraine Conservation Plan Areas, the Town of Caledon defines Woodland Core Areas as woodlands that meet one or more of the criteria for Core Areas or Natural Areas and Corridors Woodlands in the Region of Peel OP (Peel 2016). A woodland area in the Site 5 study area overlaps a Core Area of the Greenlands System (Figure 2E). New development within Woodland Core Areas is prohibited with the exception of some permitted uses including essential infrastructure, subject to the appropriate environmental studies as determined by the Town and other relevant agencies. New development is not permitted in Other Woodlands (i.e., all other woodlands that do not meet the definition of a Woodland Core Area) unless it is demonstrated that the development will not result in the degradation of ecosystem integrity.

4.7 Significant Valleylands

General guidelines for determining significance of valleylands are presented in the Natural Heritage Reference Manual (MNR 2010). Recommended criteria for designating significant valleylands include prominence as a distinctive landform, degree of naturalness, importance of its ecological functions, restoration potential, and historical and cultural values.

In Mississauga, significant valleylands are associated with the main branches, major tributaries and other tributaries and watercourse corridors draining directly to Lake Ontario, including the Credit River, Etobicoke Creek, and Mimico Creek. These features are mapped as Significant Natural Areas (Figure 3) and Natural Hazard Lands in the OP (OP Schedule 10; Mississauga 2019). Sensitive Natural Areas containing watercourses are present within the study areas of Sites 2, 11, and 16 (Figures 2B, 2F, and 2H). Permitted uses within Significant Natural Areas and Natural Hazard Lands may include essential infrastructure, in accordance with an environmental assessment process. Vegetated setbacks may be required from the top of bank of significant valleylands and are determined on a case-by-case basis (Mississauga 2019).

Valleylands and Watercourse Corridors are included as a designation within the Brampton OP and are described in more detail in Section 4.8.6. Valleylands and Watercourse Corridors were identified on Site 5 and within the study area, as depicted on Figure 2E. Although development is generally prohibited within valleylands, some uses are permitted subject to an approval process (Brampton 2006).

The Town of Caledon has identified all Valley and Stream Corridors in its jurisdiction under the Environmental Policy Area. Permitted uses within these areas may include essential infrastructure, subject to the appropriate environmental studies as determined by the Town and other relevant agencies. Site 5 overlaps an Environmental Policy Area (Figure 2-E).

In addition, valleys and hazard lands are generally regulated by the local conservation authority (in this case, CVC or TRCA) and development within or adjacent to these features is subject to common permitting policies (CVC 2010; TRCA 2008).

4.8 Official Plan Designated Features

4.8.1 Core Areas of the Greenlands System

Core Areas of the Greenlands System are a land use designation in the Peel OP and are mapped on Schedule A of the Peel OP (Peel 2016). Core Areas represent provincially and regionally significant features and are recognized for their importance in maintaining the integrity of the regional Greenlands System (Peel 2016). Core Areas are present on Sites 2, 5, and 16, and within their respective study areas, and outside of the site, but within the study area at Site 11 as depicted on Figures 2B, 2E, 2F, and 2H, respectively.

Development or site alteration in Core Areas of the Greenlands System is generally prohibited, but some exceptions are identified in section 2.3.2.6 of the Peel OP. Essential infrastructure is exempted where an environmental assessment has demonstrated potential impacts are adequately mitigated.

4.8.2 Significant Natural Areas and Natural Green Spaces

Significant Natural Areas and Natural Green Spaces are a land use designation in the Mississauga OP and are mapped as one feature layer on Schedule 3 of the Mississauga OP (Mississauga 2019). Significant Natural Areas are areas that meet one or more of the following criteria:

- provincially or regionally significant life science ANSI;
- environmentally sensitive or significant areas;
- habitat of threatened or endangered species;
- fish habitat;
- SWH;
- significant woodlands;
- significant wetlands; and,
- significant valleylands

Natural Green Spaces are areas that meet one or more of the following criteria:

- Woodlands greater than 0.5 hectares that do not fulfill the requirements of a significant woodland.
- Wetlands that do not fulfill the requirements of a significant wetland.
- Watercourses that do not fulfill the requirements of a significant valleyland, even if they are predominantly engineered.
- All natural areas greater than 0.5 hectares that have vegetation that is uncommon in the City.

There are Significant Natural Areas and Natural Green Spaces identified at Sites 2, 11, and 16, as depicted on Figures 2B, 2F, and 2H, respectively.

Development or site alteration within, or adjacent to, a Significant Natural Area including essential infrastructure is not permitted unless all reasonable alternatives have been considered and any negative impacts minimized. Notwithstanding this policy, development is not be permitted in the following areas: PSW or provincially significant coastal wetlands; habitat of endangered and threatened species and fish habitat except in accordance with provincial and federal requirements; and Peel Core Areas of the Greenlands System, except in accordance with regional requirements (Mississauga 2019).

Development or site alteration is not permitted within or adjacent to Natural Green Spaces unless it has been demonstrated that there will be no negative impact to the natural heritage features and their ecological functions and opportunities for their protection, restoration, enhancement and expansion have been identified (Mississauga 2019).

4.8.3 Special Management Areas

Special Management Areas represent lands adjacent to or near Significant Natural Areas or Natural Green Spaces that will be managed or restored to enhance and support the Significant Natural Area or Natural Green Space. Special Management Areas are mapped on Schedule 3 of the Mississauga OP (Mississauga 2019). There is a Special Management Area at Site 2, as depicted on Figure 2B.

Development and site alteration is not permitted within or adjacent to Special Management Areas unless it has been demonstrated that there will be no negative impact to the natural heritage features and their ecological functions and opportunities for their protection, restoration, enhancement and expansion have been identified (Mississauga 2019).

4.8.4 Linkages

Linkages are a land use designation in the Mississauga OP and are defined as areas that support ecological functions of Significant Natural Areas and Natural Green Spaces by connecting important features within the natural heritage system and urban forest (Mississauga 2019). They are recognized as important to the maintenance of biodiversity, but do not meet the criteria of Significant Natural Areas, Natural Green Spaces, Special Management Areas, or Residential Woodlands. Linkages are mapped on Schedule 3 of the Mississauga OP (Mississauga 2019). There are linkages identified within the study areas at Sites 1, 13, and 16, as depicted on Figures 2A, 2G, and 2H, respectively.

Development and site alteration is not permitted within, or adjacent to, Linkages unless it has been demonstrated that there will be no negative impact to the natural heritage features and their ecological functions and opportunities for their protection, restoration, enhancement and expansion have been identified (Mississauga 2019).

Linkages are also a land use designation in the Brampton OP and are recognized as areas that connect important features of the natural heritage system (Brampton 2006). Linkages are recognized for the ecological functions they provide, including habitat, migration routes, hydrological flow, and connections or buffering from adjacent land uses. There are Linkages identified within the study area at Site 17, as depicted on Figure 2I. The City of Brampton encourages the retention of Linkages between natural heritage system features (Brampton 2006).

4.8.5 Environmental Policy Areas

Environmental Policy Areas is a land use designation in the Caledon OP and include Natural Core Areas and Natural Corridors (Caledon 2018). An Environmental Policy Area is identified on Site 5 and within the study area, as depicted on Figure 2E.

New development within Environmental Policy Areas is prohibited, apart from permitted uses including essential infrastructure, activities permitted through approved Forest Management and Environmental Management Plans, non-intensive recreation, and legally existing residential and agricultural uses (Caledon 2018).

4.8.6 Valleylands and Watercourse Corridors

Valleylands and Watercourse Corridors is a land use designation in the Brampton OP and are defined as areas associated with river systems, where valleylands are distinguished from stream corridors by the presence of a distinct landform (Brampton 2006). Valleylands and Watercourse Corridors act as corridors for movement and provide habitat for fish and wildlife (Brampton 2006). Valleylands and Watercourse Corridors are identified on Site 5 and within its respective study area, as depicted on Figure 2E.

Development within lands designated as Valleylands and Watercourse Corridors is generally prohibited, with some exceptions for existing and permitted uses including parks, sports fields, golf courses, agriculture, and stormwater management facilities (Brampton 2006).

5.0 SUMMARY AND CONCLUSIONS

Based on the results of the natural environment desktop assessment and field reconnaissance, there are sensitive natural features at all nine of the Sites. These features represent potential constraints to development that require assessment. A summary of the identified sensitive natural features, recommended setbacks, and other mitigation measures are provided in Table 3.

General wildlife and habitat assessments should be completed at all sites to determine the presence of potential habitat, following which, additional field surveys will be required before regional road improvement projects are constructed and the associated stormwater infrastructure and LID are implemented.

Table 3: Summary of Natural Heritage Constraints and Typical Setbacks

Natural Environment Feature	Responsible Agency[1]	Development Constraint	Setback[2]	Site	Setback Flexibility[3]	Mitigation
Provincially Significant Wetlands (PSW)	CVC and/or TRCA, MNRF	Development adjacent (within 120 m) requires an environmental impact assessment or study	30 m	▪ Currently none identified but unevaluated wetlands may be subject to evaluation	Absolute	▪ No development permitted within the PSW ▪ Development adjacent to the PSW must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected ▪ Development proposed within regulated limits may require a permit from the CVC and/or TRCA
Other Wetlands	CVC and/or TRCA	Development within or adjacent (within 30 m) requires an environmental impact assessment or study	10 m	▪ Site 5 ▪ Site 13	Absolute	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected ▪ Development proposed within regulated limits may require a permit from the CVC and/or TRCA
Watercourses	CVC and/or TRCA	Development within or adjacent (within 30 m) requires an environmental impact assessment or study	10 m	▪ Site 1 ▪ Site 2 ▪ Site 3 ▪ Site 5 ▪ Site 11 ▪ Site 16	Absolute	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected ▪ Development proposed within regulated limits may require a permit from the CVC and/or TRCA
Significant Woodlands	Applicable municipality, CVC and/or TRCA	Development within or adjacent (within 120 m) requires an environmental impact assessment or study	10 m	▪ Site 5 ▪ Site 11 ▪ Site 16	Absolute	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected
Significant Valleylands	Applicable municipality, CVC and/or TRCA	Development within or adjacent (within120 m) requires an environmental impact assessment or study	10 m	▪ Site 2 ▪ Site 5 ▪ Site 11 ▪ Site 16	Absolute	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected ▪ Development proposed within regulated limits may require a permit from the CVC and/or TRCA
Significant Wildlife Habitat	Applicable municipality, CVC and/or TRCA	Development within or adjacent (within 120 m) requires an environmental impact assessment or study	120 m	▪ All sites	Negotiable	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected
Habitat of Species at Risk - Endangered or Threatened Species	MECP	Development within or adjacent (within 120 m) requires an environmental impact assessment or study	120 m	▪ Site 1 ▪ Site 2 ▪ Site 3 ▪ Site 4 ▪ Site 5 ▪ Site 11 ▪ Site 13 ▪ Site 16	Negotiable	▪ No development permitted within habitat for endangered or threatened species ▪ Must demonstrate no adverse impacts to species or its habitat ▪ If species or habitat will be impacted, permitting under the *Endangered Species Act, 2007* may be required

Table 3: Summary of Natural Heritage Constraints and Typical Setbacks

Natural Environment Feature	Responsible Agency[1]	Development Constraint	Setback[2]	Site	Setback Flexibility[3]	Mitigation
Fish Habitat	DFO	Development adjacent (within 30 m) requires an environmental impact assessment or study and Request for Review under the Fisheries Act.	10 m (warm/ coolwater) 15 m (coldwater)	▪ Site 1 (warmwater) ▪ Site 2 (warmwater) ▪ Site 3 (warmwater) ▪ Site 5 (coldwater) ▪ Site 11 (warmwater) ▪ Site 16 (warmwater)	Absolute	▪ Must demonstrate no adverse impacts to fish or fish habitat ▪ Setbacks adjacent to fish habitat will be determined by an impact assessment ▪ If fish or fish habitat will be impacted, permitting under the federal *Fisheries Act* may be required
Core Areas of the Greenlands System	Region of Peel	Development within or adjacent requires an environmental impact assessment or study	Varies[7]	▪ Site 2 ▪ Site 5 ▪ Site 16	Negotiable	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected
Significant Natural Areas and Natural Green Spaces[4]	City of Mississauga	Development within or adjacent requires an environmental impact assessment or study	Varies[7]	▪ Site 2 ▪ Site 11 ▪ Site 16	Negotiable	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected
Special Management Areas[4]	City of Mississauga	N/A	None	▪ Site 2	N/A	▪ Must be managed to support the nearby green space or natural heritage feature.
Linkages[4]	City of Mississauga	Development within or adjacent requires an environmental impact assessment or study	Varies[7]	▪ Site 1 ▪ Site 13 ▪ Site 16	Negotiable	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected
Linkages and Enhancement Areas[5]	City of Brampton	Development within or adjacent requires an environmental impact assessment or study	Varies[7]	▪ Site 17	Negotiable	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected
Valleylands and Watercourse Corridors[5]	City of Brampton	Development within or adjacent requires an environmental impact assessment or study	10 m	▪ Site 5	Absolute	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected ▪ Development proposed within regulated limits may require a permit from the CVC and/or TRCA
Environmental Policy Areas[6]	City of Caledon	Development within or adjacent requires an environmental impact assessment or study and/or a management plan	Varies[7]	▪ Site 5	Negotiable	▪ Must demonstrate no adverse impacts to feature or function and ensure feature is appropriately protected

[1] CVC = Credit Valley Conservation; DFO = Fisheries and Oceans Canada; MECP = Ministry of the Environment, Conservation, and Parks; MNRF = Ministry of Natural Resources and Forestry; TRCA = Toronto and Region Conservation Authority.
[2] Setbacks are recommended according to the following documents:
City of Mississauga Official Plan, 2019
CVC. 2010. Watershed Planning and Regulation Policies
MNR. 2010. Natural Heritage Reference Manual
TRCA. 2014. The Living City Policies
[3] Setback flexibility is defined as follows:
Negotiable – reduced setbacks may be negotiated with the responsible agency, typically through completion of an environmental impact study.
Absolute – setbacks are generally not subject to negotiation, except where the proponent obtains appropriate permits from the responsible agency. Permits may not be available for all features.
[4] As defined in the City of Mississauga Official Plan, 2019.
[5] As defined in the City of Brampton Official Plan, 2006.
[6] As defined in the Town of Caledon Official Plan, 2018.
[7] Varies – setbacks are generally determined as part of an environmental impact study.

6.0 LIMITATIONS

This report was prepared for GMBP for the purposes of due diligence. The report, which specifically includes all tables, figures and appendices, is based on data and information collected by Golder, and reflects the conditions on the sites and within their respective study areas at the time of the desktop review, including data obtained by Golder from external sources as described in this report. Golder has exercised reasonable skill, care and diligence to assess the external data acquired during the preparation of this assessment but makes no guarantees or warranties as to the accuracy, currency or completeness of this information. This report is based upon and limited by circumstances and conditions acknowledged herein, and upon information available at the time of authoring. No field investigations were carried out to verify the presence of sensitive natural heritage features including SAR habitat or individuals on the sites. Provincial and municipal policies that apply to the sites should be confirmed by a planner prior to development.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such third parties. Golder accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this report.

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Signature Page

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Ecologist

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Principal, Senior Ecologist

BB/HM/mp

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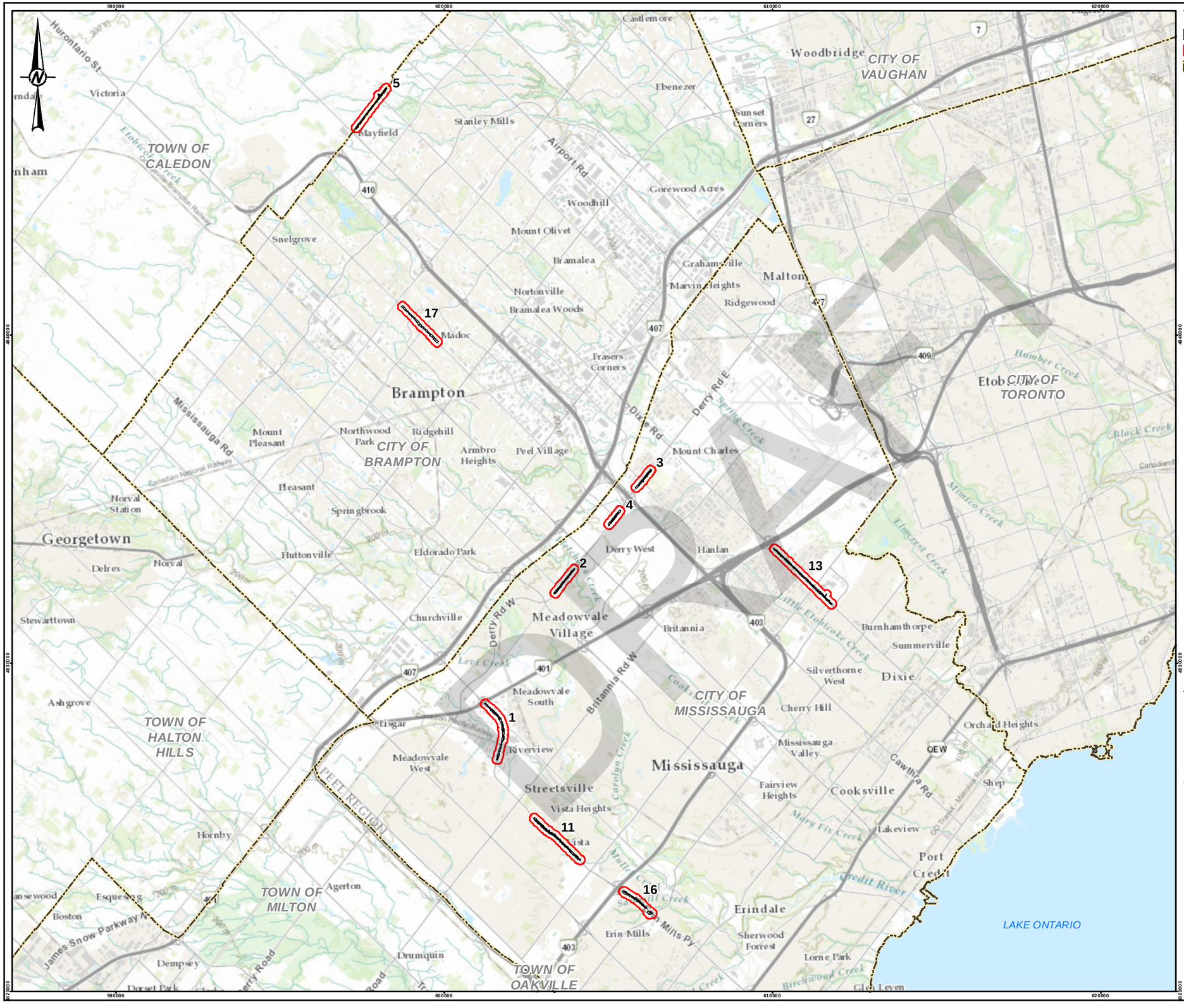
FIGURES



LEGEND

- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY

KEY MAP

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1. BASE DATA - MNRF LIO, 2020. CITY OF MISSISSAUGA OPEN DATA, 2020. CITY OF BRAMPTON OPEN DATA, 2020.
2. STORM WATER INFRASTRUCTURE PROVIDED BY GM BLUE PLAN AND REGION OF PEEL, MAY 2020
3. BASE IMAGE - SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT

GM BLUEPLAN ENGINEERING LIMITED

PROJECT

REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE

SITE LOCATIONS

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

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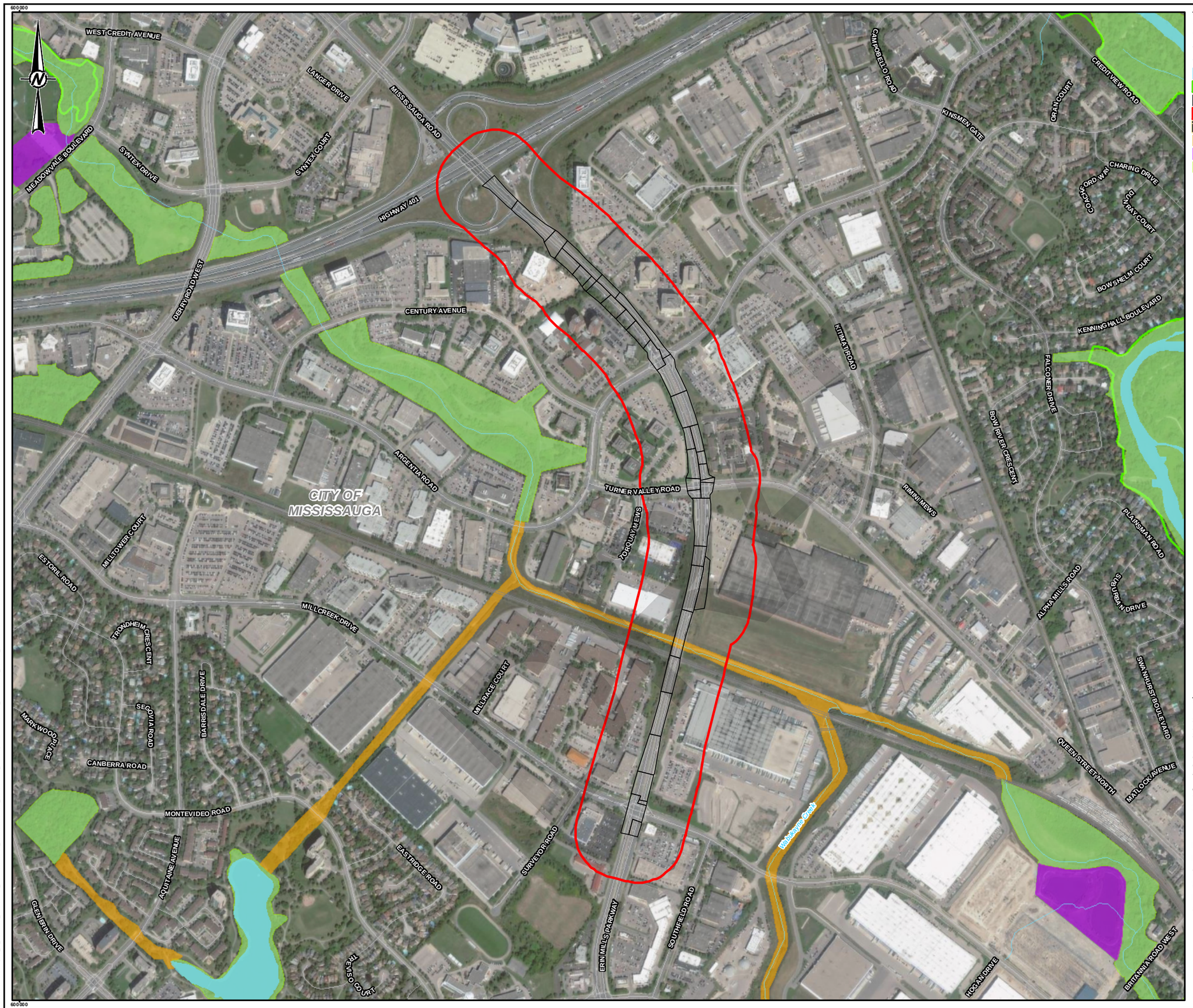
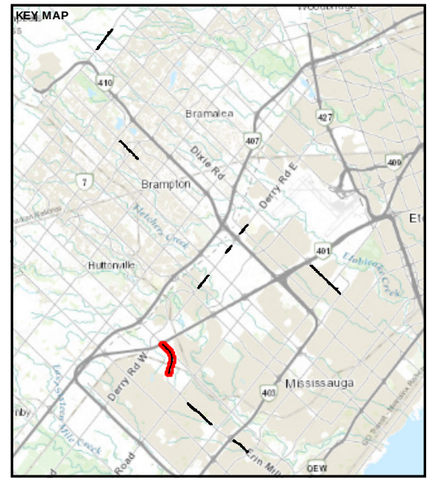


LEGEND

- ROAD
- RAILWAY TRACK
- WATERCOURSE
- WATERBODY
- GREENLANDS SYSTEM (REGION OF PEEL)
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- LINKAGES (CITY OF MISSISSAUGA)
- SPECIAL MANAGEMENT AREAS (CITY OF MISSISSAUGA)
- SIGNIFICANT NATURAL AREAS AND NATURAL GREEN SPACES (CITY OF MISSISSAUGA)

KEY MAP



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4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
GM BLUEPLAN ENGINEERING LIMITED

PROJECT
REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE
SENSITIVE NATURAL FEATURES AT SITE 1 - ERIN MILLS NORTH OF MISSISSAUGA ROAD

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
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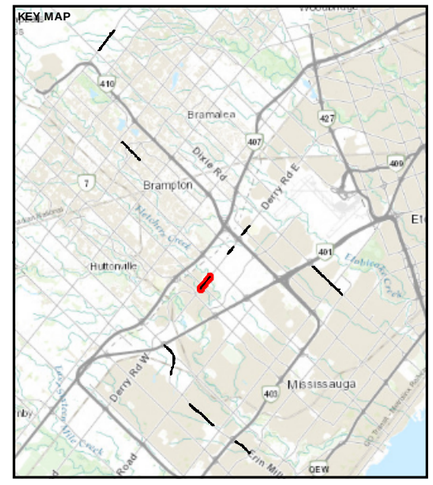
LEGEND

- ROAD
- WATERCOURSE
- GREENLANDS SYSTEM (REGION OF PEEL)
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- SPECIAL MANAGEMENT AREAS (CITY OF MISSISSAUGA)
- SIGNIFICANT NATURAL AREAS AND NATURAL GREEN SPACES (CITY OF MISSISSAUGA)



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4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
GM BLUEPLAN ENGINEERING LIMITED

PROJECT
REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE
SENSITIVE NATURAL FEATURES AT SITE 2 - DERRY ROAD NEAR MCLAUGHLIN

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
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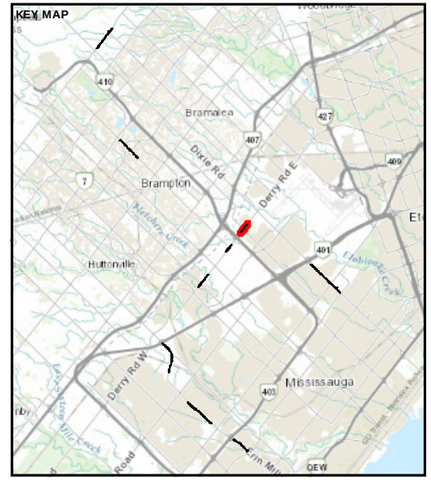
LEGEND

- ROAD
- WATERCOURSE
- WATERBODY
- UNEVALUATED WETLAND
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- VALLEYLAND / WATERCOURSE CORRIDOR (CITY OF BRAMPTON)

KEY MAP



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4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
GM BLUEPLAN ENGINEERING LIMITED

PROJECT
REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE
SENSITIVE NATURAL FEATURES AT SITE 3 - DERRY ROAD EAST OF HIGHWAY 410

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
19126124	0003	D	2-C

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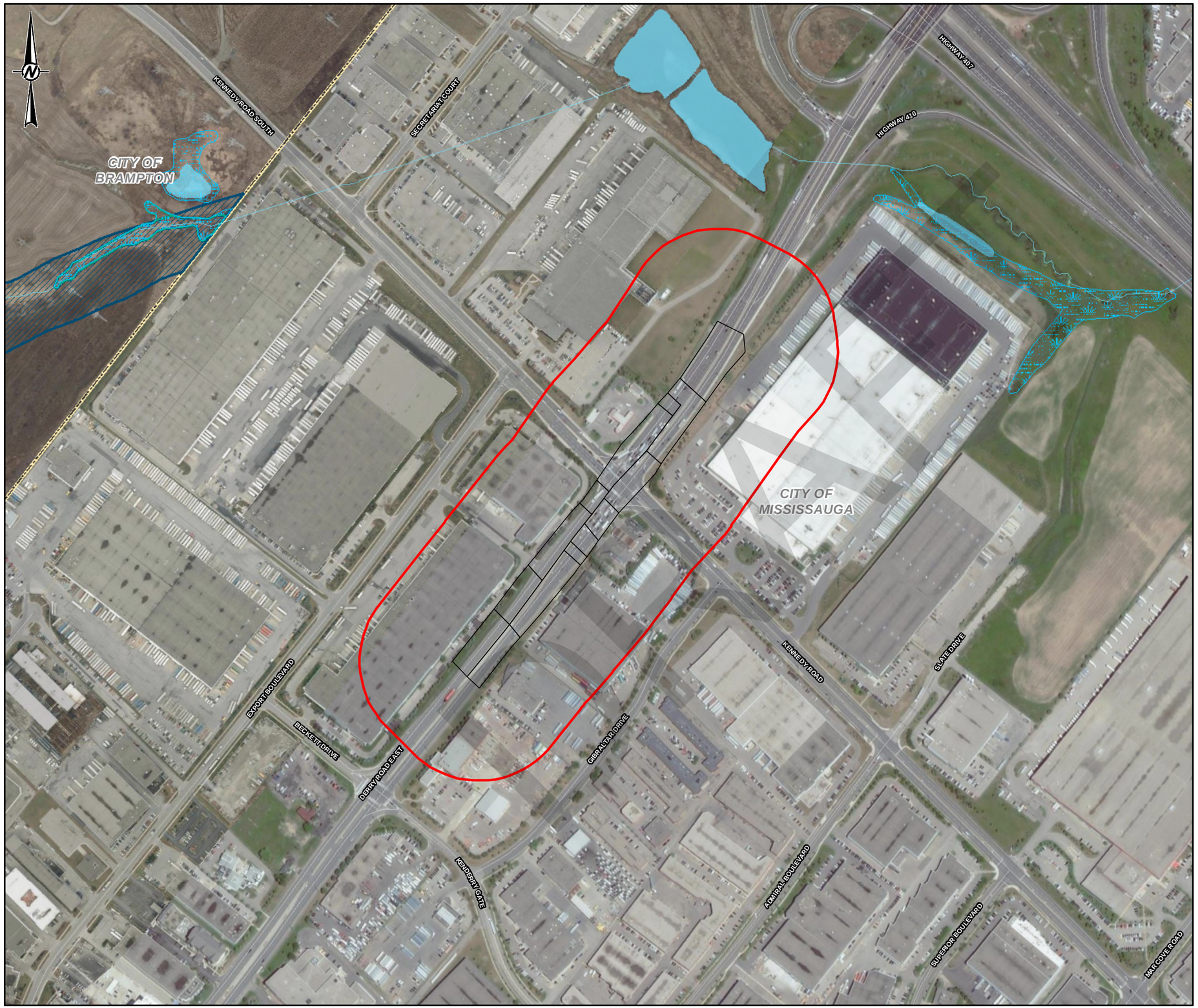
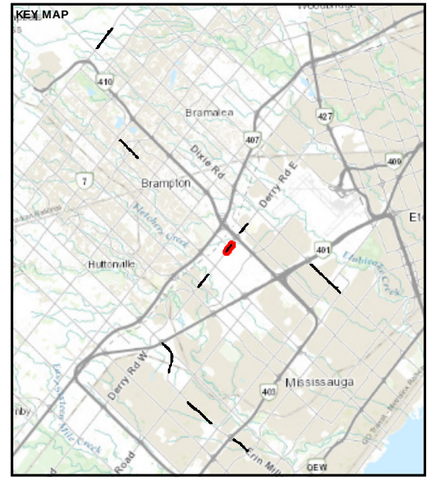


LEGEND

- ROAD
- WATERCOURSE
- WATERBODY
- UNEVALUATED WETLAND
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- OTHER WETLAND (CITY OF BRAMPTON)
- VALLEYLAND / WATERCOURSE CORRIDOR (CITY OF BRAMPTON)



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4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT

GM BLUEPLAN ENGINEERING LIMITED

PROJECT

REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE

SENSITIVE NATURAL FEATURES AT SITE 4 - DERRY ROAD WEST OF HIGHWAY 410

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

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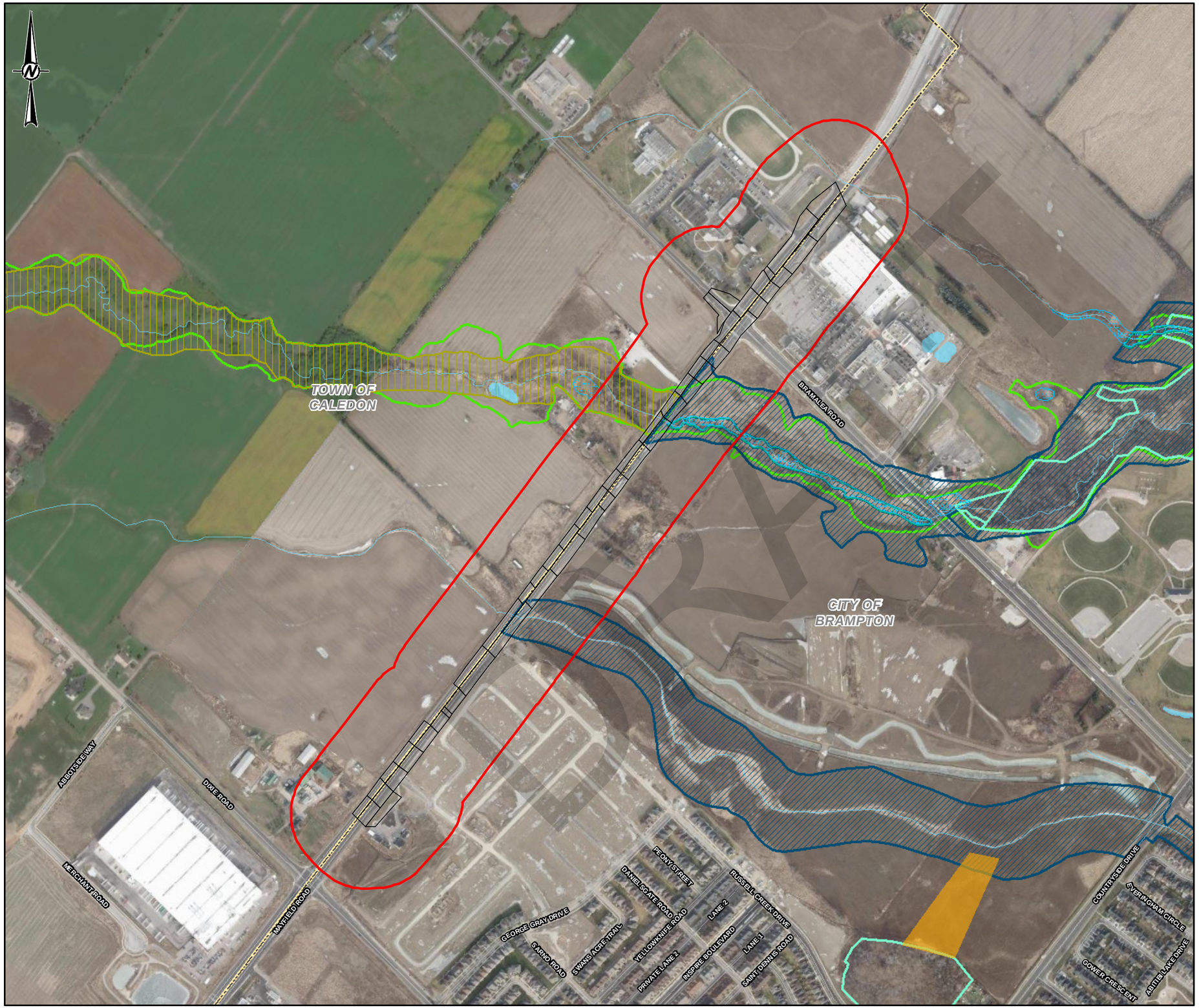
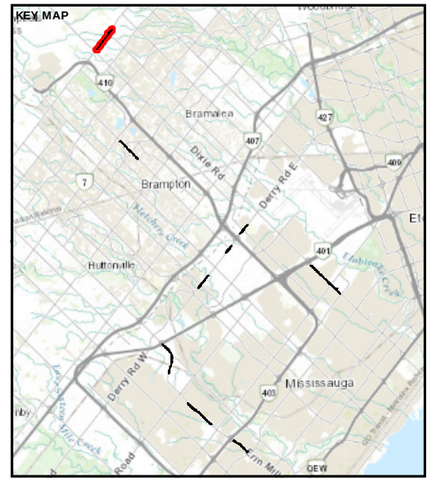


LEGEND

- ROAD
- WATERCOURSE
- WATERBODY
- UNEVALUATED WETLAND
- GREENLANDS SYSTEM (REGION OF PEEL)
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- LINKAGES AND ENHANCEMENT AREAS (CITY OF BRAMPTON)
- WOODLAND (CITY OF BRAMPTON)
- OTHER WETLAND (CITY OF BRAMPTON)
- VALLEYLAND / WATERCOURSE CORRIDOR (CITY OF BRAMPTON)
- ENVIRONMENTAL POLICY AREA (TOWN OF CALEDON)

KEY MAP



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1:7,500 METRES

REFERENCE(S)

1. BASE DATA - MNRF LIO, 2020. CITY OF MISSISSAUGA OPEN DATA, 2020. CITY OF BRAMPTON OPEN DATA, 2020.
2. STORM WATER INFRASTRUCTURE PROVIDED BY GM BLUE PLAN AND REGION OF PEEL, MAY 2020
3. BASE IMAGE - SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
GM BLUEPLAN ENGINEERING LIMITED

PROJECT
REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE
SENSITIVE NATURAL FEATURES AT SITE 5 - MAYFIELD ROAD EAST OF DIXIE ROAD

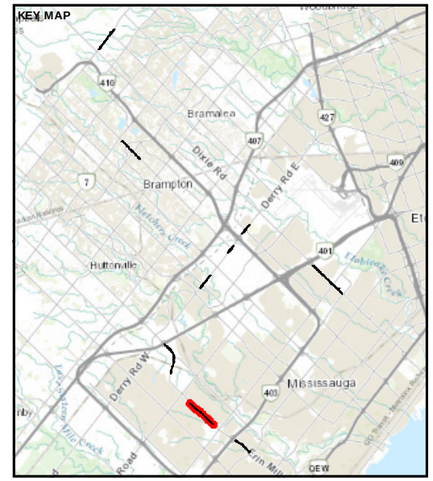
CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
19126124	0003	D	2-E

LEGEND

- ROAD
- RAILWAY TRACK
- WATERCOURSE
- WATERBODY
- GREENLANDS SYSTEM (REGION OF PEEL)
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- SIGNIFICANT NATURAL AREAS AND NATURAL GREEN SPACES (CITY OF MISSISSAUGA)



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REFERENCE(S)

1. BASE DATA - MNRF LIO, 2020. CITY OF MISSISSAUGA OPEN DATA, 2020. CITY OF BRAMPTON OPEN DATA, 2020.
2. STORM WATER INFRASTRUCTURE PROVIDED BY GM BLUE PLAN AND REGION OF PEEL, MAY 2020
3. BASE IMAGE - SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
GM BLUEPLAN ENGINEERING LIMITED

PROJECT
REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE
SENSITIVE NATURAL FEATURES AT SITE 11 - ERIN MILLS SOUTH OF MISSISSAUGA ROAD

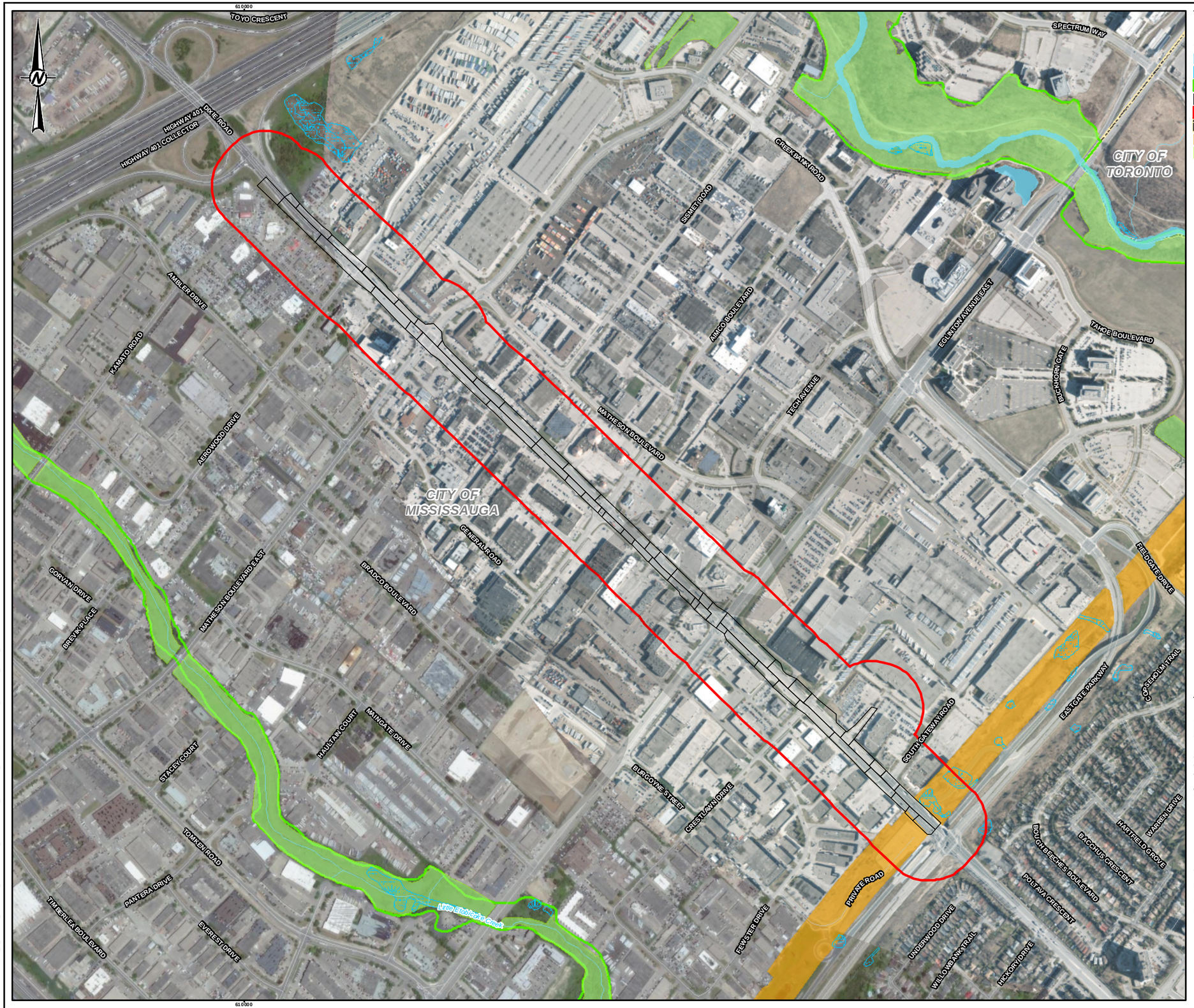
CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
19126124	0003	D	2-F

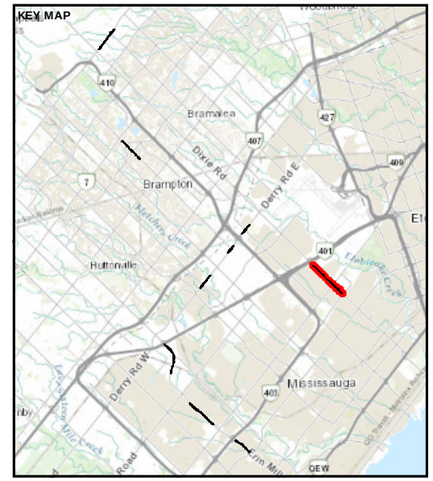
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

PATH: S:\Clients\Region_of_Peel\Peel_Stormwater_Infrastructure\99_PROJ\19126124_GMBluePlan_PeelRegionStormwater\4d_PRO\0003_Natural_Environment\19126124-0003-HN-0005.mxd PRINTED ON: 2022-01-31 AT 3:17:57 PM



LEGEND

- ROAD
- WATERCOURSE
- WATERBODY
- UNEVALUATED WETLAND
- GREENLANDS SYSTEM (REGION OF PEEL)
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- LINKAGES (CITY OF MISSISSAUGA)
- SIGNIFICANT NATURAL AREAS AND NATURAL GREEN SPACES (CITY OF MISSISSAUGA)



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REFERENCE(S)

1. BASE DATA - MNRF LIO, 2020. CITY OF MISSISSAUGA OPEN DATA, 2020. CITY OF BRAMPTON OPEN DATA, 2020.
2. STORM WATER INFRASTRUCTURE PROVIDED BY GM BLUE PLAN AND REGION OF PEEL, MAY 2020
3. BASE IMAGE - SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
GM BLUEPLAN ENGINEERING LIMITED

PROJECT
REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE
SENSITIVE NATURAL FEATURES AT SITE 13 - DIXIE ROAD SOUTH OF HIGHWAY 401

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
19126124	0003	D	2-G

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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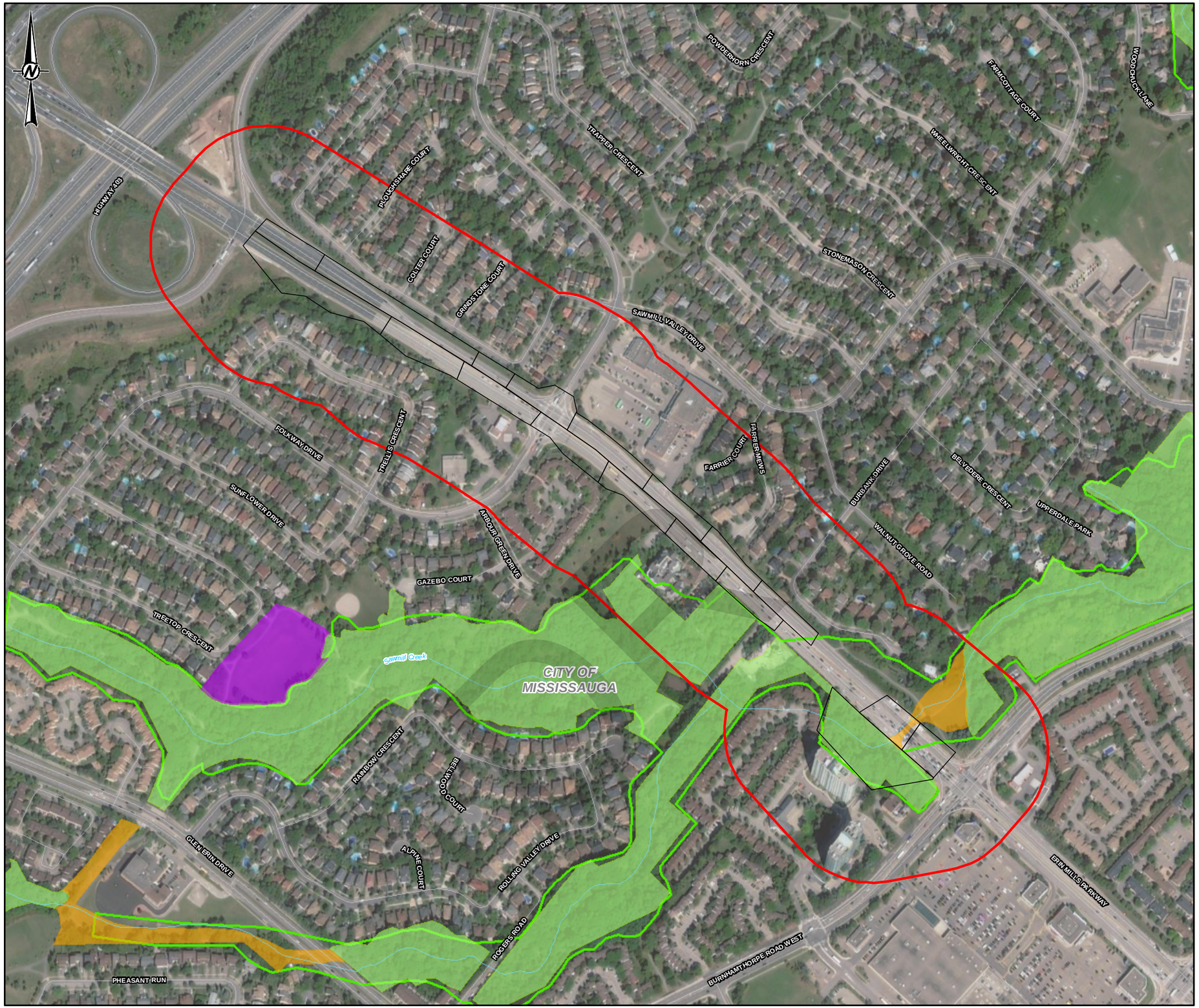
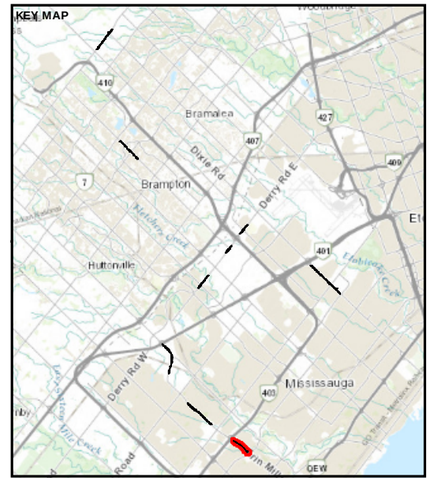


LEGEND

- ROAD
- WATERCOURSE
- GREENLANDS SYSTEM (REGION OF PEEL)
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- LINKAGES (CITY OF MISSISSAUGA)
- SPECIAL MANAGEMENT AREAS (CITY OF MISSISSAUGA)
- SIGNIFICANT NATURAL AREAS AND NATURAL GREEN SPACES (CITY OF MISSISSAUGA)

KEY MAP



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1:5,000 METRES

REFERENCE(S)

1. BASE DATA - MNRF LIO, 2020. CITY OF MISSISSAUGA OPEN DATA, 2020. CITY OF BRAMPTON OPEN DATA, 2020.
2. STORM WATER INFRASTRUCTURE PROVIDED BY GM BLUE PLAN AND REGION OF PEEL, MAY 2020
3. BASE IMAGE - SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
GM BLUEPLAN ENGINEERING LIMITED

PROJECT
REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE
SENSITIVE NATURAL FEATURES AT SITE 16 - ERIN MILLS SOUTH OF HIGHWAY 403

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
19126124	0003	D	2-H

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25mm

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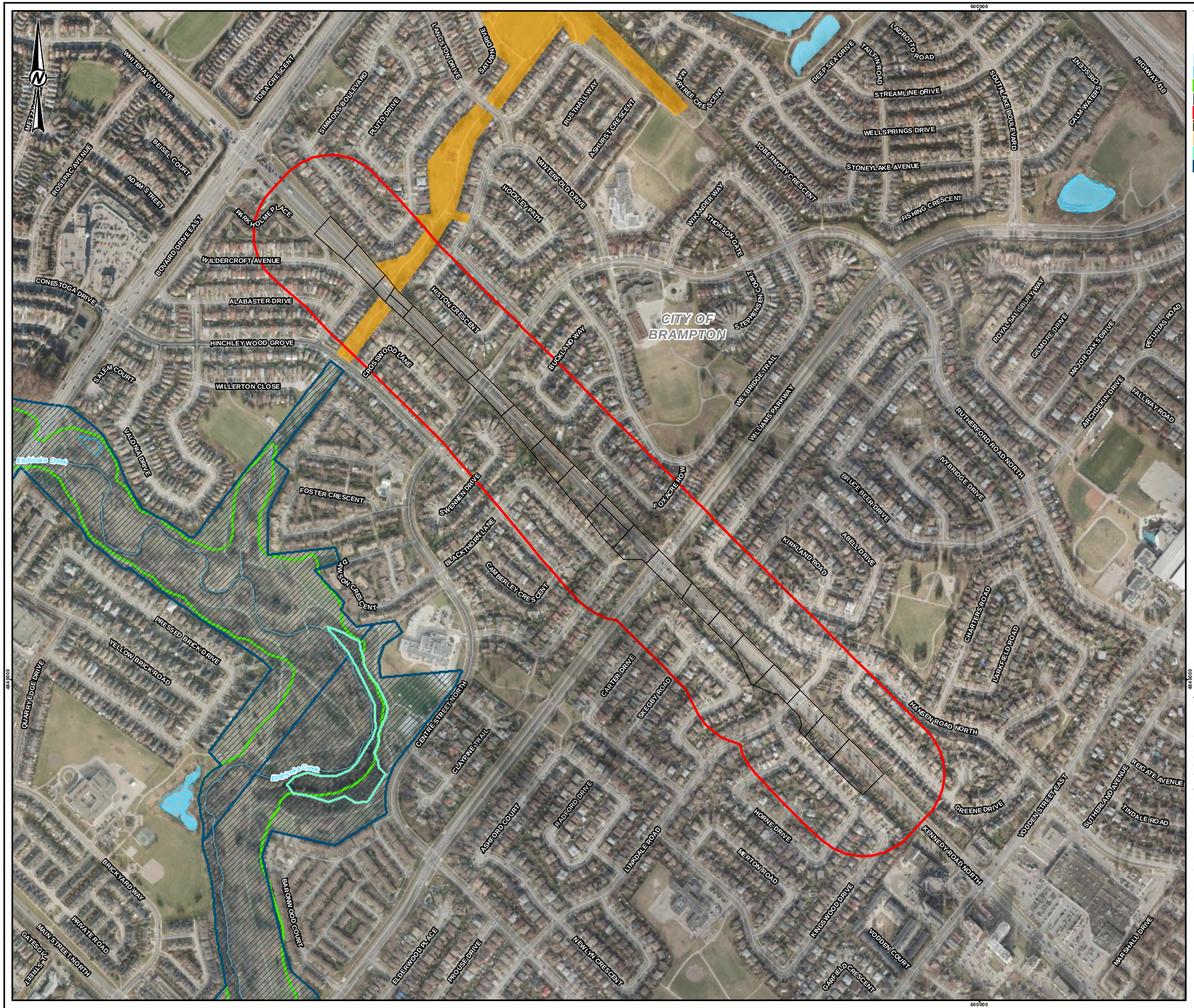
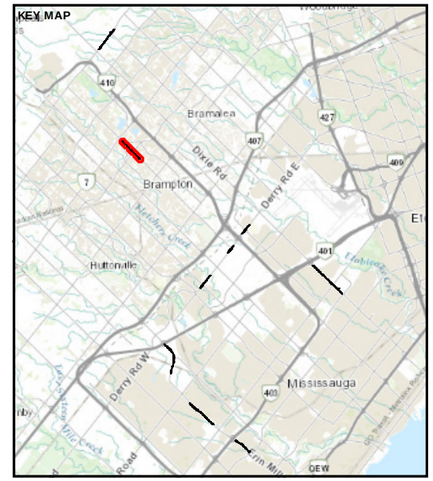


LEGEND

- ROAD
- WATERCOURSE
- WATERBODY
- UNEVALUATED WETLAND
- GREENLANDS SYSTEM (REGION OF PEEL)
- PROJECT SITE
- STUDY AREA
- CITY / TOWN BOUNDARY
- LINKAGES AND ENHANCEMENT AREAS (CITY OF BRAMPTON)
- WOODLAND (CITY OF BRAMPTON)
- VALLEYLAND / WATERCOURSE CORRIDOR (CITY OF BRAMPTON)

KEY MAP



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REFERENCE(S)

1. BASE DATA - MNRF LIO, 2020. CITY OF MISSISSAUGA OPEN DATA, 2020. CITY OF BRAMPTON OPEN DATA, 2020.
2. STORM WATER INFRASTRUCTURE PROVIDED BY GM BLUE PLAN AND REGION OF PEEL, MAY 2020
3. BASE IMAGE - SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY
SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. COORDINATE SYSTEM: NAD 1983 UTM ZONE 17N

CLIENT
GM BLUEPLAN ENGINEERING LIMITED

PROJECT
REGION OF PEEL STORMWATER SERVICING MASTER PLAN FOR REGIONAL ROADS

TITLE
SENSITIVE NATURAL FEATURES AT SITE 17 - KENNEDY ROAD SOUTH OF QUEEN STREET

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2021-12-03
DESIGNED	CGE
PREPARED	BB
REVIEWED	BB
APPROVED	HM

PROJECT NO.	CONTROL	REV.	FIGURE
19126124	0003	D	2-I

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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APPENDIX A

Species at Risk Screening

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
Amphibian	Jefferson salamander	*Ambystoma jeffersonianum*	END	END	END	S2	In Ontario, Jefferson salamander is found only in southern Ontario, along southern portions of the Niagara Escarpment and western portions of the Oak Ridges Moraine. Jefferson salamander prefers moist, well-drained deciduous and mixed forests with a closed canopy. It overwinters underground in mammal burrows and rock fissures and moves to vernal pools and ephemeral wetlands in the early spring to breed. Breeding ponds are typically located in or near to forested habitats, and contain submerged debris (i.e., sticks, vegetation) for egg attachment sites. Ephemeral breeding pools need to have water until at least mid-summer (mid to late July) (Jefferson Salamander Recovery Team 2010).	Regulated In the geographic areas of: City of Hamilton; counties of Brant, Dufferin, Elgin, Grey, Haldimand, Norfolk, and Wellington; regional municipalities of Halton, Niagara, Peel, Waterloo and York Regulated Habitat: i. wetland, pond or vernal pool, or other temporary pool, being used or was used in previous five years, by Jefferson salamander or Jefferson dominated polyploidy ii. area within 300 m of wetland, pond or vernal or other temporary pool that provides suitable foraging, dispersal, migration or hibernation conditions iii. wetland, pond or vernal or other temporary pool that provides suitable breeding conditions, is within 1 km of an area described in i. and is connected to the area described in iv. iv. an area providing suitable conditions for Jefferson salamander or Jefferson dominated polyploids to disperse and is within 1 km of an area described in i.	Moderate at Site 5	The forests and wetlands in the study area may provide suitable habitat for Jefferson salamander. The last known record in the study area is from 2007.
Amphibian	Western chorus frog - Great Lakes St. Lawrence / Canadian Shield population	*Pseudacris triseriata*	—	THR	THR	S3	In Ontario, habitat of this amphibian species typically consists of marshes or wooded wetlands, particularly those with dense shrub layers and grasses, as this species is a poor climber. They will breed in almost any fishless pond including roadside ditches, gravel pits and flooded swales in meadows. This species hibernates in terrestrial habitats under rocks, dead trees or leaves, in loose soil or in animal burrows. During hibernation, this species is tolerant of flooding (Environment Canada 2015).		Moderate at Site 5	Wetlands in the study area may provide suitable habitat for western chorus frog. There are no recent occurrence records for the study area.
Arthropod	Gypsy cuckoo bumble bee	*Bombus bohemicus*	END	END	END	S1S2	In Ontario, gypsy cuckoo bumble bee is a habitat generalist and is found in several different types of habitats, including open meadows, agricultural fields, urban areas, boreal forest and other woodlands. Gypsy cuckoo bumble bee is a parasitic bee and uses the underground nests of the subgenus *Bombus senso stricto*. This bee is a		Low	Currently this species is only known to occur in Pinery Provincial Park.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
							generalist forager but is often associated with flowering plants close to wooded areas and blueberry fields. Currently this species is only known to occur in Pinery Provincial Park (COSEWIC 2014).			
Arthropod	Monarch	*Danaus plexippus*	SC	SC	END	S2N, S4B	In Ontario, monarch is found throughout the northern and southern regions of the province. This butterfly is found wherever there is milkweed (*Asclepias* spp.) plants for its caterpillars and wildflowers that supply a nectar source for adults. It is often found on abandoned farmland, meadows, open wetlands, prairies and roadsides, but also in city gardens and parks. Important staging areas during migration occur along the north shores of the Great Lakes (COSEWIC 2010).		Moderate at all sites	Meadows, open wetlands, farm fields, and roadsides throughout the study areas may provide suitable habitat for monarch. There are recent occurrence records within the vicinity of all sites.
Arthropod	Rapids clubtail	*Gomphus quadricolor*	END	END	END	S1	In Ontario, rapids clubtail has been recorded in only four rivers in southwestern and southeastern Ontario: Thames, Humber, Credit and Mississippi. This dragonfly's nymph inhabits medium to large, swift-flowing streams with interspersed rapids and muddy pools. Gravel or cobble substrate is preferred, and protruding boulders are used by adults to perch. Riparian forest habitat is also required for adult females (Hamill 2010).		Low	Rivers and large streams in the study areas may provide suitable habitat for rapids clubtail; however, it has only been recorded in four rivers in southwestern and southeastern Ontario, and no occurrence records were available for any of the Sites.
Arthropod	Rusty-patched bumble bee	*Bombus affinis*	END	END	END	S1	In Ontario, rusty-patched bumble bee is found in areas from the southern Great Lakes – St. Lawrence forest region southwards into the Carolinian forest. It is a habitat generalist, but it is typically found in open habitats, such as mixed farmland, savannah, marshes, sand dunes, urban and lightly wooded areas. It is cold –tolerant and can be found at high elevations. Most recent sightings in Ontario have been in oak savannah habitat with well-drained, sandy soils and moderately open canopy. It requires an abundance of flowering plants for forage. This species most often builds nests underground in old rodent burrows, but also in hollow tree stumps and fallen dead wood (Colla and Taylor-Pindar 2011). The only recent sightings in Ontario are from Pinery Provincial Park.		Low	The only recent sightings in Ontario are from Pinery Provincial Park.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
Arthropod	West Virginia white	*Pieris virginiensis*	SC	—	—	S3	In Ontario, west Virginia white is found primarily in the central and southern regions of the province. This butterfly lives in moist, mature, deciduous and mixed woodlands, and the caterpillars feed only on the leaves of toothwort (*Cardamine* spp.), which are small, spring-blooming plants of the forest floor. These woodland habitats are typically maple-beech-birch dominated. This species is associated with woodlands growing on calcareous bedrock or thin soils over bedrock (Burke 2013).		Low	There are some wooded areas within some of the study areas; however, it is not anticipated that they are growing on calcareous bedrock or thin soils over bedrock.
Bird	Acadian flycatcher	*Empidonax virescens*	END	END	END	S2S3B	In Ontario, Acadian flycatcher breeds in the understory of large, mature, closed-canopy forests, swamps and forested ravines. This bird prefers forests greater than 40 ha in size and exhibits edge sensitivity preferring the deep interior of the forest. Its nest is loosely woven and placed near the tip of branch in a small tree or shrub often, but not always, near water (Allen et al. 2002).		Low	There is a lack of large mature forests in the study areas.
Bird	Bald eagle	*Haliaeetus leucocephalus*	SC	—	NAR	S2N,S4B	In Ontario, bald eagle nests are typically found near the shorelines of lakes or large rivers, often on forested islands. The large, conspicuous nests are typically found in large super-canopy trees along water bodies (Buehler 2000).		Low	There are no lake shorelines within the study areas and the watercourses traversing the sites and study areas appear to be small.
Bird	Bank swallow	*Riparia riparia*	THR	THR	THR	S4B	In Ontario, bank swallow breeds in a variety of natural and anthropogenic habitats, including lake bluffs, stream and riverbanks, sand and gravel pits, and roadcuts. Nests are generally built in a vertical or near-vertical bank. Breeding sites are typically located near open foraging sites such as rivers, lakes, grasslands, agricultural fields, wetlands and riparian woods. Forested areas are generally avoided (Garrison 1999).	General (Draft) Category 1 – Breeding colony, including burrow and substrate between them Category 2 – Area within 50 m of the front of breeding colony face Category 3 – Area of suitable foraging habitat within 500 m of the outer edge of breeding colony	Moderate at Sites 1, 2, 3, 5, 11, and 16	Stream and riverbanks and roadcuts in the study areas may provide suitable habitat for bank swallow. There are recent occurrence records within the vicinity of the indicated sites.
Bird	Barn swallow	*Hirundo rustica*	THR	THR	SC	S4B	In Ontario, barn swallow breeds in areas that contain a suitable nesting structure, open areas for foraging, and a body of water. This species nests in human made structures including barns, buildings, sheds, bridges, and culverts. Preferred foraging habitat includes grassy fields, pastures, agricultural cropland, lake and river shorelines, cleared rights-of-way, and wetlands (COSEWIC 2011). Mud nests are	General Category 1 – Nest Category 2 – Area within 5 m of the nest Category 3 – Area between 5-200 m of the nest	Moderate at Sites 2 and 5	Numerous structures suitable for nesting, such as abandoned buildings, bridges, and culverts, are located within the study areas. There are recent occurrence records within the vicinity of the indicated sites.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
							fastened to vertical walls or built on a ledge underneath an overhang. Suitable nests from previous years are reused (Brown and Brown 2019).			
Bird	Black tern	*Chlidonias niger*	SC	—	NAR	S3B	In Ontario, black tern breeds in freshwater marshlands where it forms small colonies. It prefers marshes or marsh complexes greater than 20 ha in area and which are not surrounded by wooded area. Black terns are sensitive to the presence of agricultural activities. The black tern nests in wetlands with an even combination of open water and emergent vegetation, and still waters of 0.5-1.2 m deep. Preferred nest sites have short dense vegetation or tall sparse vegetation often consisting of cattails, bulrushes and occasionally burreed or other marshland plants. Black terns also require posts or snags for perching (Weseloh 2007).		Low	There are no freshwater marshlands greater than 20 ha in area on any of the Sites or within the study areas.
Bird	Bobolink	*Dolichonyx oryzivorus*	THR	THR	THR	S4B	In Ontario, bobolink breeds in grasslands or graminoid dominated hayfields with tall vegetation (Gabhauer 2007). Bobolink prefers grassland habitat with a forb component and a moderate litter layer. They have low tolerance for presence of woody vegetation and are sensitive to frequent mowing within the breeding season. They are most abundant in established, but regularly maintained, hayfields, but also breed in lightly grazed pastures, old or fallow fields, cultural meadows and newly planted hayfields. Their nest is woven from grasses and forbs. It is built on the ground, in dense vegetation, usually under the cover of one or more forbs (Renfrew et al. 2015).	General Category 1 – Nest and area within 10 m of nest Category 2 – Area between 10-60 m of the nest or centre of approximated defended territory Category 3 – Area of continuous suitable habitat between 60-300 m of the nest or centre of approximated defended territory	Moderate at Site 5	Agricultural fields in the study area may provide suitable nesting habitat for bobolink. There are some occurrence records throughout the study area with unlisted dates.
Bird	Canada warbler	*Cardellina canadensis*	SC	THR	THR	S4B	In Ontario, breeding habitat for Canada warbler consists of moist mixed forests with a well-developed shrubby understory. This includes low-lying areas such as cedar and alder swamps, and riparian thickets (McLaren 2007). It is also found in densely vegetated regenerating forest openings. Suitable habitat often contains a developed moss layer and an uneven forest floor. Nests are well concealed on or near the ground in dense shrub or fern cover, often in		Low	Habitat is not likely to occur on any of the Sites or within the study areas.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
							stumps, fallen logs, overhanging stream banks or mossy hummocks (Reitsma et al. 2010).			
Bird	Cerulean warbler	*Setophaga cerulea*	THR	END	END	S3B	In Ontario, breeding habitat of cerulean warbler consists of second-growth or mature deciduous forest with a tall canopy of uneven vertical structure and a sparse understory. This habitat occurs in both wet bottomland forests and upland areas, and often contains large hickory and oak trees. This species may be attracted to gaps or openings in the upper canopy. The cerulean warbler is associated with large forest tracks but may occur in woodlots as small as 10 ha (COSEWIC 2010). Nests are usually built on a horizontal limb in the mid-story or canopy of a large deciduous tree (Buehler et al. 2013).		Low	Habitat is not likely to occur on any of the Sites or within the study areas.
Bird	Chimney swift	*Chaetura pelagica*	THR	THR	THR	S4B, S4N	In Ontario, chimney swift breeding habitat is varied and includes urban, suburban, rural and wooded sites. They are most commonly associated with towns and cities with large concentrations of chimneys. Preferred nesting sites are dark, sheltered spots with a vertical surface to which the bird can grip. Unused chimneys are the primary nesting and roosting structure, but other anthropogenic structures and large diameter cavity trees are also used (COSEWIC 2007).	General Category 1 – Human-made nest/roost, or natural nest/roost cavity and area within 90 m of natural cavity	Moderate at Sites 2, 5, 11, and 16	Chimneys and large-diameter cavity trees in the study areas may provide suitable habitat. There are recent occurrence records within the vicinity of the indicated sites.
Bird	Common nighthawk	*Chordeiles minor*	SC	THR	SC	S4B	In Ontario, these aerial foragers require areas with large open habitat. This includes farmland, open woodlands, clearcuts, burns, rock outcrops, alvars, bogs, fens, prairies, gravel pits and gravel rooftops in cities (Sandilands 2007)		Moderate at Site 5	Open fields and wetlands in the study area may provide suitable habitat for common nighthawk. There are recent occurrence records within the vicinity of this site.
Bird	Eastern meadowlark	*Sturnella magna*	THR	THR	THR	S4B	In Ontario, eastern meadowlark breeds in pastures, hayfields, meadows and old fields. Eastern meadowlark prefers moderately tall grasslands with abundant litter cover, high grass proportion, and a forb component (Hull 2019). They prefer well drained sites or slopes, and sites with different cover layers (Roseberry and Klimstra 1970).	General Category 1 – Nest and area within 10 m of the nest Category 2 – Area between 10-100 m of the nest or centre of approximated defended territory Category 3 – Area of continuous suitable habitat between 100-300 m of the nest or centre of approximated defended territory	Moderate at Site 5	Agricultural fields in the study area may provide suitable nesting habitat for eastern meadowlark. There are no occurrence records for the study area.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
Bird	Eastern whip-poor-will	*Antrostomus vociferus*	THR	THR	THR	S4B	In Ontario, whip-poor-will breeds in semi-open forests with little ground cover. Breeding habitat is dependent on forest structure rather than species composition, and is found on rock and sand barrens, open conifer plantations and post-disturbance regenerating forest. Territory size ranges from 3 to 11 ha (COSEWIC 2009). No nest is constructed, and eggs are laid directly on the leaf litter (Mills 2007).		Low	Habitat is not likely to occur on any of the Sites or within the study areas.
Bird	Eastern wood-pewee	*Contopus virens*	SC	SC	SC	S4B	In Ontario, eastern wood-pewee inhabits a wide variety of wooded upland and lowland habitats, including deciduous, coniferous, or mixed forests. It occurs most frequently in forests with some degree of openness. Intermediate-aged forests with a relatively sparse midstory are preferred. In younger forests with a relatively dense midstory, it tends to inhabit the edges. Also occurs in anthropogenic habitats providing an open forested aspect such as parks and suburban neighborhoods. Nest is constructed atop a horizontal branch, 1-2 m above the ground, in a wide variety of deciduous and coniferous trees (COSEWIC 2012).		Moderate at Site 11	Forests and wooded anthropogenic areas in the study area may provide suitable nesting habitat. There are recent occurrence records within the vicinity of the site.
Bird	Evening grosbeak	*Coccothraustes vespertinus*	SC	SC	SC	S4B	In Ontario, evening grosbeak breeds across northern Ontario, as far south as southern Georgian Bay, in open mature coniferous or mixed forests dominated by fir species, white spruce and/or trembling aspen (MECP 2019).		Low	Although forests in the study areas may provide suitable habitat, evening grosbeak is rarely known to breed in the vicinity of the study areas.
Bird	Golden-winged warbler	*Vermivora chrysoptera*	SC	THR	THR	S4B	In Ontario, golden-winged warbler breeds in regenerating scrub habitat with dense ground cover and a patchwork of shrubs, usually surrounded by forest. Their preferred habitat is characteristic of a successional landscape associated with natural or anthropogenic disturbance such as rights-of-way, and field edges or openings resulting from logging or burning. The nest of the golden-winged warbler is built on the ground at the base of a shrub or leafy plant, often at the shaded edge of the forest or at the edge of a forest opening (Confer et al. 2011).		Low	Habitat is not likely to occur on any of the Sites or within the study areas.

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Bird	Grasshopper sparrow *pratensis* subspecies	*Ammodramus savannarum* (pratensis subspecies)	SC	SC	SC	S4B	In Ontario, grasshopper sparrow is found in medium to large grasslands with low herbaceous cover and few shrubs. It also uses a wide variety of agricultural fields, including cereal crops and pastures. Close-grazed pastures and limestone plains (e.g., Carden and Napanee Plains) support highest density of this bird in the province (COSEWIC 2013).		Moderate at Site 5	Large farm fields in the study area may provide suitable nesting habitat for grasshopper sparrow. There are recent occurrence records within the vicinity of this site.
Bird	Henslow's sparrow	*Ammodramus henslowii*	END	END	END	SHB	In Ontario, Henslow's sparrow breeds in large grasslands with low disturbance, such as lightly grazed and ungrazed pastures, fallow hayfields, grassy swales in open farmland, and wet meadows. Preferred habitat contains tall, dense grass cover, typically over 30 cm high, with a high percentage of ground cover, and a thick mat of dead plant material. Henslow's sparrow generally avoids areas with emergent woody shrubs or trees, and fence lines. Areas of standing water or ephemerally wet patches appear to be important. This species breeds more frequently in patches of habitat greater than 30 ha and preferably greater than 100 ha (COSEWIC 2011).	General Category 1 – Nest or probable breeding occurrence and the area within 50 m Category 2 – Area of continuous suitable habitat outside of category 1	Low	There is a lack of large, low-disturbance grasslands on the Site and within the study areas.
Bird	Least bittern	*Ixobrychus exilis*	THR	THR	THR	S4B	In Ontario, least bittern breeds in marshes, usually greater than 5 ha, with emergent vegetation, relatively stable water levels and areas of open water. Preferred habitat has water less than 1 m deep (usually 10 – 50 cm). Nests are built in tall stands of dense emergent or woody vegetation (Woodliffe 2007). Clarity of water is important as siltation, turbidity, or excessive eutrophication hinders foraging efficiency (COSEWIC 2009).		Low	There is a lack of large marshes greater than 5 ha on the Sites and within the study areas.
Bird	Loggerhead shrike	*Lanius ludovicianus (migrans subsp)*	END	END	END	S2B	In Ontario, loggerhead shrike breeds in open country habitat characterized by short grasses with scattered shrubs or low trees. Unimproved pasture containing scattered hawthorns (*Crataegus* spp.) on shallow soils over limestone bedrock is the preferred habitat. Preferred nest sites include isolated hawthorns or red cedar. Males defend large territories of approximately 50 ha (Chabot 2007).		Low	There is a lack of open country habitat on the Site and within the study areas.

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Bird	Louisiana waterthrush	*Parkesia motacilla* (formerly Seiurus motacilla)	THR	THR	THR	S3B	In Ontario, Louisiana waterthrush inhabits mature forests along steeply sloped ravines adjacent to running water. It prefers clear, cold streams and densely wooded swamps. Trees, bushes, exposed roots, cliffs, banks and mossy logs are favoured nesting spots. Riparian woodlands are preferred stopover sites during migration. Nests are concealed from view at the base of uprooted trees, among mosses, or under logs and in cavities along the stream bank (COSEWIC 2006).		Low	Habitat is not likely to occur on any of the Sites or within the study areas.
Bird	Northern bobwhite	*Colinus virginianus*	END	END	END	S1	In Ontario, northern bobwhite breeds in early successional habitats. This species requires a combination of three habitat types: woody cover, cropland and grassland. Croplands provide foraging habitat, grassland and fields are used for nesting, and dense brush provides both winter forage and year-round cover. These birds' nest on the ground in a shallow depression lined with grasses and other dead vegetation (Brennan et al. 2014).		Low	There is a lack of early successional habitat in the study areas.
Bird	Peregrine falcon (anatum/tundrius subspecies)	*Falco peregrinus anatum/tundrius*	SC	SC	Not at Risk	S3B	In Ontario, peregrine falcon breeds in areas containing suitable nesting locations and sufficient prey resources. Such habitat includes both natural locations containing cliff faces (heights of 50 - 200 m preferred) and anthropogenic landscapes including urban centres containing tall buildings, open pit mines and quarries, and road cuts. Peregrine falcons nest on cliff ledges and crevices and building ledges. Nests consist of a simple scrape in the substrate (COSEWIC 2017).		Moderate at Sites 1, 13, and 16	Tall buildings in the study areas may provide suitable habitat for peregrine falcon. There are recent occurrence records within the vicinity of the indicated sites.
Bird	Prothonotary warbler	*Protonotaria citrea*	END	END	END	S1B	In Ontario, prothonotary warbler breeds in mature and semi-mature, deciduous swamp forest with a closed canopy, and large expanses of relatively deep, open standing water. Swamps are typically dominated by silver maple, black ash, yellow birch, and black gum. These birds' nest in tree cavities, favouring small, shallow holes often situated at low heights in dead or dying trees. Nests are typically situated over standing or slow-moving water. Artificial nest boxes are also readily accepted. This species is		Low	Large deciduous swamp forests do not exist on any of the Sites or within the study areas.

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							area sensitive and is seldom found in forests less than 100 ha in size (COSEWIC 2007).			
Bird	Red-headed woodpecker	*Melanerpes erythrocephalus*	SC	END	END	S4B	In Ontario, red-headed woodpecker breeds in open, deciduous woodlands or woodland edges and are often found in parks, cemeteries, golf courses, orchards and savannahs (Woodliffe 2007). They may also breed in forest clearings or open agricultural areas provided that large trees are available for nesting. They prefer forests with little or no understory vegetation. They are often associated with beech or oak forests, beaver ponds and swamp forests where snags are numerous. Nests are excavated in the trunks of large dead trees (Frei et al. 2017).		Moderate at Site 2	The golf course in the study area may provide suitable habitat for red-headed woodpecker. There are no recent occurrence records throughout the study area.
Bird	Short-eared owl	*Asio flammeus*	SC	SC	SC	S2N,S4B	In Ontario, short-eared owl breeds in a variety of open habitats including grasslands, tundra, bogs, marshes, clear-cuts, burns, pastures and occasionally agricultural fields. The primary factor in determining breeding habitat is proximity to small mammal prey resources (COSEWIC 2008). Nests are built on the ground at a dry site and usually adjacent to a clump of tall vegetation used for cover and concealment (Gahbauer 2007).		Moderate at Site 5	Open farm field and wetlands in the study area may provide suitable habitat for short-eared owl. There are no recent occurrence records throughout the study area.
Bird	Wood thrush	*Hylocichla mustelina*	SC	THR	THR	S4B	In Ontario, wood thrush breeds in moist, deciduous hardwood or mixed stands that are often previously disturbed, with a dense deciduous undergrowth and with tall trees for singing perches. This species selects nesting sites with the following characteristics: lower elevations with trees less than 16 m in height, a closed canopy cover (>70 %), a high variety of deciduous tree species, moderate subcanopy and shrub density, shade, fairly open forest floor, moist soil, and decaying leaf litter (COSEWIC 2012).		Moderate at Sites 11 and 16	Wooded areas in the study areas may provide suitable nesting habitat. There are occurrence records for the study areas with unlisted dates.
Bird	Yellow-breasted chat	*Icteria virens virens*	END	END	END	S1B	In Ontario, yellow-breasted chat breeds in early successional, shrub-thicket habitats including woodland edges, regenerating old fields, railway and hydro right-of-way's, young coniferous reforestations, and wet thickets bordering wetlands. Tangles of grape (Vitis spp.)		Low	There is a lack of shrub-thicket habitats on the Sites and within the study areas.

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							and raspberry (Rubus spp.) vines are features of most breeding sites. There is some evidence that the yellow-breasted chat is an area sensitive species. Nests are located in dense shrubbery near to the ground (COSEWIC 2011).			
Fish	American eel	*Anguilla rostrata*	END	—	THR	S1?	In Ontario, American eel is native to the Lake Ontario, St. Lawrence River and Ottawa River watersheds. Their current distribution includes lakes Huron, Erie, and Superior and their tributaries. The Ottawa River population is considered extirpated. The preferred habitat of the American eel is cool water of lakes and streams with muddy or silty substrates in water temperatures between 16 and 19°C. The American eel is a catadromous fish that lives in fresh water until sexual maturity then migrates to the Sargasso Sea to spawn (Burridge et al. 2010; Eakins 2016).	General (as of June 30, 2013)	Low	Due to distance from Lake Ontario, it is unlikely that the American eel exists within the watercourses on any of the Sites and within the study areas.
Fish	Deepwater sculpin - Great Lakes / Western St.Lawrence population	*Myoxocephalus thompsoni*	—	SC	SC	S3?	In Ontario, deepwater sculpin are found in Lakes Huron, Ontario, and Superior, as well as in scattered inland lakes. This fish species prefers cold, deep water (usually between 60-150 m in lakes), with soft substrates. Spawning takes place year-round, but peaks in August and early September. Its lifespan is 7 years, with females maturing at 3 years and males at 2 years (DFO 2019).		Low	The watercourses on the Sites and within the study areas likely lack adequate depth preferred by this species.
Fish	Lake sturgeon - Great Lakes / Upper St.Lawrence population	*Acipenser fulvescens*	END	—	THR	S2	In Ontario, lake sturgeon, a large prehistoric freshwater fish, is found in all the Great Lakes and in all drainages of the Great Lakes and of Hudson Bay. This species typically inhabits highly productive shoal areas of large lakes and rivers. They are bottom dwellers and prefer depths between 5-10 m and mud or gravel substrates. Small sturgeons are often found on gravelly shoals near the mouths of rivers. They spawn in depths of 0.5 to 4.5 m in areas of swift water or rapids. Where suitable spawning rivers are not available, such as in the lower Great Lakes, they are known to spawn in wave action over rocky ledges or around rocky islands (Golder 2011).	General	Low	The watercourses on the Sites and within the study areas are unlikely to provide suitable habitat for lake sturgeon. Additionally, there are no records of this species in the vicinity of the Sites or study areas.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
Fish	Northern brook lamprey - Great Lakes / Upper St.Lawrence population	*Ichthyomyzon fossor*	SC	SC	SC	S3	In Ontario, northern brook lamprey occurs in rivers draining into Lakes Superior, Huron and Erie, as well as in the Ottawa and St. Lawrence Rivers. It is found in clear streams of varying sizes. Adults prefer riffle and run areas of cold-water streams and rivers with gravel and sand substrates. Spawning habitat usually includes a swift current and coarse gravel or rocky substrate, with which males construct inconspicuous nests (COSEWIC 2007).		Low	This species is not known to currently occur in the vicinity of the study areas.
Fish	Redside dace	*Clinostomus elongatus*	END	END	END	S2	In Ontario, redside dace, a small cool water species common in the USA but less so in Canada, is found in tributaries of western Lake Ontario, Lake Erie, Lake Huron and Lake Simcoe. They are found in pools and slow-moving areas of small headwater streams with clear to turbid water. Overhanging grasses, shrubs, and undercut banks, are an important part of their habitat, as are instream boulders and large woody debris. Preferred substrates are variable and include silt, sand, gravel and boulders. Spawning occurs in shallow riffle areas (Redside Dace Recovery Team 2010).	Regulated In the geographic areas of: cities of Hamilton and Toronto; counties of Bruce, Grey, Huron, Simcoe, and Wellington; regional municipalities of Durham, Halton, Peel and York; townships of St. Joseph, Jocelyn and Hilton; and the village of Hilton Beach Regulated Habitat: i. any part of a stream of other watercourse currently being used by Redside Dace, or was used during previous 20 years by Redside Dace and that provides suitable conditions to carry out life processes ii. the area encompassing the meander belt width of the stream or watercourse described in i., and the vegetated area or agricultural lands within 30 m of the stream or watercourse iii. stream, permanent or intermittent headwater drainage feature, groundwater discharge area or wetland that augments or maintains baseflow, coarse sediment supply or surface water quality of a part of stream or other watercourse described in i., provided that stream or watercourse has an average bankfull width of 7.5 m or less In the geographic areas of: in the City of Hamilton, counties of Bruce, Grey, Huron, Simcoe, and Wellington, and the regional municipalities of Durham, Halton, Peel and York Regulated Habitat:	Moderate at Sites 2 and 5	Coolwater streams in the study areas may provide suitable habitat for redside dace. There are historical and current occurrence records within the vicinity of the indicated sites.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
								iv. Any part of a stream or other watercourse used by a Redside Dace at any time in the past located in the same or adjacent sub-watershed as area identified in i. that provides suitable conditions for successful stream corridor rehabilitation and for natural recolonization of Redside Dace v. area encompassing the meander belt width of an area described in iv., and the vegetated area or agricultural lands within 30 m of an area described in iv. vi. stream, permanent or intermittent headwater drainage feature, groundwater discharge area or wetland that augments or maintains baseflow, coarse sediment supply or surface water quality of a part of stream or other watercourse described in iv., provided that stream or watercourse has an average bankfull width of 7.5 m or less.		
Fish	Shortnose cisco	*Coregonus reighardi*	END	END	END	SH	In Ontario, shortnose cisco species was last reported in Georgian Bay in 1985 and Lake Ontario in 1964. It prefers clear, deep waters and water temperatures between 2 and 10°C (COSEWIC 2005).	General (as of June 30, 2013)	Low	The watercourses on the Sites and within the study areas likely lack sufficient depth and thermal regime preferred by this species.
Fish	Upper Great Lakes kiyi	*Coregonus kiyi kiyi*	SC	SC	SC	S3	In Ontario, kiyi occurs in Lake Superior. The kiyi was last seen in Lake Ontario in 1964 and Lake Huron in 1973. The Kiyi is a cold-water species that prefers temperatures between 3.7 and 4.6°C and depths ranging from 35 to 200 m; however, it is rarely found in waters less than 108 m deep. Kiyi have been collected over lake bottoms of clay and mud substrates. Spawning generally occurs in the late fall at depths greater than 100 m (COSEWIC 2005).		Low	There are no suitable habitats meeting the required depths for this species on the Sites or within the study areas.
Mammal	Eastern small-footed myotis	*Myotis leibii*	END	—	—	S2S3	This species is not known to roost within trees, but there is very little known about its roosting habits. The species generally roosts on the ground under rocks, in rock crevices, talus slopes and rock piles. It occasionally inhabits buildings. Areas near the entrances of caves or abandoned mines may be used for hibernaculum, where the conditions are	General	Moderate at Site 5	There may be suitable rock features for roosting in the study area. There are no known abandoned mine features in the vicinity of the study area that may provide hibernacula for this species.

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							drafty with low humidity, and may be subfreezing (Humphrey 2017)			
Mammal	Little brown myotis	*Myotis lucifugus*	END	END	END	S4	In Ontario, this specie's range is extensive and covers much of the province. It will roost in both natural and man-made structures. Roosting colonies require a number of large dead trees, in specific stages of decay and that project above the canopy in relatively open areas. May form nursery colonies in the attics of buildings within 1 km of water. Caves or abandoned mines may be used as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC 2018).	General	Moderate at Sites 1, 2, 3, 4, 5, 11, 13, and 16	There may be suitable roosting trees and structures for this species in the study areas. There are no known abandoned mine features in the vicinity of the study areas that may provide hibernacula for this species.
Mammal	Northern myotis	*Myotis septentrionalis*	END	END	END	S3	In Ontario, this species' range is extensive and covers much of the province. It will usually roost in hollows, crevices, and under loose bark of mature trees. Roosts may be established in the main trunk or a large branch of either living or dead trees. Caves or abandoned mines may be used as hibernacula, but high humidity and stable above freezing temperatures are required (ECCC 2018).	General	Moderate at Sites 1, 2, 3, 4, 5, 11, 13, and 16	There may be suitable roosting trees preferred by this species in the study areas. There are no known abandoned mine features in the vicinity of the study areas that may provide hibernacula for this species.
Mammal	Tri-colored bat	*Perimyotis subflavus*	END	END	END	S3?	In Ontario, tri-colored bat may roost in foliage, in clumps of old leaves, hanging moss or squirrel nests. They are occasionally found in buildings although there are no records of this in Canada. They typically feed over aquatic areas with an affinity to large-bodied water and will likely roost in close proximity to these. Hibernation sites are found deep within caves or mines in areas of relatively warm temperatures. These bats have strong roost fidelity to their winter hibernation sites and may choose the exact same spot in a cave or mine from year to year (ECCC 2018).	General	Moderate at Sites 1, 2, 3, 4, 5, 11, 13, and 16	There may be suitable roosting habitat (i.e., squirrel nests) in the study areas preferred by this species. The study areas are located more than 5 km from Lake Ontario. There are no known abandoned mine features in the vicinity of the study areas that may provide hibernacula for this species.
Reptile	Blanding's turtle - Great Lakes / St.Lawrence population	*Emydoidea blandingii*	THR	END	END	S3	In Ontario, Blanding's turtle will use a range of aquatic habitats, but favor those with shallow, standing or slow-moving water, rich nutrient levels, organic substrates and abundant aquatic vegetation. They will use rivers but prefer slow-moving currents and are likely only transients in this type of habitat. This species is known to travel great distances over land in the spring in	General Category 1 – Nest and area within 30 m or overwintering sites and area within 30 m Category 2 – Wetland complex (i.e., all suitable wetlands or waterbodies within 500 m of each other) that extends up to 2 km from occurrence, and the area within 30 m around	Moderate at Sites 1, 11, 13, and 16	The wetlands, marshes, and roadsides in the study areas may provide suitable habitat for this species. There are recent occurrence records within the vicinity of the indicated sites.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
							order to reach nesting sites, which can include dry conifer or mixed forests, partially vegetated fields, and roadsides. Suitable nesting substrates include organic soils, sands, gravel and cobble. They hibernate underwater and infrequently under debris close to water bodies (COSEWIC 2016).	those suitable wetlands or waterbodies Category 3 – Area between 30-250 m around suitable wetlands/waterbodies identified in category 2, within 2 km of an occurrence		
Reptile	Eastern hog-nosed snake	*Heterodon platirhinos*	THR	THR	THR	S3	In Ontario, eastern hog-nosed snake can be classified as a habitat generalist as it uses a variety of habitats across its range. This snake typically uses habitat with open vegetation cover, including open woodlands, wetlands, fields, forest edges, beaches and dunes, and disturbed sites, most often near water. In the Georgian Bay area, disturbed fields, rock barrens and forests appear to be preferred habitats. This species relies on sandy well drained soils. Hibernation occurs in sandy soils below the frost line. This species has been observed excavating hibernation sites in mixed intolerant upland forests. Nesting and oviposition have been noted in upland sandy areas and rock outcrops under large flat rocks. The majority of their diet is comprised of American toad and Fowler's toad (Kraus 2011).		Moderate at Sites 2, 5, 11, and 16	Woodlands and wetlands may provide suitable habitat within the study areas. There are no occurrence records in the study areas.
Reptile	Eastern ribbonsnake - Great Lakes population	*Thamnophis sauritius*	SC	SC	SC	S4	In Ontario, eastern ribbonsnake is semi-aquatic, and is rarely found far from shallow ponds, marshes, bogs, streams or swamps bordered by dense vegetation. They prefer sunny locations and bask in low shrub branches. Hibernation occurs in mammal burrows, rock fissures or even ant mounds (COSEWIC 2012).		Moderate at Sites 2, 5, 11, and 16	The wetlands in the study areas may provide suitable habitat for this species. There are no occurrence records for Sites 2 and 5, and only historical occurrence records within the vicinity of Sites 11 and 16.
Reptile	Northern map turtle	*Graptemys geographica*	SC	SC	SC	S3	In Ontario, northern map turtle prefers large waterbodies with slow-moving currents, soft substrates, and abundant aquatic vegetation. Ideal stretches of shoreline contain suitable basking sites, such as rocks and logs. Along Lakes Erie and Ontario, this species occurs in marsh habitat and undeveloped shorelines. It is also found in small to large rivers with slow to moderate flow. Hibernation takes place in soft substrates under deep water (COSEWIC 2012).		Moderate at Site 5	Watercourses and wetlands in the study area may provide suitable habitat. There are recent occurrence records within the vicinity of the site.

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
Reptile	Snapping turtle	*Chelydra serpentina*	SC	SC	SC	S3	In Ontario, snapping turtle uses a wide range of waterbodies, but shows preference for areas with shallow, slow-moving water, soft substrates and dense aquatic vegetation. Hibernation takes place in soft substrates under water. Nesting sites consist of sand or gravel banks along waterways or roadways (COSEWIC 2008).		Moderate at Sites 1, 2, 3, 5, 11, and 16	Waterbodies and watercourses in the study areas may provide suitable habitat. There are recent occurrence records within the vicinity of the indicated sites.
Reptile	Stinkpot or Eastern musk turtle	*Sternotherus odoratus*	SC	THR	SC	S3	In Ontario, eastern musk turtle is very rarely out of water and prefers permanent bodies of water that are shallow and clear, with little or no current and soft substrates with abundant organic materials. Abundant floating and submerged vegetation is preferred. Hibernation occurs in soft substrates under water. Eggs are sometimes laid on open ground, or in shallow nests in decaying vegetation, shallow gravel or rock crevices (COSEWIC 2012).		Moderate at Site 5	The watercourses and wetlands in the study area may provide suitable habitat for eastern musk turtle. There are recent records of this species in the vicinity of the study area.
Vascular Plant	American chestnut	*Castanea dentata*	END	END	END	S1S2	In Ontario, American chestnut occurs in mixed or deciduous forests in the Carolinian zone (Farrar 1995). It is often found in communities with dense canopy cover and often associated with oak and maple. This tree grows primarily on acidic, sand or gravel soils (Boland et al. 2012).		Moderate at Sites 11 and 16	Wooded areas in the study areas may provide suitable habitat. No records of occurrences were identified for American chestnut.
Vascular Plant	American ginseng	*Panax quinquefolius*	END	END	END	S2	In Ontario, American ginseng is found in moist, undisturbed and relatively mature deciduous woods often dominated by sugar maple. It is commonly found on well-drained, south-facing slopes. American ginseng grows under closed canopies in well-drained soils of glacier origin that have a neutral pH (ECCC 2018).		Low	Although wooded areas in the study areas may provide suitable habitat, American ginseng is not currently known to occur in the study areas.
Vascular Plant	American hart's-tongue fern	*Asplenium scolopendrium*	SC	SC	SC	S3	In Ontario, American hart's-tongue fern grows on thin calcareous soils on or near dolomitic limestone of the Niagara Escarpment, and occasionally on open talus/scree slopes. Most populations are found on steep, moderately moist slopes that face north to northeast and are under a hardwood canopy cover (Environment Canada 2013).		Low	American hart's tongue fern is not currently known to occur in the study areas.
Vascular Plant	Butternut	*Juglans cinerea*	END	END	END	S2?	In Ontario, butternut is found along stream banks, on wooded valley slopes, and in deciduous and mixed forests. It is commonly associated with beech, maple,	General (as of June 30, 2013)	Moderate at Sites 2, 11, and 16	Wooded areas in the study areas may provide suitable habitat. There are recent occurrence records for Site 16; however, no occurrence

Taxon	Common Name	Scientific Name	ESA[1]	SARA[2]	COSEWIC[3]	Provincial (SRank)[4]	Habitat Requirements	ESA Habitat Protection Provisions[5]	Potential to Occur on the Site or in the Study Area[6]	Rationale for Potential to Occur on the Site or in the Study Area
							oak and hickory (Voss and Reznicek 2012). Butternut prefers moist, fertile, well-drained soils, but can also be found in rocky limestone soils. This species is shade intolerant (Farrar 1995).			records were identified for Sites 2 and 11.
Vascular Plant	Dense blazing star	*Liatris spicata*	THR	THR	THR	S2	In Ontario, dense blazing star is found mainly in moist tall-grass prairies, oak savannahs, wet meadows and along roadsides in full sun in open areas (COSEWIC 2010). It grows in moist to wet, sandy calcareous soils (WDNR 2019). It is primarily restricted to southwestern Ontario.		Low	Habitat is not likely to occur on the Sites or within the study areas, and there are no occurrence records for any of the Sites or associated study areas.
Vascular Plant	Hill's pondweed	*Potamogeton hillii*	SC	SC	SC	S2S3	In Ontario, Hill's pondweed grows in the muddy substrates of cold, clear, slow-moving, calcareous streams, ditches, and ponds. It is found in water up to 1 m in depth. Often found near flow obstructions including the upstream side of road culverts, among stumps and fallen trees, or in shallow water among rushes and sedges (Parks Canada Agency 2014).		Moderate at Sites 1, 2, 3, 5, 11, and 16	Streams and ponds in the study areas may provide suitable habitat for Hill's pondweed.
Vascular Plant	Purple twayblade	*Liparis liliifolia*	THR	THR	THR	S2S3	In Ontario, purple twayblade occurs in a wide variety of habitats such as open oak woodland and savannah, mixed deciduous forest, shrub thicket, shrub alvar, deciduous swamp, and conifer plantation. This species is commonly found in dry mesic conditions, but there have been reports from wetland habitats (COSEWIC 2010).		Low	Although wooded areas in the study area may provide suitable habitat, purple twayblade is not currently known to occur in the study areas.

1 Endangered Species Act (ESA), 2007. General (O.Reg 242/08 last amended 21 July 2020). Species at Risk in Ontario List (O.Reg 230/08 last amended 1 Aug 2018 as O. Reg 404/18, s. 1.); Schedule 1 (Extirpated - EXP), Schedule 2 (Endangered - END), Schedule 3 (Threatened - THR), Schedule 4 (Special Concern - SC)

2 Species at Risk Act (SARA), 2002. Schedule 1 (Last amended 12 August 2021); Part 1 (Extirpated), Part 2 (Endangered), Part 3 (Threatened), Part 4 (Special Concern)

3 Committee on the Status of Endangered Wildlife in Canada (COSEWIC) http://www.cosewic.gc.ca/

4 Provincial Ranks (SRANK) are Rarity Ranks assigned to a species or ecological communities, by the Natural Heritage Information Centre (NHIC). These ranks are not legal designations. SRANKS are evaluated by NHIC on a continual basis and updated lists produced annually. SX (Presumed Extirpated), SH (Possibly Extirpated - Historical), S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure), SNA (Not Applicable), S#S# (Range Rank), S? (Not ranked yet), SAB (Breeding Accident), SAN (Non-breeding Accident), SX (Apparently Extirpated). Last assessed November 2019.

5 General Habitat Protection is applied when a species is newly listed as endangered or threatened on the SARO list under the ESA, 2007. The definition of general habitat applies to areas that a species currently depends on. These areas may include dens and nests, wetlands, forests and other areas essential for breeding, rearing, feeding, hibernation and migration. General habitat protection will also apply to all listed endangered or threatened species without a species-specific habitat regulation as of June 30, 2013 (ESA 2007, c.6, s.10 (2)). Regulated Habitat is species-specific habitat used as the legal description of that species habitat. Once a species-specific habitat regulation is created, it replaces general habitat protection. Refer to O. Reg. 242/08 for full details regarding regulated habitat.

6 Sites are only listed where habitat potential is moderate or high. Remaining Sites can be assumed to have low habitat potential.

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