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Appendix C: Natural Environment Report

Regional Municipality of Halton

Halton Regional Road 25 MCEA

Natural Environment Report

Monday, June 22, 2026

CIMA+ Project No. B001514

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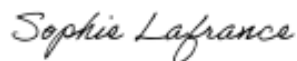
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Regional Municipality of Halton

Natural Environment Report

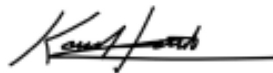
Regional Road 25 MCEA
CIMA+ Project no B001514

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List of Acronyms

ANSI	Area of Natural and Scientific Interest
BAG	Butternut Assessment Guidelines
CASAR	Canadian Aquatic Species at Risk
CC	Coefficient of Conservatism
CH	Conservation Halton
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
CSP	Corrugated Steel Pipe
DBH	Diameter-at-breast Height
DFO	Fisheries and Oceans Canada
EA	Environmental Assessment
EAA	Environmental Assessment Act
ELC	Ecological Land Classification
ESA	Endangered Species Act, 2007 (Provincial)
FA	Fisheries Act
GBIF	Global Biodiversity Information Facility
GPS	Global Positioning System
IBA	Important Bird and Biodiversity Areas
LIO	Land Information Ontario
NAD 83	North American Datum - 1983
NHIC	Natural Heritage Information Centre
NHRM	Natural Heritage Reference Manual
MBCA	Migratory Birds Convention Act, 1994 (Federal)
MCEA	Municipal Class Environmental Assessment
MEA	Municipal Engineers Association
MECP	Ministry of Environment, Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry

MTO	Ministry of Transportation of Ontario
OMNRF/MNRF/	Ontario Ministry of Natural Resources (former name for MECP) Ministry of Natural Resources (former name for MNRF)
OBBA	Ontario Breeding Bird Atlas
CASAR	Canadian Aquatic Species at Risk
OP	Official Plan
ORAA	Ontario Reptile and Amphibian Atlas
OWES	Ontario Wetland Evaluation System
PPS	Provincial Planning Statement
PSW	Provincially Significant Wetlands
ROW	Right of Way
RR 25	Regional Road 25
SAR	Species at Risk (in this report they refer to species that are provincially or federally listed as endangered or threatened and receive protection under ESA or SARA)
SARA	Species at Risk Act (Federal)
SARO	Species at Risk in Ontario
SCA	Species Conservation Act
SWH	Significant Wildlife Habitat
SWHTG	Significant Wildlife Habitat Technical Guide

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1 Introduction

CIMA+ has been retained by the Regional Municipality of Halton, hereafter referred to as the Proponent, to provide consulting engineering services as part of a Schedule ‘C’ Municipal Class Environmental Assessment (MCEA) for improvements to Regional Road 25 (RR 25) from Speers Road to Derry Road, in the Regional Municipality of Halton, Ontario (hereafter the “Project”). The Project is now in the preliminary design stage and a preferred alignment has been proposed. The following Natural Environment Report has been prepared in support of the preliminary design.

1.1 Project Location

The project consists of the section of RR 25 between Speers Road and Derry Road, spanning approximately 15.6 km and centered on UTM coordinates 17T 596946 E, 4811981 N. It travels through the Town of Oakville and the Town of Milton, which are part of the Regional Municipality of Halton. The road name changes from Bronte Road in the Town of Oakville to RR 25 after intersecting Dundas Street West and runs in a northwest to southeast orientation which is being simplified to a north-south direction in the context of this report (**Figure 1**). For the purposes of the background review and site investigations, the “Site” consisted of a 65 m corridor (32.5m on either side of the existing centre line). The preferred alignment has recently been refined to a maximum 47 m right-of-way, mainly centered on the existing centre line but deviating to one side or another in certain places to avoid natural features. The boundaries of this proposed alignment and easement fall entirely within the original 65 m Site corridor investigated.

1.2 Project Description

Halton Region’s Transportation Master Plan – The Road to Change (2011) identified the need for additional capacity in the RR 25 corridor. To improve network connectivity and address forecasted travel demand to 2031, Halton Region is undertaking an MCEA study to consider improvements to Regional Road 25 from Speers Road to Derry Road in the Town of Milton and Town of Oakville. The study is being completed in accordance with Schedule ‘C’ of the MCEA (October 2000, amended in 2007, 2011, 2015, and 2023), as approved under the Ontario Environmental Assessment Act. The purpose of the Regional Road 25 MCEA study (Speers Road to Derry Road) is to examine a wide range of multi-modal transportation improvements, including widening of the roadway, cross-sectional requirements, active transportation, intersection improvements, and overall traffic operations, while considering the impact of such improvements on the social, cultural, and natural environments. The preferred alternative and a preliminary alignment have now been selected. The plan involves widening the road from 4 to 6

lanes over most of the Project's length and adding multi-use paths and a dedicated bus lane. The Project will be completed in three phases; Speers Rd to Highway 407; Highway 407 to Britannia Rd; Britannia Rd to Derry Rd. Construction is planned to begin sometime in 2029 or 2030.

1.3 Purpose and Scope of Assessment

The purpose of this Natural Environment Report is to collect and document appropriate information on the boundaries, attributes, connectivity, and functions of relevant environmental features present on the Site or within 120 m (the "Adjacent Lands"). When present, the significance of natural features is evaluated and the nature of potential impacts is described at a high level, which will be refined during the detailed design process.

At the time of this documents development, January 2024, there were several regulations that have since been repealed. Further reports and documents required in the detailed design phase of the program will include updated reviews under those regulations but, at this time, this report maintains its relevancy under the previous regulations that were in effect when it was scoped, executed, and developed.

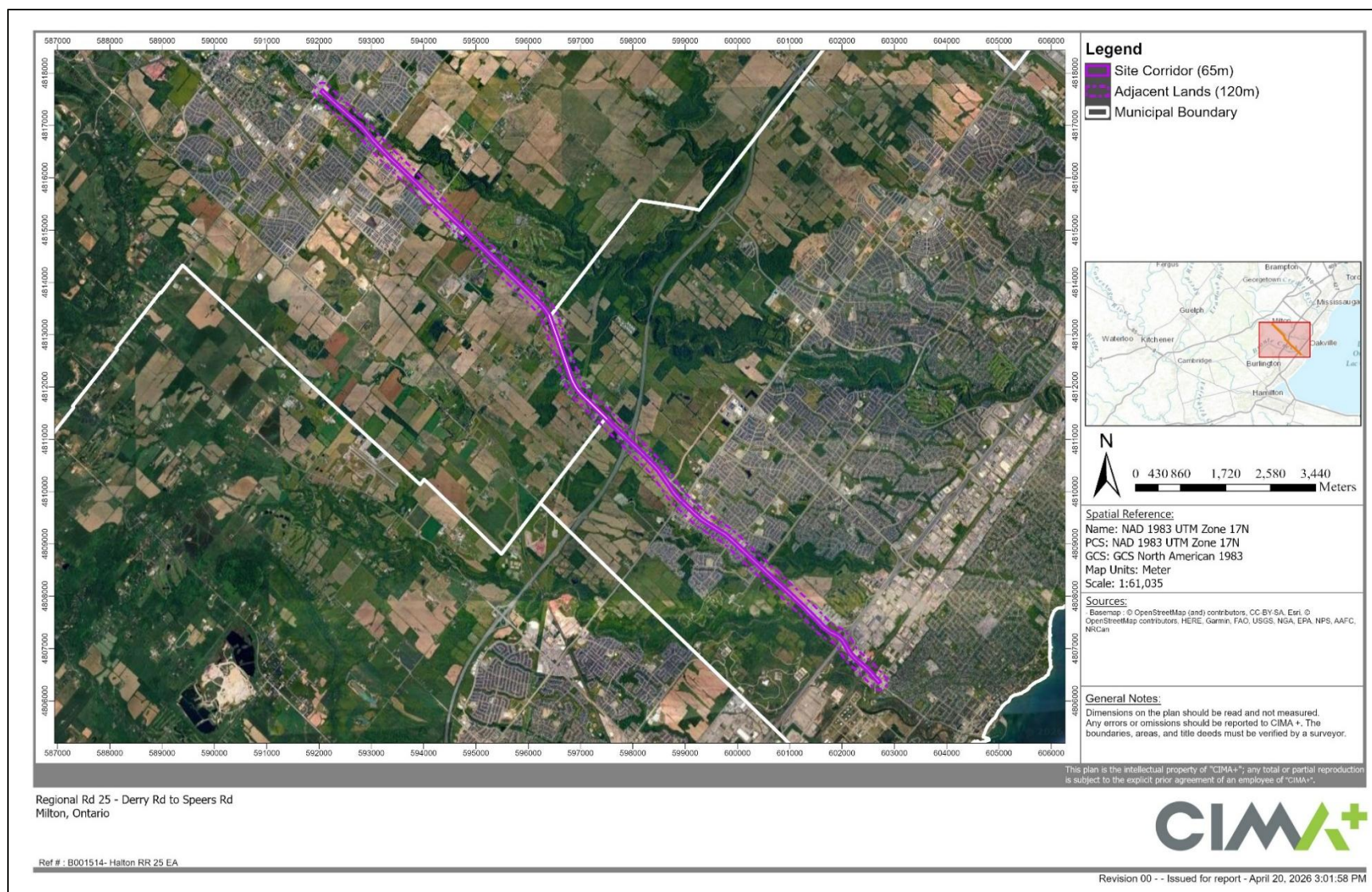


Figure 1: Site and Adjacent Lands (120 m)

2 Legislative Context

This section includes a summary of the relevant regional, provincial, and federal acts, regulations and policies that apply to the proposed road improvements in respects to the Natural Environment Features. A review of the impacts to the Natural Environment Features is typically triggered by one primary Act. It is anticipated that this project will fall solely under the Environmental Assessment Act (EAA). The federal Impact Assessment Act, 2019 is not anticipated to be triggered. Any project should also conform to the norms of other applicable provincial and federal legislations. These are briefly described below beginning with the primary process.

2.1 Federal

2.1.1 Fisheries Act

The *Fisheries Act*, last amended on August 28, 2019, is administered by Fisheries and Oceans Canada (DFO) and is intended to provide a framework for the management of threats to fish and fish habitat, including the prevention of pollution, regardless of their attachment to a fishery. The most relevant sections to works, undertakings and activities are:

- Prohibition of the Death of Fish (Section 34.4 (1));
- Prohibition of the Harmful alteration, disruption, or destruction of Fish Habitat (Section 35 (1)); and
- The provisional Ministerial powers to ensure the free passage of fish or the protection of fish or fish habitat with respect to existing obstructions (Section 34.3).

2.1.2 Migratory Birds Convention Act

The *Migratory Birds Convention Act*, 1994 (MBCA) regulates the protection and conservation of migratory birds as populations and individuals. It also offers protection for nests containing a live bird or viable eggs for most migratory bird species. Schedule 1 under the Migratory Bird Regulations (2022) lists 18 species that may reuse nests and whose nests are protected year-round regardless of occupation, unless the nest has been reported and deemed abandoned after a waiting period. Species listed under Schedule 1 that are expected breeders in Ontario include great egret (*Ardea alba*), great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), black-crowned night heron (*Nycticorax nycticorax*), and pileated woodpecker (*Dryocopus pileatus*). The Migratory Bird Regulations (2022) prohibits the disturbance, damage, or destruction of migratory bird nests or eggs. These prohibitions and regulations apply to any areas where migratory birds and their nests are found in Canada.

2.1.3 Species at Risk Act

Federally protected species are listed in 'Schedule 1' of the *Species at Risk Act*, 2002 (SARA). The application of SARA varies depending on the species and the level of government with jurisdiction over the land. In general, the relevant sections are:

- Prohibition of killing, harming, harassment, capturing or taking of an individual listed as extirpated, endangered, or threatened (Section 32(1))
- Prohibition of possessing, collecting, buying, selling, or trading an individual listed as extirpated, endangered, or threatened (Section 32(2))
- Prohibition against the damaging or destruction of residences of species listed as endangered or threatened. For extirpated species, the recovery strategy must also recommend the reintroduction of the species into the wild in Canada (Section 33)

On lands that are not federal, Sections 32 and 33 do not apply except for aquatic species, those listed as "fish" under the Fisheries Act or a migratory bird as per the Migratory Birds Convention Act, 1994 (MBCA), unless a federal order has been created.

2.2 Provincial

2.2.1 Environmental Assessment Act

The *Environmental Assessment Act*, 1990 (EAA) is triggered when the proponent is a provincial ministry, municipality, or public body (i.e., conservation authorities) for specific types of projects including infrastructure, such as public road widenings/improvements. The Act sets out the guidelines for the evaluation of the potential environmental effects and the steps to be taken with respect to notifications, consultation, and submissions. The assessments can be individual or scoped / streamlined. The streamlined EA is a self-assessment process that follows a specific standard. The MCEA created by the Municipal Engineers Association (MEA) applies to various projects carried out by municipalities including road widening/improvements. Under this process, the project is first categorized into one of four types:

- Schedule A: Normal or emergency operations and maintenance activities with minimal environmental effects which are pre-approved.
- Schedule A+: Pre-approved but requires the public to be advised.
- Schedule B: Improvements and minor expansions to existing facilities with some potential effects that require screening level assessment

- Schedule C: New facilities and major expansions which are required to follow the environmental assessment planning process described in the Class Environmental Assessment. (MEA, <https://municipalclassea.ca/manual>)

The MCEA guidelines include the need to consider provincial guidelines such as the Provincial Planning Statement.

2.2.2 Endangered Species Act

The Endangered Species Act, 2007 (ESA) prohibits killing or damaging the habitat of species that are listed on the SAR in Ontario list. Endangered (END) indicates that the species lives in the wild in Ontario but is facing imminent extinction or extirpation. Threatened (THR) indicates the species lives in the wild in Ontario, is not endangered, but is likely to become endangered if steps are not taken to address the factors threatening it. Note that species listed as special concern are not afforded protection under the Act.

The ESA is applicable on private and provincial lands. It can also sometimes be applicable to federal lands. The relevant sections to the project are:

- Prohibition on killing or harming of END or THR individuals (Section 9)
- Prohibition on damage to END or THR habitat (Section 10)

As of the time of submission, Bill 5 (the *Protect Ontario by Unleashing our Economy Act*, 2025) has been given Royal Assent but not implemented by the Ministry of Environment, Conservation, and Parks. Any changes following its implementation will require reconsideration for the Project and its permitting approvals. It is understood that the *Species Conservation Act*, 2025 (SCA) will come into force under Bill 5 sometime in 2026. The SCA takes a “registration first” approach to works and will require similar mitigations but reduced offsetting requirements than the current ESA.

2.2.3 Conservation Authorities Act

The Site is within the jurisdiction of Conservation Halton (CH) as outlined in O. Reg.41/24. Development, Interference with Wetlands and Alterations to Shorelines and Watercourses under the *Conservation Authorities Act* – Conservation Halton. As amended by Bill 23 in December 2022, CH’s jurisdiction pertains exclusively to impacts to floodplains, hazardous lands, and hydrologic functions of wetlands and no longer includes the other elements of the Natural Environment. An evaluation of impacts under associated with hydrologic function is outside of the scope of this report and will be addressed within any fluvial or hydrogeological reporting. All lands within 30 m of an identified wetland are subject to regulation and consideration under O.Reg 41/24. In consultation with CH, the regulation, mitigation, and compensation for impacts to the

lands < 30 m will be discussed with CH at detailed design in advance of the permit application.

2.2.4 Greenbelt Act

The *Greenbelt Act*, 2005, was passed as a means of protecting drinking water and agriculture and managing sprawl across the Greater Golden Horseshoe. The Greenbelt Plan under this act enforces special protections on a large portion of sensitive lands that include the Niagara Escarpment, Oak Ridges Moraine, and Urban River Valleys (URV). The Project passes through lands designated as Protected Countryside under the Greenbelt Plan for 2.8 km just north of Highway 407 and skirts the eastern edge of Bronte Creek Provincial Park which is also part of this designation. In addition, the Fourteen Mile and Sixteen Mile Creek valleys protected under the Greenbelt Act as Urban River Valleys.

2.2.5 Fish and Wildlife Conservation Act

In addition to the protections offered by the statutes and policies noted above, the *Fish and Wildlife Conservation Act*, 1997, administered by the Ministry of Natural Resources and Forestry (MNR), needs to be considered. This Act imposes restrictions on the hunting, trapping, and fishing of wildlife, as well as the possession of animals (live or dead). These restrictions include the capturing or harassing of specially protected wildlife or any wild bird species (not a game bird and not listed as an exception) regardless of its live stage (egg, adult) (Part II 5 (1)). It also protects nests or eggs of wild bird species (other than American crow (*Corvus brachyrhynchos*), brown-headed cowbird (*Molothrus ater*), common grackle (*Quiscalus quiscula*), house sparrow (*Passer domesticus*), red-winged blackbird (*Agelaius phoeniceus*), or European starling (*Sturnus vulgaris*)) (Part II 7(1)). In case of conflicting provisions with the Endangered Species Act, the Act providing greater protection for the animal, invertebrate, or fish in question will prevail.

2.2.6 Provincial Planning Statement

While the Provincial Planning Statement, 2024 (PPS) is a tool under the *Planning Act*, 1990, and is not triggered by the proposed road improvements, the MCEA recommends that the PPS and policies listed in the local Official Plan (OP) be considered when assessing the significance of a Natural Environment Feature for a municipal project.

2.3 Municipal (Official Plans)

The Project's alignment passes through the Town of Oakville and the Town of Milton, both of which are situated within the upper-tier Regional Municipality of Halton. Between the municipal boundaries of Milton and Oakville, the alignment also traverses lands designated as Protected Countryside under the Greenbelt Plan.

As the project alignment falls within the jurisdiction of multiple municipalities, planning and development should consider the policies of the local Official Plans (OP)s of the Town of Milton and the Town of Oakville. In addition, the Halton Region Official Plan, which has been redesignated as a local OP, has jurisdiction in areas of Halton Region that do not fall within other municipalities. These three OPs follow the guidelines set out in the PPS and conform with the Province's Growth Plan for the Greater Golden Horseshoe (2006). In addition, Halton Region's OP conforms to and incorporates the Greenbelt Plan within its framework. Note that a portion of the project alignment is located within the boundaries of the North Oakville West Secondary Plan, for which its policies will apply. The policies relevant to Natural Environment Features are summarized below in **Table 1**. Habitat for endangered or threatened species is not specifically depicted on any OP schedules, and their presence or absence must be determined based on the appropriate provincial methodologies and guidelines. If the policies of any two municipalities conflict, then the more restrictive policy is typically followed. The Natural Environment Features defined by the relevant OPs are summarized in the table below.

Table 1: Summary of Natural Environment Legislation in Official Plans

Natural Environment Feature	Halton Region (November 4, 2022)	Town of Oakville (August 31, 2021)	Town of Milton (March 2023)
Habitat of Endangered and Threatened Species (SAR)	Section 118 (2) states that development and site alteration are not permitted except in accordance with relevant provincial and federal regulations.	Section 16.1.6 identifies that development “shall not be permitted in the significant habitat of endangered or threatened species”, and that development within 120 m is not permitted unless it can be demonstrated that there will be no negative impacts to the feature or its function. Note that the 120 m would be superseded by any guidelines provided by applicable provincial or federal regulations.	Section 4.9.3.1 states that development and site alteration are not permitted except in accordance with relevant provincial and federal regulations.
Wetlands	Significant wetlands and significant coastal wetlands are included within the Key Features designation of the Regional NHS on Map 1G. Section 276.5 indicates that significant wetlands include Provincially Significant Wetlands (PSWs), as well as others identified in the Niagara Escarpment Plan, Greenbelt Plan Area or in the Regional Natural Heritage Systems. Outside of these three areas, only PSWs are considered significant. As indicated in Section 268, PSWs are assessed based on the Ontario Wetland Evaluation System (OMNRF, 2022). Buffer width should be a minimum of 30 m. Non-significant wetlands are identified as “Key Features” under Policy 115.3 (6) and depicted on Map 1G	Wetlands are depicted on Schedule B. Section 16.1.7 identifies that development is not permitted within provincially, regionally, or locally significant wetlands or within a minimum buffer of 30 m from the boundary of the wetland. Buffer width shall be established through an approved study. Adjacent Lands are considered to be within 120 m of the wetland edge.	Significant wetlands and significant coastal wetlands are included within the Key Features designation of the NHS on Schedule 1, and all wetlands are depicted on Schedule B. Section 4.9.3.1 states that development and site alteration are not permitted in significant wetlands except in accordance with relevant provincial and federal regulations. Section 4.9.1.3 (f) identified other wetlands as key natural heritage features Significant wetlands include PSWs, as well as others identified in the Niagara Escarpment Plan, Greenbelt Plan Area or in the Regional NHS. Outside of these three areas, only PSWs are considered significant. Delineation of wetlands is to follow the Ontario Wetland Evaluation System (OMNRF, 2022). Minimum vegetation protection zone of 30m is required for wetlands. Adjacent Lands are considered to be within 120 m.

Natural Environment Feature	Halton Region (November 4, 2022)	Town of Oakville (August 31, 2021)	Town of Milton (March 2023)
Significant Valleylands	Significant valleylands are included within the Key Features designation of the Regional NHS on Map 1G.	Valleylands are identified on Schedule B. Section 16.1.9 identifies minimum buffers of 7.5 m for minor valleys and 15.0 m for major valleys. Section 16.1.9 (b) identifies the major valleys to be Bronte Creek and Sixteen Mile Creek, and several minor valleys, including Fourteen Mile Creek. Adjacent Lands are defined as those within 120 m of a major valley or “directly abutting” the top of bank of minor valleys.	Significant valleylands are included within the Key Features designation of the NHS on Schedule 1 and B. Adjacent Lands are considered to be within 120 m.
Woodlands	Significant woodlands are included within the Key Features designation of the Regional NHS on Map 1G. These are defined based on the criteria listed in Section 277. As per Section 139.3.7 (5), buffer width should be a minimum of 30 m from significant woodlands within the Greenbelt NHS.	Woodlands are identified on Schedule B. Section 16.1.8 identifies that development shall not be permitted within regionally significant woodlands or within a minimum buffer of 10 m from the drip line of the woodland. Buffer width shall be established through an approved study. Adjacent Lands are defined as those within 120 m of a regionally significant woodland.	Significant woodlands are included within the Key Features designation of the NHS on Schedule 1 and B. Section 2.3.3.2 states that development and site alteration are not permitted in significant woodlands unless there will be no negative impacts. Minimum vegetation protection zone of 30m is required for significant woodlands. Adjacent Lands are defined as those within 120 m of a regionally significant woodland.
Significant Wildlife Habitat	Significant wildlife habitat is identified in Section 115.3 as a Key Feature Typically falls within the areas identified as “Key Features” on Map 1G but is not mapped. Must be delineated through an EIA. Adjacent Lands are considered to be within 120 m.	Significant wildlife habitat is identified on Schedule B. Section 16.1.10 states that development shall not be permitted in significant wildlife habitat. Adjacent Lands are defined as within 120 m.	Significant wildlife habitat is included within the Key Features designation of the NHS on Schedule 1 and B. Adjacent Lands are considered to be within 120 m.
Areas of Natural and Scientific Interest (ANSIs)	Significant ANSIs are included within the Key Features designation of the Regional NHS on Map 1G. Adjacent Lands are considered to be 50 m for earth science ANSIs and 120 m for life science ANSIs.	OP Section 16.1.12 states that development is not permitted in provincially or regionally significant ANSIs unless no negative impacts on the feature or its ecological function are demonstrated. Adjacent Lands are defined as 50 m for earth science ANSIs and 120 m for life science ANSIs.	Significant ANSIs are included within the Key Features designation of the NHS on Schedule 1 and B. Adjacent Lands are considered to be 50 m for earth science ANSIs and 120 m for life science ANSIs.

Natural Environment Feature	Halton Region (November 4, 2022)	Town of Oakville (August 31, 2021)	Town of Milton (March 2023)
Fish Habitat	Fish habitat is included within the Key Features designation of the Regional NHS on Map 1G. Section 118 (2) states that development and site alteration are not permitted except in accordance with relevant provincial and federal regulations. <i>The Fisheries Act</i>, managed by Fisheries and Oceans Canada (DFO), is the authority for decision-making with respect to fish and fish habitat. Adjacent Lands are considered to be within 120 m.	Section 16.1.13 states that development shall not be permitted in fish habitat or within a minimum buffer width of 30 m for cold-water creeks and 15 m for warm-water creeks, except in accordance with relevant federal and provincial regulations. <i>The Fisheries Act</i>, managed by DFO, is the authority for decision-making with respect to fish and fish habitat. Buffer width shall be established through an approved study. Adjacent Lands are defined as 120 m.	Fish Habitat is included within the Key Features designation of the NHS on Schedule 1 and B. Section 4.9.3.1 states that development and site alteration are not permitted in Key Features except in accordance with relevant provincial and federal regulations. <i>The Fisheries Act</i>, managed by DFO, is the authority for decision-making with respect to fish and fish habitat. Minimum vegetation protection zone of 30m is required for wetlands. Adjacent Lands are considered to be within 120 m.
Linkages	Section 7.2 (b) states that “the proposal will maintain, restore or where possible enhance the diversity and connectivity of natural heritage features in an area...recognizing linkages between and among natural heritage features and areas” Identified as Key Features in Policy 115.3 (3)	“Linkage Preserve Areas” for the northwest planning area are depicted on Schedule B2. A Linkage Preserve Area is present just south of Highway 407	Environmental Linkage Area designation is shown on Schedule C.9.B Policy C.9.5.6 (d) states that “Development in areas designated “Environmental Linkage Area” shall be in accordance with the policies in Section B.3.13.3 of the Official Plan.” No prescribed buffers
Enhancement Areas	Not specifically defined	Not specifically defined	Defined as “ecologically supporting areas adjacent to key features and/or measures internal to the key features that increase the ecological resilience and function of individual key features or groups of key features .”
Environmentally Sensitive Areas	Defined using criteria laid out in 2006 report	Shown on Schedule B1 Defined as a Natural Feature under Policy 16.1.2 (f) Development or Site alteration is restricted on or adjacent to as per Policy 16.1.11 (b)	Only ESA mentioned is Junction Woods ESA, within Campbellville Secondary Plan Area

3 Methodology

The Natural Environment features along the proposed RR 25 improvement area were identified through the review of available background information and on-site ecological surveys. These methodologies were based on the legislations discussed above, the various secondary plans, and with discussions with the Region (i.e., development of work plans).

3.1 Study Area

The Site is the area of potential direct impact from the works associated with the corridor improvement. At this time, it is anticipated that the area of impact, for any alternative, would be situated within 32.5 m either side of the centre line of the existing RR 25, along the 15.6 km corridor from Speers Road to Derry Road. It is assumed that all clearing, excavations, backfilling, and grading and paving will be restricted to this width (i.e., total width of 65 m) and that any temporary laydown areas will be in lands that are already developed (i.e., existing areas devoid of natural features such as paved, gravel areas). The Adjacent Lands herein are based on provincial guidance (i.e., those identified by the Province in the Natural Heritage Reference Manual (NHRM)) which is 120 m. When considering the potential for species at risk (SAR) to occur within the study area, a larger distance (5 km) is used to collect the background information. This is to account for species with large areas of habitat protections like some SAR birds and reptiles.

3.2 Background Review

Information on known Natural Environment Features was collected through a background review. The search for information focused on: wetlands, woodlands, valleylands, wildlife habitat, areas of natural and scientific interest, fish habitat, and habitat of endangered or threatened species. These features were sometimes referred to by the more general terms of Natural Heritage System (Regional, Greenbelt, Key Features etc.).

When completing desktop reviews, a larger area (~5 km) was applied to obtain a better understanding for the local characteristics and occurrences of SAR. The data were then reviewed and analyzed for applicable site-specific information. Information from government websites and personal knowledge has also been included as appropriate. Data sources included:

- Aerial/Satellite Imagery (ESRI, 2021)
- Atlas of the Mammals of Ontario (Dobbyn, 1994)

- Conservation Halton (CH, 2023)
- eBird Status and Trends (Cornell Lab of Ornithology, Released 2026)
- Fisheries and Oceans (DFO) Aquatic Species at Risk Mapping (DFO, 2025)
- Geographic information from Land Information Ontario (LIO, 2026)
- Global Biodiversity Information Facility (GBIF) Occurrence Data
- Greenbelt Plan (2017)
- Important Bird and Biodiversity Areas (IBA) Birdlife International (No Date)
- iNaturalist (2026)
- The Ministry of Natural Resources and Forestry's (MNRF) Natural Heritage Information Center (NHIC) Make A Map (NHIC, 2026)
- North Oakville West Secondary Plan (2006)
- North Oakville Creeks Subwatershed Study (2006)
- Ontario Breeding Bird Atlas (Atlas 2- 2001 – 2005; Atlas 3 – 2021-2025)
- Official Plan of the Regional Municipality of Halton (2024)
- Ontario Reptile and Amphibian Atlas (Ontario Nature, 2019)
- Town of Milton Official Plan (2008)
- Town of Oakville Official Plan (2009)
- Sixteen Mile Creek Areas 2 & 7 Subwatershed Update Study (AMEC, 2015)

3.3 Field Studies

3.3.1 Vegetation Descriptions and Flora Observations

Vegetation communities were mapped using satellite imagery and verified during field visits. Field studies were completed by systematically walking the Site and where access was not available by visual inspection from a distance and aerial photography. Field investigations included a botanical inventory, and vegetation was characterized based on the appropriate methodologies: Ontario Wetland Evaluation System, Southern Manual (OWES) (MNRF, 2022) for wetland habitats and the Ecological Land Classification for Southern Ontario (ELC) (Lee et al. 1998) for upland habitats. The MNRF's ELC and OWES definition of wetlands do not match one another. Since wetlands are to be evaluated following OWES, the determination of the presence/absence of wetland habitat was solely based on the OWES definition of wetland habitat:

“Lands that are seasonally or permanently flooded by shallow water as well as lands where the water table is close to the surface; in either case the presence of abundant water has caused the formation of hydric soils and has favored the dominance of either hydrophytic or water tolerant plants”. (MNR, 2022). Furthermore, OWES protocol notes that the presence of large numbers of obligate upland species requires an upland classification.

As per OWES, the outer boundaries of the wetlands were delineated and mapped using the “50% wetland vegetation rule” which estimates the relative abundance of wetland and upland species in each layer. An OWES qualified professional walked the outer limits of the wetland to create a boundary line. As per OWES, the minimum community size to be delineated is 0.5 ha and the minimum wetland size to be assessed is 2ha unless special functions or ecological importance is identified. In that case smaller wetland communities or wetlands may be delineated. The community codes used to classify wetlands differ between ELC and OWES, with ELC using more detailed codes based on dominant species and soil type. Because the OWES procedure was followed in the field, OWES codes are provided on all figures herein and **Table 2** lists corresponding ELC codes for each OWES code found on the Site.

Table 2: OWES and ELC Codes

Community Type	OWES Classification	ELC Classification
Open marsh dominated by robust emergent herbaceous aquatic or semiaquatic vegetation such as cattails or phragmites	reM (robust emergent marsh)	MAM1/2/3 (bedrock, mineral or organic meadow marsh) or MAS1/2/3 (bedrock, mineral or organic shallow marsh). No subcodes defined for robust emergents.
Open marsh dominated by narrow-leaved emergent herbaceous aquatic vegetation such as grasses, sedges and rushes.	neM (narrow-leaved emergent marsh)	MAM1/2/3 (bedrock, mineral or organic meadow marsh) or MAS1/2/3 (bedrock, mineral or organic shallow marsh). Various subcodes possible.
Open marsh dominated by aquatic or semiaquatic forbs such as ferns, joe-pye-weed or jewelweed	gcM (groundcover marsh)	MAM1-3, MAM2-9, MAM2-10, MAM3-8 or MAM3-9 (Jewelweed or forb mineral, organic or bedrock meadow marsh)

The upland vegetation communities were characterized using ELC to classify and map ecological communities to the community class or lower. The ecological community boundaries were generally defined through the review of satellite imagery and further refined during field investigations from lands within the Site and Adjacent Lands where access had been granted. Adjacent Lands that were not accessible were evaluated “over-the-fence” using binoculars to identify tree species and overall community form. Information on soils, DBH and groundcover flora was not obtained from these lands. Like OWES, the ELC protocol recommends that a vegetation community be at least 0.5 hectares (ha) in size before it is defined. Based on the composition of vegetation communities in the Site, patches of vegetation less than 0.5ha were described as inclusions (if required). The information was documented and classified according to species and locational data was gathered using a hand-held GPS.

Plants that could not be identified in the field were collected for a more detailed examination in the laboratory. Nomenclature used in this report follows the Southern Ontario Plant List (Bradley, 2010) for both common and scientific names which are based on Newmaster et al. (1998). Authorities for scientific names are given in Newmaster et al. (1998).

3.3.2 Species at Risk Plants, including Butternut Inventory

Specific attention was paid to locating any species at risk (SAR) plants. With respect to Butternuts (*Juglans cinerea*), the recently updated Butternut Assessment Guidelines (BAG) were followed (MECP, 2021). The following was completed:

- A butternut inventory completed by a Butternut Health Expert in the Site.
- The field work was completed during the approved leaf-on season, which is considered to be between May 15-August 31.
- If an individual had been found, it would have been marked with white spray paint and/or flagging tape, photographed, and numbered sequentially.
- The SARs coordinates, using a GPS unit set at NAD 83, would have been recorded

If individuals were observed within neighbouring private lands, inventory was assessed “over the fence” from within the RR 25 RoW.

3.3.3 Daytime Breeding Bird Survey

Information on bird use of the area was collected through daytime breeding bird surveys. A hybrid protocol was used that was a blend of the Survey Protocol for Eastern Meadowlark (*Sturnella magna*) (OMNRF, 2013) and the Ontario Breeding Bird Atlas

Guide for Participants (OBBA, 2001). The Eastern Meadowlark protocol alone was not deemed suitable because few to no open grassland, hayfield or pasture habitats were identified during the background review and because forest birds were one target. However, grassland birds were still considered potentially present, thus the OBBA protocol was modified slightly to target grassland birds in certain areas of the Site. In specific areas with grassland conditions (such as SE of the Highway 407 interchange) or where such conditions may emerge following abandonment of farmland, it is recommended that updated surveys be completed during the detailed design phase, as necessary, following the Survey Protocol for Eastern Meadowlark (OMNRF, 2013). The hybrid protocol employed consisted of:

- Surveys conducted a minimum of 10 days apart between May 24 and July 10
- Two visits completed for both forested and grassland areas.
- Surveys began no earlier than 30 minutes before sunrise and were completed by 0900 for grassland stations and 5 hours after sunrise for general stations.
- Visits were conducted on days with no rain, little to no wind (up to 3 on the Beaufort scale), and good visibility.
- The survey type is point-counts:
 - Grassland 10-minute point count stations were generally spaced 250 m apart.
 - General 5-minute point count stations were generally spaced 300 m apart.
 - Point counts consisted of listening and observing over a specified period and recording the number of birds heard/seen, their sex, location, behavior, and interactions with others.
 - While walking between points, any additional observations were recorded.
 - Birds are identified by sound and/or sight.

Bird survey stations are depicted on **Figure 2** below.

3.3.4 Aquatic Habitat Descriptions

To assess the potential impacts to fish habitat, fish communities or fish SAR, the aquatic habitats within the Site were assessed based on the point observation technique used by Ontario Stream Assessment Protocol (Stanfield, 2013) and the Ministry of Transportation of Ontario (MTO)'s Environmental Guide for Fisheries (MTO, 2020). This includes a description of the channel morphology using evenly spaced transects upon which data was recorded from evenly spaced observation points. The data collected included: channel width, wetted width, bankfull depth, water depth,

substrate size, morphological units, and in-stream cover. The locations of the stations described is provided in the results section.

Each area of aquatic habitat is called a feature, and the feature's characteristics are assessed and reported individually. A feature ends when it joins larger watercourse or when it leaves the study area. A feature is typically a consistent size and type of watercourse (drain, tributary, stream, etc.) and may or may not be named depending on its size, importance to the local community, and what regulations it falls under (e.g. Drainage Act, R.S.O. 1990, c. D.17).

3.3.5 Raptor Nest Survey

On October 24, 2024, a dedicated raptor nest search was conducted in response to concerns by the public about the possibility of bald eagles (*Haliaeetus leucocephalus*) nesting near the roadway. The entire length of the project corridor was surveyed visually for large raptor nests (which would not be active at this time of year but may be protected under a Significant Wildlife Habitat context). Some raptors are known to reuse nests and the discovery of any intact nests is therefore relevant to future nesting seasons which may overlap with project activities. Particular attention was paid to the wooded area west of the roadway in the Bronte Creek valley north of the 403, which is where reports of Bald Eagle nesting on iNaturalist and by the public have been concentrated.

3.3.6 Incidental Fauna Observations

During all visits, any wildlife observations were recorded. Incidental observations included observations of an individual or its tracks, burrows, feces and/or kill sites.

3.3.7 Anurans

No anuran call surveys were completed as part of the Preliminary Design phase investigations. It was recognized that many wetlands and roadside swales on the Site had a high potential of containing breeding anurans. Thus, these were assumed to be amphibian breeding habitat and treated as such during the assessment of Significant Wildlife Habitat. A more detailed assessment of these habitat patches is recommended during the detailed design stage.

3.4 Evaluation of Natural Environment Features

The Natural Environment Features identified as present or as candidate features based on the background review and site investigations are brought forward for evaluation as per the applicable provincial and/or federal guidelines for that feature or SAR. This step was completed following the site investigations and further described in Section 6 of this report.

3.5 Assessment of Ecopassage Potential

The proposed Project may have potential to improve the connectivity of the existing Natural Heritage System through the establishment of ecopassages. Linear infrastructure such as roadways often creates a physical barrier to wildlife movement across the landscape. Road upgrades such as widenings are a potential cost-efficient opportunity to replace outdated infrastructure with more modern, ecologically sound alternatives. A desktop review of potential areas for improvement was undertaken by CIMA+. This involved an assessment of the current condition of all river and stream crossings along the Project's length, using aerial imagery, and an assessment of the potential for future connectivity of linear Natural Environment Features (including riparian corridors, hedgerows and woodlands) that cross the roadway if passages were introduced. Proposed Linkage areas identified in the Regional NHS and North Oakville Creeks Subwatershed Study (TSH, 2006) were taken into consideration during the evaluation. Findings were then paired with those of field investigations to identify realistic opportunities for the Project to contribute to connectivity of the Natural Environment.

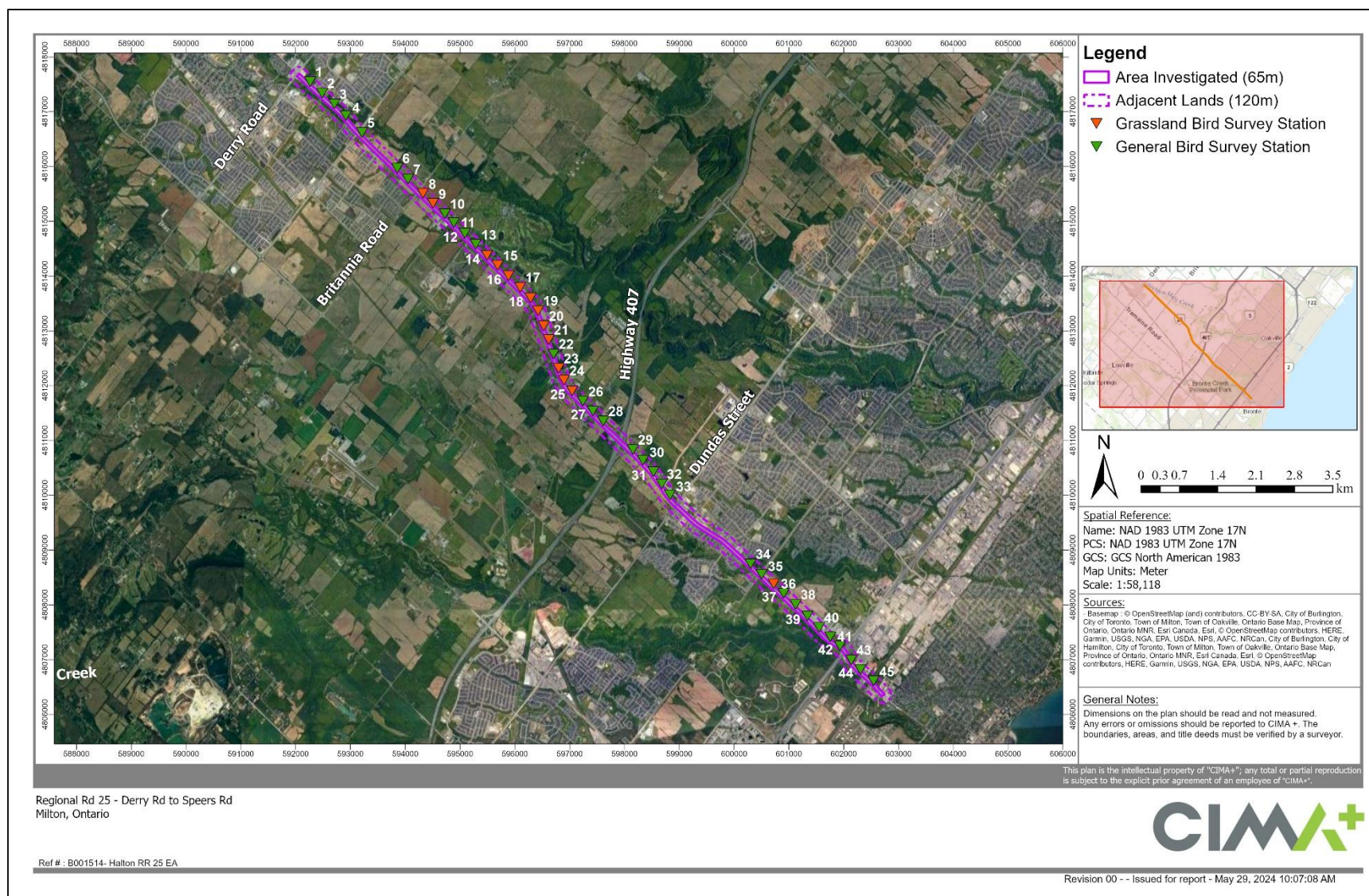


Figure 2: Bird Survey Stations (Whole Site View)

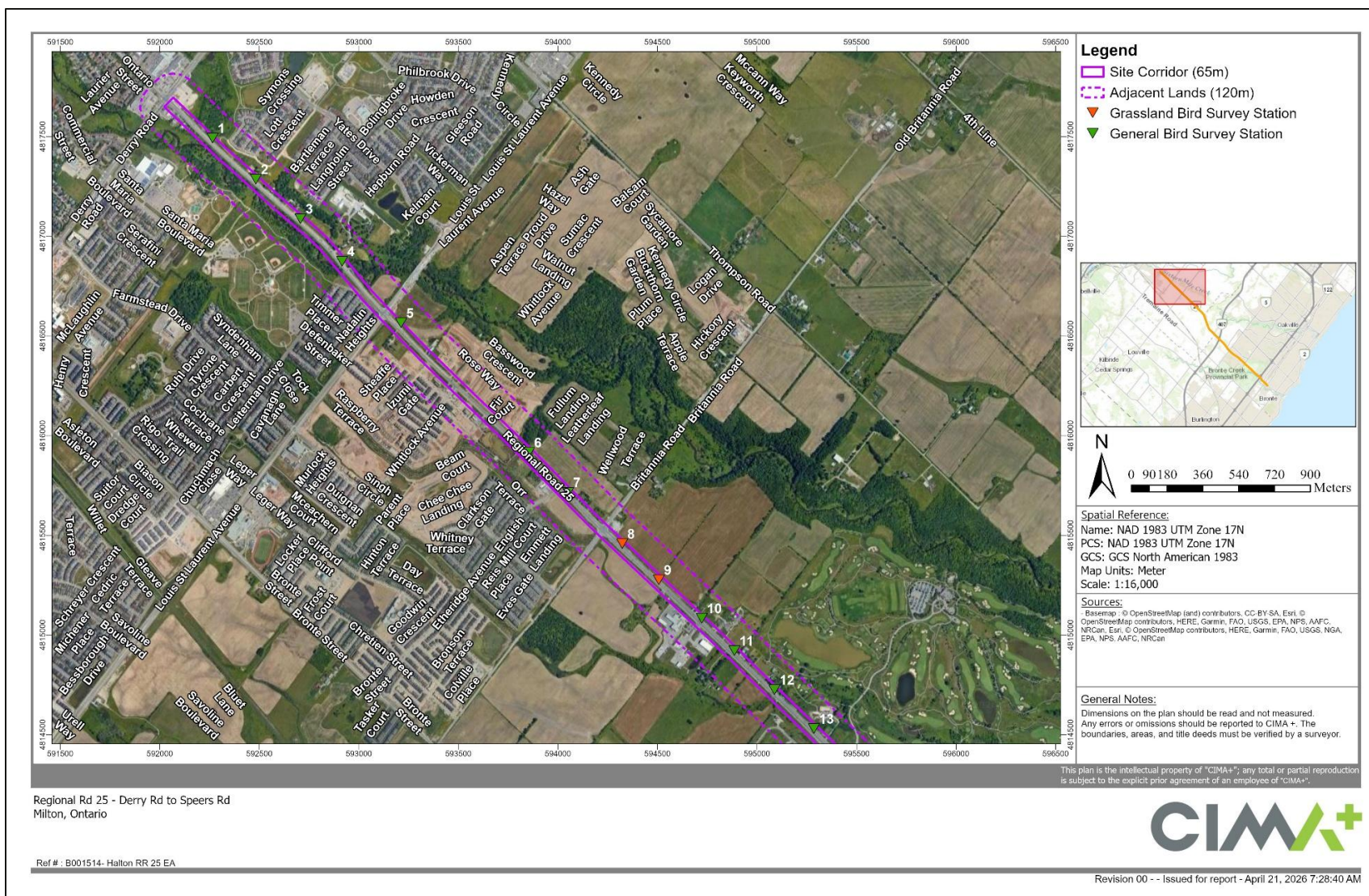


Figure 3: Bird Survey Stations Map A



Figure 4: Bird Survey Stations Map B



Figure 5: Bird Survey Stations Map C



Figure 6: Bird Survey Stations Map D

4 Background

4.1 Summary of Known Natural Environment Features

As noted above, the RR 25 improvement corridor is roughly 15.6 km long. The surrounding lands are heavily developed, particularly in the northern and southern extents, with residential lands, commercial businesses, and areas of active construction. However, there are several well-defined Natural Environment Features such as: Sixteen Mile Creek, Fourteen Mile Creek, and Bronte Creek and the associated natural wooded areas and valleylands flanking these features on both sides. A review of information from NHIC, provincial/federal atlases, and satellite imagery has identified the following Natural Environment Features as present or potentially present within the Site and Adjacent Lands:

- Endangered and Threatened Species and/or their habitats
- Provincially Significant Wetlands
- Evaluated / Other Wetlands
- Significant Valleylands
- Significant Woodlands
- Other Woodlands
- Significant Wildlife Habitat
- ANSI – Earth Science
- Fish Habitat

~~The Town of Milton OP notes that significant wildlife habitat is included within the Key Features designation of the Regional NHS on Schedule A and B. There are NHS areas mapped on various OP schedules. These are summarized below in Table 3 and displayed in a figure included in Appendix A.~~

Table 3: Summary of Available Background Information on the Identified Natural Environment Features within the Site

Natural Environment Systems	Present within Site (65m)	Present within Adjacent Lands (120m) of Site	Comments
Endangered and Threatened Species	Redside Dace, Silver Shiner Critical Habitat.	Potential for any of the species listed in Table 7.	
Provincially and Regionally Significant Wetlands	PSWs are not specifically identified on Schedules. Small portions of North Oakville-Milton West Wetland Complex	Additional portions of North Oakville-Milton West Wetland Complex	Discussed in Section 6.1.2.
Unevaluated Wetlands	None present.	None present.	Discussed in Section 6.1.3.
Significant Valleylands	Bronte Creek, Sixteen Mile Creek and Fourteen Mile Creek valleylands, as identified on Town of Oakville Schedule B are present on the Site and Adjacent Lands. Halton and Milton do not map Significant Valleylands. Significance is to be assessed by an EIS. High, medium and low constraint classifications are mapped on the Site for North Oakville on Schedule B2.	Bronte Creek, Sixteen Mile Creek and Fourteen Mile Creek valleylands, as identified on Town of Oakville Schedule B are present on the Site and Adjacent Lands. Halton and Milton do not map Significant Valleylands. Significance is to be assessed by an EIS. High, medium and low constraint classifications are mapped on the Site for North Oakville on Schedule B2.	Discussed in Section 6.1.3.

Natural Environment Systems	Present within Site (65m)	Present within Adjacent Lands (120m) of Site	Comments
Woodlands	Woodlands (general) are identified on Town of Oakville Schedule B and the Greenlands B designation on Town of Milton Schedule A. Significant Woodlands are mapped as Key Features on Halton Region Map 1G and are present on the Site and Adjacent Lands. Significance is to be reassessed through a field assessment or through an existing watershed plan or sub-watershed study.	Woodlands (general) are identified on Town of Oakville Schedule B and the Greenlands B designation on Town of Milton Schedule A. Significant Woodlands are mapped as Key Features on Halton Region Map 1G and are present on the Site and Adjacent Lands. Significance is to be reassessed through a field assessment or through an existing watershed plan or sub-watershed study.	Discussed in Section 6.1.5. Other woodlands are discussed in Section 6.1.6.
Significant Wildlife Habitat	None mapped. Site investigations are required to identify which SWH are potentially present within Key Features of NHS. Areas mapped on Schedule B1 of the Town of Oakville OP are not within 120 m of the Project.	None mapped. Site investigations are required to identify which SWH are potentially present within Key Features of NHS. Areas mapped on Schedule B1 of the Town of Oakville OP are not within 120 m of the Project.	Discussed in Section 6.1.7.
Areas of Natural and Scientific Interest (ANSI)	Present -- Trafalgar Moraine ANSI (Earth Science) within the corridor improvement area and Adjacent Lands.	Present -- Trafalgar Moraine ANSI (Earth Science) within the corridor improvement area and Adjacent Lands.	Discussed in Section 6.1.8.

Natural Environment Systems	Present within Site (65m)	Present within Adjacent Lands (120m) of Site	Comments
Fish Habitat	3 major creeks and several smaller tributaries present. Watercourses shown on Map 1G of the Regional NHS. None identified on Schedules.	Additional small headwater features.	Discussed in Section 6.1.9.
Natural Heritage System (Greenbelt Plan)	Present – Greenbelt NHS is identified on Halton Region Map 1 and 1G, Town of Oakville Schedule A1; Greenbelt designations within RoW include Urban River Valleys and Protected Countryside	Present – Greenbelt NHS is identified on Halton Region Map 1 and 1G, Town of Oakville Schedule A1; Greenbelt designations within RoW include Urban River Valleys and Protected Countryside	N/A – Designation contains features discussed above
Regional Natural Heritage System (Halton Region)	Present	Present	N/A – Designation contains features discussed above

4.2 Endangered and Threatened Species and their Habitat

Endangered and Threatened Species at Risk (defined herein as “SAR”) are protected under the Provincial ESA. On private, municipal and provincial lands, the federal SARA typically applies only to fish species and the residences of migratory birds. Most birds, including SAR, also receive protection under the MBCA and/or FWCA. The Project is situated on private and municipal lands and as such, the evaluation of presence was completed following the province’s guidelines.

A list of potential endangered and threatened species was compiled using the sources listed in Section 3.2. Note that following site investigations, this list of species and potential occurrence was reviewed and adjusted. A summary table (Table 7) describing each of the 33 species (and additional information for each species brought forward) is

provided in Section 6.1.1. The NHIC database provides information available to the public on SAR documented as occurring within the general area. It should be noted that not all information for all species is available to the public. Furthermore, the absence of a record does not necessarily indicate that the species is absent from the area. The purpose of the NHIC database is to help determine what species may occur within the project area. The background review included looking at the list of birds observed as part of the Ontario Breeding Bird Atlas (OBBA) and any SAR species listed on these lists were considered as potentially occurring within the subject lands. Similarly, all SAR reptiles and/or SAR amphibians included in the Ontario Reptile and Amphibian Atlas (ORAA) within the vicinity of the Site was included in the assessment. Added to this list were species that often occur within the general area based on personal experience or observations. There were several species who are considered extirpated in their respective recovery strategies or have not been observed in any database since prior to the 1990s. These species have been excluded from the list below and from Table 7.

The resulting list includes 33 potential SAR in the 5 km area (scientific names are provided in Table 7):

- 1 insect (rusty-patched bumblebee)
- 3 fish (American eel, redbreast dace, silver shiner)
- 1 amphibian (Jefferson salamander)
- 1 reptile (Blanding's turtle)
- 13 birds (least bittern, chimney swift, lesser yellowlegs, red-headed woodpecker, Acadian flycatcher, bank swallow, prothonotary warbler, Louisiana waterthrush, cerulean warbler, yellow-breasted chat, bobolink, eastern meadowlark, Henslow's sparrow)
- 7 mammals (little brown myotis, northern myotis, eastern small-footed myotis, tri-colored bat, eastern red bat, silver-haired bat and hoary bat)
- 7 plants (dense blazing star, eastern flowering dogwood, American chestnut, butternut, black ash, fern-leaved yellow false foxglove, smooth yellow false foxglove)

4.3 Available Information on Fish Habitat and Communities

The project alignment crosses three watersheds and several major watercourses. The background review identified the following features:

- Bronte Creek

- Fourteen Mile Creek
- Sixteen Mile Creek
- Unnamed features

A review of available background information provided fish community information for these three major creeks, along with information for several of their tributaries. This information was available and obtained from the Aquatic Resource Area (ARA) database on Land Information Ontario (LIO) for all watercourses and the DFO Canadian Aquatic Species at Risk Mapping (CASAR) for selected watercourses.

The background species list for Sixteen Mile Creek contains 24 warm to cold water species (see Appendix B for scientific names and detailed information). Of the species listed, it included:

- Five sport fish (rainbow trout, brown trout, brown bullhead, smallmouth bass, and largemouth bass)
- Two pan fish species (rock bass and pumpkinseed).
- Two species at risk were identified:
 - Silver Shiner (federally and provincially threatened). Note that DFO CASAR mapping identifies this species as being found or potentially found in Sixteen Mile Creek. It also identifies critical habitat in this creek within the potential area of impact (see Appendix B).
 - Redside Dace (federally and provincially Endangered).
- The thermal regime for this watercourse is listed as warm water (LIO, 2023).

Nine features within the Sixteen Mile Creek sub-watershed either crossed or flowed near the Site (RR 25). Background fish information was available for three of these. A summary of the information found is provided in the bullets below:

- Features 1 and 2 were considered to provide critical habitat for silver shiner, as per CASAR mapping by DFO (see Appendix B).
 - Thermal regime of Feature 1 is warm water whereas Feature 2 is cool water (LIO, 2023).
- Feature 5 is listed as containing 9 common warm to cool water species and includes two sport fish (brown bullhead and largemouth bass) and one pan fish (pumpkinseed).
 - The thermal regime for this watercourse is listed as warm water (LIO, 2023).

The background species list for Fourteen Mile Creek includes 20 warm to cold water species (see Appendix B for scientific names and detailed information). Of the species listed, there are:

- Two sport fish (brown bullhead and largemouth bass)
- One pan fish (pumpkinseed).
- One species at risk, redbside dace.
 - Note that DFO CASAR mapping identifies this species as being found or potentially found in Fourteen Mile Creek. It also identified critical habitat for this species within the potential area of impact (see Appendix B).
- The thermal regime for this creek is cold (LIO, 2023).

Four features were in the Fourteen Mile Creek Subwatershed either cross or flow near the Site. Background fish information was available for three of the tributaries:

- Feature 10 had a list of two species, both common warm cool water species (fathead minnow and creek chub).
- Feature 11 listed only creek chub.
- Feature 13 listed only brook stickleback.
- The thermal regime for these three tributaries is listed as cold (LIO, 2023).

Bronte Creek also flows by the project area. The resulting background species list for this creek contains 56 warm to cold water species (See Appendix B for scientific names and detailed information). Of the species listed, they included:

- Nine sport fish (rainbow trout, chinook salmon, brown trout, brook trout, cisco, northern pike, brown bullhead, smallmouth bass, and largemouth bass)
- Seven pan fish (white perch, rock bass, green sunfish, pumpkinseed, bluegill, black crappie, and yellow perch).
- Three species at risk:
 - American Eel (provincially endangered)
 - Silver Shiner (federally and provincially threatened). Note that DFO CASAR mapping identifies this species as being found or potentially found in Bronte or its tributaries. It also identifies critical habitat in Bronte Creek within the potential area of impact (see Appendix B)
 - Redside Dace (federally and provincially Endangered).
- The thermal regime for this creek is warm (LIO, 2023).

5 Site Investigations

5.1 Site Visit Dates and Purpose

As mentioned above, several site visits were undertaken. A summary of the dates, times, ambient conditions, and purpose for the visits are provided in **Table 4**. Rainfall and water level conditions are included alongside the aquatic field work to capture the general watershed conditions at the time of the work. The vegetation communities are described in the section below, followed by the results from the species-specific surveys, and then aquatic habitat descriptions.

Table 4: Summary of Dates, Times, Conditions and Purpose of Site Investigations

*Min-Max Temp Taken From: Environment Canada. National Climate Data and Information Archive. Available <http://climate.weatheroffice.gc.ca/> [May 15, 2023]

** Water Level Conditions taken from Conservation Halton Flood Status webpage: <https://www.conservationhalton.ca/flood-status/>

Date	Time (h)	Staff	Air Temperature (Min-Max) °C*	Cloud Cover (%) Beaufort Wind Scale [Descriptor (scale)]	Total Rainfall (mm) 7 days prior to visit	Water Level Conditions **	Purpose
June 12, 2023	0930-1645	C. Little	17.0-18.0 (14.5-19.1)	Partially cloudy Wind: light air (1) changing to gentle breeze (3)	47.8	n/a	Vegetation Description Butternut Survey
June 13, 2023	1415-1830	S. Lafrance	19 (10.0-21.5)	Overcast (100) Wind: Light Air (1)	47.6	Water Safety Statement	Aquatic Habitat Description
June 14, 2023	0830-1600 0915-2040	C. Little S. Lafrance	14.0-20.0 (13.8-19.9)	Overcast Wind: light air (1) changing to light breeze (2)	47.6	Water Safety Statement	Vegetation Description Butternut Survey Aquatic Habitat Description
June 15, 2023	0820-1040	S. Lafrance	15 (10.5-24.5)	Overcast (100) Wind: Light Air (1)	48.5	Water Safety Statement	Aquatic Habitat Description

Date	Time (h)	Staff	Air Temperature (Min-Max) °C*	Cloud Cover (%) Beaufort Wind Scale [Descriptor (scale)]	Total Rainfall (mm) 7 days prior to visit	Water Level Conditions **	Purpose
June 16, 2023	0900-1715	C. Little	16.0-21.0 (14.9 – 22.5)	Sunny Wind: light breeze (2)	55.9	n/a	Vegetation Description Butternut Survey
June 24, 2023	0520-1100	A. Quinsey	18.0-20.0 (18.6-24.7)	Overcast Wind: light air (1)	3.2	n/a	Breeding Bird Survey
June 25, 2023	0520-1000	A. Quinsey	19.0-21.0 (20.0- 23.6)	Overcast Wind: light breeze (2)	10.8	n/a	Breeding Bird Survey
July 4, 2023	0530-1100	A. Quinsey	18.0-26.0 (19.5-29.6)	Clear Wind: light air (1)	81.5	n/a	Breeding Bird Survey
July 5, 2023	0400-0945	A. Quinsey	22.0-28.0 (22.5-31.2)	Clear Wind: light breeze (2)	62.9	n/a	Breeding Bird Survey
August 8, 2023	0815-1600	C. Little	18.0-25.0 (18.2 – 25.9)	Partially cloudy Wind: light air (1) changing to gentle breeze (3)	15.3	n/a	Vegetation Description Wetland Verification

Date	Time (h)	Staff	Air Temperature (Min-Max) °C*	Cloud Cover (%) Beaufort Wind Scale [Descriptor (scale)]	Total Rainfall (mm) 7 days prior to visit	Water Level Conditions **	Purpose
August 9, 2023	0800-1545	C. Little	19.0-28.0 (19.2 – 28.4)	Partially cloudy Wind: light air (1) changing to light breeze (2)	15.3	n/a	Woodland Assessment Wetland Verification
August 10, 2023	0830-1600	C. Little	20.0-25.0 (20.4 – 26.1)	Overcast, light drizzle Wind: light breeze (2)	12.1	n/a	Woodland Assessment Wetland Verification
August 11, 2023	0900-1515	C. Little	17.0-25.0 (17.3 – 25.3)	Sunny Wind: light breeze (2) changing to gentle breeze (3)	5.5	n/a	Wetland Verification Wetland Verification
August 12, 2023	0630-1030	C. Little	21.0-25.0 (20.0 – 27.2)	Partially cloudy Wind: light breeze (2) changing to gentle breeze (3)	29.9	n/a	Vegetation Description Woodland Assessment
October 24, 2024	0800-1600	K. Heide	8.0-12.0 (1.7 – 14.0)	Partially cloudy Wind: light breeze (2) No precipitation	0.0	n/a	Eagle/Raptor Nest Search
May 27, 2025	1120-1316	K. Heide	19.0 (6.5 – 19.4)	Mainly cloudy (9/10) Wind: calm (0) No precipitation	28.6	n/a	Eagle/Raptor Nest Search

5.2 Vegetation Descriptions and Butternut Inventory Results

The project area was visited multiple times during the growing season to document various Natural Environment Features within the corridor improvement area. The vegetation communities (minimum size 0.5 ha as per both ELC and OWES, unless a significant smaller community is identified) are described below along with the dominant plant species and a representative photograph. There were smaller wetland communities within the Site that required delineation, and description by an OWES certified evaluator, as per the workplan. These included several wetland pockets within the ditches of the Site. The vegetation descriptions for the natural communities are provided in the paragraphs below.

A full list of plant species observed in the Site is included in Appendix C. Overall, 153 plant species were observed within the Site and Adjacent Lands, with coefficients of conservatism ranging from 0 to 8. Scientific names for all plant species are provided in Appendix C. Most of the Site was heavily developed consisting of commercial and residential properties, or areas that are currently under active construction. There were several places of worship, a school, paramedic service centers, a fire hall, a waste management site, and a civic operations center. There was also a golf course and a driving range in the middle of the Site. Apart from the valleylands associated with portions of Bronte Creek, Fourteen Mile Creek, and Sixteen Mile Creek, the topography in the project area is relatively flat. The remaining upland habitats consisted of forested lands, several cultural meadows, shrub thickets, and agricultural fields. The wetland communities within the Site consisted of marshes (mainly vegetated with common reed, narrow-leaved cattail, and reed canary grass). The vegetation communities included:

- Cultural Meadow (dominated by herbaceous species with no more than 25% cover provided by either shrub or tree species)
- Open Agriculture (i.e., annual row crop, perennial cover crop, and pasture lands)
- Deciduous Cultural Thickets (>75% canopy cover by deciduous shrubs)
 - CUT1 – Mineral Thicket Ecosite
- Deciduous Forests (communities with >75% canopy cover by deciduous trees)
 - FOD2-4 - Dry-Fresh Oak - Hardwood Deciduous Forest
 - FOD4 - Dry-Fresh Upland Deciduous Forest
 - FOD7-3 - Fresh-Moist Willow Lowland Deciduous Forest
 - FOD7-4 - Fresh-Moist Black Walnut Lowland Deciduous Forest
- Coniferous Forests (communities with >75% canopy cover by coniferous trees)

- FOC - Coniferous Forest
- Mixed Forests (communities with >25% canopy cover by deciduous trees and coniferous trees)
 - FOM1 - Dry Oak - Pine Mixed Forest
 - FOM2-1 - Dry-Fresh White Pine - Oak Mixed Forest
- Marshes (wetland plant species provide 50% or more cover; and community is dominated by narrow-leaved emergents (ne), robust emergents (re), and/or herbs (gc)).
 - neM
 - reM
 - gcM

The vegetation communities within the corridor improvement area are mapped and displayed in Appendix D.

5.2.1 Upland Community

Anthropogenic (ANTH)

Along the corridor there were many areas consisting of manicured lawn dominated by Kentucky bluegrass. These areas were associated with private residences, commercial buildings or municipal boulevards. **Figure 7** below displays a CUM community along the RR 25 ROW that is mowed and comprised solely of Kentucky bluegrass.



Figure 7: View of manicured lawn (CUM) within the RR 25 ROW (August 9, 2023)

Cultural Meadow (CUM)

There were several cultural meadows within the corridor improvement area. Woody vegetation was present in these areas but only in low densities (black walnut, staghorn sumac, and red oak) (2-6m, 5% cover). There were generally no canopy or subcanopy layers in these communities. The ground cover layer was densely vegetated (100% cover), consisting of grasses and broadleaf species, primarily tall goldenrod, alsike clover, red clover, calico aster, cow vetch, wild carrot, chicory, and birds-foot-trefoil.

Figure 8 below displays a typical CUM community along RR 25.



Figure 8: View of cultural meadow (CUM) in the north end of the Site (August 10, 2023)

Cultural Plantation (CUP)Open Agriculture (OAG)

The majority of the agricultural fields were situated in the center of the Site, between Dundas Street West and Britannia Road. Agriculture was predominantly annual row crops (e.g., corn, soy), perennial cover crops (e.g., winter wheat), and fallow formerly-agricultural lands. The photos that follow give a representation of the agricultural lands along the corridor.



Figure 9: View of agricultural field planted with corn (August 10, 2023)



Figure 10: View of agricultural field planted with soy (August 10, 2023)

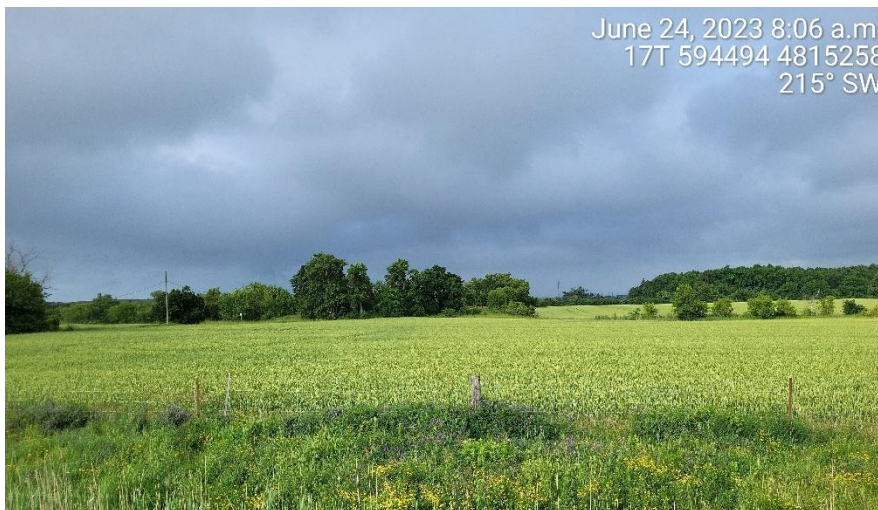


Figure 11: Wheat field on the east side of RR 25



Figure 12: Fallow former agricultural land, now exhibiting grassland characteristics, along the east side of RR 25

Mineral Cultural Thicket Ecosite (CUT1)

Several shrub thickets were present in the Site, all of which were dominated by deciduous species. These communities were generally associated with riparian zones and floodplains. Species included staghorn sumac, common buckthorn, glossy buckthorn, and honeysuckle, which ranged in size from 1-3m tall. **Figure 12** below displays the THDM2 community situated northeast of Yellow Rose Circle in the south end of the Site.



Figure 13: View of deciduous cultural thicket along RR 25 ROW (August 9, 2023)

Dry-Fresh Oak – Hardwood Deciduous Forest (FOD2-4)

There were four FOD2-4 communities within the Site: two within the Bronte Creek lands, and two directly north and south of the Highway 407 ramp. The canopy in these woodlots (20-24 m tall, 80% cover) was generally composed of red oak (dbh 18-95 cm), sugar maple (dbh 10-70 cm), and basswood (dbh 15-55 cm). The sub canopy (10-18 m tall, 30% cover) was primarily black maple (dbh 7-40 cm), black walnut (dbh 9-54 cm), and large-tooth aspen (dbh 10-30 cm). The understory (0.5-4 m tall, 60% cover) was mainly comprised of red raspberry, glossy buckthorn, and honeysuckle. The ground cover layer (80% cover) was mainly composed of common burdock, poison ivy, and tall goldenrod. Photo 6 below displays the FOD2-4 community associated with the Bronte Creek corridor in the south end of the alignment. Two black oaks were noted in this community on October 24, 2024, one of which was a skinny subcanopy tree curving over the sidewalk in the approximate location of the streetlamp seen in the centre of **Figure 14**, and the other a larger, stunted individual about 30m west of the roadway on the top edge of a sandy embankment leading down to the Bronte Creek valley. Black Oak is not a SAR or rare species, but can sometimes be an indicator of former oak savannah or areas with potential for restoration to savannah, which is a rare ecosystem in Ontario.



Figure 14: View of FOD2-4 community adjacent the Bronte Creek lands (June 25, 2023)

Dry-Fresh Upland Deciduous Forest (FOD4)

This 0.68 ha community was situated at the northeast corner of RR 25 and Dundas Street West. This woodlot was heavily disturbed with areas of remnant concrete and cultural meadow inclusions along the RR 25 and Dundas Street ROWs, because of past tree clearings. The canopy (15-22 m tall, 60% cover) was dominated by Manitoba maple (dbh 30-65 cm) and crack willow (dbh 45-75 cm). The sub canopy (10-18 m tall, 30% cover) was primarily black locust (dbh 7-22 cm), black walnut (dbh 16-40 cm), and Siberian elm (dbh 10-25 cm). The understory (0.5-4 m tall, 60% cover) was mainly comprised of common buckthorn, rose species, and trembling aspen. The ground cover layer (85% cover) was mostly composed of grasses, wild carrot, sweet white clover, chicory, and pigweed. **Figure 15** below displays the FOD4 community at the northeast corner of RR 25 and Dundas St. W.



Figure 15: View of FOD4 community (August 9, 2023)

Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3)

There were three FOD7-3 communities within the Site, all of which are associated with the Fourteen Mile Creek corridor. The canopy in these woodlots (18-24 m tall, 85% cover) was dominated by crack willow (dbh 25-88 cm), shagbark hickory (dbh 5-45 cm), beech (dbh 30-65 cm), and sugar maple (dbh 15-50 cm). The sub canopy (10-18 m tall, 55% cover) was comprised of black cherry (dbh 7-35 cm), black locust (dbh 10-40 cm), black walnut (dbh 5-15 cm), and basswood (dbh 10-38 cm). The understory (0.5-3 m tall, 60% cover) was mainly comprised of glossy buckthorn, staghorn sumac, and honeysuckle. The ground cover layer (80% cover) was mainly composed of grasses, Virginia creeper, cow vetch, and thistle. **Figure 16** below displays the FOD7-3 community associated with the Fourteen Mile Creek corridor approximately 200 m northeast of Upper Middle Road West.



Figure 16: View of FOD7-3 community adjacent Fourteen Mile Creek (June 14, 2023)

Fresh-Moist Black Walnut Lowland Deciduous Forest (FOD7-4)

There were multiple FOD7-4 communities within the Site, all of which were associated with the Bronte Creek and Sixteen Mile Creek corridors. The canopy in these woodlots (18-24 m tall, 80% cover) was dominated by black walnut (dbh 10-55 cm), Manitoba maple (dbh 15-65 cm), and crack willow (dbh 25-88 cm). The sub canopy (10-18 m tall, 45% cover) was comprised of bur oak (dbh 7-40 cm), black locust (dbh 10-45 cm), and green ash (dbh 10-30 cm). The understory (0.5-3 m tall, 60% cover) was mainly comprised of glossy buckthorn and honeysuckle. The ground cover layer (80% cover) was dominated by wild grape, cow vetch and tall goldenrod. **Figure 17** below displays the FOD7-4 community adjacent to Sixteen Mile Creek in the northern portion of the corridor. This community type is provincially rare with an S-rank of S2S3.



Figure 17: View of FOD7-4 community adjacent Sixteen Mile Creek (August 10, 2023)

Coniferous Forest (FOC)

The only FOC community was approximately 700 m southeast of Lower Base Line W along the RR 25 ROW adjacent the Freedom Center. The canopy layer within this community was approximately 16 m tall, provides 80% cover, and consisted mainly of white spruce (dbh 15-35 cm). The sub-canopy contained trembling aspen, shagbark hickory, and American elm. The understory was comprised of common buckthorn and honeysuckle, and the ground cover (80%) consisted of grasses, wild carrot, and tall goldenrod.

Dry Oak – Pine Mixed Forest (FOM1)

This remnant forest community was approximately 575 m northeast of Britannia Road and situated between active agricultural fields and active construction. The canopy in this mixed woodlot (15-21 m tall, 85% cover) was dominated by bur oak (dbh 10-55 cm), white pine (dbh 35-60 cm), and white spruce (dbh 25-88 cm). The sub canopy (10-18 m tall, 45% cover) was composed of shagbark hickory (dbh 10-43 cm), sugar maple (dbh 10-35 cm), and Manitoba maple (dbh 10-50 cm). The understory (0.5-3 m tall, 60% cover) mainly consisted of glossy buckthorn, and honeysuckle. The ground cover layer (80% cover) that was observed from the RR 25 ROW was mainly composed of field horsetail, cow vetch, and tall goldenrod.

Dry-Fresh White Pine – Oak Mixed Forest (FOM2-1)

This community was approximately 1 km south of Lower Base Line W and situated adjacent to the Freedom Center. The canopy in this mixed woodlot (18-22 m tall, 85% cover) was dominated by white pine (dbh 40-65 cm), red oak (dbh 10-60 cm), American elm (dbh 18-35), and green ash (dbh 15-40 cm). The sub canopy (10-18 m tall, 45% cover) was comprised of shagbark hickory (dbh 10-43 cm), white spruce (dbh 10-35 cm), and hawthorn (dbh 10-25 cm). The understory (0.5-3 m tall, 60% cover) mainly consisted of glossy buckthorn, staghorn sumac, and honeysuckle. The species composition of the ground cover layer (80% cover) could not be observed from the ROW as a cattail marsh was adjacent this woodlot. **Figure 18** below provides a visual of the FOM2-1 community situated behind a cattail marsh along RR 25.



Figure 18: View of FOM2-1 community behind cattail marsh (August 10, 2023)

5.2.2 Wetland Communities

Mash communities were the only wetland type observed within the Site. The majority of these features consisted of narrow wetland pockets within the ditches of the alignment, comprising mainly dense common reed, narrow-leaved cattail, and/or reed canary grass with little to no water present. Although these areas were often less than 0.5 ha (the minimum community size to be delineated as per OWES), every marsh community within the Site was delineated as per the work plan and where access was permitted. Three different vegetation forms were observed: narrow-leaved emergents (ne), robust emergents (re), and/or herbs (gc).

Narrow-leaved Emergent Marsh (neM)

There were several neM communities within the Site. The dominant form in these wetted areas was narrow-leaved emergents which were primarily reed canary grass (95%) with some herbs (5% purple loosestrife and spotted jewelweed) intermixed. These areas were mostly associated with riparian zones and floodplains adjacent to smaller unnamed tributaries along the corridor. **Figure 19** below displays the neM polygon, situated 200 m southwest of Upper Middle Road W, containing mainly reed canary grass.



Figure 19: View of neM community dominated by reed canary grass (August 9, 2023)

Robust emergent Marsh (reM)

There were multiple reM communities within the RR 25 ROW. The dominant form was robust emergents which were primarily composed of common reed (85%) with some communities dominated by narrow-leaved cattail (15%). These areas were mostly associated with the RR 25 ROW wetted ditches. **Figure 20** and

Figure 21 below display the two robust emergent marshes associated with the North Oakville-Milton West PSW Complex situated directly northwest of the Highway 407 on-ramp. **Figure 20** is of the polygon on the west side of RR 25 (within the ROW), and **Figure 21** displays the polygon on the east side of RR 25 wedged between two corn fields, both of which consisted entirely of common reed. **Figure 22** displays the third 0.04 ha wetland polygon as part of this PSW, situated on the east side of RR 25 (within the ROW) adjacent to the Freedom Center, composed solely of narrow-leaved cattail.



Figure 20: View of reM community, northwest of Highway 407 on-ramp, included as part of the North Oakville-Milton West PSW Complex (August 10, 2023)



Figure 21: View of reM community, northeast of Highway 407 on-ramp, included as part of the North Oakville-Milton West PSW Complex (August 10, 2023)



Figure 22: View of reM community dominated by narrow-leaved cattail, 1 km south of Lower Base Line West, included as part of the North Oakville-Milton West PSW Complex (August 9, 2023)

Ground cover (herbs) Marsh (gcM)

There were a few gcM communities within the Site. The dominant form was ground cover (herbs) which were primarily composed of purple loosestrife (95%) with some robust emergents (narrow-leaved cattail and common reed 5%) intermixed. These areas were associated with riparian zones of unnamed tributaries across the corridor.

Figure 23 below displays one of the gcM polygons within the RR 25 ROW situated adjacent to the Tee Zone Driving Range approximately 300 m northwest of Burnhamthorpe Road W.



Figure 23: View of gcM community comprised of purple loosestrife (August 10, 2023)

5.2.3 SAR Plant / Butternut Survey Results

Surveys for butternut and other SAR plants were completed on days with appropriate weather conditions and during the butternut assessment period. “Over the fence” surveys were completed in areas where access was not permitted (i.e., private lands). No butternut or other SAR plants were observed within the Site. A SAR plant survey will be re-conducted during detailed design to address potential butternuts found within the site during an arborist program.

5.3 Fauna Surveys

5.3.1 Daytime Breeding Bird Survey Results

The breeding bird surveys involved two visits to all natural habitats; one in late June and one in early July. These visits took place in the early morning, as per the Ontario Breeding Bird Atlas Guide for Participants (OBBA, 2001), and on days with appropriate weather conditions.

The Site provided habitat for many common breeding birds. In total 55 species of birds were observed on site and within the Adjacent Lands (Appendix C). Of these, 29 species were found to likely be nesting on the area surrounding the road (**Table 5**). Most of the observations consisted of calling males, though some foraging individuals and females were noted. The only species of conservation value were the bald eagle, barn swallow, and wood thrush. The bald eagle occurrence was a single individual flying over the road near Station 13; it was not found to be breeding near the road. The barn swallows were present at nearly half of the survey stations, the highest breeding evidence observed was several individuals entering a barn west of the road near station 22. A single wood thrush was heard over 175m from the road to the west from Station 43.

Three SAR birds (bank swallow, bobolink, and eastern meadowlark) were observed:

- A colony of bank swallows was observed in a large, temporary, sand pile near Station 20, within 50m of the road.
- Male bobolinks (3 on the first visit, 2 on the second). Additional bobolinks were seen between on June 14 in the mixed meadow community on the east side of RR 25 across from Henderson Road (See Section 5.4).
- Male eastern meadowlark was observed on both visits in the field east of Station 15 in an old field.
- A male eastern meadowlark was observed during the second visit (July 4, 2023) east of the road in an old field beside Station 17.

- Several bobolinks were observed during the vegetation surveys east of the road in the agricultural field near Station 24 (June 24, 2023).

Table 5: Breeding Bird Species with Probable and Confirmed Breeding Evidence

Common Name	Scientific Name	ABBO Category	SRANK	ESA Reg. 230/08 DARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Breeding Evidence
Osprey	<i>Pandion haliaetus</i>	Confirmed	S5B	no status	no status	AE
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Probable	S5	no status	no status	T
Killdeer	<i>Charadrius vociferus</i>	Probable	S5B, S5N	no status	no status	T, M
Rock Dove	<i>Columba livia</i>	Probable	SNA	no status	no status	T, M
Spotted Sandpiper	<i>Actitis macularia</i>	Probable	S5	no status	no status	T
Mourning Dove	<i>Zenaida macroura</i>	Probable	S5	no status	no status	T, M
Northern Flicker	<i>Colaptes auratus</i>	Probable	S5	no status	no status	T
Willow Flycatcher	<i>Empidonax traillii</i>	Probable	S5B	no status	no status	T
Blue Jay	<i>Cyanocitta cristata</i>	Probable	S5	no status	no status	T
American Crow	<i>Corvus brachyrhynchos</i>	Probable	S5B	no status	no status	T
Tree Swallow	<i>Tachycineta bicolor</i>	Confirmed	S4B	no status	no status	AE

Common Name	Scientific Name	ABBO Category	SRANK	ESA Reg. 230/08 DARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Breeding Evidence
Bank Swallow	<i>Riparia riparia</i>	Confirmed	S4B	THR	THR	AE
Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	Confirmed	S4B	no status	no status	AE, CF
Barn Swallow	<i>Hirundo rustica</i>	Confirmed	S4B	SC	THR	AE
American Robin	<i>Turdus migratorius</i>	Confirmed	S5B	no status	no status	AE, NB
Gray Catbird	<i>Dumetella carolinensis</i>	Probable	S5B	no status	no status	T
European Starling	<i>Sturnus vulgaris</i>	Confirmed	SNA	no status	no status	AE, CF, FY
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Probable	S5B	no status	no status	T
Common Yellowthroat	<i>Geothlypis trichas</i>	Probable	S5B	no status	no status	T
Chipping Sparrow	<i>Spizella passerina</i>	Probable	S5B	no status	no status	T
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Probable	S4B	no status	no status	T, M
Song Sparrow	<i>Melospiza melodia</i>	Confirmed	S5B	no status	no status	NB
Bobolink	<i>Dolichonyx oryzivorus</i>	Probable	S4B	THR	THR	T

Common Name	Scientific Name	ABBO Category	SRANK	ESA Reg. 230/08 DARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Breeding Evidence
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Confirmed	S4	no status	no status	CF
Eastern Meadowlark	<i>Sturnella magna</i>	Probable	S4B	THR	THR	T
Common Grackle	<i>Quiscalus quiscula</i>	Confirmed	S5B	no status	no status	CF
Brown-headed Cowbird	<i>Molothrus ater</i>	Probable	S4B	no status	no status	P
American Goldfinch	<i>Carduelis tristis</i>	Probable	S5B	no status	no status	T, M
House Sparrow	<i>Passer domesticus</i>	Probable	SNA	no status	no status	T, P

SRANK Definitions

S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 Secure, Common, widespread, and abundant in the nation or state/province.

S#B Breeding

SNA

SARO Status Definitions

SC Special Concern: A species with characteristics that make it sensitive to human activities or natural events.

THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SARA Status Definitions

THR Threatened, a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

Probable Breeding Evidence Codes:

- M Multiple singing/calling/drumming individuals (7 or more) heard during one visit to a single square and in suitable nesting habitat during the species' breeding season. Use with caution to avoid counting migrants.
- P Pair observed in suitable nesting habitat during the species' breeding season.
- T Permanent territory presumed through registration of territorial song, or the occurrence of an adult bird, at the same place, in breeding habitat, on at least two days a week or more apart, during its breeding season.

Confirmed Breeding Evidence Codes:

- NB Nest building, including the carrying of nesting material, by all species except wrens and woodpeckers.
- FY Recently Fledged Young (nidicolous species – whose young are raised in a nest) or downy young (nidifugous species – whose young leave the nest soon after hatching) incapable of sustained flight.
- CF Adult Carrying Food for young.
- AE Adult Entering, occupying, or leaving a nest site (visible or not) or whose behavior suggests the presence of an occupied nest.

5.3.2 Raptor Nest Survey

Two raptor nests were found along the corridor on October 24, 2024. The first was an inactive stick nest, likely of an Osprey, atop a communications tower at the Southeast corner of Highway 407 and Regional Road 25 (43.44374, -79.78575). A decoy Bald Eagle had been placed on it as a means of preventing future nesting activities on the tower. The second was another large stick nest, placed in a White Pine on the western slope of the Bronte Creek Valley (43.40940, -79.74787, **Figure 24**). It was situated 429m southwest of the roadway as the eagle flies. This second nest matched the photos publicly available on iNaturalist of a Bald Eagle nest that had been active in the spring of 2024 at this same approximate location. Due to the time of year, there were no birds around, but the structure of the nest appeared intact. At the time of the visit it was considered possible this nest would be used again in the future as Bald Eagles commonly reuse nests.

The nest was checked on May 27, 2025 during the active breeding period for Bald Eagles. The observer watched the nest from close proximity (50 m) within Bronte Creek Provincial Park for a period of 30 minutes. No eagles were using the nest at that time, nor were any eagles seen in the immediate area. An adult Bald Eagle was seen perched several km away near 5th Line and 6th Line in Milton on the same day. Two adult Red-tailed Hawks were seen hovering above the suspected eagle nest, coming within a few metres of it at times. However, they did not land on the nest during the 30-

minute period of continuous observation and no young were heard begging. It is possible that the hawks were using the nest but this was not confirmed. However, the continued presence of Red-tailed Hawks around the nest with no eagles defending the nest is strong evidence that eagles were not using the nest in 2025, or that they had been using it earlier in the year and the young had already fledged or been predated.



Figure 24: Potentially active Bald Eagle nest located at 43.40940, -79.74787

5.4 Incidentals

During the site investigations, evidence of the presence of or observations of wildlife individuals were noted. This section also includes additional bird species which were not found on-site during the breeding bird survey period. The incidental observations included three herptiles: American toad (*Anaxyrus americanus*), eastern garter snake (*Thamnophis sirtalis sirtalis*), and painted turtle (*Chrysemys picta*).

Four bird species were only observed incidentally (not present during the breeding bird surveys): American redstart, house wren, northern harrier, and eastern phoebe. All were

common species with secure habitats in Ontario (S4 or S5 ranked species). It should be noted that while these species were not observed during official point counts, they were present on the Site or Adjacent Lands during the breeding season.

In addition to the Bobolinks (*Dolichonyx oryzivorus*) detected on point counts, multiple male and female bobolinks were observed incidentally on June 14, 2023 within the mixed meadow community on the east side of RR 25 across from Henderson Road. These were seen during the breeding season and the presence of both male and female birds suggests pairing, which is often an indication of probable breeding.

Two painted turtle mortalities were observed along the Site north of Lower Baseline Road, near the Rattlesnake Point Golf Club.

Refer to **Figure 25** below for locations of incidental wildlife observed during the 2023 field investigations.

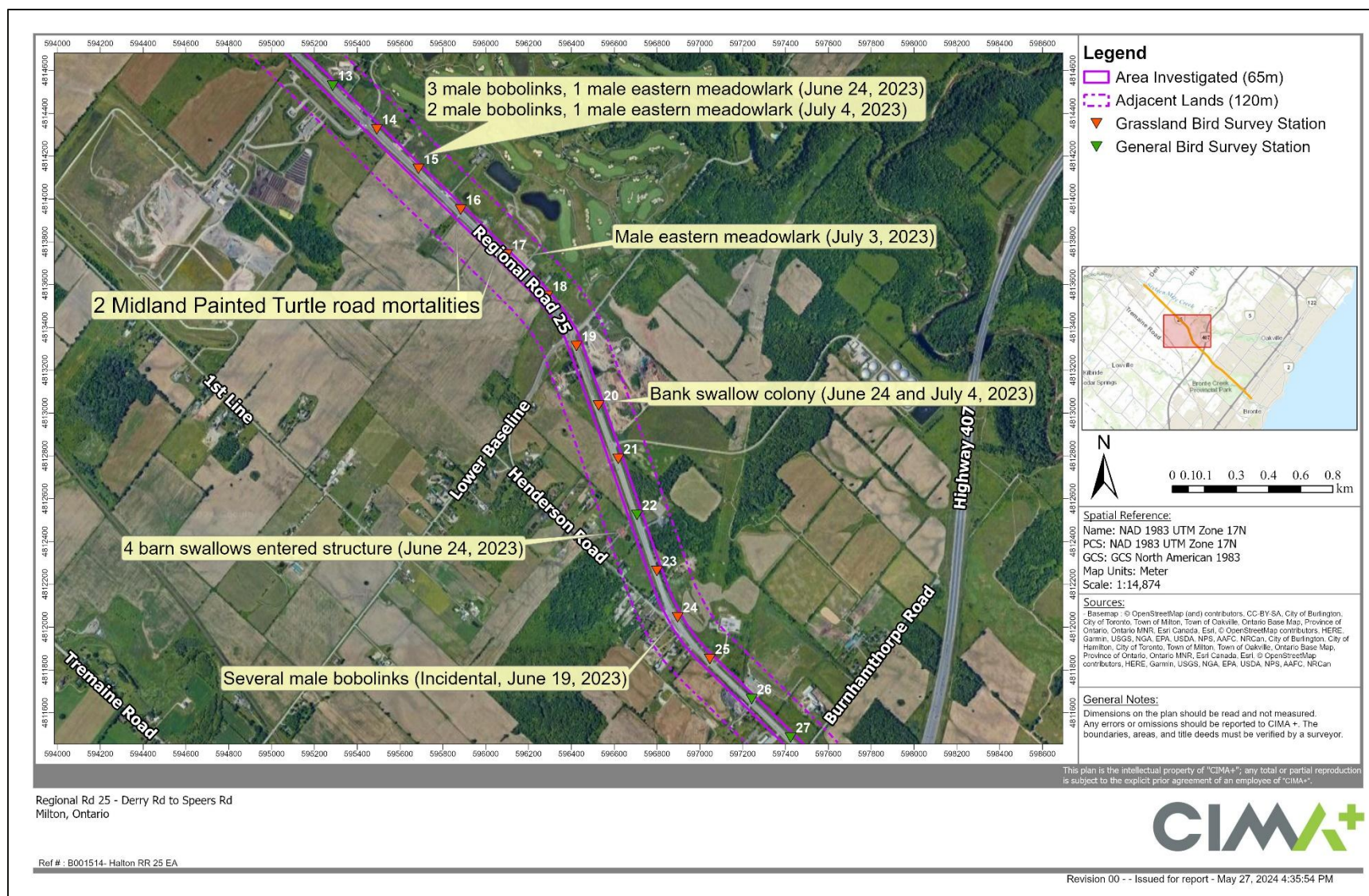


Figure 25: Species at Risk and Special Concern Bird Locations and Turtle Road Mortalities

5.5 Aquatic Habitat Assessment Results

As defined in Section 3.3.4, there were 16 features identified either crossing the Site or flowing within the Adjacent Lands (120 m). Of these features, three were named and known to be permanent, fish bearing channels: Sixteen Mile Creek, Fourteen Mile Creek, and Bronte Creek. All other features were unnamed and, as noted in the background review section, were either part of the Sixteen Mile Creek sub-watershed (features 1-9), or the Fourteen Mile Creek sub-watershed (features 11-13).

The following tables provide a summary of the features: location in relationship to the corridor, length, morphological characteristics within the area surveyed, whether there is information in the background on the presence/absence of fish and/or the thermal regime. Summaries of each feature are included below (**Table 6**) followed by maps of their locations, and the location of the habitat stations and the barriers (**Figure 26**, **Figure 27**, and **Figure 28**), and a few representative photographs. The features are listed from north to south. The details collected during the survey are provided in Appendix E along with representative photographs of each sampling station. Named watercourses are highlighted in blue.

Table 6: Aquatic Habitat Summary

Sub watershed	Feature	Station No.	Location in Relation to RR 25	Total Length	Feature Type in Study Area	Thermal Regime	Flow Duration	Channel Morphology	Dominant Substrate	Dominant In-water Cover	No. of Fish Species	Known SAR or Potential SAR	Comments
16 Mile	16 Mile	n/a	Crosses (bridge)	n/a	Natural Channel	Warm	Confirmed Permanent	Runs to Glides	Rocky with Fines	Boulders, LWD, emergents (along banks)	24	Redside Dace Silver Shiner	Good quality, Direct Fish Habitat
16 Mile	1	1	Crosses (box culvert)	1.5km	Natural Channel	Warm	Assumed Permanent	Riffles, glides, and pool	Rocky with Fines	Cobbles, boulders, submergents	1	Silver Shiner	Good quality, Direct Fish Habitat
16 Mile	1	2	Crosses (box culvert)	1.5km	Natural Channel	Warm	Assumed Permanent	Riffles with one pool	Rocky with Fines	Cobbles, boulders, algae, overhanging vegetation	1	Silver Shiner	Good quality, Direct Fish Habitat
16 Mile	2	3	70m North, ran parallel	430m	Vegetated Swale	Cool	Seasonal	Dry	Fines	Terrestrial vegetation	1	Silver Shiner	Poor quality, no defined channel, unlikely to offer silver shiner habitat, dry at time of visit with some water pooled in culvert. Assumed direct seasonal fish habitat
16 Mile	3	4	Crosses (box culvert)	170m	Channelized	n/a	Assumed seasonal	Glide	Fines with a few cobbles	Aquatic vegetation and terrestrial vegetation	0	N	Poor quality, channel built in 2016, assumed direct fish habitat
16 Mile	4	5	Crosses (concrete culvert)	280m	Vegetated road ditch	n/a	Assumed seasonal	Glide	Fines	Aquatic vegetation and terrestrial vegetation	0	N	Moderate quality, downstream end may be permanent due to backflow from Feature 5, assumed direct fish habitat

Sub watershed	Feature	Station No.	Location in Relation to RR 25	Total Length	Feature Type in Study Area	Thermal Regime	Flow Duration	Channel Morphology	Dominant Substrate	Dominant In-water Cover	No. of Fish Species	Known SAR or Potential SAR	Comments
16 Mile	5	6	Crosses (arch culvert)	9.2km	Natural Channel	Warm	Confirmed Permanent	Glide	Fines with cobble and gravel	Aquatic vegetation, terrestrial vegetation, and cobbles	9	N	Good quality, direct fish habitat
16 Mile	5	7	Crosses (arch culvert)	9.2km	Natural Channel	Warm	Confirmed Permanent	Glide, pool and run	Fines with gravel	Aquatic vegetation, terrestrial vegetation, and overhanging vegetation	9	N	Good quality, direct fish habitat
16 Mile	6	8	Crosses (corrugated steel pipe)	530m	Vegetated road ditch	n/a	Assumed Seasonal	Glide	Gravel and fines, some cobble	Aquatic vegetation, terrestrial vegetation, and overhanging vegetation	0	N	Poor quality, assumed direct fish habitat
16 Mile	7	9	Crosses (corrugated steel pipe)	1.2km	Vegetated road ditch/mowed swale	n/a	Assumed Seasonal	Dry	Fines	Aquatic vegetation and terrestrial vegetation	0	N	Poor quality, assumed direct fish habitat
16 Mile	8	10	Crosses (arch culvert)	3.2km	Natural Channel	n/a	Assumed Permanent	Glide and pool	Fines	Aquatic vegetation and terrestrial vegetation	0	N	Good quality, assumed direct fish habitat
16 Mile	8	11	Crosses (arch culvert)	3.2km	Natural Channel	n/a	Assumed Permanent	Glide	Fines	Aquatic vegetation and terrestrial vegetation	0	N	Good quality, assumed direct fish habitat
16 Mile	9	12	Crosses (corrugated steel pipe)	1.2km	Vegetated road ditch	n/a	Assumed Seasonal	Glide	Fines	Aquatic vegetation and terrestrial vegetation	0	N	Poor quality, assumed direct fish habitat
14 Mile	14 Mile	d/s	Crosses (Bridge)	n/a	Natural Channel	Cold	Confirmed Permanent	Glide	Fines and boulders	Aquatic vegetation	20	Reside Dace	Good quality, direct fish habitat

Sub watershed	Feature	Station No.	Location in Relation to RR 25	Total Length	Feature Type in Study Area	Thermal Regime	Flow Duration	Channel Morphology	Dominant Substrate	Dominant In-water Cover	No. of Fish Species	Known SAR or Potential SAR	Comments
14 Mile	14 Mile	u/s	Crosses (Bridge)	n/a	Natural Channel	Cold	Confirmed Permanent	Riffle	Cobble, gravel, and boulders	Boulders and aquatic vegetation	20	Reside Dace	Good quality, direct fish habitat
14 Mile	10	13	Crosses (Plastic culvert)	7.2km	Vegetated road ditch	Cold	Assumed Permanent	Glide	Fine	Aquatic vegetation	2 (fathead minnow, creek chub)	N	Moderate quality, direct fish habitat
14 Mile	11	14	Crosses (corrugated steel pipe)	3.2km	Vegetated road ditch	Cold	Assumed Permanent	Glide	Fine	Aquatic vegetation and terrestrial vegetation	1 (Creek Chub)	N	Moderate quality, direct fish habitat
14 Mile	11	15	Crosses (corrugated steel pipe)	3.2km	Vegetated road ditch	Cold	Assumed Permanent	Glide	Fine	Aquatic vegetation and terrestrial vegetation	1 (Creek Chub)	N	Moderate quality, direct fish habitat
14 Mile	11	16	Crosses (corrugated steel pipe)	3.2km	Vegetated road ditch	Cold	Assumed Permanent	Glide	Fine	Aquatic vegetation and terrestrial vegetation	1 (Creek Chub)	N	Moderate quality, direct fish habitat
14 Mile	12	17	Crosses (box culvert)	500m	Natural Channel	Cold	Assumed Seasonal	Glide	Fine	Aquatic vegetation and terrestrial vegetation	1 (Brook Stickleback)	N	Poor quality, direct fish habitat
14 Mile	12	18	Crosses (box culvert)	500m	Natural Channel	Cold	Assumed Seasonal	Glide	Fine	Aquatic vegetation and terrestrial vegetation	1 (Brook Stickleback)	N	Poor quality, direct fish habitat
14 Mile	13	19	Crosses (box culvert)	1.5km	Natural Channel	n/a	Assumed Permanent	Glides	Fines	Aquatic vegetation and terrestrial vegetation	0	N	Good quality assumed direct fish habitat. Watercress was present.
14 Mile	13	20	Crosses (box culvert)	1.5km	Natural Channel	n/a	Assumed Permanent	Glides	Fines with cobbles	Aquatic vegetation and terrestrial vegetation	0	N	Moderate quality, assumed direct fish habitat
Bronte	Bronte	n/a	Crosses (Bridge)	n/a	Natural Channel	Warm	Confirmed Permanent	Glide with riffles	Fines, boulders, cobbles	Boulders and aquatic vegetation	56	American Eel, Silver Shiner, Redside Dace	Good quality, direct fish habitat

Table 7: Aquatic Parameters of each Station and Watercourse for each Fish Habitat Visit (June 2023)

Sub watershed	Feature	Station No.	Date	Time	Air Temp* (°C)	Water Temp (°C)	Ave. Channel Width (m)	Ave. Bankfull Depth (cm)	Ave. Wetted Width (m)	Ave. Wetted Depth (cm)
16 Mile	n/a	n/a	June 14, 2023	1720	20	16	12	70-100	10	50-80
16 Mile	1	1	June 14, 2023	1715	20	18	4.8	28	4.2	15
16 Mile	1	2	June 14, 2023	1640	19	18	3.6	26	3.0	17
16 Mile	2	3	June 14, 2023	1505	18	n/a	3.5	4	0	0
16 Mile	3	4	June 14, 2023	1415	18	18	1.8	5	1.4	1
16 Mile	4	5	June 14, 2023	1355	18	18	1.9	16	1.3	10
16 Mile	5	6	June 14, 2023	1330	18	19	5.8	21	4.8	11
16 Mile	5	7	June 14, 2023	1230-1850	18-20	17	4.7	32	3.0	21
16 Mile	6	8	June 14, 2023	1215-1900	18	17	0.8	11	0.5	7
16 Mile	7	9	June 14, 2023	1150	17	16*	0.8	5	0	0
16 Mile	8	10	June 14, 2023	1100	17	n/a	3.8	24	2.8	12
16 Mile	8	11	June 14, 2023	1930	18	17	2.3	13	1.7	5
16 Mile	9	12	June 14, 2023	1050-1955	17-16	17	1.5	9	0.4	1
14 Mile	n/a	Downstream	June 13, 2023	1620	15	n/a	8	90-120	7	60-90
14 Mile	n/a	Upstream	June 15, 2023	0944	17	n/a	8	60-80	6	30-50
14 Mile	10	13	June 13, 2023	1820	15	16	2.5	18	2.2	8
14 Mile	11	14	June 15, 2023	0825	15	17	1.6	12	1.1	1
14 Mile	11	15	June 15, 2023	0845	15	18	4.3	15	2.9	7
14 Mile	11	16	June 13, 2023	1710	15	11	3.1	22	2.7	12

Sub watershed	Feature	Station No.	Date	Time	Air Temp* (°C)	Water Temp (°C)	Ave. Channel Width (m)	Ave. Bankfull Depth (cm)	Ave. Wetted Width (m)	Ave. Wetted Depth (cm)
14 Mile	12	17	June 13, 2023	1540	15	10	2.7	12	2.1	6
14 Mile	12	18	June 15, 2023	1010	17	14	2.5	8	1.3	1
14 Mile	13	19	June 13, 2023	1520	16	11	3.1	12	1.5	2
14 Mile	13	20	June 15, 2023	1030	17	14	2.1	9	1.1	2
Bronte Creek	n/a	n/a	June 13, 2023	1415	18	17	15	100-130	12	50-80

* Temperature was taken in the water pooling in the culvert

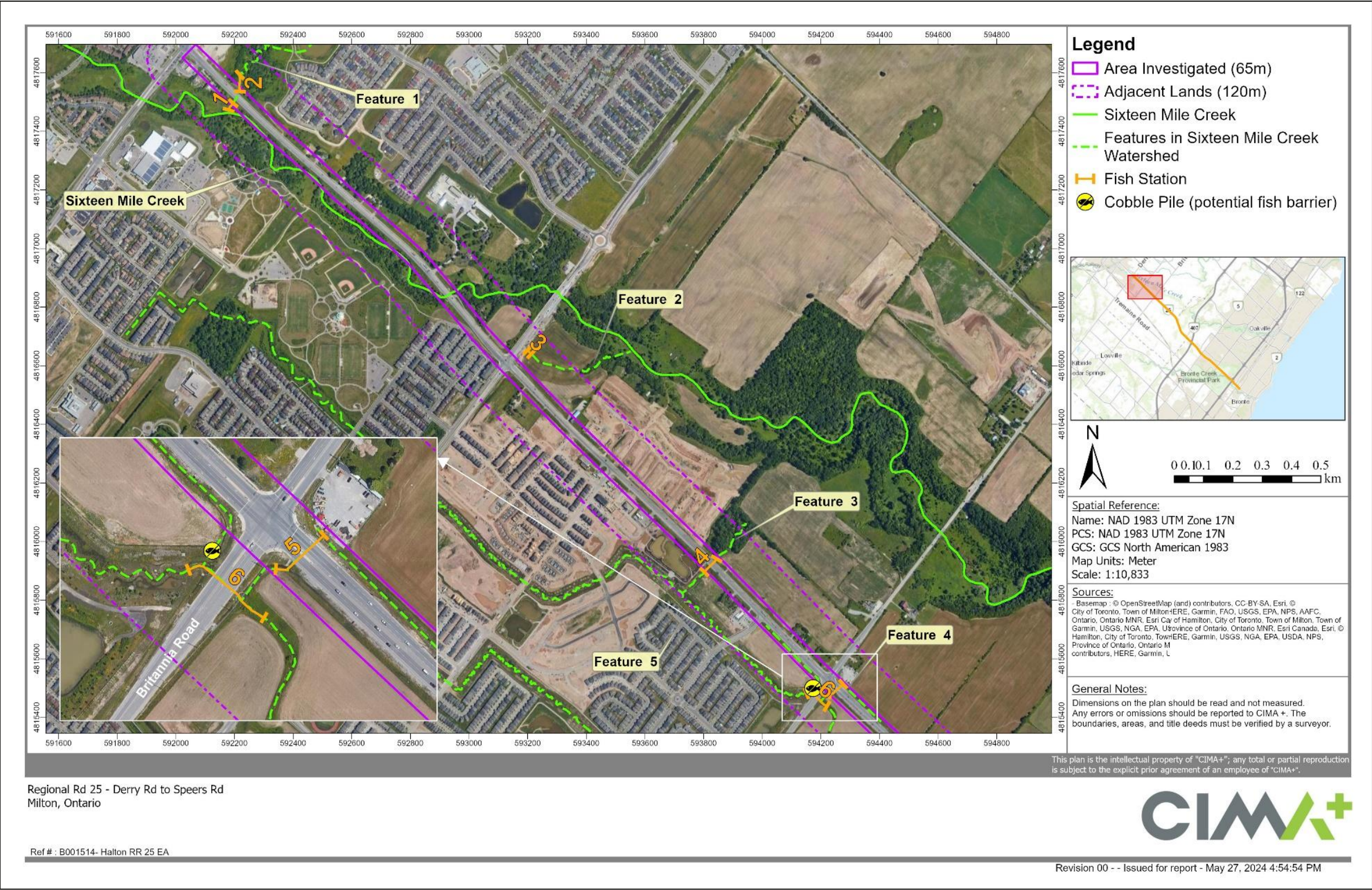


Figure 26: Fish Stations, Barriers, and Watercourses for the North Section of the Sixteen Mile Creek Watershed

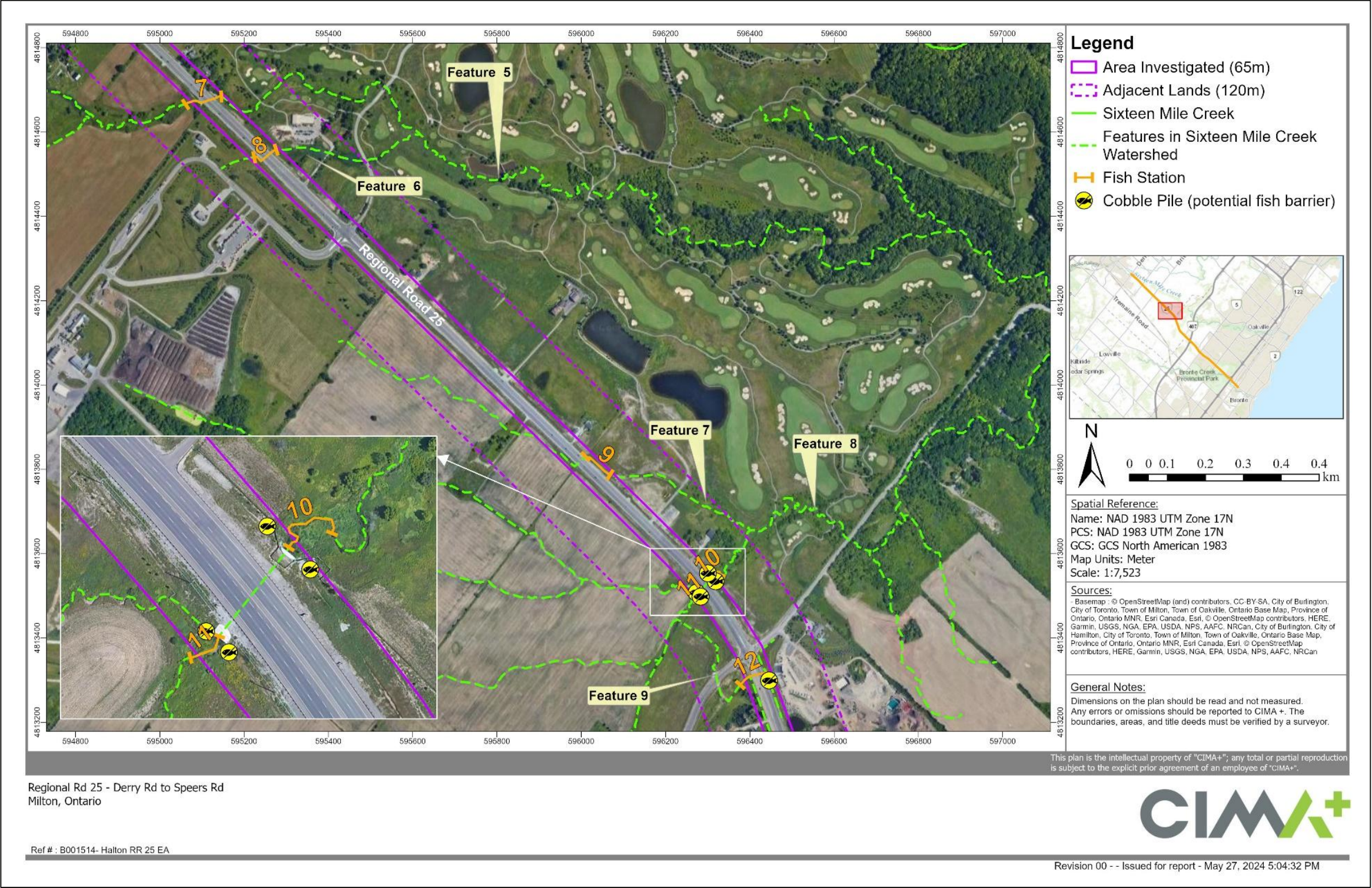


Figure 27: Fish Stations, Barriers, and Watercourses for the South Section of the Sixteen Mile Creek Watershed

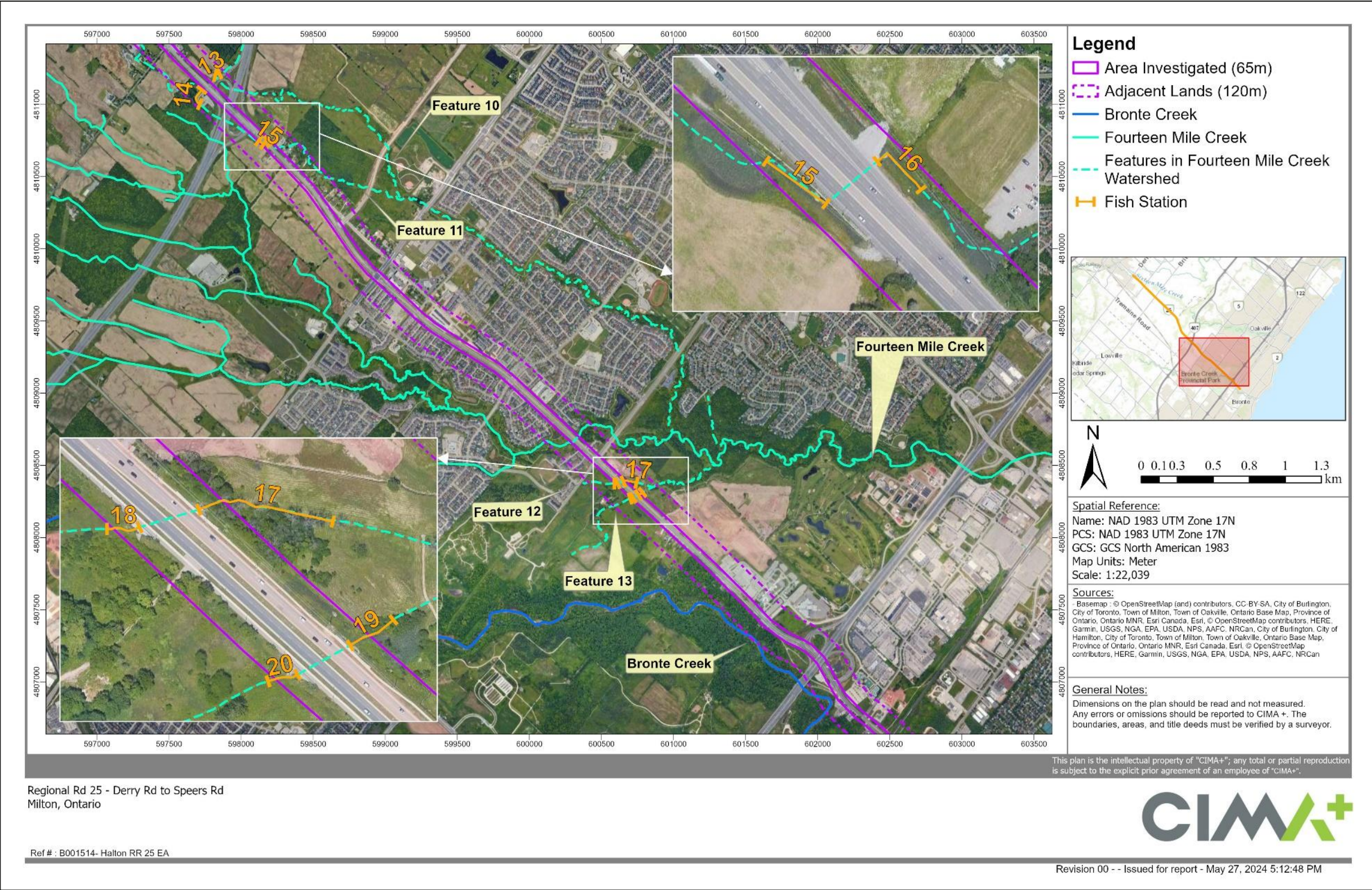


Figure 28: Fish Stations, Barriers, and Watercourses for the Fourteen Mile Creek and Bronte Creek Watersheds

5.5.1 Sixteen Mile Creek

The Sixteen Mile Creek sub-watershed is approximately 360 km² with the creek originating from wetlands 17 km upstream of its crossing with RR 25. From its point of origin, it flows through forested habitat, agricultural fields, and developed areas before reaching RR 25. The creek then flows through forested corridors another 26 km before reaching Lake Ontario.

No habitat station was established on Sixteen Mile Creek as it was not wadable, but general notes were captured during the visit. In the area observed, the habitat consisted of a fast moving, moderately deep (30-80 cm) mix of runs, slow riffles (**Figure 29**), and glides, over boulders, cobbles, and fines. The channel width was approximately 12 m. In-water cover noted from the shoreline included boulders, occasional large woody debris, and a narrow band of aquatic vegetation (emergents) along the banks.

The banks were well vegetated by herbaceous and woody species, with some canopy cover. The bankfull marks on the bank suggest that water depths in some conditions may be approximately 20 cm above the depths observed at the time of the visit. Sixteen Mile Creek has several tributaries flowing into it, with nine of those tributaries flowing across or near the Site.



Figure 29: Sixteen Mile Creek, looking upstream at a short riffle (June 14, 2023)

5.5.1.1 Feature 1

Feature 1 flowed perpendicular to RR 25 and the culvert crossing was 30 m upstream from the confluence with Sixteen Mile Creek (**Figure 30**). This unnamed feature was walked between its confluence with Sixteen Mile Creek and a distance of 60 m

upstream of RR 25 on June 14, 2023. Based on satellite imagery, this feature's length is 1.5 km and originates from the subdivision northwest of the Site. The feature flowed in a sinuous fashion through forested habitat through its entire length except for the lower 80 m. The feature flows through a box culvert under RR 25 (**Figure 31** and **Figure 32**) and did not have any barriers in the observed length. The detailed information from two stations established, one on each side of the culvert, is provided in Appendix E.



Figure 30: Looking downstream at the downstream end of the box culvert (June 14, 2023)



Figure 31: Looking upstream in the box culvert (June 14, 2023)



Figure 32: Looking upstream in the box culvert (June 14, 2023)

5.5.1.2 Feature 2

Feature 2 ran parallel to RR 25 in an agricultural field. It was walked from its upstream end at Louis St. Laurent Avenue downstream for 30 m on June 14, 2023. Based on satellite imagery, its length was 430 m and it originated from the outlet of the stormwater system at Louis St Laurent Avenue (concrete pipe). The feature flowed southeast through an agricultural field (**Figure 33**) and then into forested habitat near Sixteen Mile Creek. While there was flowing water at the concrete outlet, it disappeared immediately into the ground (**Figure 34**). The remainder of the system walked was dry at the time of the visit. It is further noted that the channel was poorly defined (no continuously carved channel) with portions having little definition (slight dip in landscape). No structural barriers to fish movement were noted other than a lack of defined channel. The detailed information from the station established, at the upstream side of the feature, is provided in Appendix E.



Figure 33: Looking upstream in the box culvert (June 14, 2023)



Figure 34: Looking at the upstream culvert (June 14, 2023)

5.5.1.3 Feature 3

Feature 3 was located perpendicular to RR 25, and the culvert crossing was 125 m upstream from its confluence with Feature 5. Feature 3 was walked a distance of 40 m upstream and downstream of the culvert crossing on June 14, 2023. Based on satellite imagery, its total length was 170 m and it originated from the roadside ditch along RR 25. This feature was built in October of 2016 (satellite imagery) and no channel was present in this location prior to this construction. The feature flowed southwest through

meadow habitat. This feature did not exhibit permanent flow as it was completely dry at the time of the visit. There was no channel upstream of the culvert (**Figure 35**), and any stormwater, etc. is anticipated to reach the culvert via overland flow. No barriers were present throughout the feature. The detailed information from the station established, on the downstream side of the culvert (**Figure 36**), is provided in Appendix E.



Figure 35: Looking at the upstream end of the culvert (June 14, 2023)



Figure 36: Looking at the downstream end of the culvert (June 14, 2023)

5.5.1.4 Feature 4

Feature 4 flows perpendicular to RR 25 and the culvert crossing was 60 m upstream from the confluence with Feature 5. Feature 3 was walked from its downstream end to a distance of 90 m upstream of RR 25 on June 14, 2023. Based on satellite imagery, its length was 280 m and it originated from the roadside ditch on the east side of RR 25. The feature flowed northwest along the road (**Figure 37**) then was directed south through a concrete culvert into Feature 5 (**Figure 38**). The downstream 50 m was realigned in September 2021 following roadwork on Britannia Road (satellite imagery). No barriers were present throughout the feature. The detailed information from the station established, spanning both sides of the culvert, is provided in Appendix E.



Figure 37: Looking upstream at the end of the surveyed section (June 14, 2023)



Figure 38: Looking at the upstream end of the culvert (June 14, 2023)

5.5.1.5 Feature 5

Based on satellite imagery, its total length was 9.2 km and it originated in a subdivision west of the Site. The feature then flowed through a variety of habitats, including developed land, forested habitat, wetlands, meadows, agricultural land, and golf courses, before flowing into Sixteen Mile Creek. Feature 5 flowed parallel to RR 25 for the portion upstream of Britannia Road, and eventually crossed under RR 25 roughly 3.2 km from its confluence with Sixteen Mile Creek. The feature was walked for 120 m where it crosses Britannia Road (**Figure 39** and **Figure 40**) (Station 6, in Appendix E), and an additional 120 m where it crossed RR 25 (**Figure 41** and **Figure 42**) (Station 7, Appendix E). The channel upstream of the Britannia Road crossing was realigned in 2016 and 2017 (satellite imagery). No barriers were found throughout the walked part of the feature. Detailed information from the two stations established is provided in Appendix E.



Figure 39: Looking downstream from the bridge at Britannia Road (June 14, 2023)



Figure 40: Looking upstream from the bridge at Britania Road (June 14, 2023)



Figure 41: Looking downstream from the culvert at Regional Road 25 (June 14, 2023)



Figure 42: Looking upstream from the culvert at Regional Road 25 (June 14, 2023)

5.5.1.6 Feature 6

Feature 6 flowed perpendicular to RR 25. It was walked for 20 m upstream and 50 m downstream where it crosses RR 25 (**Figure 43**). Based on satellite imagery, its entire length was 530 m and it originated from the roadside ditch at the access road to the Halton Waste Management Site. The feature also received contributing flow from the roadside ditches along RR 25. From its originating point, it flowed through mowed lawn (**Figure 44**), meadow, and golf course, before flowing into the Feature 5 (discussed above). No barriers were found throughout the walked part of the feature, but the channel was heavily choked with emergent vegetation downstream of the culvert (**Figure 45**). The detailed information from the station established, spanning both sides of the culvert, is provided in Appendix E.



Figure 43: Looking downstream through the culvert at Regional Road 25 (June 14, 2023)



Figure 44: Looking upstream from Regional Road 25 (June 14, 2023)



Figure 45: Looking downstream from the culvert at Regional Road 25 (June 14, 2023)

5.5.1.7 Feature 7

Within the Site, Feature 7 mostly flowed parallel to RR 25 except where it crosses it. It was walked for 120 m where it crosses RR 25. Based on satellite imagery, its length was 1.2 km and it originated in agricultural fields west of the crossing. The feature also received contributing flow from the roadside ditches along RR 25. From its originating point, it flowed through an agricultural field and abandoned agricultural field (**Figure 46**), before flowing into Feature 8. No barriers were found throughout the walked part of the feature, but the channel was heavily choked with vegetation. There was no defined channel present upstream of the culvert, but rather a grassy swale (**Figure 47** and **Figure 48**). Detailed information from the station established, located downstream of the culvert, is provided in Appendix E.



Figure 46: Looking downstream from Regional Road 25 (June 14, 2023)



Figure 47: Looking upstream from the culvert at Regional Road 25 (June 14, 2023)



Figure 48: Looking downstream through the culvert (June 14, 2023)

5.5.1.8 Feature 8

Feature 8 flowed perpendicular to RR 25. It was walked for 80 m where it crosses RR 25 (**Figure 49**). Based on satellite imagery, its total length was 3.2 km and it originated in agricultural fields west of the crossing. The feature received contributing flow from additional branches, roadside ditches, from agricultural fields (on the upstream side of the RR 25 crossing), and from Features 7 and 9. Rock check dams in the roadside ditches prevented fish access upstream in these ditches. From its originating point, it flowed through an agricultural field, a golf course, meadow (**Figure 50**) and forested habitat before flowing into Sixteen Mile Creek. No barriers were found throughout the walked part of the feature. Detailed information from the two stations established, one on each side of the culvert, is provided in Appendix E.



Figure 49: Looking upstream from the downstream end of the culvert (June 14, 2023)



Figure 50: Looking downstream from the culvert (June 14, 2023)

5.5.1.9 Feature 9

Feature 9 flowed parallel to RR 25 except where it crossed the roadway. It was walked for 400 m from its confluence with Feature 8, upstream, to where it crosses RR 25. Based on satellite imagery, its length was 1.2 km and it originated in the roadside ditch to RR 25 (**Figure 51**). The feature received contributing flow from the roadside ditches along RR 25 (**Figure 52**). From its originating point, it flowed as a roadside ditch for

most of its length, before veering south and flowing through meadow. Erosion protection (in the form of cobbles) located on the east side of the road in the ditch may serve as a fish barrier. The channel on the west side of the road was heavily choked with emergent vegetation. The detailed information from the station established, spanning both sides of the culvert, is provided in Appendix E.



Figure 51: Looking upstream from the east side of Regional Road 25 (June 14, 2023)



Figure 52: Looking upstream from the west side of Regional Road 25 (June 14, 2023)

5.5.2 Fourteen Mile Creek

The Fourteen Mile Creek originates approximately 6.5 km upstream of its crossing with RR 25. From its point of origin, it flows through agricultural land and residential areas before reaching RR 25. It then flows another 9.5 km through a narrow-forested corridor within residential areas before reaching Lake Ontario.

No habitat station was established on Fourteen Mile Creek as it is well-known fish habitat and is identified as Redside Dace habitat. General notes were captured during the visits. In the area observed, the habitat consisted of a slow moving moderately deep (60-90 cm) glide on the downstream end of RR 25 (**Figure 53**) and a fast-moving shallow (30-50 cm) riffle on the upstream side (**Figure 54**). The channel width was approximately 8 m. In-water cover noted from the banks included boulders and a narrow band of emergent aquatic vegetation along the banks.

The banks were well vegetated by herbaceous and woody species, with some canopy cover. The bankfull marks on the bank suggest that water depths in some conditions may be approximately 30 cm above the depths observed at the time of the visit. Fourteen Mile Creek has several tributaries flowing into it, with four of those tributaries flowing across or near the Site.



Figure 53: Looking downstream from Regional Road 25 (June 13, 2023)



Figure 54: Looking upstream from Regional Road 25 (June 13, 2023)

5.5.2.1 Feature 10

Feature 10 flowed parallel to RR 25. It was walked for 40 m where it flows within the Adjacent Lands. Based on satellite imagery and field truthing, the length of the feature was 7.2 km and originated north along Highway 407. The feature received contributing flow from roadside ditches and agricultural fields. From its originated point, the feature flowed in the roadside ditch along Highway 407 before veering east and flowing through agricultural fields, a meadow corridor flowing through subdivisions, and finally through forested habitat before flowing into Fourteen Mile Creek. The meadow corridor was built in 2007, when the watercourse was realigned during the construction of the subdivisions. No barriers were observed in the walked area, and the culvert did not serve as a barrier (**Figure 55**). Detailed information from the station established, upstream of the culvert under the highway exit for Highway 407, is provided in Appendix E.



Figure 55: Looking downstream from the upstream end of the culvert (June 13, 2023)

5.5.2.2 Feature 11

Feature 11 flowed parallel to RR 25 for most of its length, flowing perpendicular where it crosses the road. Based on satellite imagery and field truthing, its length was 3.2 km and it originated at RR 25, west of Highway 407. The feature received contributing flow from roadside ditches and agricultural fields. From its originating point, it flowed in the roadside ditch along RR 25 before veering south (**Figure 56**) and flowing through developed areas, agricultural fields, mowed grass, forested habitat, and marsh habitat before flowing into Feature 10. No barriers were found throughout the walked part of the feature, but some areas of the watercourse were choked with emergent vegetation. Detailed information was obtained three stations on Feature 11; one where it flows near RR 25; one upstream of the culvert where it crosses the road; and one downstream of this culvert (See Appendix E).



Figure 56: Looking downstream from the upstream end of the feature (June 14, 2023)

5.5.2.3 Feature 12

Feature 12 flowed perpendicular to RR 25. It was walked for 270 m where it crosses RR 25. Based on satellite imagery and field truthing, its length was 0.5 km and it originated at a small stormwater pond just outside of the Adjacent Lands. From its originating point, it flowed through meadow marsh (**Figure 57** and **Figure 57**), forest, and mixed meadow before flowing into Feature 13. No barriers were observed within the walked area, and the culvert under RR 25 did not act as a barrier. Detailed information from the two stations established, one on each side of the culvert, is provided in Appendix E.



Figure 57: Looking downstream from Regional Road 25 (June 13, 2023)



Figure 58: Looking upstream from Regional Road 25 (June 13, 2023)

5.5.2.4 Feature 13

Feature 13 flows perpendicularly to RR 25. It was walked for 230 m where it crosses RR 25. Based on satellite imagery and field truthing, its length is 1.6 km. The feature receives contributing flow from roadside ditches, agricultural field, and Feature 12. The feature flows through meadow habitat (**Figure 59** and **Figure 60**). There was a gravel/cobble pile present at the downstream and upstream end of the culvert at RR 25

which are anticipated to act as seasonal fish barriers. The detailed information from two stations established, one on each side of the culvert, is provided in Appendix E.



Figure 59: Looking downstream from Regional Road 25 (June 13, 2023)



Figure 60: Looking upstream from Regional Road 25 (June 13, 2023)

5.5.3 Bronte Creek

Bronte Creek watershed is approximately 300 km² and the creek originates from agricultural fields, wetlands, and lakes approximately 43 km upstream of where it flows within the Adjacent Lands of RR 25. From its point of origin, it flows through forested habitat, agricultural fields, lakes, and developed areas before flowing near RR 25. The creek then flows through forested areas, marsh, and swamp another 4.5 km before reaching Lake Ontario.

No habitat station was established on Bronte Creek as it could not be waded in, but general notes were captured during the visits. In the area observed, the habitat consisted of a moderately moving, moderately deep (50-80 cm) mix of glide and slow riffle where it flows near RR 25 (**Figure 61** and **Photo 62**). The channel width was approximately 15 m. In-water cover noted from the banks included a few boulders and a narrow band of emergent aquatic vegetation along the right bank.

The banks were well vegetated by herbaceous and woody species, with some canopy cover. The bankfull marks on the bank suggest that water depths in some conditions may be approximately 50 cm above the depths observed at the time of the visit. Bronte Creek did not have any tributaries flowing near the Site.



Figure 61: Looking upstream at Bronte Creek near Regional Road 25 (June 13, 2023)



Figure 62: Looking downstream at Bronte Creek near Regional Road 25 (June 13, 2023)

6 Potential Impact to the Natural Environment

6.1 Evaluation of Significance

Based on the background review and the site investigations, it was concluded that the vegetation communities and landscape contain or provide potential for the following Natural Environment Features:

- Endangered or threatened species and their habitat
- Provincially Significant Wetlands
- Unevaluated Wetlands
- Candidate Significant Valleylands
- Significant Woodlands
- Other Woodlands
- Significant Wildlife Habitat
- ANSI – Earth Science
- Known or Assumed Fish Habitat
- Wildlife Corridors

The following section assesses whether these features are significant based on the OP, or the Natural Heritage Reference Manual (NHRM) (OMNR, 2010), or other legislations,

as applicable. Where it is determined that a significant Natural Environment Feature is present or is assumed to be present, the potential impacts will be determined based on the understanding of project activities using the latest available design information and will be updated at future design stages. The sections below summarize the evaluation for each feature based on the current preliminary design.

6.1.1 Habitat of Endangered and Threatened Species

As noted in Section 4.2, 33 Endangered or Threatened species were identified as potentially occurring. These species are described in **Table 8** with their status, preferred habitats, and guidelines. The likelihood of the species or its habitat being present is then evaluated based on the data collected from site investigations, as well regulation specified suitable habitat conditions. For some species, the federal and/or provincial governments provide guidelines on what habitats should receive automatic protection. This is usually based on distances from known sightings or suitable habitat. Federally, the habitat is typically classed based on function, while provincially, it is categorized as either regulated or general habitat. Regulated habitat has a detailed description and is prescribed in an Ontario Regulation. General habitat often splits habitat requirements into three categories, Categories 1-3, where 1 indicates the greatest sensitivity to disturbances. Note that Butternuts are the exception, where Category 1 individuals are least sensitive.

Several SAR have their preferred habitats identified in government documentation, where possible these documents are used to evaluate whether to bring the species forward for assessment. If no guidance is provided, the available literature is used to evaluate the suitability of the habitat on-site for that species. For the species brought forward to impact analysis, additional details on the species' needs, any governmental guidance, and the potential for the project to interact with the species or its habitat are discussed in the subsections below. If analysis identifies a necessity for avoidance and/or mitigation measures, then they will be provided in the next iteration of this report.

Table 8: List of Potential Endangered or Threatened Species and Identification of those Brought Forward following Site Investigations

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Insects							
Rusty-patched Bumble Bee	<i>Bombus affinis</i>	S1	END	END	Generalist species. Nests have been found underground, usually in old rodent burrows. This species has been found foraging in a wide variety of habitats such as mixed farmland, sand dunes, marshes, urban and wooded areas. (COSEWIC 2010).	Last known occurrence in Canada is from 2009.	No
Fish							
American Eel	<i>Anguilla rostrata</i>	S1?	END	No Status	Near cover over muddy bottoms in lakes, ponds, rivers, and creeks at depths <15 m; preferred water temperature range 16-19°C. (COSEWIC 2006)	Present within Bronte Creek. Not listed as present in Sixteen Mile Creek or Fourteen Mile creek. Unlikely to be present in any other tributaries surveyed due to their small size (with current low populations eels are not being captured in smaller tributaries).	Yes
Redside Dace	<i>Clinostomus elongatus</i>	S2	END	END	Pools of small slow-flowing headwater streams. (COSEWIC 2007).	Mapped critical habitat present in Fourteen Mile Creek. Present in Fourteen Mile Creek, Sixteen Mile Creek, and Bronte Creek. Of the unnamed channels, features 1, 5, and 8 were noted as those most suitable for the species.	Yes
Silver Shiner	<i>Notropis photogenis</i>	S2S3	THR	THR	Medium to large streams or rivers (4th order and higher), with having alternating riffle-pool sequences (MECP 2017).	Mapped critical habitat present in Sixteen Mile Creek and Bronte Creek, and Features 1 and 2. However, although Feature 2 is considered to have Silver Shiner critical habitat by DFO, this feature is a small agricultural drain, which did not appear to provide direct fish habitat within the Study Area.	Yes

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Amphibians							
Jefferson Salamander	<i>Ambystoma jeffersonianum</i>	S2	END	END	Deciduous or mixed upland forests with suitable breeding ponds. Ponds are normally ephemeral, or vernal, woodland pools that dry in late summer. Terrestrial habitat is in mature woodlands that have access to areas below the frost line for overwintering. (COSEWIC 2010)	Recent occurrences in general area, potential to occur in adjacent wooded habitat if suitable vernal pools are present.	Yes
Reptiles							
Blanding's Turtle	<i>Emydoidea blandingii</i>	S3	THR	THR	Shallow water, large marshes, shallow lakes, or similar such water bodies (COSEWIC, 2016). Federal guidelines use a 2 km distance and bases the automatic protection on the occupancy and suitability of the habitat for nesting, overwintering and functional habitat (ECCC, 2018). Provincial guidelines provide general habitat protection to suitable habitat within 2 km of an occurrence when certain conditions are met (MECP, 2019).	No occurrences listed within 2km of the Study Area on the NHIC or ORAA databases. There are several recent occurrences on iNaturalist in the Oakville and Milton areas - details on location are not available and many are associated with the Credit River watershed but some of the sightings along roadways. This species is brought forward as having a potential to occur, but no suitable nesting habitat was noted within the study area and the only potential overwintering habitat would be restricted to the larger watercourses. All other aquatic features could provide movement corridors.	Yes

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Birds							
Least Bittern	<i>Ixobrychus exilis</i>	S4B	THR	THR	Freshwater marshes habitat with dense vegetation (Sandilands, 2005; COSEWIC, 2009a). Nests are typically in cattail marshes, near edge or openings but they have been found in other emergents and occasionally in willow (Woodliffe, 2007). Recovery strategy states that the species must have permanent marsh/shrub swamps and a mosaic of tall and robust herbaceous or woody vegetated with open water areas and natural regime water levels (ECCC, 2014). The open water areas can be shallow (10-50cm) (OMNRF, 2016). Movements within this suitable habitat can extend within a 500m radius of the nest (ECCC, 2014). and are usually found in those that are larger than 5 ha (COSEWIC 2009; OMNRF, 2014). The province does not currently have any guidance on the general habitat requirements of this species. (COSEWIC 2009a).	Several observations within 2 km on the downstream end of Bronte Creek. While there is no suitable wetland habitat immediately adjacent to the road, there are some small marsh areas along Bronte Creek within 500m.	Yes
Lesser Yellowlegs	<i>Tringa flavipes</i>	S4B,S4N	THR	NA	Breeds in northern Ontario in a variety of boreal wetlands (Catling 2024). Uses flooded fields and wetlands in southern Ontario as stopover habitat during migration. Provincially, this species receives only general habitat protection.	No breeding populations in southern Ontario. Migrants likely to use Project lands during migration in flat areas where standing water may seasonally occur.	No

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Chimney Swift	<i>Chaetura pelagica</i>	S4B, S4N	THR	THR	Cities, towns, villages, rural, and wooded areas. This species rarely utilizes trees; they prefer trees greater than 50 cm in diameter and that are within 1 km of waterbodies (COSEWIC 2007). Provincially, this species' protected habitat consists of Category 1 habitat, which is a human-made nesting/roosting feature or natural nesting/roosting tree cavity, as well as the area within 90 m of the natural tree cavity (MECP, 2017). No Category 2 or 3 habitats are outlined for this species (MECP, 2017).	Many structures near Site and potential for large trees in the wooded areas; however this is a conspicuous species of which none were observed during the breeding bird surveys. No chimneys or other optimal structures were present on the Site itself. Species is confirmed to breed within 10 km.	Yes
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	S4B	END	END	Open deciduous woodland, woodland edges, and sparsely treed habitats. (COSEWIC, 2007; MECP, 2022). The province does not currently have guidance for the general habitat of this species, though critical habitat is identified (both federally and provincially) as the suitable habitat within a 200 m radius around a nest observation OR the 600 m around confirmed or probable breeding OR two possible breeding records within 600 m and 7 days of each other (MECP, 2022; ECCC, 2019). Observations must be from after 2021.	Suitable woodlands present along improvement corridor and several NHIC and eBird occurrences. None observed during breeding bird surveys, however as woodpeckers are not always identified (false negatives without callback surveys), they have been brought forward.	Yes
Acadian Flycatcher	<i>Empidonax virescens</i>	S2S3B	END	END	Mature, closed canopy forest habitats with an open understory (COSEWIC, 2010). The federal and provincial recovery strategies define critical habitat as suitable habitat that has any breeding evidence for at least two years between 1995 and 2009 (OMNRF, 2016; ECCC, 2012)	Occurrence in general area. Little suitable habitat adjacent to the road. None observed during breeding bird surveys.	No

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Bank Swallow	<i>Riparia riparia</i>	S4B	THR	THR	This species nests within vertical banks, with a preference for sand-silt substrate. Nesting sites more likely near open upland habitats. (COSEWIC 2013). Provincially, the species protected habitat is the 50 m in front of a breeding colonies bank face and all suitable foraging habitat within 500 m (MECP 2015).	Colony observed in nearby man-made sand pile within 50m of the road, but only during the first visit.	Yes
Prothonotary Warbler	<i>Protonotaria citrea</i>	S1B	END	END	Large mature deciduous swamps and riparian floodplains with permanent or semi permanent water pools (COSEWIC 2007).	No suitable swamp habitat adjacent to the Site. None observed during bird surveys.	No
Louisiana Waterthrush	<i>Seiurus motacilla</i>	S3B	THR	SC	Nests along pristine, headwater streams and associated wetlands that occur in large tracts of mature forest. (COSEWIC 2015)	No suitable habitat adjacent to the road. None observed during bird surveys.	No
Yellow-breasted Chat	<i>Icteria virens</i>	S1B	END	END	Variety of early-successional habitats (dense, low vegetation), including early shrubby regrowth on abandoned agricultural fields, power-line corridors, clear-cuts, fencerows, forest edges and openings, and areas near streams, ponds, and swamps (COSEWIC 2011)	Suitable habitat present and 2021 occurrence within 1km of improvement corridor. None were observed during surveys but as this species has potential to nest early in the season the late season visits had potential for false negatives.	Yes
Henslow's Sparrow	<i>Ammodramus henslowii</i>	SHB	END	END	Tallgrass prairie, wet meadows, and coastal marshes. Has adapted to nesting in forb dominated grasslands in old field sites. (COSEWIC, 2011). Critical habitat is not yet defined for this species under the federal recovery strategy or provincially (ECCC, 2010). Provincially, the protected habitat is 50 m from the nest and the area of continuous suitable habitat outside of Category 1 (MECP 2013).	None observed during the 2023 breeding bird surveys and no nearby records. Extremely rare in Ontario.	No

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Cerulean Warbler	<i>Setophaga cerulea</i>	S3B	THR	END	In Ontario they favour mature deciduous stands dominated by oak-maple, often in association with swampy bottomlands. (COSEWIC 2010)	Candidate suitable habitat present adjacent to the roadway. No individuals were observed during bird surveys although traffic noise competes with its quiet song. This species is a very rare breeder in Ontario, having undergone steep declines in the past 20 years. The only confirmed breeding sites in the 3rd Atlas were: Norfolk County; Pinery Prov. Park; Rondeau Prov. Park; 2 sites in Chatham-Kent County; 1 site on the Georgian Bay; 1 site north of Peterborough; and the Frontenac Arch near Kingston. The nearest instance of probable breeding was from the Dundaas Valley in Ancaster, ON, ~29 km SW of the Site. Possible breeding (i.e., singing males) is regularly recorded throughout southern Ontario including within 5 km of the Site, however the only “possible” records within 5 km were from 2004 in Shell Park, Oakville and 1997 at Bronte Harbour. The nearest “possible” breeding records in recent years (i.e., past 20 years) were from 8.5 km west of the Site at Currie Tract on the Niagara Escarpment in 2020 and 2022. There are no records in eBird of the species at any time of year, including historical, from Bronte Creek Provincial Park or anywhere within 1 km of the Site. Although theoretically possible, the lack of records considering the large amount of birding effort in this area in the past 20 years is sufficient evidence to assume absence of this species.	No

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Bobolink	<i>Dolichonyx oryzivorus</i>	S4B	THR	THR	Primarily in forage crops, and grassland habitat. It is sensitive to edge effects, size of habitat and areas with dense shrub vegetation or a litter layer deeper than a few centimetres (COSEWIC, 2010). The federal recovery strategy defines critical habitat as predetermined 10x10 km squares containing habitat with suitable biophysical attributes (ECCC, 2022). Provincially, this species protected habitat is the area extending 60 m from the nest as well as the 300 m of suitable habitat around the nest (MECP 2013).	Present in several fallow fields within 300 m of the Site. Closest calling males were ~100m from Site but suitable habitat in these areas extended up to the roadside.	Yes
Eastern Meadowlark	<i>Sturnella magna</i>	S4B	THR	THR	Typically require larger grasslands but have been known to breed in habitats that were 1 ha in the United States. Usually, this species' defended territories consist of 2.8-3.2 ha of uncut meadow or field (OMNR, 2014b). Personal observations of successful nesting habitat for this species in Eastern Ontario have not found any successful nesting pairs in habitats that were less than 5 ha, which is estimated to be this species' approximate area requirement (COSEWIC, 2011). The federal recovery strategy requires habitat to fall within 10x10 km squares of occupancy to be considered for critical habitat. Provincially, this species protected habitat is the area extending 100 m from the nest as well as the 300 m of suitable habitat around the nest (MECP 2013).	Present in several fields within 300 m of the Site. Closest calling individual was a calling male ~75m from the roadway. Suitable habitat extended up to the road.	Yes

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Mammals							
Little Brown Myotis	<i>Myotis lucifugus</i>	S4	END	END	Females establish summer maternity colonies, often in buildings or large-diameter trees. Foraging occurs over water, along waterways, and forest edges. Overwinter in cold and humid hibernacula (caves/mines). (COSEWIC 2013).	All 7 SAR bat species are known to roost and/or inhabit tree cavities and have potential to occur on the Site or Adjacent Lands. Some species also roost in structures and Little Brown Myotis may occasionally use structures or isolated trees as maternity habitat. Migratory bats have also been observed roosting in shrubs, thus many portions of the Site constitute potential habitat. Ranges are generally quite poorly understood but all are known from across Southern Ontario. No rocky habitat suitable for hibernacula or for Eastern Small-footed Myotis maternity sites was present. However, potential for day-roosts and maternity habitat is brought forward for all species due to the large size of the Project and poor understanding of habitat requirements and local bat occurrence. As there are large cavity trees, large woodlands, structures and shrubs within the Site and Adjacent Lands, any of these species may be present; as such, MECP timing windows for vegetation clearing will be followed to prevent potential harm.	Yes
Northern Myotis	<i>Myotis septentrionalis</i>	S3	END	END	Older (late successional or primary forests) with large interior habitat and snags that are in the mid-stage of decay. They prefer intact interior habitat and are sensitive to edge habitats (Menzel et al., 2002; Broders et al., 2006; SWH 6E Ecoregion Criterion Schedule). Critical habitat has not yet been defined by the province.	All 7 SAR bat species are known to roost and/or inhabit tree cavities and have potential to occur on the Site or Adjacent Lands. Some species also roost in structures and Little Brown Myotis may occasionally use structures or isolated trees as maternity habitat. Migratory bats have also been observed roosting in shrubs, thus many portions of the Site constitute potential habitat. Ranges are generally quite poorly understood but all are known from across Southern Ontario. No rocky habitat suitable for hibernacula or for Eastern Small-footed Myotis maternity sites was present. However, potential for day-roosts and maternity habitat is brought forward for all species due to the large size of the Project and poor understanding of habitat requirements and local bat occurrence. As there are large cavity trees, large woodlands, structures and shrubs within the Site and Adjacent Lands, any of these species may be present; as such, MECP timing windows for vegetation clearing will be followed to prevent potential harm.	Yes

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Eastern Small-footed Myotis	<i>Myotis leibii</i>	S2S3	END	No Status	Roost in a variety of habitats, including in or under rocks, in rock outcrops, or in caves, mines, or hollow trees. Preferred maternity habitat of this species consists of open rock habitats, it rarely uses old buildings as roosting/maternity sites. In the winter, these bats hibernate, most often in caves and abandoned mines (Humphrey 2017). Critical habitat has not yet been defined by the province.	All 7 SAR bat species are known to roost and/or inhabit tree cavities and have potential to occur on the Site or Adjacent Lands. Some species also roost in structures and Little Brown Myotis may occasionally use structures or isolated trees as maternity habitat. Migratory bats have also been observed roosting in shrubs, thus many portions of the Site constitute potential habitat. Ranges are generally quite poorly understood but all are known from across Southern Ontario. No rocky habitat suitable for hibernacula or for Eastern Small-footed Myotis maternity sites was present. However, potential for day-roosts and maternity habitat is brought forward for all species due to the large size of the Project and poor understanding of habitat requirements and local bat occurrence. As there are large cavity trees, large woodlands, structures and shrubs within the Site and Adjacent Lands, any of these species may be present; as such, MECP timing windows for vegetation clearing will be followed to prevent potential harm.	Yes
Tri-colored Bat	<i>Perimyotis subflavus</i>	S3?	END	END	Tri-colored Bat	All 7 SAR bat species are known to roost and/or inhabit tree cavities and have potential to occur on the Site or Adjacent Lands. Some species also roost in structures and Little Brown Myotis may occasionally use structures or isolated trees as maternity habitat. Migratory bats have also been observed roosting in shrubs, thus many portions of the Site constitute potential habitat. Ranges are generally quite poorly understood but all are known from across Southern Ontario. No rocky habitat suitable for hibernacula or for Eastern Small-footed Myotis maternity sites was present. However, potential for day-roosts and maternity habitat is brought forward for all species due to the large size of the Project and poor understanding of habitat requirements and local bat occurrence. As there are large cavity trees, large woodlands, structures and shrubs within the Site and Adjacent Lands, any of these species may be present; as such, MECP timing windows for vegetation clearing will be followed to prevent potential harm.	Yes

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Silver-haired Bat	<i>Lasionycteris noctivagans</i>	S4	END	END	Females establish summer maternity colonies in large diameter trees (COSEWIC 2023). They also use buildings as roosting sites. Critical habitat has not yet been defined. Provincially, hibernacula have a buffer of 200m. Buffers for maternity sites have not been established.	All 7 SAR bat species are known to roost and/or inhabit tree cavities and have potential to occur on the Site or Adjacent Lands. Some species also roost in structures and Little Brown Myotis may occasionally use structures or isolated trees as maternity habitat. Migratory bats have also been observed roosting in shrubs, thus many portions of the Site constitute potential habitat. Ranges are generally quite poorly understood but all are known from across Southern Ontario. No rocky habitat suitable for hibernacula or for Eastern Small-footed Myotis maternity sites was present. However, potential for day-roosts and maternity habitat is brought forward for all species due to the large size of the Project and poor understanding of habitat requirements and local bat occurrence. As there are large cavity trees, large woodlands, structures and shrubs within the Site and Adjacent Lands, any of these species may be present; as such, MECP timing windows for vegetation clearing will be followed to prevent potential harm.	Yes
Eastern Red Bat	<i>Lasiurus borealis</i>	S4	END	END	Day roosts can be in a variety of deciduous and coniferous forest types, usually in trees but occasionally shrubs. Trees used as maternity roosts tend to be large diameter and tall (COSEWIC 2023). Migrate south to hibernate in the southern United States (COSEWIC 2023). Critical habitat has not yet been defined. Provincially, hibernacula have a buffer of 200m. Buffers for maternity sites have not been established.	All 7 SAR bat species are known to roost and/or inhabit tree cavities and have potential to occur on the Site or Adjacent Lands. Some species also roost in structures and Little Brown Myotis may occasionally use structures or isolated trees as maternity habitat. Migratory bats have also been observed roosting in shrubs, thus many portions of the Site constitute potential habitat. Ranges are generally quite poorly understood but all are known from across Southern Ontario. No rocky habitat suitable for hibernacula or for Eastern Small-footed Myotis maternity sites was present. However, potential for day-roosts and maternity habitat is brought forward for all species due to the large size of the Project and poor understanding of habitat requirements and local bat occurrence. As there are large cavity trees, large woodlands, structures and shrubs within the Site and Adjacent Lands, any of these species may be present; as such, MECP timing windows for vegetation clearing will be followed to prevent potential harm.	Yes

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Hoary Bat	<i>Lasiurus cinereus</i>	S4	END	END	Near open, grassy areas in forests or over lakes. Day roosts can be in a variety of deciduous and coniferous forest types, usually in trees but occasionally shrubs. Trees used as maternity roosts tend to be large diameter and tall (COSEWIC 2023). Migrate south to hibernate in the southern United States (COSEWIC 2023). Critical habitat has not yet been defined. Provincially, hibernacula have a buffer of 200m. Buffers for maternity sites have not been established.	All 7 SAR bat species are known to roost and/or inhabit tree cavities and have potential to occur on the Site or Adjacent Lands. Some species also roost in structures and Little Brown Myotis may occasionally use structures or isolated trees as maternity habitat. Migratory bats have also been observed roosting in shrubs, thus many portions of the Site constitute potential habitat. Ranges are generally quite poorly understood but all are known from across Southern Ontario. No rocky habitat suitable for hibernacula or for Eastern Small-footed Myotis maternity sites was present. However, potential for day-roosts and maternity habitat is brought forward for all species due to the large size of the Project and poor understanding of habitat requirements and local bat occurrence. As there are large cavity trees, large woodlands, structures and shrubs within the Site and Adjacent Lands, any of these species may be present; as such, MECP timing windows for vegetation clearing will be followed to prevent potential harm.	Yes
Vascular Plants							
Dense Blazing Star	<i>Liatris spicata</i>	S2	THR	THR	Tallgrass prairie habitats. (COSEWIC 2010)	No tallgrass prairie habitat present in the Site. None observed during vegetation surveys.	No
Eastern Flowering Dogwood	<i>Cornus florida</i>	S2?	END	END	Dry to rich deciduous forest, especially hillsides and riverbanks. (COSEWIC 2007)	Suitable habitat present but none observed within the Site during vegetation surveys.	No
American Chestnut	<i>Castanea dentata</i>	S1S2	END	END	Upland deciduous forest on acid to neutral sandy soil. (COSEWIC 2004)	Suitable habitat present but none observed within the Site during vegetation surveys.	No

Common Name	Scientific Name	SRank	ESA Reg.230/08 SARO List Status	SARA Schedule 1 List of Wildlife SAR Status	Preferred Habitat Guidelines	Evaluation	Brought Forward (Yes or No)
Butternut	<i>Juglans cinerea</i>	S2?	END	END	Found in a variety of habitat types but grows best on well-drained fertile soils in shallow valleys and on gradual slopes (COSEWIC, 2017). The federal recovery strategy does not outline critical habitat for this species. Provincially, butternuts are assessed and categorized based on the amount of canker. These categories are outlined in Section 5.	Suitable habitat present but none observed within the Site during vegetation surveys. Surveys are valid for 2 years.	No
Black Ash	<i>Fraxinus nigra</i>	S4	END	No Status	Swamps, bogs, and riparian areas, occasionally poorly drained upland areas (COSEWIC 2018). Healthy black ash with diameters equal to or larger than 8cm at breast height in areas affected by the emerald ash borer became protected beginning on January 25, 2024.	Suitable habitat present and the Site is within the municipalities listed as heavily affected by the emerald ash borer. However, none were observed during vegetation surveys.	No
Fern-leaved Yellow False Foxglove	<i>Aureolaria pedicularia</i>	S1	THR	THR	Open savanna and woodland habitats with 20-60% canopy cover. Primarily associated with black oak and heath species (COSEWIC 2018)	No savannah habitat present - none observed during vegetation surveys.	No
Smooth Yellow False Foxglove	<i>Aureolaria flava</i>	S2?	THR	THR	Dry upland oak woodlands with 60-80% canopy closure. (COSEWIC 2018)	Suitable habitat present but none observed during vegetation surveys.	No

SRANK DEFINITIONS

- SH Possibly Extirpated (Historical), Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20–40-year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
- S1 Critically Imperiled, critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
- S2 Imperiled, imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
- S3 Vulnerable, Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
- S4 Apparently Secure, Uncommon but not rare; some cause for long-term concern due to declines or other factors.
- S#S# Range Rank, A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
- ? Inexact Numeric Rank—Denotes inexact numeric rank
- S#B Breeding
- S#N Non-Breeding

SARO STATUS DEFINITIONS

- END Endangered: A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.
- THR Threatened: A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

SARA STATUS DEFINITIONS

- END Endangered, a wildlife species facing imminent extirpation or extinction.
- THR Threatened, a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
- SC Special Concern, a wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

6.1.1.1 American Eel

The American eel is listed as endangered provincially. They breed in the Sargasso Sea and mature for 5-20 years in freshwater rivers of North America (Becker, 1983; MacGregor et al., 2013; Scott and Crossman, 1998). They are listed as present within Bronte Creek. Under the current population densities, this species is not usually found in smaller tributaries. No critical habitat or general habitat description has been provided by the province. It is noted that this species can also travel on land where needed to move around obstacles. This species is considered present and avoidance and mitigation measures, along with appropriate consultation, could be required depending on the location and level of potential impact.

6.1.1.2 Redside Dace

Redside Dace is a small, cool-water cyprinid that inhabits deep pools and slow-moving sections of small streams between 5 to 10 m wide with a mixture of overhanging vegetation and riffles (Redside Dace Recovery Team, 2010). Stream habitat is usually clear with variable substrates, ranging from silt to boulders (COSEWIC, 2017). This species spends the majority of its lifespan in pools, only moving to riffle habitats for spawning (Redside Dace Recovery Team, 2010); COSEWIC, 2017). Outside of the spawning period, it resides in mid-water positions in pools for foraging during the majority of the year including winter (Redside Dace Recovery Team, 2010). Spawning typically occurs in late May when water temperatures approach 16 to 18°C. Its preferred spawning substrate consists of coarse sediments on gravelly riffles, often in headwater features (Redside Dace Recovery Team, 2010). Males often establish territories in existing nest depressions constructed by other species, particularly the Common Shiner or Creek Chub, and thus benefit from the presence and guarding behaviour of these species to facilitate spawning (COSEWIC, 2017). It is considered intolerant of habitat disturbances (Redside Dace Recovery Team, 2010). This is supported by the COSEWIC report that indicates that the species is sensitive to turbidity, and its habitat is dependent on intact headwater features and groundwater seepage (COSEWIC, 2017). Other important limiting factors include elevated turbidity, channel alteration, pollution, deterioration of water quality, loss or removal of streamside vegetation, and fluctuations in water flow regimes (COSEWIC, 2017).

The Redside dace is a specialized insectivore, with terrestrial insects comprising its primary diet and thus necessitating the presence of suitable riparian vegetation (COSEWIC, 2017; Redside Dace Recovery Team, 2010). Growth and development are anticipated to continue within the range of the Redside dace to accommodate the region's rapidly growing population, intensifying the need to maintain the species'

current habitat and prevent further adverse impacts on its remaining populations in Ontario (COSEWIC, 2017). This species is present in Sixteen Mile Creek, Fourteen Mile Creek, and Bronte Creek, and could be found in various tributaries. Additionally, DFO's CASAR mapping shows **critical habitat** as well as the potential presence of this species in Fourteen Mile Creek. An assessment of how this species or its habitat could be impacted by the proposed works will be required once details on area of impact are known.

The information from the 242/08 and Guidance for Development Activities in Redside Dace Protected Habitat (MNRF, 2016) notes that working **in or within 30 m of the bankfull width of the watercourse/ meander belt** is the main trigger for review.

Note that while impacts to this species habitat can be registered under the Ontario Regulation 242/08 Section 23.4 Aquatic Species, that is only applicable to some types of activities and necessitates specific offsets and procedures. It also does not exempt the project from requirement to contact DFO under both the *Fisheries Act* and the *Species at Risk Act*. Some of the general rules for the provincial registration process include:

- Footprint of structure does not increase by more than 25%; and
- The damage to habitat is less than 300m² (calculated as land situated either in or within 30m of the bankfull width and of which less than 100m² is below the bankfull depth (i.e., less than 100m² below the high-water mark); and
- Activities do not involve:
 - Installation of temporary bridge/culvert
 - Deposition of material in a watercourse for a temporary road
 - Changes to alignment of the watercourse
- Activities are not carried out in:
 - Detroit, Niagara, St. Clair, St. Lawrence or specific portions of the Sydenham River or Ausable River (see O. Reg. 23.4 (3)(3))

6.1.1.3 Silver Shiner

This species is protected both provincially and federally as a threatened species. The DFO CASAR map notes that Critical Habitat is present in this area within Sixteen Mile Creek, Bronte Creek and their tributaries.

Critical habitat is defined as run, riffle, or pool areas in streams with slow to moderate flow for juveniles and moderate to fast flow for adults within Sixteen Mile and Bronte Creek and their tributaries (DFO 2022). Federally, the critical habitat includes the entire **channel width, meander belt, and the 30m of riparian vegetation extending from**

the meander belt width (DFO 2022). Provincially, the general habitat has been defined as:

Category 1: Flowing pools, runs and riffles in occupied reaches

Category 2: Shallow, nearshore habitats, and areas with aquatic vegetation in occupied reaches

Category 3: Floodplains and riparian edges adjacent to occupied reaches

6.1.1.4 Jefferson Salamander

This species is found near or within deciduous or mixed-wood upland forests containing suitable breeding ponds. Breeding ponds are devoid of predatory fish, often ephemeral, and are filled by spring runoff, groundwater, or springs which normally dry in mid to late summer (COSEWIC, 2016). Breeding ponds require low shrubs, twigs, fallen tree branches, submerged riparian vegetation or emergent vegetation to which to attach egg masses (Linton et al. 2018). Adults live and forage in deciduous or mixed woodlands within microhabitats that include small mammal burrows, rock fissures, tree stumps, leaf litter, logs, and woody debris on the forest floor (COSEWIC, 2016).

The Jefferson salamander is a provincially endangered species. Since December 9, 2021, this species has a Habitat Regulation described under Ontario Regulation 832/21. This regulation applies to the City of Hamilton, counties of Brant, Dufferin, Elgin, Grey, Haldimand, Norfolk and Wellington and the regional municipalities of Halton, Niagara, Peel, Waterloo and York. The Regional Municipality of Halton falls within the geographic area for this species' regulated habitat which is outlined below:

I. Wetland, pond or vernal or other temporary pool that is being used by a Jefferson salamander or Jefferson dominated polyploid or was used by a Jefferson-dominated polyploid at any time during the previous five years.

II. An area that is within 300 metres of a wetland, pond or vernal pool described in subparagraph I and that provides suitable foraging, dispersal, migration, or hibernation conditions for Jefferson salamanders or Jefferson dominated polyploids.

III. A wetland, pond or vernal or other temporary pool that,

Would provide suitable breeding conditions for Jefferson salamander or Jefferson dominated polyploids.

Is within one kilometre of an area described in subparagraph I, and

Is connected to the area described in subparagraph I by an area described in subparagraph iv, and

IV. An area that provides suitable conditions for Jefferson salamanders or Jefferson dominated polyploids to disperse and is within one kilometre of an area described in subparagraph I.” (O. Reg 832/21 as of May 30, 2024)

The woodlands adjacent to the Site may provide vernal pool habitat for this species, and the majority of the wetlands observed were seasonal. A number of the wetlands within the Site are connected by stream systems that provide access for fish that would likely prey on salamander and anuran eggs (Appendix A). These wetlands are associated with aquatic Features 5, 10, 11, 12, and Fourteen Mile Creek. As such, it is unlikely that the wetlands in these areas would provide successful breeding habitat for the Jefferson Salamander. It can be concluded that candidate habitat for this species on the Site/Adjacent Lands consists of all vernal pools and the area of woodland within 300 m of these pools.

6.1.1.5 Blanding’s Turtle

Blanding’s turtle is associated with a variety of shallow slow aquatic habitats with submergent and emergent plants and soft substrate (COSEWIC, 2016). Their preferred aquatic habitat is less than 2 m deep (ECCA, 2018). To err on the side of caution, depths up to 4.5 m are considered habitat for this species (ECCA, 2018). These turtles require basking sites located near the water such as exposed rocks or partially submerged logs. The nesting sites are located within areas of loose substrates varying from sand to cobblestone and may occur along roadways as far as 400 m away. Marsh habitat is important for the juveniles for protection from predators. The species overwinters within permanent water bodies (COSEWIC, 2016). This species can migrate far distances of up to 6 km (OMNR, 2013b). Migration routes can include overland movement. However, some habitats such as: active agricultural croplands, sand pits, large waterbodies, fast-flowing systems, and high use highways are not considered suitable habitat (ECCA, 2018). They also note that heavily developed urban areas without aquatic or wetland habitats are considered unsuitable (ECCA, 2018).

The habitat guidelines for Blanding’s turtle provide protection to the areas surrounding a nest, or perceived nest area. The level of protection varies with the distance from the nest and has been categorized by MNRF into three categories. These, along with their protection level are:

Category 1 Nest and the area within 30 m or Overwintering sites and the area within 30 m

Category 2 The wetland complex (i.e., all suitable wetlands or waterbodies within 500m of each other) that extends up to 2 km from an occurrence, and the area within 30 m around those suitable wetlands or waterbodies

Category 3 Area between 30 m and 250 m around suitable wetlands/waterbodies identified in Category 2, within 2 km of an occurrence

Blanding's turtles are present in the general area but there are no occurrences listed on the NHIC or ORAA databases within 2 km. Still, information from citizen scientists notes this species as present in the general area. There was no suitable nesting habitat within the Site, and the only potential overwintering habitat would be those associated with the larger, deeper channels that had soft substrate (Bronte Creek, Fourteen Mile Creek, and Sixteen Mile Creek). Most of the unnamed features were shallow or dry during June, suggesting that they are not permanent and would only offer a potential movement corridor. The movement corridors are evaluated based on their linkage function (i.e., linking potential overwintering habitat to nesting habitat). Depending on the detailed design selected, typical avoidance and mitigation measures may be sufficient to avoid contravening ESA. This can be further reviewed once a detailed design has been selected. At this time, all aquatic and wetland features will be regarded as potential Category 2 habitat and a 30 m buffer surrounding these features will be included in this habitat as per the MNRF's definition provided above. Additional areas within 250 m of Category 2 habitat will be regarded as potential Category 3 habitat, provided they fall within 2 km of a known occurrence.

6.1.1.6 Least Bittern

The least bittern is a threatened species protected both provincially and federally. It is a secretive species that requires marsh habitats with dense vegetation (Sandilands, 2005; COSEWIC, 2009a). This species tends to prefer to nest within cattail marshes usually along the edge or near openings (Woodliffe, 2007). However, it has also been found to nest in bulrushes, grasses, horsetails, and willow (Woodliffe, 2007). The COSEWIC report for Least Bittern indicates that it requires emergent marsh communities with open water and stable water levels (COSEWIC, 2009a). Most territories have been found in wetlands of at least 5 ha (OMNRF, 2016), and self-sustaining populations likely require wetlands of 100 ha or larger (Sandilands 2005). Even so, Least Bitterns have been observed defending territory in marshes as small as 0.4 ha, and under the MBCA and SARA, such territories would still constitute a protected "residence" as they are habitually occupied by an individual with the intent of breeding.

There are several documented occurrences in the general area and the Bronte Creek valley contains marshes larger than 5 ha within 500 m of the Site. Marshes of 0.4 ha are located on the Site and Adjacent Lands. The potential to impact this species will be evaluated once a detailed design has been selected. Consultation with MECP may be required.

6.1.1.7 Red-headed Woodpecker

Red-headed Woodpeckers inhabit open woodlands with a high percentage of standing dead trees. Such habitats have diminished across the eastern portion of the range, and the species is now estimated at only 6,000 individuals in all of Canada. During the nonbreeding season, they are highly nomadic, and the same breeding territories are not always held year after year (Frei et al, 2020).

While the possibility for this species breeding on most properties in southern Ontario is low, the fact that it favours disturbed areas and roadside woodlands means that it may disproportionately occur on lands slated for development. Therefore, a thorough consideration for this species and its habitat is necessary. Further, its cavity nests are protected year-round under the Migratory Birds Convention Act (1994). If a pair is known to nest in a given tree, the tree cannot be cut down during the winter (same protections as for raptors and colonial nesting birds).

This species was not detected during surveys, however potentially suitable habitat was noted on the Site. All of the woodland stands that overlap the Site were found to have the necessary characteristics, as these were relatively open woodlands with a strong oak component. Further, the species is confirmed to breed within 20 km. Because of this and because the species is nomadic and breeds in different areas each year, it is considered potentially present.

6.1.1.8 Chimney Swift

The Chimney Swift proliferated across southern Ontario during the industrial revolution when there was an abundance of open brick chimneys in the landscape. Prior to this they nested in massive hollow snag trees associated with old-growth forest. They have declined considerably in recent decades due to the removal and retrofitting of chimneys, combined with a lack of suitable-sized snag trees. They remain locally common, especially in older parts of cities where brick chimneys are still present, and have occasionally been found nesting in trees in recent years. Nest sites near bodies of water and trees >50 cm DBH with a hollow, open top are preferred. Category 1 habitat is the only form of protected habitat, which includes the nest site and the area within 90 m of a nest tree (area around manmade nest structures is not protected) (COSEWIC, 2007).

Although numerous structures are present on the Site, no suitable chimneys or other optimal nest structures were noted and there were no optimal cavity trees noted. No Chimney Swifts were observed during surveys, although they are known from background information to nest in downtown Milton and older parts of Burlington and Oakville. It is likely that Chimney Swifts forage over the Site but they are not expected to be present as a nesting species.

6.1.1.9 Lesser Yellowlegs

This species was federally listed as Threatened in 2021 (and provincially in 2023) due to rapid declines in its population based on Breeding Bird Survey data (COSEWIC 2020, OBBA, 2021). It breeds in remote northern taiga and winters in south America, staging in wetlands and flooded fields along its migratory route. Loss of appropriate migratory stopover habitat, which has been nearly complete in heavily agricultural portions of eastern North America, is a serious concern for this species.

Although Lesser Yellowlegs are only present in the Greater Toronto Area (GTA) for a few weeks during the spring and fall, staging areas in this part of the migratory route are of particular importance. One of the most common types of staging habitat are flooded agricultural fields, a habitat which can be inadvertently destroyed by grading or improving the drainage of farmland. The numerous small wetlands along the roadway have strong potential to serve as stopover habitat for Lesser Yellowlegs.

6.1.1.10 Bank Swallow

This species nests within vertical banks, with a preference for sand-silt substrate. Nesting sites are more likely near open upland habitats. (COSEWIC 2013). Nest colonies may be in natural banks or manmade banks, dirt piles or structures with a suitable slope aspect, thus they are common in sand and gravel quarries and construction sites. Provincially, the species' protected habitat is the 50 m in front of a breeding colonies bank face and all suitable foraging habitat within 500 m (MECP 2015). Nests in active quarries or construction sites are not considered critical habitat, though the birds themselves and their active nests remain protected under ESA, SARA and MBCA. There was one Bank Swallow colony found on the Adjacent Lands (within 50 m of the Site). It was located in a dirt pile at Van Beek's Landscape Supply on the southeast corner of RR25 and Lower Base Line. There was no suitable nesting habitat on the Site itself, but the birds were seen foraging over the Site.

6.1.1.11 Yellow-breasted Chat

This Endangered songbird is abundant in shrublands across the United States, and is rarely but regularly observed in southern Ontario and southern British Columbia. In Ontario it regularly nests at a few locations in Essex and Chatham-Kent counties, and sporadically at other sites as far north as Toronto. In 2021 a bird was on territory in Bronte Creek Provincial Park, which constitutes probable breeding (Birds Canada, 2021-2025). Although candidate shrubland habitat on the Site is limited, the Project is adjacent to Bronte Creek Provincial Park, and the area on the east edge of the park (particularly near the abandoned road alignment at the interchange with Highway 403), contains suitable shrubland and thicket conditions for nesting. The probability of Yellow-

breasted Chats occurring here (or anywhere on the Site) is extremely remote, but should be retained as a possibility considering the recent nearby record.

6.1.1.12 Bobolink

This species of grassland-breeding-bird typically requires a minimum of 4 ha of uncut meadow or field (McCracken, 2013). It is described as area-sensitive in the general habitat guidelines (MECP, 2021). That same publication also notes that its defended territory tends to be between 1.2-6.1 ha, but it prefers larger tracks of grassland. The Bobolink General Habitat Description (MECP, 2021) indicates that the protected habitat for this species includes three categories:

Category 1 known nests and 10 m of the nest

Category 2 the area between 10 m and 60 m from the nest or the approximate centre of the defended territory

Category 3 the area of continuous suitable habitat between 60 m and 300 m of the nest or approximate centre of the defended territory

Present and likely breeding in old fields to the east of the road near Stations 15 and 24. The field near Station 24 is active agricultural land on which habitat protections for this species do not apply. However, if the land is left fallow, then protection for this species will apply. Regardless, any nests present in either active or inactive agricultural land would receive protection under SARA and the MBCA. Typically, these types of projects result in the removal of only narrow strips of vegetation and the application of the MECP timing windows is often accepted as avoiding contravention to ESA when the land use is active agricultural cropland. Consultation with MECP may still be required. Further evaluation once preferred alternatives are available is required.

6.1.1.13 Eastern Meadowlark

Like the bobolink, this species is a grassland-breeding-bird that typically requires a minimum of 4 ha of uncut meadow or field (McCracken, 2013). The general Habitat Description for the Eastern Meadowlark (OMNRF, 2018) indicates that the protected habitat for this species includes three categories:

Category 1 known nests and 10 m of the nest

Category 2 the area between 10 m and 100 m from the nest or the approximate centre of the defended territory

Category 3 the area of continuous suitable habitat between 100 m and 300 m of the nest or approximate centre of the defended territory

Present and likely breeding in the old fields to the east of the road near Stations 15 and 17. They could be present in the surrounding agricultural fields as well, however active agricultural land is exempt from the ESA for grassland bird habitat, but if it is left fallow then protections will apply. Typically, these types of projects result in the removal of only narrow strips of vegetation and the application of the MECP timing windows is often accepted as avoiding contravention to ESA when the land use is active agricultural cropland. Consultation with MECP may still be required. Further evaluation once preferred alternatives are available is required.

6.1.1.14 SAR Bats

Seven Endangered bat species were identified during the background review. Three of these species (Eastern Red Bat, Hoary Bat and Silver-haired Bat) are migratory, meaning they spend the summer in Ontario but do not overwinter/hibernate in the area. They are known to use a variety of trees, structures and occasionally shrubs for roosting. Little research has been done on these species and their use of habitat to date. At this time, all three are considered potentially present in any area with trees, shrubs or suitable structures. Many portions of the Site contained candidate roost sites for these three species and they are therefore assumed to be present.

Four non-migratory bats (Eastern small-footed myotis, tri-colored, northern myotis, and little brown myotis) are all listed as endangered species provincially signifying that they are at risk of becoming extinct or extirpated in Ontario. Only little brown myotis, northern myotis, and tri-colored are listed as endangered federally and receive protection in Canada. Eastern small-footed myotis is listed as endangered provincially and is afforded protection under ESA; this species is not listed federally and is therefore not afforded protection under SARA. There are three types of habitats required by bats: hibernation, maternity sites, and day-roost sites. The latter is not considered critical habitat.

These four bat species prefer to hibernate in caves or mines, and rarely hibernate in buildings (COSEWIC, 2013). No caves or mines were present within the Site.

The recovery strategy for the eastern small-footed myotis indicates that the species prefer open rock habitats and that it rarely uses old buildings as roosting/maternity sites (Humphrey, 2017). No rocky habitat or buildings proposed for impact were present within the area searched; based on this information, this species' maternity sites are considered absent.

The Atlas of Mammals of Ontario (Dobbyn, 1994) suggests that the tri-colored bat is present within this part of Ontario and uses a variety of forested habitats for maternity

roosts. Maternity habitat for this species is assumed to be present in woodland stands that overlap the Site.

The northern myotis tends to prefer larger expanses of older forests (late successional or primary forests) and choose maternity sites in snags that are in the mid-stage of decay. They prefer to roost within interior habitat and is shown to be negatively correlated with edge habitat (Menzel et al., 2002; Broders et al., 2006; Yates et al., 2006; OMNRF, 2015a).

The little brown myotis is one of the few bat species that can use anthropogenic structures as maternity sites. Potential suitable structures can include buildings, bridges, barns, and bat boxes. The little brown myotis can also use tall, large cavity trees that are in the early to mid-stages of decay as maternity roosts, as well as loose/raised tree bark, and/or crevices in cliffs (ECCC, 2018). This bat species occurs in higher densities in mature deciduous and/or mixed forests due to increased opportunities for large snags. However, unlike the northern myotis, the little brown myotis does not exclusively require mature forest stands to find appropriate maternity roosts (COSEWIC, 2013). This commonly observed species could establish maternity roosts in this area.

6.1.2 Wetlands

Due to a number of hydrological and ecological concerns, a primary objective of municipal planning in Halton Region is to define and protect wetland habitat, especially wetlands identified as significant. Provincially Significant Wetlands (PSW)s are defined as a key natural heritage feature by all three local jurisdictions along the Project's route: Oakville, Halton and rural Halton, and are automatically considered significant in any context. In addition, other wetlands that provide an important ecological contribution have been identified as significant within the Greenbelt Plan Area, Niagara Escarpment Plan Area, and Regional Natural Heritage System, as per Policy 276.5 of the Halton OP. According to the three local OPs relevant to the Project, PSWs and other significant wetlands receive a minimum mandatory buffer of 30 m from development. Necessary activities within this buffer (such as critical infrastructure) require a study approved by the municipality in question and typically are prescribed certain conditions, mitigation measures and sometimes habitat offsets. The approved study may prescribe a buffer larger than 30 m but only the municipality can allow a reduced buffer.

The background review identified the presence of the North Oakville-Milton West PSW Complex (LIO, 2026) (Appendix A). During the site investigations a number of small wetland communities were found overlapping the Site, three of which form part of this PSW Complex. These were:

- One reM community located north of the Highway 407 ramp and west of the Site. The portion of the wetland within the Site and its Adjacent Lands that was delineated was approximately 0.38 ha; its boundaries were similar to but slightly larger than the PSW polygon available on provincial mapping (approximately 0.30 ha). Nearly 0.06 ha of the delineated reM community falls within the Site. This community was dominated by common reed.
- One reM community located north of the Highway 407 ramp and east of the Site. The wetland community delineated by CIMA+ was approximately 0.82 ha, and larger than the PSW polygon on provincial mapping (0.14 ha). The delineated feature does not fall within the 65m Site, but falls completely within 120m of the Site.
- One reM community of approximately 0.04 ha located north of Henderson Rd, on the east side of the Site and adjacent to the Freedom Center. The location and boundaries of this wetland closely match the PSW polygon on provincial mapping. This feature falls within the Site. This community was dominated by cattails.

The three wetland communities listed above are automatically considered significant as they fall within a currently-mapped PSW. Under the current OWES evaluation methods (OWES Southern Manual, 4th Edition, 2022), wetlands are no longer complexed. As such, each individual wetland could be re-evaluated and if not found significant in and of itself, the appropriate MNRF process can be followed to remove the PSW designation. However, unless they are deemed not significant, the PSWs are to be protected in terms of their form and function with a typical buffer of 30m to apply.

In addition to the above three communities, there are 24 unevaluated marsh communities along the RR 25 improvement corridor. These areas are generally narrow wetland pockets within the ditches of the alignment comprised mainly of common reed, narrow-leaved cattail, and/or reed canary grass, most of which had no standing water in July. These were delineated as per the work plan (Appendix D). All of these communities were less than 5 ha, and most were less than 1 ha.

Many of the unevaluated marsh communities on the Site fall within the Regional NHS, Greenbelt and/or Greenbelt Urban River Valleys. Specifically, this includes: all wetland communities between Highway 407 and Lower Base Line; the reM community associated with Fourteen Mile Creek on the west side of RR25; the reM community on the east side of RR25 just south of Highway 407; and the two reM communities associated with Sixteen Mile Creek in Milton. Many of the remainder of wetland communities on the Site fall within the area delineated on the Halton OP Map 1G as “Key Features”. The unevaluated wetland communities on Site have not been

specifically identified as significant, although they are eligible for significance consideration based on the land designations containing them. Due to their small size, proximity to the roadway, and lack of significant species, the present study did not find significant evidence to justify that most of these communities provide an “important ecological contribution”. However, they still likely provide some hydrological and ecological value and the recommendation is to preserve all wetlands where possible, ideally retaining at least a 10 m buffer.

In addition to municipal and regional policies concerning PSWs and other wetlands, Conservation Halton (CH) regulates 30 metres from the limit of any wetland, including those less than 2 ha in size, under Ontario Regulation 41/24. Depending on the design alternative selected, impacts to these wetland features may require a permit from CH determined at the detailed design phase.

6.1.3 Significant Valleylands

As discussed in Section 4.1, valleylands are identified as either major or minor valleys and depicted on the OP schedules. The background review noted that there were three major valleys present along this corridor:

- Bronte Creek (major)
- Sixteen Mile Creek (major)
- Fourteen Mile Creek (minor)

As per the NHRM, a valleyland is defined as a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. “Significant” in the context of valleylands means “ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system”. There are a number of criteria considered by the NHRM in the identification of significant valleylands. These include landform-related functions, ecological features, and restored ecological functions. The NHRM protocol involves first characterizing the study area, and then deciding which evaluation criteria are appropriate to classify a valleyland as significant.

A high-level assessment of significance was undertaken at the preliminary design phase following the NHRM criteria (**See Table 9**). This assessment was done for the 3 above-noted watercourses and the 13 associated wetted features crossing the Site that are listed in Section 5.5. Based on the findings of the assessment, all three of the above noted valleys are considered significant and their form and functions are to be protected. In addition, features 1,2,5 and 8 were also found to be significant based on one or more criteria. Significance of the remaining features was not proven, but not all

sources were consulted at this time and significance cannot be discounted for any of the features. A more thorough assessment will be completed during detailed design for the features proposed to be impacted.

Section 16.1.9 of the Oakville OP notes that a minimum buffer of 15 m from the top of bank is required for major valleys and 7.5 m from the top of bank for the minor valleys. Similarly the Town of Milton OP states in Section C.10.5.8.6.a that watercourses are to be given a minimum 10 m buffer from the greater of the regional storm floodplain or stable top of bank, and Policy C.10.5.8.6.c.i further specifies a minimum of 30 m to stable top of bank for Sixteen Mile Creek. These setbacks are based on requirements prescribed by the CA. To safeguard the corridor against future erosion, CIMA+ recommends that all significant valleylands, both major and minor, be given a 30 m buffer from stable top-of-bank, and that all watercourses (regardless of significance) be given a 10 m buffer. However, it is recognized that in some instances this will not be possible, most notably along Sixteen Mile Creek where the existing roadway already runs within 15 m of the physical top of bank. In these cases, engineers must provide a detailed design solution that minimizes risk of slope instability under a range of climate scenarios, and the municipality must be consulted throughout the planning process. In all cases, an absolute minimum of 7.5 m must be retained between the extent of grading and the stable top-of-bank of any valley.

Table 9: Significant Valleyland Assessment

Significant Valleyland Criteria	Feature/Watercourse Identifier															
	1	2	3	4	5	6	7	8	9	10	11	12	13	Bronte Creek	Fourteen Mile Creek	Sixteen Mile Creek
Landform-related Functions and Attributes																
Areas of water conveyance from catchment areas of 50 ha or greater, as defined by a stream channel conveying or holding water for at least two months of the year, or as defined by floodlines or by the meander belt width	U	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y
areas of active or historic erosion as characterized by exposed soils on shorelines, river banks, valley walls and instream islands	U	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y
areas of active or historic deposition characterized by alluvial soils forming bottomlands, terraces, levees and instream or river-mouth deltas or islands	U	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y
associated wetlands important to water attenuation, storage and release	U	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y
areas contributing to groundwater infiltration; areas that make an important contribution to infiltration in the region	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
areas of groundwater release (i.e., springs, seepage slopes, wetlands)	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
areas with well-defined valley morphology (e.g., floodplains, meander belts, valley slopes) having an average width of 25 m or more	Y	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y	Y
valleylands with boundaries defined on the basis of standard procedures such as those in the Adaptive Management of Stream Corridors in Ontario including Natural Hazards Technical Guides, and Understanding Natural Hazards	Y	U	U	U	Y	U	U	U	U	U	U	U	U	Y	Y	Y
distinctive landforms based on their representation of geomorphological processes and features, quality and rarity	U	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y
features such as oxbows, bottomlands, terraces, deltas, exposed soil strata or eroding slopes along riverbanks or valley walls	Y	U	U	U	Y	U	U	Y	U	U	U	U	U	Y	Y	Y
Ecological Features																
areas of contiguous woodland, wetland and/or meadow considered cumulatively	Y	N	N	N	Y	N	N	Y	N	N	N	N	N	Y	Y	Y
the proportion of valleyland that has natural vegetation cover vs. a cultural use (e.g., golf course, landscaped parkland, agricultural field, urban area) - greater than 25% natural vegetation cover should be considered significant	Y	N	N	N	N	N	N	U	N	N	N	N	N	Y	Y	Y
proportion of valleyland that has natural riparian vegetation	Y	U	U	U	Y	U	U	Y	U	U	U	U	U	Y	Y	Y
riparian vegetation greater than 30 m in width on each side of surfacewater features should be considered significant	Y	N	N	N	N	N	N	U	N	N	N	N	N	Y	Y	Y
assessment of Floristic Quality Index (FQI) score (Oldham et al., 1995) - high FQI in the context of the local watershed should be considered significant	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
areas of high community and/or species diversity	U	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y
seasonally important habitats such as deer yards, migration stopovers, etc.	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	U	U
high proportion of regionally and locally significant species	U	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y

Significant Valleyland Criteria	Feature/Watercourse Identifier															
	1	2	3	4	5	6	7	8	9	10	11	12	13	Bronte Creek	Fourteen Mile Creek	Sixteen Mile Creek
rare communities or the habitat of rare species, based on federal or provincial guidelines	Y	Y	U	U	Y	U	U	Y	U	U	U	U	U	Y	Y	Y
areas determined to provide important habitat required to sustain native aquatic and terrestrial species diversity within the region	Y	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y
the portion of the valleyland with continuous natural vegetation corridors with a minimum width of 100 m	Y	U	U	U	U	U	U	U	U	U	U	U	U	Y	N	N
areas with functional ecological connections to other natural areas within the watershed both inside and outside the valleylands	Y	U	U	U	Y	U	U	U	U	U	U	U	U	Y	Y	Y
areas that are determined to provide important wildlife corridors	U	U	U	U	U	U	U	U	U	U	U	U	U	Y	Y	Y
Restored Ecological Functions																
restoration will provide important ecological benefits such as linkage function, improvement of habitat for rare species, reduced fragmentation effects, and/or increased core natural areas	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
areas where restoration will provide a minimum 30 m corridor of riparian vegetation on each side of surfacewater features	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
areas where the public is interested in assisting in the implementation of ecological restoration	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
areas that are in public ownership and that would benefit from restoration	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
areas where restoration would buffer existing natural areas from the effects of adjacent development	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
Overall Significance?	Y	Y	U	U	Y	U	U	Y	U	U	U	U	U	Y	Y	Y

*Y = Yes, N = No, U = Unknown (data deficient or sources not consulted at this stage)

6.1.4 Significant Woodlands

The determination of significance was assessed as per Section 277 of the Region's OP (2022). The OP defines a significant woodland as being 0.5 ha or larger meeting one or more of the four following criteria:

- Woodland contains forest patch over 99 years old.
- Woodland is 2 ha or larger within the Urban Area or 4 ha outside and below the Escarpment Brow, or 10 ha within the Escarpment Brow.
- Woodland has a 100 m interior 4 ha or larger
- Woodland or part of it is within 50 m of a major creek or certain headwater creek, or within 150 m of the Escarpment Brow.

There are 11 significant woodlands in the Site within the Key Features of the NHS. A summary of the assessment for each of these stands is provided in text below. The woodland stands should be avoided to the extent feasible. The impact to woodland stands will be evaluated once the preferred alternatives are available.

6.1.4.1 Woodland Stands 1 and 2

Woodland Stands 1 and 2 were situated adjacent to the Bronte Creek lands and consisted of a mix of Dry-Fresh Oak - Hardwood Deciduous Forest (FOD2-4) and Fresh-Moist Black Walnut Lowland Deciduous Forest (FOD7-4) communities. The canopy in these woodlots (18-24 m tall, 80% cover) was generally composed of red oak (dbh 18-95 cm), sugar maple (dbh 10-70 cm), black walnut (dbh 10-55 cm), Manitoba maple (dbh 15-65 cm), and basswood (dbh 15-55 cm). The sub canopy (10-18 m tall, 30% cover) was primarily black maple (dbh 7-40 cm), bur oak (dbh 7-40 cm), black locust (dbh 10-45 cm), and green ash (dbh 10-30 cm), and large-tooth aspen (dbh 10-30 cm). The understory (0.5-4 m tall, 60% cover) was mainly comprised of red raspberry, glossy buckthorn, and honeysuckle. The ground cover layer (80% cover) was mainly composed of common burdock, poison ivy, and tall goldenrod. The woodlots were generally in good condition with the exception of scattered dead green ash snags throughout.

These stands are over 99 years old based on the presence of larger trees and appearing well developed (>10 years old) in 1934 aerial photos. They also meet the size requirements and are situated within 50 m of a major creek (Bronte Creek) as per Section 277 of the Region of Halton's OP. Furthermore, these stands are located within the Greenbelt Plan Area, with Stand 1 being in the URV designation and Stand 2 being in the protected countryside/NHS.

6.1.4.2 Woodland Stand 3

Woodland Stand 3 is associated with the Fourteen Mile Creek corridor and consists of a Fresh-Moist Willow Lowland Deciduous Forest (FOD7-3). The canopy in this area (18-24 m tall, 85% cover) was dominated by crack willow (dbh 25-88 cm), shagbark hickory (dbh 5-45 cm), beech (dbh 30-65 cm), and sugar maple (dbh 15-50 cm). The sub canopy (10-18 m tall, 55% cover) was comprised of black cherry (dbh 7-35 cm), black locust (dbh 10-40 cm), black walnut (dbh 5-15 cm), and basswood (dbh 10-38 cm). The understory (0.5-3 m tall, 60% cover) was mainly comprised of glossy buckthorn, staghorn sumac, and honeysuckle. The ground cover layer (80% cover) was mainly composed of grasses, Virginia creeper, cow vetch, and thistle. This stand is in good condition with majority of the trees displaying healthy live crowns.

This stand is older than 99 years old, as it appeared well-developed (>10 years of age) in 1934 aerial photos; however, the portion near the Site is younger. The stand also meets the size requirements and is situated within 50 m of a major creek (Fourteen Mile Creek) as per Section 277 of the Region of Halton's OP.

6.1.4.3 Woodland Stand 4

Woodland Stand 4 is situated directly northwest of the Highway 407 on-ramp and consists of a Dry-Fresh Oak - Hardwood Deciduous Forest (FOD2-4). The canopy (18-24 m tall, 80% cover) was generally composed of red oak (dbh 18-65 cm), sugar maple (dbh 15-45 cm), black walnut (dbh 10-55 cm), and Manitoba maple (dbh 15-65 cm). The sub canopy (10-18 m tall, 30% cover) was bur oak (dbh 7-40 cm), large-toothed aspen (dbh 10-45 cm), and green ash (dbh 10-30 cm). The understory and ground cover layer could not be determined from the ROW. There are small wetland polygons associated with the North Oakville-Milton West Wetland Complex within and adjacent to the woodlot. This woodlot was generally in good condition with the exception of scattered dead green ash snags throughout.

This stand meets the size requirements, is older than 99 years based on 1934 aerial imagery, and situated within 50 m of a major creek (Fourteen Mile Creek) as per Section 277 of the Region of Halton's OP.

6.1.4.4 Woodland Stand 5

Woodland Stand 5 is approximately 1 km south of Lower Base Line W and consists of a Dry-Fresh White Pine – Oak Mixed Forest (FOM2-1). The canopy in this mixed woodlot (18-22 m tall, 85% cover) was dominated by white pine (dbh 40-65 cm), red oak (dbh 10-60 cm), American elm (dbh 18-35), and green ash (dbh 15-40 cm). The sub canopy (10-18 m tall, 45% cover) was comprised of shagbark hickory (dbh 10-43 cm), white spruce (dbh 10-35 cm), and hawthorn (dbh 10-25 cm). The understory (0.5-3 m tall,

60% cover) was mainly comprised of glossy buckthorn, staghorn sumac, and honeysuckle. The species composition of the ground cover layer (80% cover) could not be observed from the ROW as a cattail marsh was adjacent this woodlot. There are small wetland polygons associated with the North Oakville-Milton West Wetland Complex within the woodlot. This stand is in good condition with majority of the trees displaying healthy live crowns.

This stand meets the size requirements as per Section 277 of the Region of Halton's OP. It had begun to regenerate but still appears to be a thicket community in 1934 aerial imagery. It is not in close proximity to any watercourses.

6.1.4.5 Woodland Stand 6

Woodland Stand 6 is approximately 575 m northeast of Britannia Road and is comprised of a Dry Oak – Pine Mixed Forest (FOM1) community. The canopy in this mixed woodlot (15-21 m tall, 85% cover) is dominated by bur oak (dbh 10-55 cm), white pine (dbh 35-60 cm), and white spruce (dbh 25-88 cm). The sub canopy (10-18 m tall, 45% cover) is comprised of shagbark hickory (dbh 10-43 cm), sugar maple (dbh 10-35 cm), and Manitoba maple (dbh 10-50 cm). The understory (0.5-3 m tall, 60% cover) is mainly comprised of glossy buckthorn, and honeysuckle. The ground cover layer (80% cover) that was observed from the RR25 ROW was mainly composed of field horsetail, cow vetch, and tall goldenrod. There is an unnamed feature of Sixteen Mile Creek that runs through this wooded area. This stand was in good condition during the 2023 field assessment.

This stand is situated within 50 m of a major creek (Sixteen Mile Creek) as per Section 277 of the Region of Halton's OP. It is not present in the 1934 imagery. It is identified in the Sixteen Mile Creek Areas 2 & 7 Subwatershed Update Study as a natural feature with medium constraint (AMEC, 2015).

6.1.4.6 Woodland Stands 7-11

Woodland Stand 7, Stand 8, Stand 9, Stand 10, and Stand 11 consist of Fresh-Moist Black Walnut Lowland Deciduous Forest (FOD7-4) communities all of which are associated with the Sixteen Mile Creek corridor located at the north end of the Study Area. The canopy in these wooded areas (18-24 m tall, 80% cover) was dominated by black walnut (dbh 10-55 cm), Manitoba maple (dbh 15-65 cm), and crack willow (dbh 25-88 cm). The sub canopy (10-18 m tall, 45% cover) was comprised of bur oak (dbh 7-40 cm), black locust (dbh 10-45 cm), and green ash (dbh 10-30 cm). The understory (0.5-3 m tall, 60% cover) was mainly comprised of glossy buckthorn, and honeysuckle. The ground cover layer (80% cover) was mainly composed of wild grape, cow vetch, and tall goldenrod. These forested lands were in good condition with majority of the

trees displaying healthy live crowns, with the exception of scattered dead green ash snags throughout.

All of these stands meet the size requirements except for Woodland Stand 7, and are all situated within 50 m of a major creek (Sixteen Mile Creek) as per Section 277 of the Region of Halton's OP. Woodland 7, 8, and 9 appear to be older than 99 years based on the 1934 imagery. 10 and 11 have a very narrow strip of riparian trees that are present in 1934, but the communities themselves appear to be younger than 90 years. Stands 7-10 are identified in the Sixteen Mile Creek Areas 2 & 7 Subwatershed Update Study as high constraint natural features, and Stand 11 as a medium constraint feature (AMEC, 2015). **Figure 63** below displays Stands 1 through 5, all within the Town of Oakville, and Stands 6-11 are displayed in **Figure 64** and are all situated in the Town of Milton.

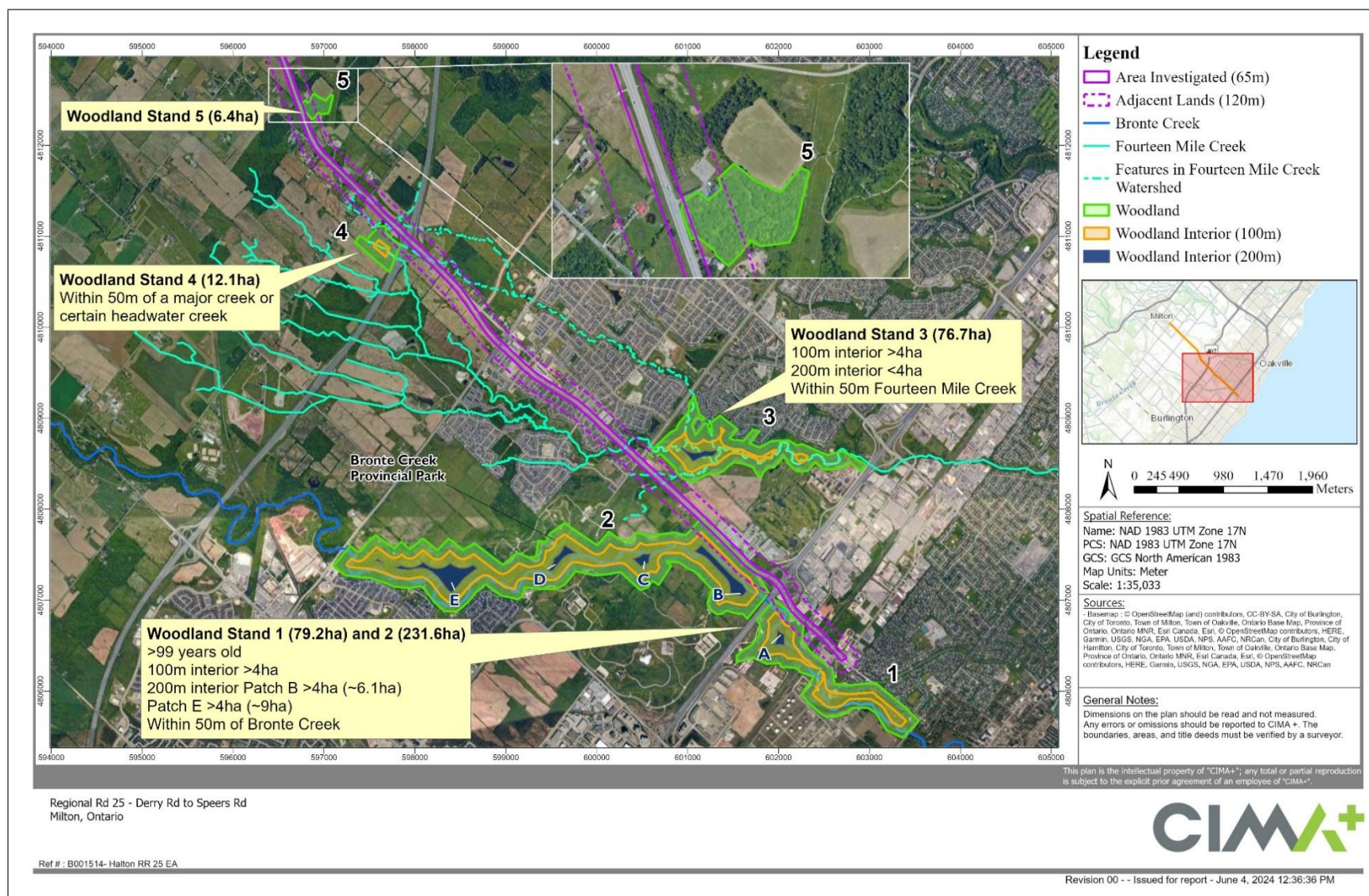


Figure 63: Significant Woodlands within the Site (Oakville)

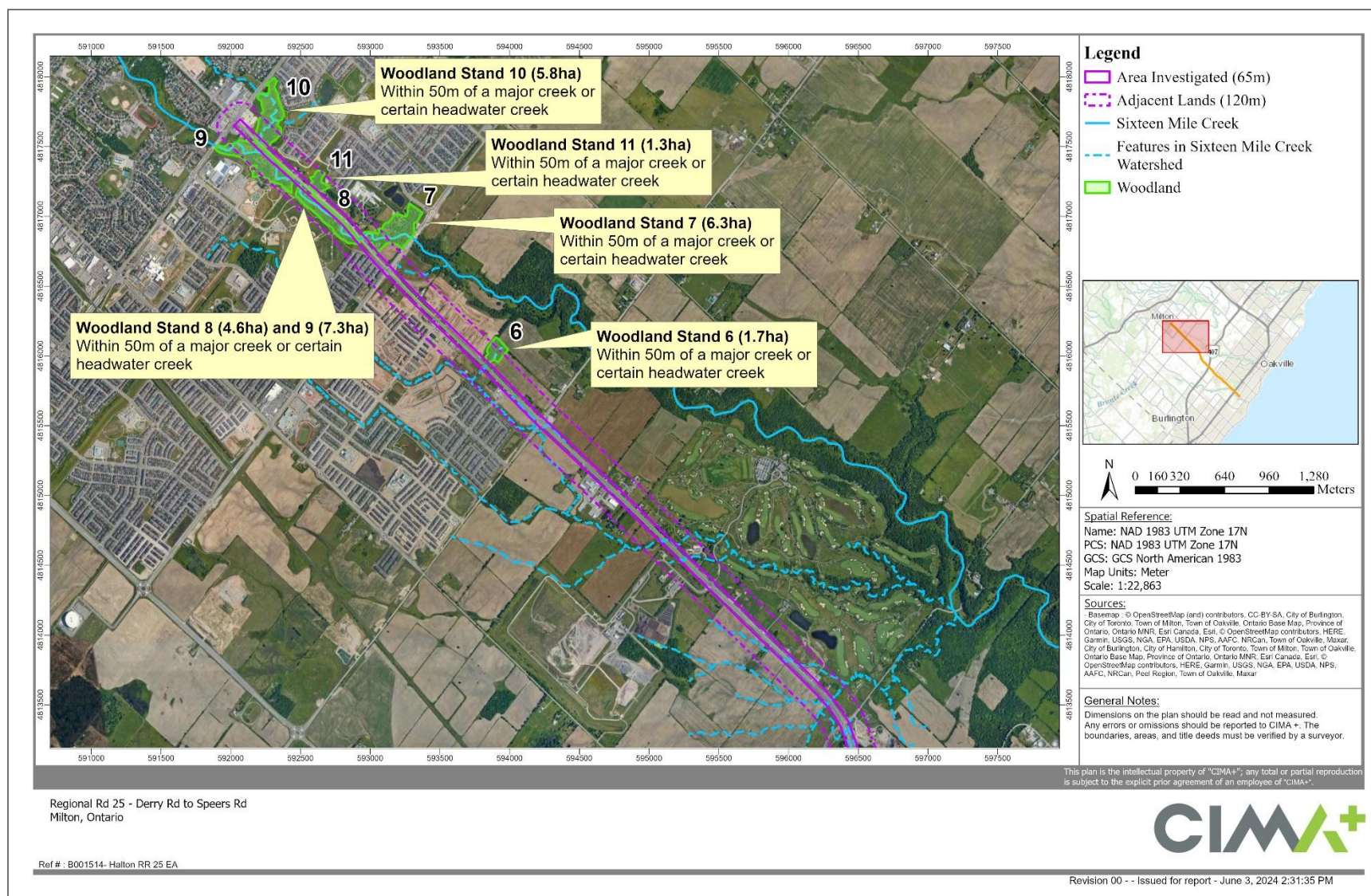


Figure 64: Significant Woodlands within the Site (Milton)

6.1.5 Significant Wildlife Habitat

As discussed in Section 4.1, general SWH was identified in the Town of Oakville's OP and Key Features in NHS were identified within the Site. The evaluation of SWH is completed below through a desktop review and site investigations using the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (OMNRF, 2015). Those deemed candidate SWH are further discussed in the table in Appendix F. **Table 10** below outlines the candidate SWH that have potential to occur within the Site. Avoidance and mitigation measures should be applied to protect these features once a design alternative is selected.

Table 10: Candidate Significant Wildlife Habitat

Candidate SWH	Discussion of Findings
Candidate Waterfowl stopover and staging areas (terrestrial)	Numerous fields present which could flood in or within 120 m of the corridor improvement area.
Raptor wintering area	Hawks and eagles present and suitable mix of forest and upland fields for hawk overwintering habitat.
Bat maternity colonies	Woodlands and fields near Bronte Creek and Fourteen Mile Creek potentially meet requirements.
Turtle wintering areas	Suitable forest habitat and potential for snag trees in the Site.
Migratory butterfly stopover area	Sections of Bronte Creek, Fourteen Mile Creek, and Sixteen Mile Creek could provide turtle overwintering habitat. Majority of wetland polygons within the Site do not have water depths suitable to provide overwintering habitat for turtles.
Landbird migratory stopover area	There are areas 10 ha in size within the Bronte Creek lands that provide a combination of field and forest, within 5 km of Lake Ontario.
Old Growth Forest	There are woodlands >5 ha in size within the Bronte Creek lands that are within 5 km from Lake Ontario.

Candidate SWH	Discussion of Findings
Woodland Raptor Nesting Habitat	Minimum habitat requirements present in the woodland along Bronte Creek (Stand 2). Stand 2 is estimated to have a total of 19.5ha of interior habitat (using an edge of 200m); however, this is divided into four isolated and narrow patches of which two meet the minimum of 4ha of interior habitat. Patch B is situated outside of the Site but within 200m; Patch E is much further west and as such, outside of the area of impact. Minimize removal of vegetation along the edge of Stand 2, especially any that reduces the interior habitat in Patch B (edge 200m) to less than 4ha. No active raptor nesting was noted; however, timing of observations was not in the appropriate season to confirm. A follow-up field visit in October 2024 confirmed the presence of a Bald Eagle nest that is thought to have been active in 2024 and may be used again in the future. It is located 429m southwest of Regional Road 25 at: 43.40940, -79.74787 (see Photo 18). Note that this is within the 100m interior portion of Woodland Stand 2. An inactive Osprey nest was also found on a communications tower at 43.44374, -79.78575, but a decoy Bald Eagle has been placed on it to prevent nesting activity.
Woodland Area-Sensitive Bird Breeding Habitat	Interior habitat present in the woodland along Bronte Creek (Stands 1 and 2) to be considered Candidate, but the breeding bird surveys in or near the Site did not contain a sufficient number of indicator species breeding near woodlands. Woodland area-sensitive bird breeding habitat is absent from the Site but could still be present in the woodland stand as a whole. Those would not be impacted by the proposed improvements.

Candidate SWH	Discussion of Findings
Marsh Bird Breeding Habitat	Candidate habitat is present. No targeted marsh bird surveys conducted but no indicator species were present during general bird surveys.
Amphibian Breeding Habitat (Wetlands)	Candidate habitat is present; 15 of 27 wetland communities that were delineated meet the minimum size requirements and are over 120m from woodlands.
Amphibian Breeding Habitat (Woodlands)	No candidate swamp habitat was present within the Site. There is potential that some of the woodland areas may have contained vernal pools where access was not permitted.
Rare Vegetation Communities	FOD7-4 (Fresh-Moist Black Walnut Lowland Deciduous Forest) present on Site and Adj. Lands along Bronte Creek and Sixteen Mile Creek.
Special Concern (SC) and Rare Wildlife Species	Occurrences of SC fish, turtles, and birds were noted in the general area during the background review. Several SC species were observed during field investigations: three birds (barn swallows, wood thrush, bald eagle) and one reptile (painted turtle).

6.1.6 Areas of Natural and Scientific Interest

Provincial databases (LIO, 2026) identified the presence of a significant Earth Science ANSI in the study area, Trafalgar Moraine ANSI. The Trafalgar Moraine was formed as an end moraine, and currently contains headwaters for multiple watercourses across the watershed (Eyles et al., 2010). This feature is classified on LIO (2019) as non-sensitive, and will be further discussed in the Hydrogeological Assessment report to follow.

Other ANSIs within the Adjacent Lands include Bronte Creek Provincial Park Nature Reserve Zone ANSI and Sixteen Mile Creek Candidate Life Science ANSI. The Bronte Creek ANSI protects a variety of rare flora and fauna and a long section of relatively undisturbed, deep valley land. It was established as part of the Bronte Creek Management Plan (MECP, 2017) and includes the entire valley from Highway 403 to Dundas St plus a 40 m buffer from the stable top of slope. The Sixteen Mile Creek Candidate Provincial Life Science ANSI occurs along the valley of Sixteen Mile Creek

near the Project, but outside the Adjacent Lands. There is little information available on this ANSI, but according to MNRF mapping, it is confined to the reach of river south of Britannia Rd (Amec, 2015).

6.1.7 Fish Habitat

The Site includes 16 Features of which three are named (Sixteen Mile Creek, Fourteen Mile Creek, and Bronte Creek). Based on the review of background information and the information collected during the June 2023 site visit, the following information is considered important when reviewing alternatives:

- 9 Features are known to provide direct fish habitat:
 - Sixteen Mile Creek, Features 1, 2 & 5
 - Note that Feature 2 did not appear to provide fish habitat within the Site.
 - Fourteen Mile Creek, Features 10-12
 - Bronte Creek
- 5 Features with confirmed or suspected presence of endangered or threatened species that receive protection under ESA and/or SARA:
 - Bronte Creek, Sixteen Mile Creek, Features 1 & 2
 - Critical Habitat for Silver Shiner
 - Note that Feature 2 did not appear to provide fish habitat within the Site.
 - Fourteen Mile Creek
 - Critical Habitat for Redside Dace
- 5 Features are listed as cold water:
 - Fourteen Mile Creek and Features 10-13
- 8 Features appeared to be seasonal.
 - Sixteen Mile Creek subwatershed - Features 2-4, 6, 7 & 9
 - Fourteen Mile Creek subwatershed - Features 12-13
- 7 Features were simply assumed to provide direct fish habitat as no barriers were noted.
 - Sixteen Mile Creek subwatershed - Features 2-4, 6, 7-9

6.2 Assessment of Impacts

The previous section identified which Natural Environment Features are present along the right-of-way and their level of significance in an ecological and legislative context. The following section will discuss the potential impacts on these features based on the current understanding of the design, which at this time is a preliminary design.

6.2.1 Review of Project Activities and Preliminary Design

The Project is the widening of a 16 km section of major paved arterial road in a suburban and agricultural part of southern Ontario. The Project will be completed in three phases; Speers Rd to Highway 407; Highway 407 to Britannia Rd; Britannia Rd to Derry Rd. The general activities associated with the Project will be:

- Site preparation (removal of trees and structures within the alignment, installation of protective fencing)
- Upgrades and/or replacement of existing utilities, retaining walls, culverts and bridges
- Deconstruction of the existing roadway and connecting driveways
- Construction of sidewalks, multi-use paths and boulevards
- Grading and reconstruction/paving of new, widened roadway
- Installation of signage and overhead utilities, as required
- Site remediation (planting grass/trees, bank stabilization)

At the 30% design stage, the proposed footprint is expected to occur entirely within the 65 m corridor investigated as the “Site”. This width encompasses all permanent and temporary footprints. No widening is planned south of Wyecroft Rd., but the roadway will be reconstructed and a multi-use path and sidewalk will be added. Construction in this zone will be limited to the existing footprint plus a 5 m easement on either side (30 m total). Over the remainder of the Project, the road will be widened to 6 lanes and a multi-use path will be added to both sides (only one side in some sections), for a total permanent footprint width of 47 m. 5 m construction easements on either side of the right-of-way bring the total footprint width along most this segment to 57 m. This width will normally be centered on the existing centre line, with the exception of the 1 km section north of the Sixteen Mile Creek crossing. Over this section, all widening will take place on the east side of the roadway to avoid impacting Sixteen Mile Creek which flows parallel and immediately adjacent to the existing roadway.

6.2.2 Impact Assessment Methods

The assessment of the potential impacts is completed by analyzing the impact of various activities associated with the Project. The significance of the potential impacts is measured using four criteria:

Area (geographical extent) of the impact:

- a) Local, signifying that the impacts will be localized within the Project area
- b) Regional, signifying that the impacts may extend beyond the immediate project area.

Nature of the impact:

- a) Direction (negative or positive)
- b) Complexity (direct or indirect)
- c) Risk (certain, likely, unlikely, remote)
- d) Confidence level (well understood, poorly understood)

Duration of the impact:

- a) Short term (one-two years)
- b) Medium term (two-seven years)
- c) Long term (seven-30 years)
- d) Permanent (>30 years)

Magnitude of the impact:

- a) Negligible, signifying that the impact is not noticeable
- b) Minor, signifying that the Project's impacts are perceivable and require mitigation
- c) Moderate, signifying that the Project's impacts are perceivable and require mitigation as well as monitoring and/or compensation
- d) Major, signifying that the Project's impacts would destroy the environmental component within the Project area.

Where identified, the boundaries of any significant features are noted and the potential for the development to cause negative impacts is assessed. For those features which may be negatively impacted, avoidance and mitigation measures are recommended, as appropriate. The 2020 Provincial Planning Statement (PPS) (referred to in the OP for the Region of Halton) states that a negative impact signifies:

“a) in regard to policy 3.6.4 and 3.6.5, potential risks to human health and safety and degradation to the quality and quantity of water, sensitive surface water features and

sensitive ground water features, and their related hydrologic functions, due to single, multiple or successive development. Negative impacts should be assessed through environmental studies including hydrogeological or water quality impact assessments, in accordance with provincial standards;

b) in regard to fish habitat, any harmful alteration, disruption or destruction of fish habitat, except where an exemption to the prohibition has been authorized under the Fisheries Act;

c) in regard to other natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities.”

6.2.3 Fish and Fish Habitat

Bronte Creek, Fourteen Mile Creek and Sixteen Mile Creek are relatively healthy tributaries of Lake Ontario that contain habitat important to a number of fish, including the Endangered Redside Dace, Silver Shiner and American Eel. Based on the review of background information and the information collected during the Site visits, the following information is considered important when reviewing alternatives:

- Design should ensure that the same water quality and quantity continues to flow post-construction
- Ensure that the design for bridges and culverts allows for fish passage during the spring and baseflow conditions (as needed)
- ~~Additional sampling or habitat descriptions may be required depending on the potential impact.~~
- Consultations and/or permitting with MECP, and DFO will be required (all work that is in or within regulated habitats for species at risk fish must be reviewed by DFO and, when the habitat is that of an ESA species, MECP as well).

Direct impacts to Fish and Fish Habitat will be limited to the temporary works associated with culvert/bridge repair, replacement and upgrades. In total there are 25 watercourse crossings along the Project's length, each of which has a separate plan for upgrades that will require a varying amount of disturbance within the watercourse (See **Table 11**).

Indirect impacts to Fish and Fish Habitat may include permanent alterations of flow regimes, and introduction of road salts, oils and contaminants. The single bridge within the Site (over Sixteen Mile Creek) will be increased slightly in width, resulting in shading of a portion of the creek. Other, less likely impacts may arise in the event of accidents or malfunction. These impacts are most likely to be negligible to minor and short-term in nature as a result of small amounts of sediment or contaminants escaping into the

natural environment during the construction phase. Mitigation measures such as sediment fencing will be able to nearly eliminate these risks. There is always a small risk of a major impact on downstream water quality in the event of a spill or material failure, and in the case of this project, such an impact could present in the form of heavy nutrient loadings to the system that could persist for an extended period of time. Such systemic fluctuations could alter the temperature of the water downstream and result in a mass die-off of fish or microbial communities, potentially causing permanent changes to the ecosystem. Preventative measures, outlined in Section 6.2.9, will be extremely important in minimizing the risk for any such major impacts, and a contingency plan will need to be put in place.

Overall, the impact on Fish and Fish Habitat would be moderate to major without the application of avoidance and mitigation measures.

Table 11: Potential Impacts Associated with Proposed Culvert and Bridge Upgrades

Structure ID	Structure Location	Creek System	Existing Structure Type	Proposed Action	Activities in Fish Habitat	Potential Impacts
C01	365 m south of Upper Middle Road	Feature 12 (Fourteen Mile Creek)	3.66 x 2.44 x 40.1 m single-barrel concrete box open-foot culvert	Extend by 1 m US and 7 m DS, add retaining wall DS	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C02 Opt. 2 (Preferred)	227 m South of Upper Middle Road	Feature 13 (Fourteen Mile Creek)	Unspecified culvert	Replace with 2.7 x 2.1 x 54.5 m single-barrel concrete box culvert with 0.3 m embedment, add retaining walls at each end	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat. Consideration for the Bronte Green OMB settlement compensation area must be reviewed during detailed design.
C03	205 m North of Upper Middle Road	Fourteen Mile Creek main branch	4.2 x 2.8 x 47 m double-barrel concrete box culvert	Increase retaining wall height on DS end	Potential to stay above high-water mark depending on construction methods	Erosion, sedimentation, additional if working within water. Critical habitat for Redside Dace.
C04	155 m North of William Halton Parkway	Tributary to feature 11 (Fourteen Mile Creek)	1.05 x 1.05 x 47.5 m HDPE/circular single-barrel culvert	Extend by 3.7 m US and 4.4 m DS	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C05 Opt. 2 (Preferred)	347 m South of 407 ETR	Feature 11 (Fourteen Mile Creek)	CSP arch culvert	Replace with 2.1 x 1.8 x 55.9 m single-barrel concrete box culvert with 0.3 m embedment	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C06 Opt. 2 (Preferred)	103 m South of Burnhamthorpe Road	Tributary to Feature 10 (Fourteen Mile Creek)	Twin CSP culvert	Replace with 0.9 x 0.9 x 52.2 m single-barrel concrete pipe culvert	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C07	209 m North of Burnhamthorpe Road	Tributary to Feature 10 (Fourteen Mile Creek)	1.2 x 0.9 x 37.1 m twin CSP arch culvert	Extend by 5 m US and 10.6 m DS	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C08A Opt 1 (Preferred)	535 m North of Burnhamthorpe Road	Tributary to Feature 10 (Fourteen Mile Creek)	Unspecified culvert	Add new 3 x 1.5 x 60 m single-barrel concrete box culvert on north side	Increased in-water footprint, temporary dewatering, channel realignment E side	Erosion, sedimentation, HADD of fish habitat

Structure ID	Structure Location	Creek System	Existing Structure Type	Proposed Action	Activities in Fish Habitat	Potential Impacts
C09	At Henderson Road Intersection	Tributary to Feature 11 (Fourteen Mile Creek)	Unspecified culvert	Relocate and replace with 0.975 x 0.975 x 69 m single-barrel concrete pipe culvert	Increased in-water footprint, temporary dewatering, channel realignment	Erosion, sedimentation, HADD of fish habitat
C10	128 m North of Henderson Road	Tributary to Feature 11 (Fourteen Mile Creek)	CSP culvert	Eliminate and direct flow to culvert C-09	Complete channel realignment, location pending detailed design.	HADD to fish or fish habitat
C11	370 m North of Henderson Road	Tributary to Feature 11 (Fourteen Mile Creek)	1.55 x 1.2 x 34.9 m single-barrel CSP arch culvert	Extend by 9.5 m US and 7.5 m DS	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C12	707 m North of Henderson Road	Tributary to Feature 11 (Fourteen Mile Creek)	CSP culvert	Replace with 0.825 x 0.825 x 52 m single-barrel concrete pipe culvert	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C13	394 m South of Lower Base Line	Feature 9 (Sixteen Mile Creek)	CSP culvert	Replace with 0.825 x 0.825 x 52 m single-barrel concrete pipe culvert	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C14	55 m South of Lower Base Line	Tributary to Feature 9 (Sixteen Mile Creek)	CSP culvert	Replace with 1.05 x 1.05 x 58.2 m single-barrel concrete pipe culvert	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C15	190 m North of Lower Base Line	Feature 8 (Sixteen Mile Creek)	7.32 x 1.83 x 48.2 m single-barrel concrete arch culvert	Increase retaining wall height on both ends	Potential to stay above high-water mark depending on construction methods	Erosion, sedimentation, additional if working within water. Significant potential for Redside Dace to be present.
C16	610 m North of Lower Base Line	Feature 7 (Sixteen Mile Creek)	1.55 x 1 x 34.2 m single-barrel CSP arch culvert	Extend by 6.3 m US and 7 m DS	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C17	260 m North of Halton Waste Management Access	Feature 6 (Sixteen Mile Creek)	Twin CSP culvert	Replace with 1.2 x 1.2 x 51.3 m single-barrel concrete box culvert with 0.3 m embedment	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat

Structure ID	Structure Location	Creek System	Existing Structure Type	Proposed Action	Activities in Fish Habitat	Potential Impacts
C18	360 m North of Halton Waste Mngmt Access	Feature 5 (Sixteen Mile Creek)	CSP culvert	Replace with 1.83 x 1.2 x 60 m single-barrel concrete box culvert with 0.3 m embedment	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat. Significant potential for Redside Dace to be present.
C19	440 m North of Halton Waste Mngmt Access	Feature 5 (Sixteen Mile Creek)	6.1 x 1.9 x 43.4 m single-barrel concrete arch culvert	Extend by 8.8 m US and 10.3 m DS	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat. Significant potential for Redside Dace to be present.
C20	40 m South of Britannia Road	Feature 4 (Sixteen Mile Creek)	1.2 x 1.2 x 38.2 m single barrel concrete pipe culvert	Extend by 9.8 m US and 9.2 m DS	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C21	78 m North of Britannia Road	Tributary to feature 5 (Sixteen Mile Creek)	1.2 x 1.2 x 39.14 m single-barrel concrete pipe culvert	Extend existing by 9.8 m US & 11.6 m DS, add new 0.9 x 0.9 x 60.54 m relief culvert of same type beside (twinning)	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat. Significant potential for Redside Dace to be present.
C22	258 m North of Etheridge Avenue	Feature 3 (Sixteen Mile Creek)	Box culvert	Replace with 3.9 x 1.8 x 52.6 m single-barrel concrete box culvert with a 0.3 m embedment	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
B01	300 m north of Louis St. Laurent Avenue	Sixteen Mile Creek main branch	43.5 x 22 m Concrete box-girder bridge	Extend bridge deck by 8.91 m on the east side (DS end)	Potential to stay above high-water mark depending on construction methods and placement of supports, but likely to involve temporary dewatering and/or shoreline alteration.	Shading of a portion of stream, potential for other impacts depending on construction/design methods. Critical habitat for Silver Shiner and Significant potential for Redside Dace or American Eel to be present.
C23		Unidentified tributary of Sixteen Mile Creek	1.83 x 0.91 x 31.5 m single-barrel concrete box culvert	Extend by 11.0 m US only	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat
C24		Feature 1 (Sixteen Mile Creek)		Extend existing by 6.6 m on US end, add new 4.2 x 3 x 47 m relief culvert of same type beside (twinning)	Increased in-water footprint, temporary dewatering, shoreline alteration	Erosion, sedimentation, HADD of fish habitat. Significant potential for Redside Dace and Silver Shiner to be present.

Table 12: Potential Impacts on Fish and Fish Habitat Prior to Implementation of Avoidance and Mitigation Measures

Prior to Avoidance and Mitigation Measures – Fish and Fish Habitat

Area	Nature	Duration	Magnitude	Required Actions
Local to Regional (downstream impacts could extend to Lake Ontario in event of an accident)	Negative (HADD to fish including SAR) Direct (loss of fish and disturbance of habitat) Certain (some impacts unavoidable) Well-understood (fish have known tolerances for pollution and known habitat requirements)	Short-term death of fish Medium to long-term crash in population including downstream in event of an accident	Moderate	Avoidance and mitigation measures required to prevent risk of contaminants entering waterways. Restoration Plan tailored to improve habitat conditions DFO Request for Review

6.2.4 Endangered and Threatened Species

Based on background research and field findings, fifteen (15) SAR were identified as potentially present on the Site or Adjacent Lands; American Eel, Redside Dace, Silver Shiner, Jefferson Salamander, Blanding's Turtle, Least Bittern, Bobolink, Eastern Meadowlark, and the 7 bats listed in Table 8.

6.2.4.1 SAR Fish

No fish sampling was carried out, thus impact assessment is based on background information and observed habitat conditions.

The American Eel is assumed to be present in Bronte Creek and Sixteen Mile Creek. These are larger rivers that flow directly into Lake Ontario. It is not expected in any of the smaller tributaries on the Site or in the portion of Fourteen Mile Creek that crosses the Site. Bronte Creek is buffered from the Project by nearly 120 m of mature woodland. Where Sixteen Mile Creek parallels RR25 for 1 km, the alignment has been specifically modified to avoid any increase in footprint towards the creek. The proposed design will

avoid all direct impacts to American Eel habitat, with the exception of a small increase in footprint at the roadway's crossing. Habitat within a small area at the crossing will be altered via shading and removal of riparian vegetation. Indirect acute impacts would be possible in the event of a spill or malfunction. The risk of such impacts can be minimized provided that erosion/sediment control and contaminant/spill management measures are put in place. These measures are the standard for any construction project in Halton Region and follow a strict set of guidelines (outlined in Section 7).

Redside Dace critical habitat is mapped in Fourteen Mile Creek and may also be present in Bronte Creek, Sixteen Mile Creek and various unnamed tributaries, especially Features 1, 5 and 8. Silver Shiner critical habitat is mapped in Sixteen Mile Creek, Bronte Creek, Feature 1 and Feature 2. Although Feature 2 did not appear suitable for Silver Shiner, DFO critical habitat is equivalent to presence from a legal standpoint. Any works within Features 1, 2, 5 and 8 and in any of the three main creeks should therefore be considered to have possible direct impacts on SAR fish. In-water works associated with the current design will include culvert replacement, bridge modifications, bank/shoreline alterations within the Site and localized stream realignments. Impacts may include harmful alteration, disruption and destruction of SAR fish or their habitat. Impacts are expected to be localized and minor, affecting only a small number of SAR fish at most. However, without having completed fish sampling it is impossible to determine the number of fish affected without any protective measures in place. Therefore, the list of avoidance and mitigation measures in Section 7 must be followed closely to minimize impacts to minor and predictable levels.

6.2.4.2 SAR Reptiles and Amphibians

The impact on most reptile and amphibian SAR by the Project is expected to be minimal, as SAR habitat is concentrated outside the Site and individuals would only be expected to pass through the Site during movement or migration between breeding, overwintering and foraging habitats. Jefferson Salamander and Blanding's Turtle were identified as potentially present. Jefferson Salamander breeds in vernal pools and spends the rest of its life cycle in mature forest. The Project will not be impacting any vernal pools and will only slightly affect the edges of some forested areas. These forested areas do contain vernal pools, so **a characterization of the forested habitats on the Site is recommended** (ideally in early spring) to ensure no suitable breeding habitat is being removed. Blanding's Turtle is more likely to occur on the Site itself as it is known to be fairly common in the area and travels long distances between nesting, foraging and overwintering areas. It should be assumed potentially present in all natural habitats on the Site, especially aquatic and semiaquatic habitats. No impacts are expected on Blanding's Turtle breeding or overwintering habitat, but wetlands and ponds are present in the Adjacent Lands and turtles are known to dig nests in exposed

gravel or bare dirt areas near wetlands and ponds. Thus, the Site may be an attractive location for these turtles during construction, resulting in harm or death to turtles or their eggs. Because of the long life cycle of turtles, the loss of even a single individual can have devastating consequences on the population. It will be extremely important to monitor the Site closely during the nesting season and to maintain turtle exclusion fencing (sediment fencing) to avoid gaps where turtles can enter.

On larger road widening projects where roadside ditches and adjacent forest have high potential to provide anuran habitat, anuran surveys are often completed. This is typically done during the detailed design phase to inform the specific alignment of the roadway. At this time, only a preliminary alignment is available which remains highly subject to changes. As such, anuran surveys have not yet been completed. Anuran breeding ponds are considered Significant Wildlife Habitat and should be identified so that appropriate buffers can be maintained, in accordance with the local OP. In addition, a subpopulation of the federally Threatened Western Chorus Frog Great Lakes – St-Lawrence population is known to occur in the Milton/Oakville area. Though not listed provincially, it is illegal to kill or harm this species under the federal SARA, and its habitat can be subject to protection at the federal level under emergency orders. Western Chorus Frog is also considered a “special concern or rare species” under the SWH criteria and would trigger SWH on that account. Considering the large size of the Project, it is **recommended that anuran surveys be completed** during the detailed design phase prior to finalization of the design to identify any presence of Western Chorus Frog or other anuran breeding ponds within the Site.

6.2.4.3 SAR Birds

Confirmed Species

The SAR birds confirmed to be present on the Site were Bobolink, Eastern Meadowlark and Bank Swallow. A colony of Bank Swallows was found nesting on a sand pile <50 m from the road. This anthropogenic habitat does not constitute “habitat” under the SARA when stockpiles are appropriately sloped. However, any swallows that do nest on the piles would receive protection, and any direct mortality of the birds or their young, once nests are established, would constitute a major impact and a contravention of SARA. Bobolink and Eastern Meadowlark were both found during surveys to be fairly common in agricultural areas bordering the roadway, and were both ranked “probable” breeders. They require large tracts of grassland, pasture or hayfield to breed, and although they may frequent roadside habitat, they are unlikely to suffer from the loss of a narrow strip of habitat along the roadside. There is, however, a high likelihood of nests being constructed near the roadside, especially for Bobolink which nests in relatively high

densities. To avoid mortality of SAR birds or direct impacts on their critical habitat or residences, timing windows are extremely important.

Lesser Yellowlegs

Lesser Yellowlegs does not nest in the area but likely uses the Site during migration, relying on flooded areas (and to a lesser extent ponds and riparian areas) as stopover habitat. Unlike most migratory birds, shorebirds such as Yellowlegs have few options to find alternate stopover habitat during their migration. The roadside ditches being affected may provide this habitat, thus there is a potential for negative interaction with the Project. However, the narrow ditches are not optimal stopover habitat and would only attract a small number of birds. The more significant potential for stopover habitat would occur on flooded agricultural fields on the Adjacent Lands. Any activities that improve drainage could eliminate staging habitat and have a minor but negative impact with permanent and regional significance. Flooding can be intermittent, so the risk may not be apparent during field visits but is still a concern. The creation of shallow stormwater retention features may serve as compensation for lost staging habitat. Wetlands impacted during construction should be recreated to existing conditions, and the Project presents an opportunity to create new staging habitat by incorporating meanders or retention ponds into the drainage system.

Under the ESA, Lesser Yellowlegs stopover habitat is only protected during the migration periods of April-May and August-October, and under MBCA only the birds themselves receive protection. As the species is not yet federally listed, it does not receive protection under the SARA at this time. As such, timing activities to avoid the protected periods will prevent contravention of the laws that protected this species at the time of preliminary design.

Other Potential SAR Birds

Other SAR birds with a lower potential to occur on the Site are Least Bittern, Red-headed Woodpecker, Yellow-breasted Chat and Chimney Swift. There were no structures suitable for Chimney Swift noted within the Site, so the impact on this species can be considered negligible. Least Bittern has potential to nest near the Site in small wetlands within the Adjacent Lands. The potential of specific wetlands will be assessed at the detailed design stage. Impacts on these wetlands are not anticipated except in the event of a major malfunction, thus the level of impact on Least Bittern is considered negligible and low-risk. Open oak woodlands with many snags (suitable Red-headed Woodpecker habitat) were noted on the Site and Adjacent Lands. Although no Red-headed Woodpeckers were detected, they could still be present and nesting. Any impacts on their nest site (which is protected year-round) would constitute a major impact with potentially regional implications as this is a rare and steeply declining

species. **An assessment of cavity trees for potential to contain Red-headed Woodpecker cavities will be an important next step** during the detailed design. This survey should simultaneously look for Pileated Woodpecker cavities, which are protected year-round under the MBCA. Yellow-breasted Chat is a rare shrubland-nesting bird that is outside its normal range in Halton Region but has been reported fairly often in the vicinity of the Project, and abundant shrubland habitat is present. Because shrublands often do not receive the same level of protection as mature woodlands and wetlands, they are more at risk of being removed or negatively affected during the breeding season. Birds that nest in these areas may therefore be more at risk of getting overlooked. The inadvertent destruction of critical habitat for the Yellow-breasted Chat would constitute an extremely major impact with national implications due to the limited number of breeding pairs in the country.

The overall level of impacts on SAR birds could be relatively major and likely without the application of mitigation measures and timing windows. As most birds are not present or breeding between October and April, most impacts can be avoided by timing activities outside the breeding period. This schedule will be important to follow to reduce the risk of impacts on any SAR birds and all birds protected under the ESA and/or MBCA/FWCA. A future iteration of this report will assess impacts of the detailed design under the new Species Conservation Act (SCA) framework, which defines habitat differently than the ESA and in many cases delegates authority to the SARA.

6.2.4.4 SAR Bats

During the initial Site investigations, bat habitat was not assessed as the area of candidate habitat within the Site was unnecessarily large to survey. However, numerous trees and shrubs are present along the RR25 corridor within the Site and many of these will likely require removal. There is high potential for some trees to contain cavities suitable for bat roosting, and any vegetated area with shrubs may be used for roosting by migratory bats. Where forest edges are being affected, there is also potential for maternity habitat to be impacted. It is **recommended that a survey be carried out to identify any candidate maternity habitat and cavity trees** within the Site during the detailed design phase once a scoped survey area is established. The potential to impact bats can be avoided through the application of best management practices provided by MECP. The MECP guidelines (i.e., timelines for clearing of vegetation, additional surveys if these are not met) are anticipated to apply.

Table 13: Potential Impacts on SAR Prior to Avoidance and Mitigation Measures

Prior to Avoidance and Mitigation Measures – SAR

Area	Nature	Duration	Magnitude	Required Actions
Local to Regional	Negative (death, harm or destruction of habitat) Direct (mortality of animals or destruction of nests) Unlikely (Actual SAR presence on Site is unlikely, but assumed possible) Well-understood (well-studied species)	Short-term death of individuals Medium to long-term declines Permanent loss of local/regional populations or of habitat	Moderate to major	Avoidance and mitigation measures required to prevent impacting SAR habitat wherever possible and to minimize # of individuals affected (i.e., in fish salvages). Restoration Plan tailored to improve habitat conditions

6.2.5 Wetlands

There are several fragments of the North Oakville-Milton West PSW Complex near the Site and 24 vegetation communities on the Site and Adjacent Lands were classified as wetland. These communities were broken down into narrow-leaved emergent marsh, robust emergent marsh and groundcover marsh, with robust emergent marsh being the main type affected. All of the affected parcels are essentially roadside ditches or swales, some of which are connected to larger natural areas and others which are isolated. Over the entire corridor, the proposed road widening will result in the permanent loss of approximately 0.06 hectares of Provincially Significant Wetland and 0.9 hectares of unevaluated wetland. Up to 0.06 additional hectares of PSW and 1 additional hectare of unevaluated wetland may be impacted (but not permanently lost) within the 5 m construction easement. Indirect impacts on adjacent areas of wetland may include contamination by road salts or oils, changes to water levels resulting in changes in the

vegetation community, and increased noise levels that compete with the communication of frogs and wetland birds.

The Region of Halton OP considers all wetlands, regardless of their evaluation or significance status, to be key natural heritage features and grants them the same 30-m buffer requirements as significant wetlands. Minor exemptions from the Regional OP's policy are permitted for projects deemed necessary public infrastructure, including when situated in the Greenbelt. The Project meets this definition. Alternative alignments have been considered and the proposed preliminary alignment was chosen in part to avoid other sensitive features. Minor adjustments to the alignment are recommended if possible during detailed design to minimize the amount of wetland lost, but due to the nature of the Project (a road widening with a minimum width for traffic flow), the design cannot be altered to entirely avoid wetlands, and this includes small areas currently designated as PSW. At the Region's discretion these PSW parcels may be reassessed and potentially downgraded from PSW status to better align the project with regional policy. Overall, the level of impacts on wetlands are expected to be localized and minor but with potential for moderate disturbance to adjacent areas without the application of protective measures. Ongoing consultation with the Region will be an important part of the development process and wetland offsets/compensations may be required or recommended.

Table 14: Potential Impacts on Wetlands to Avoidance and Mitigation Measures

Prior to Avoidance and Mitigation Measures – Wetlands

Area	Nature	Duration	Magnitude	Required Actions
Local	Negative Direct (loss of habitat) Indirect (altered water levels, contaminants, degradation) Certain Well understood (Similar impacts seen in other road projects in GTA)	Permanent loss of habitat Medium to long-term changes in remaining parts of wetland	Minor to moderate	Avoidance and mitigation measures required to prevent exceeding predicted impacts Consultation with municipality and CH Development of a restoration plan Potential habitat offsets

6.2.6 Significant Valleylands

All three valleys on the Site met the criteria for significance. No impacts would be expected on the function of these valleylands provided that the minimum buffer width is retained (15 m for Bronte Creek and Sixteen Mile Creek, 7.5 m for Fourteen Mile Creek). No increase in footprint is planned within these buffers. The roadway currently runs very close to Sixteen Mile Creek in Milton for 1 km, with the 15 m buffer barely maintained or not maintained in sections. As such, absolutely no widening, sidewalks, staging of materials/equipment or any other works have been planned on the west side of the roadway over that 1 km stretch.

6.2.7 Significant Woodlands

Eleven (11) woodland stands along the Project corridor met the criteria for significance, (which included essentially all of the woodlands on the Site and/or Adjacent Lands). The preferred alignment involves minimal impacts along the edges of stands 2, 5, 7, 9, 10 and 11, amounting to approximately 1.1 ha of woodland loss in total. An additional 3.68 hectares of woodland are within the 5 m construction easement and may need to be removed in some cases for access or visibility reasons, but in most cases can be retained. A more detailed assessment of forest loss will be completed during detailed design. Woodlands that are not removed may experience edge effects, pruning or isolated tree removals. The recommended 30 m buffer will not be possible in many cases, which will increase the level of edge effects over the long term. An important consideration regarding woodland impacts on the Site are the potential presence of SAR habitat and SWH, especially cavity trees and vernal pools used by anurans and/or Jefferson Salamander. Where the buffers for these features can be maintained, they will be considered important features for avoidance. Where buffers cannot be maintained, the features themselves will be avoided as possible through footprint planning. This level of detail will be developed during the detailed design and will be informed by further field investigations.

The overall impact to Significant Woodlands on the Site is expected to be moderate without the implementation of any mitigation measures, and minor following these measures. If measures are followed in accordance with this report, woodland significance will not be lost and ecological function of the woodlands will not be significantly reduced.

Table 15: Potential Impacts on Significant Woodlands Prior to Avoidance and Mitigation Measures

Prior to Avoidance and Mitigation Measures – Significant Woodlands

Area	Nature	Duration	Magnitude	Required Actions
Local	Negative Direct (loss and damage to trees) Indirect (degradation of microclimate through noise, dust, pollution (e.g. exhaust fumes), increased wind exposure or leaching of sediments or contaminants; introduction of invasive species) Certain (some sig. woodlands will be directly impacted or reduced slightly in area) Well-understood	Permanent loss of woodland Short-term tree damage Long-term edge effects Long-term to permanent changes in species composition, soil regime, etc.	Moderate (no loss of significance but some loss of function possible)	Avoidance and mitigation measures required to prevent exceeding predicted impacts Restoration Plan tailored to promote quick recovery of edge habitat and long-term resilience of forest (e.g. native shrub plantings along edge, establish a natural buffer) Compensation in accordance with Region of Halton Tree Canopy Replacement Policy for any trees removed on Regionally-owned land.

6.2.8 Significant Wildlife Habitat

The PPS indicates that no development or site alteration is permitted within significant wildlife habitat unless it has been demonstrated that there will be no negative impacts on the natural feature or its ecological functions. It defines wildlife habitat as:

“Areas where plants, animals and other organisms live and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife

habitat of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas which are important to migratory or non-migratory species”

As discussed in Section 4.1, SWH was identified as likely present in the background review. Following Site investigations, the ELC communities within the Site and Adjacent Lands were evaluated using the MNR’s Significant Wildlife Habitat Criteria Schedule (SWHCS) for Region 7E (2015) (See Appendix F). Candidate or confirmed SWH criteria that were met within one or more of these communities are discussed in Table 15. In some cases, surveys were not sufficient to fully assess SWH potential. When uncertain, criteria are treated as candidate unless strong evidence exists to the contrary. Avoidance and mitigation measures should be applied to protect SWH features once a design alternative is selected.

SWH was confirmed on the Site in the form of habitat for a species of Special Concern (Barn Swallow and Wood Thrush), and a provincially rare vegetation community (FOD7-4). Candidate SWH was identified on the Site and/or Adjacent Lands based on numerous criteria which are listed in **Table 16**.

Table 16: Candidate and Confirmed SWH and Potential Impacts Prior to Avoidance and Mitigation Measures

Candidate SWH	Discussion of Findings	Potential Impacts
Candidate Waterfowl stopover and staging areas (terrestrial)	Numerous fields present which could flood in or within 120 m of the corridor improvement area.	Temporary disturbance to migratory waterfowl during March-May and September-November
Raptor wintering area	Hawks and eagles present and suitable mix of forest and upland fields for hawk overwintering habitat. Woodlands and fields near Bronte Creek and Fourteen Mile Creek potentially meet requirements.	Minor localized impacts from tree removals on portions of the SWH that overlap the Site.
Bat maternity colonies	Suitable forest habitat and potential for snag trees in the Site.	Potential disturbance (minor impact) or loss of a colony (major impact)

Candidate SWH	Discussion of Findings	Potential Impacts
Turtle wintering areas	Sections of Bronte Creek, Fourteen Mile Creek, and Sixteen Mile Creek could provide turtle overwintering habitat. Majority of wetland polygons within the Site do not have water depths suitable to provide overwintering habitat for turtles.	Potential to disturb overwintering turtles during bridge/culvert work (moderate impact but can be avoided with timing windows). Impacts on downstream habitat in the event of a major accident, spill or malfunction (low risk but major impact)
Migratory butterfly stopover area	There are areas 10 ha in size within the Bronte Creek lands that provide a combination of field and forest, within 5 km from Lake Ontario.	Temporary loss of meadow habitat which can be quickly reestablished (moderate, short-term). Potential for localized tree removals in portions of the SWH that overlaps the Site (minor impact). Forest losses will be minimized where possible in design.
Landbird migratory stopover area	There are woodlands >5 ha in size within the Bronte Creek lands that are within 5 km from Lake Ontario.	Majority of woodlands to remain; portions impacted are not critical to the function of the woodland; some short-term disturbance during spring and fall is likely but migratory birds move around freely, thus impacts would be negligible to minor

Candidate SWH	Discussion of Findings	Potential Impacts
Old Growth Forest	The woodland along Bronte Creek meets the size criteria and includes Bronte Creek Provincial Park which has old growth forest. No old growth forest indicators were present within the Site.	No impacts expected within the interior of forests or in areas with old growth characteristics
Woodland Raptor Nesting Habitat	Minimum habitat requirements present in the woodland along Bronte Creek (Stand 2). Stand 2 is estimated to have a total of 19.5ha of interior habitat (using an edge of 200m); however, this is divided into four isolated and narrow patches of which two meet the minimum of 4ha of interior habitat. Patch B is situated outside of the Site but within 200m; Patch E is much further west and as such, outside of the area of impact. Minimize removal of vegetation along the edge of Stand 2, especially any that reduces the interior habitat in Patch B (edge 200m) to less than 4ha. No active raptor nesting was noted; however, timing of observations was not in the appropriate season to confirm.	No impacts expected. Though raptors are sensitive to disturbance far from a nest site, the types of disturbance associated with the road works are not significantly different than the existing conditions along the road (high noise level, foot traffic, pollution). At this time it is assumed all widening will avoid the need for tree removals on the woodland edge as this is part of the regional NHS, significant woodland, valleyland and a Provincial Park, but a thorough assessment will be done during detailed design to determine feasibility and potential impacts to core forest habitat.

Candidate SWH	Discussion of Findings	Potential Impacts
Bald Eagle and Osprey Nesting, Perching and Foraging Habitat	A field visit in October 2024 confirmed the presence of a Bald Eagle nest that is thought to have been active in 2024 and may be used again in the future. It is located 429m southwest of Regional Road 25 at: 43.40940, -79.74787 (see Photo 18). Note that this is within the 100m interior portion of Woodland Stand 2. A follow-up visit in May 2025 did not find the nest active but it continues to be treated as significant until found inactive for 3 years or suspected inactive for 5 years. An inactive Osprey nest was also found on a communications tower at 43.44374, -79.78575, but a decoy Bald Eagle has been placed on it to prevent nesting activity.	Bald Eagle nests are afforded an SWH radius of 400-800 m surrounding the nest depending on sight lines for the nest, which in this case were ~80% obstructed by vegetation. Impacts of the Project on this nest are considered negligible as any activities associated with the construction would have lesser or equivalent visual or noise disturbance compared with the existing and ongoing disturbance from traffic on the roadway.
Woodland Area-Sensitive Bird Breeding Habitat	Interior habitat present in the woodland along Bronte Creek (Stands 1 and 2) to be considered Candidate, but the breeding bird surveys in or near the Site did not contain a sufficient number of indicator species breeding near woodlands. Woodland area-sensitive bird breeding habitat is absent from the Site but could still be present in the woodland stand as a whole. Those would not be impacted by the proposed improvements.	No impacts expected within the interior of forests critical to area-sensitive birds. Little to no reduction in the amount of interior habitat.

Candidate SWH	Discussion of Findings	Potential Impacts
Marsh Bird Breeding Habitat	Candidate habitat is present. No targeted marsh bird surveys conducted but no indicator species were present during general bird surveys.	Wetlands on the Site and Adjacent Lands are unlikely to be large enough to support focal species. No impacts on downstream wetlands are expected except in the event of a major accident, spill or malfunction (low risk but major impact)
Amphibian Breeding Habitat (Wetlands)	Candidate habitat is present; 15 of 27 wetland communities that were delineated meet the minimum size requirements and are over 120m from woodlands.	Minor to major depending on the location of breeding ponds/vernal pools and the occurrence of SAR. Requires further study.
Rare Vegetation Communities	FOD7-4 (Fresh-Moist Black Walnut Lowland Deciduous Forest) present on Site and Adj. Lands along Bronte Creek and Sixteen Mile Creek.	This vegetation community occurred only on floodplains, which will be avoided by the Project due to a number of constraints (i.e., CA regulation). Minor to major indirect impacts could result from a spill or malfunction during construction.
Special Concern (SC) and Rare Wildlife Species	Occurrences of SC fish, turtles, and birds were noted in the general area during the background review. Any of these are potentially present. Several SC species were also observed during field investigations: three birds (barn swallows, wood thrush, bald eagle) and one reptile (painted turtle).	Minor to moderate impacts on these species or their habitat are possible, especially during the breeding bird season.

6.2.9 Specially Protected Wildlife and Nests

As mentioned in Section 2, in addition to the natural heritage features identified herein, there are other regulations that need to be considered. Almost all birds are protected under either the FWCA or the MBCA, and all turtles are protected under the FWCA, as are all bats that are not already listed as Endangered under ESA. The FWCA protects many other animals as well, including most native mammals, snakes, amphibians and certain butterflies. In the event that any protected species or their nests are found during construction, the potential for contravening these acts is high and avoidance and mitigation measures laid out in Section 7.6.2 must be strictly followed. By timing operations to avoid the periods in which these species are active, the possibility for such contraventions will be kept to a minimum.

7 Avoidance and Mitigation Measures

The Project is situated on an already heavily-impacted strip of land along a busy road, where sensitive natural features are unlikely to be present or may be present but only at certain times. The risk of impacts without mitigation will vary by feature, and the proposed activities will be taking place over a large area (16 km of roadway), thus broadening the potential range of impacts. Due diligence and close adherence to the following avoidance and mitigation measures will be crucial in maintaining the risk of impacts at acceptable levels.

7.1 Species at Risk and their Habitat

SAR identified to be present or assumed to be present on the Site are those indicated as “brought forward”. The following list provides common avoidance and mitigation measures applicable at the time of this report for all species brought forward. This list will be reviewed at each phase of development.

7.1.1 General

- The potential to impact SAR, and the list of SAR present on Site, should be re-evaluated at the detailed design phase to ensure that the information provided below remains the most recent advice. Engagement with regulators should be conducted early to confirm permitting and approval obligations.
- Endangered and Threatened species are protected and cannot be harmed, harassed, or killed and in some cases their habitats are also protected. These individuals will only be handled by qualified personnel and only if the individual is in imminent threat of harm. An authorization under the ESA 2007 would be required to handle individuals that are not in imminent threat of harm.

- If a SAR enters the work area during the construction period, any work that may harm the individual is to stop immediately and the supervisor will be contacted. No work will continue until the individual has left the area.
- Should an individual be harmed or killed then work will stop, and the MECP will be contacted immediately.
- Staff and contractors must be educated on the potential for SAR to be present, with a particular emphasis on the species discussed in Section 6.1.1.
 - Education on potential SAR, their habitat, potential locations, and how to properly report an observation can be done through, for example, Site specific training, posters, brochures, etc.
- Avoid unnecessary or unauthorized disturbance to vegetation, including clearing, trampling, unauthorized use of chemicals, burning, or removal of dead woody debris.
- If a SAR is encountered, this information will be provided to the NHIC (Report rare species (animals and plants) | Ontario.ca).
- Note that species-specific surveys may have a shelf-life, and this should be reviewed at the various stages of development.
- Mitigation measures listed elsewhere in this report are also applicable to this section.

7.1.2 SAR Fish

- In-water work is to be conducted during the construction timing window of **July 1 to Sept 15** for Redside Dace and Silver Shiner. Note this is a slightly narrower window than the one typically used for work in fish habitat but is stipulated by the provincial guidance on Redside Dace and Silver Shiner.
- All work is to occur during periods when the channel is dry or with minimal flow.
- A contingency plan must be established to address potential flows resulting from unanticipated storm events.
- If temporary dewatering is required, watercourses should not be blocked or flows impeded sufficiently to limit fish movement (i.e., pumping or diversion of flows around the work site can be used to avoid blocking flow during construction).
- Sediment levels should be monitored and are not to exceed 25 mg/L above background level during construction.
- Exposed soil should be graded to a stable angle and revegetated in a manner that prevents erosion.

- No stockpiling of materials within 30 m of a watercourse or where they can adversely affect drainage patterns.
- Minimize erosion by limiting the size of disturbed areas through such measures as:
 - Complete grading and infrastructure installation in phases
 - Minimize nonessential clearing and grading
 - Retaining existing vegetation.
- Minimize erosion by minimizing the time that any area is exposed to erosion
- Exposed soils are to be stabilized using erosion control blankets, lockdown netting, seeding, spraying, or utilization of methods to roughen the surface
- Minimize the slope length and gradient of disturbed areas
- Store/stockpile soil outside of direct Redside Dace/Silver Shiner habitat and at least 30 m away from indirect habitat.
- Sediment from the construction site should be captured through measures including:
 - A multi-barrier approach to prevent sediment entering the stream
 - Sediment and erosion ponds of appropriate structure, size and type for the Site
 - The use of filter berms, sediment traps, or vegetation
- Monitor and maintain sediment and erosion controls at all times to ensure they are working effectively.
- Monitor downstream areas to ensure erosion and sediment controls are working effectively.
- Conduct regular site meetings between contractors and the site inspector to ensure sediment and erosion controls are being emphasized and minor improvements are being completed, as needed.

7.1.3 SAR Birds

The most likely SAR birds to be present on the Site are Bobolink and Eastern Meadowlark. Several other SAR birds also have potential to be present. Each spring between now and construction, it should be reconfirmed that no SAR birds are nesting within the Site before any activities can occur within the breeding period of April 1-August 31. In addition, the following measures apply:

- Clearing of vegetation (including grass, weeds and shrubs) must occur between **September 1 and March 30**, unless appropriate measures to prevent contravention to ESA are followed.
- No impacts to provincial SAR bird nests or their eggs are permitted under the ESA. If a provincially listed bird is encountered, then work must stop and MECP contacted (sarontario@ontario.ca).
- No impacts to federal SAR bird nests or their eggs is permitted under the SARA. If a federally listed bird SAR nest is encountered, then work must stop until the young have fledged. If the nest/young have been harmed, then Environment Canada must be notified immediately for guidance.
- Inform work crew that if a bird flushes at close range (<five m) it is likely flushed off a nest and the nest should be located and the species identified.
- Should a nest be discovered, stop all work that may disturb the birds (i.e., that cause the adults to fly off the nest) and contact a biologist or MECP or Environment Canada, as appropriate for the species. Nests can be photographed and marked with GPS coordinates but do not flag the nest or linger near it as it can attract predators and cause birds stress.
- Avoid any unnecessary removal of vegetation. In general, dead trees or branches should not be treated differently than live vegetation and should only be removed when specifically included in a work plan.
- Note that timing windows for bird species in general are included further below as are those for bats (both are more restrictive).
- On parts of the Site where SAR birds are known to breed (especially grasslands), avoid unnecessary foot traffic (e.g. maintenance and inspection visits) during the breeding bird window of May 1 to August 31.
- Familiarize staff with the songs, calls and visual identification of grassland birds, especially Eastern Meadowlark and Bobolink.

7.1.4 SAR Bats

The potential to impact SAR bats mainly involves day-roost and migratory stopover roosts in isolated trees and/or shrubs on the Site but may also include disturbance to maternity habitat along the edges of woodlands. Based on the habitat observed on the Site (mainly disturbed edge vegetation in a suburban area) the most likely species to be affected would be Little Brown Myotis, however little is known about habitat selection of the other bat species, especially during migration. Recent discussions with MECP on indicate that they do not need to be approached if the timing window below can be adhered to.

- Educate contractors by informing them that most bats in Ontario are protected.
- Any removal of structures, and trees < 10 cm DBH or larger, is to occur between October 1 and March 31 (Bat active season is currently assumed to be April 1 to September 30 in Southern Ontario). If this is not possible, conduct exit surveys prior to cutting them down. If the exit survey identifies bats, contact MECP or a biologist for additional guidance.
- Minimize harm to retained trees by protecting their critical root zone. This is often associated with the area below the drip line.
 - Ensure that the areas where trees are to be removed is clearly shown on construction plans and delineated in the field. The plans should clearly identify where stumps can or cannot be removed.
 - Monitor the removal to ensure that boundaries are respected.
 - Do not damage the root system, trunk, or branches of any tree to the extent practical; if any roots are encountered during excavation while working outside the critical root zone, they should be cut off cleanly with sharp pruning tools rather than damaged or torn by large equipment. Clean cuts help to minimize decay and entry points for disease.
 - All exposed roots of trees to be retained should be covered in a minimum of five cm of firm soil within 24 hours of exposure.
 - Note that once clearing is completed, all subsequent movement on Site is to be on the access roads and/or work pads.
- Minimize sensory impacts to bats by ensuring that all equipment and vehicles have the appropriate mufflers and implement an anti-idling policy. Further, local noise by-laws will be followed. If working at night, ensure that only the lighting needed to perform the work safely is installed and that this lighting is focused on the work area (minimize lighting of sky or of natural features).

7.2 Woodlands

Woodlands (some of them Significant) occur on both sides of the road and will be minimally affected by the widening. The proponent will follow the below guidelines to protect the ecological function of woodlands:

- Clearly delineate on the construction drawings and in the field the area to be cleared to prevent the loss of woody vegetation that is not intended for removal.
- Utilize small machinery for the removal of woody vegetation and do not work under the drip line of trees that are not intended for removal.

- No stockpiling or infilling should occur within the drip line of the remaining woodland.
- Ensure that exhaust fumes from all equipment are not directed towards any tree's canopy.
- If the construction will have to encroach into the drip line of a tree to be retained, then installing a temporary layer of 150 mm deep partially composed wood chip mulch over the root zone can help to protect roots from compaction damage, and conserve soil moisture levels.
- Do not attach any signs, notices, or posters to trees.
- Install Tree Protection Fencing prior to commencement of construction activities, and retain fencing until construction activities have been completed to prevent accidental harm to trees to be retained. This fencing should be placed at a distance to protect the critical root zone (minimum distance from tree is the drip line from the tree's canopy).
- Tree protection fencing shall be at least 1.2 metres in height and installed in such a way that the fence cannot be altered.
- Do not place any material or equipment within the critical root zone of a tree.
- Do not raise or lower the existing grade within the critical root zone of a tree.
- Equipment and materials should not be stored near trees.
- Do not damage the root system, trunk, or branches of any tree; if any roots are encountered during excavation while working outside the critical root zone, they should be cut off cleanly with sharp pruning tools rather than allow them to be torn by large equipment. clean cuts will help to minimize decay and entry points for disease.
- All exposed roots of trees to be retained should be covered in a minimum of 5 cm of firm soil within 24 hours of exposure.
- If root pruning is implemented, the crown of the tree should be reduced proportionately under the direction of a Certified Arborist or Registered Forester, to decrease wind sail. Pruning should be kept to thinning cuts (no major limb removal), and crowns should be monitored, and maintenance carried out for two (2) years after root pruning to remove any dieback under the direction of a Certified Arborist or Registered Forester.
- If branches are likely to hang in the way of passing equipment, the branches should be pruned by a Certified Arborist or Registered Forester to avoid tearing and undue injury to the tree.

- All pruning work must be performed under the supervision and guidance of a qualified tree professional in accordance with the latest ANSI A300 Pruning Standards and best management practices identified by the International Society of Arboriculture.

7.3 Significant Wildlife Habitat

Some portions of the Site and Adjacent Lands were found to constitute SWH based on one or more criteria. Many of the mitigation measures listed under SAR also apply to impacts on SWH. Additionally, the following avoidance and mitigation measures must be adhered to:

- Work during the daytime hours to prevent light disturbances.
- Ensure that all equipment have the appropriate mufflers to reduce noise disturbances.
- Reduce speed on Site to 15 km/hr at all times.
- Avoid approaching groups of shorebirds, waterfowl, deer, frogs or any other concentration of wildlife, especially during the spring and fall.
- If a turtle nest is suspected, then flag a 10 m buffer to protect the nest. Contact MECP (for SAR) and MNRF (all other species).
- Should a bird nest be discovered, stop all work that may disturb the birds (i.e., that cause the adults to fly off the nest) and contact a biologist or MECP or Environment Canada, as appropriate for the species. Nests can be briefly photographed (for documentation purposes only) and marked with GPS coordinates, but do not flag the nest or linger near it as it can attract predators and cause birds stress.
- In areas known to contain breeding raptors, breeding waterfowl, breeding amphibians or SC birds (such as Wood Thrush and Barn Swallow), avoid unnecessarily scheduling Site visits (e.g. for maintenance or inspection purposes) during the breeding bird window of May 1 to August 31.
- Do not poison mice, rats or other pest animals as poison can bioaccumulate and cause predators to die (especially raptors).
- Educate staff on the significance of Barn Swallows (these are likely to be common on the construction Site and are often mistaken as pest animals).

7.4 Fish and Fish Habitat

Direct, minor impacts to Fish Habitat will likely occur during culvert replacements and bridge works, and indirect impacts can result from improper operation or allowing

contaminants to enter watercourses. Activities can be carried out with minimal impacts provided that the following measures are carefully adhered to.

7.4.1 Planning

- DFO permits must be obtained wherever work is taking place below the high-water mark due to the presence of SAR.
- Avoid in-water works during turtle overwintering period.
- No work will take place when the Project area is flooded. Further, measures for erosion and sediment control and to prevent accidents and/or malfunctions are to be diligently maintained and adhered to.
- Site instruction will be provided to the contractors to highlight that the rivers on Site provide direct Fish Habitat and are critical habitat for two SAR.
- As much as possible, existing trails, roads and access points will be utilized.
- Minimize clearing of woody vegetation to maintain soil stability. Where possible, cut trees leaving behind 60 to 100 cm of trunk instead of grubbing.
- Minimize the amount of vegetation removed within riparian areas or floodplains, in particular favoring the protection of vegetation that overhangs watercourses.
- A contingency plan must be developed by the proponent for the possible event of a future structural failure during the lifetime of the Project.
- Watercourse-specific planning, as follows:
 - For all Features, design should ensure that the same water quality and quantity continues to flow to each feature.
 - For the 13 features that cross the alignment, ensure that alterations to culvert allow for fish passage during the spring and baseflow conditions (as needed)
 - Sixteen Mile Creek subwatershed – Sixteen Mile Creek, Features 1 & 3-9
 - Fourteen Mile Creek subwatershed – Fourteen Mile Creek, Features 2-4
 - Additional sampling or habitat descriptions may be required depending on the potential impact. At this time, a conservative approach was followed. For instance, Feature 2, within the study area, may be indirect Fish habitat rather than direct due to its poorly defined banks.
 - Features with possible or confirmed SAR habitat may require consultations and/or permitting with MECP, and DFO.

- All work that is within regulated habitats for SAR fish must be reviewed by DFO and when the habitat is that of an ESA species MECP.

7.4.2 Erosion and Sediment Control

- An erosion and sediment control plan will be developed by the contractor and implemented prior to any work within 30 m of a watercourse:
 - Provide regular maintenance to the erosion and sediment control measures during construction. Contractor shall be responsible for ensuring that the erosion and sediment control measures are maintained and will monitor the water clarity downstream of the work site throughout the day and during rain events. Water quality is to meet the Canadian Water Quality Guidelines for the Protection of Aquatic Life. Monitoring for visible plumes outside of the work area is to be undertaken.
 - At a minimum, the erosion and sediment control plan will include the installation of sediment fencing along the top of banks where vegetation clearing and/or soil disturbance will occur within 30 m of any channel prior to the removal of vegetation and the installation of a turbidity curtain downstream.
 - Additional materials (i.e., rip rap, filter cloth and silt fencing) will be readily available in case they are needed promptly for erosion and/or sediment control.
- Note that if meter bags are used, they can often split when being removed. As such it is preferred that gravel (washed and free of fines) be used for the metre bags.
- Any stockpiles of soil or fill material will be stored as far as possible from the channel and protected by silt fencing (minimum 30 m).
- The sediment fencing will not be removed until the bank is stabilized (meaning <20% bare soil).

7.4.3 Fish and Fish Habitat Protection

The following will apply where in-water work is required (in this case, DFO would also need to be contacted):

- Where the channel is to remain, any disturbed banks will be returned to pre-construction conditions and contours or better.
- The work within the channels will be completed in the dry.

- Water from dewatering will be treated prior to returning it to the system (i.e., straw bale settling ponds covered by geotextiles or sediment sock on the end of hose and situated on top of well vegetated slopes).
- Water from bypass will be released in such a way as to prevent erosion or the transportation of suspended sediments downstream.
- Where banks/riparian area (area within 30 m of channel) have been stabilized by seeding and/or planting, monitor the revegetation to ensure that the vegetation becomes fully established.
- Any riprap will consist of clean rock free of fines.
- Where possible, limit clearing of vegetation to trimming and leave the stump and lower 60 cm of the tree trunk in place (for shoreline stabilization).
- Fish (and other aquatic fauna) will be salvaged from the isolated channel or any area that is flooded at the time of construction, by a qualified aquatic biologist/technician. The salvage will need to be repeated if the work area becomes flooded.
 - If a fish salvage is required then a License to Collect Fish and Wildlife Scientific Collectors authorization should be applied for prior to detailed design.
- Dewatering of water in areas that may contain fish will be completed from hoses placed in fish baskets or covered with clean wash rock or other such method to prevent fish impingement and entrainment. Note that the screens that come on the hoses are not enough to prevent fish from harm. Contractor should refer to DFO's Standard Code of Practice for End-of-Pipe.
- Monitor the end of pump frequently to ensure that all fish protection measures are functioning.
- Minimize the size of temporary in-water work areas.
- Bypass flow is required. The amount of flow bypass must be sufficient to maintain the habitats downstream of the Site (i.e., similar to what would be present, at that time of year, if work was not occurring. A new drain from the end of the bypass pipe to the existing channel is being considered. Details pending but will be assessed by a fisheries biologist to ensure that this does not result in fish kills (or erosion concerns).
- Any disturbed bank, along the section to remain, will be returned to pre-construction conditions, including revegetation, as necessary, with native vegetation appropriate for Site conditions.

- Placement of any erosion control blankets is to avoid the area that will be wet (i.e., will be placed above the high-water level) as the mesh of the blankets can trap fish.
- All material introduced for the temporary measures will be fully removed from the water at the completion of the work.

7.4.4 Contaminant and Spill Management

- Contractors will be informed that Fish Habitat is present on Site and in the receiving waterbodies.
- All machinery and equipment are to follow the Clean Equipment Protocol for Industry to minimize the transport of invasive species.
- All equipment working in or near the water (wetlands, indirect fish habitat or direct fish habitat) should be well maintained, clean and free of leaks. Maintenance on construction equipment such as refueling, oil changes or lubrication would only be permitted in designated area located at a minimum of 30 m from the shoreline in an area where sediment erosion control measures and all precautions have been made to prevent oil, grease, antifreeze, or other materials from inadvertently entering the ground or the surface water flow.
- Emergency spill kits will be located on site. The crew will be fully trained on the use of clean-up materials to minimize impacts of any accidental spills. The area would be monitored for leakage and in the unlikely event of a minor spillage the Project manager would halt the activity and corrective measures would be implemented.
- If a spill occurs:
 - Stop all work
 - Spills are to be immediately reported to the MECP Spills Action Centre (1800 268-6060). Note that under the Fisheries Act deleterious substance includes sediments.
 - Clean-up measures are to be appropriate and are not to result in further harm to fish/fish habitat.
 - Sediment-laden water will be removed and disposed of appropriately.
- No construction debris will be allowed to enter the watercourse.
- Following the completion of construction, all construction materials will be removed from site.

7.5 Timing Windows

To avoid sensitive life cycle periods of various plant and animal species, the following timing windows will apply. For an explanation of these designated timing windows, see the diagram below (**Figure 65**).

- Vegetation (including grass/weeds) can only be cleared from **September 1 to March 31** (inclusive).
- Trees over 10 cm DBH and shrubs can only be removed from **December 1 to March 31** (inclusive).
- Structures can only be removed from **October 1 to March 31** (inclusive).
- Work within stream meander belts can only be done from **July 1 to September 15** (inclusive). Note, this is a reduced timing window from the typical in-water work window of June 16 to September 30.

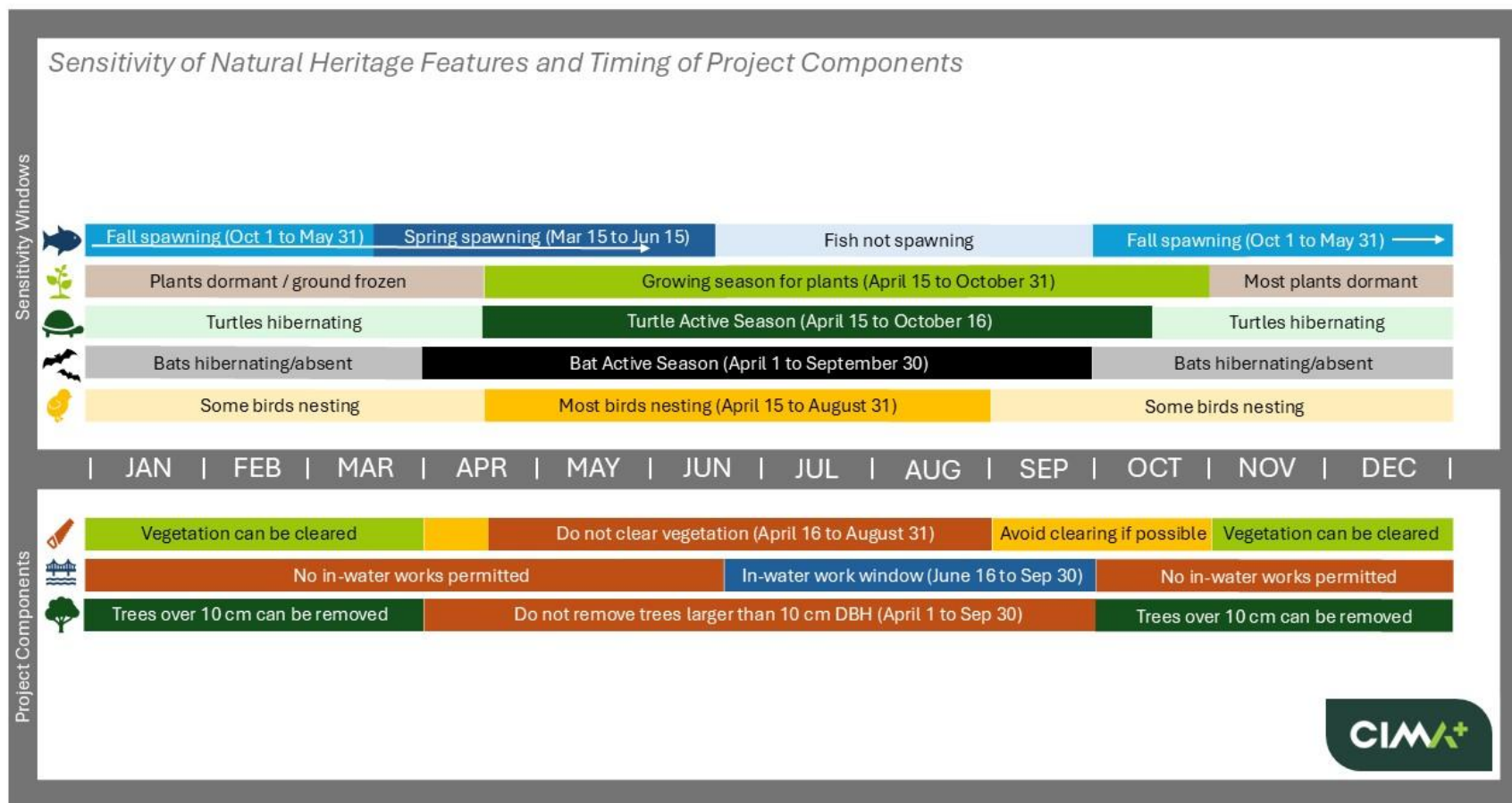


Figure 65: Sensitivity Windows and Timing of Project Activities. To accommodate Redside Dace, the in-water work window should be shortened from what is shown here to be July 1 to September 15.

7.6 Other

7.6.1 General Measures for Reptiles and Amphibians

No Endangered or Threatened reptiles or amphibians were confirmed during Site investigations, but various common turtles, snakes and frogs are likely to occur. In order to protect all reptiles and amphibians that may use the habitats on Site, the following mitigation measures must be followed:

- Conduct work outside the standard turtle active season of May 1-October 31 (note that some turtles and many amphibians are active earlier than this window and ice-off is the recommended timing window for Blanding's turtle).
- Implement a strict speed limit of 15 km/h within the Site.
- Be vigilant in looking for the presence of snakes, turtles, frogs and salamanders. If found, allow to leave on their own. If a suspected SAR is noted (i.e., Blanding's Turtle), then contact MECP or a biologist for assistance immediately.
- The sediment fencing used in standard construction projects can also serve to provide a temporary turtle exclusion function. The sediment fence used for turtle exclusion should be installed as per the guidelines from Reptile and amphibian exclusion fencing (MECP, 2021). The two ends of the fence are to have a turn-around to encourage turtles to remain within the retained habitats.

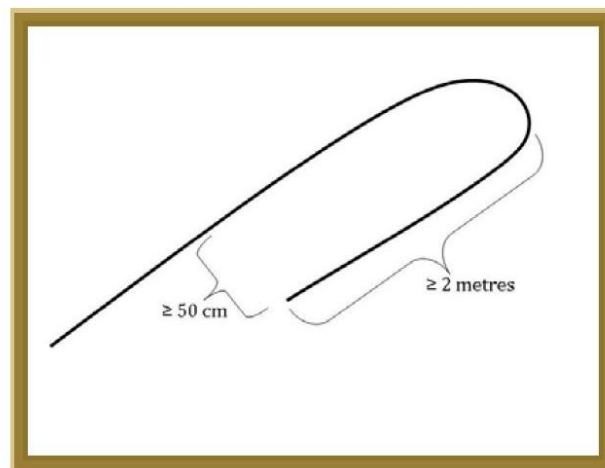


Figure 66: Diagram of a turtle exclusion fence designed to curve outwards at the ends to discourage turtles from entering the work area

- Turtle exclusion fencing should be installed and maintained each year prior to the beginning of May to minimize the potential for turtles to nest on Site.

- If a turtle nest is suspected, then create a 30 m buffer to protect the nest and contact a professional for guidance. For suspected SAR contact the MECP. For all other species, contact the MNRF.

7.6.2 General Measures for Birds and Birds Habitat

To maintain compliance with MBCA, FWCA, ESA, SARA and other legislation, the following apply:

- Clearing of vegetation (including grass, weeds and shrubs) must occur between **September 1 and April 15**, unless appropriate measures to prevent contravention to ESA are followed.
- The only bird species not protected under one or more Acts are: American Crow, Brown-headed Cowbird, Common Grackle, House Sparrow, Red-winged Blackbird, and European Starling. It is prohibited to destroy or disturb an active nest of any other bird species, or to take or handle nests, eggs, or nestlings. In this part of Ontario, the current standard nesting period is from April 5 to August 28, however the current MECP Guidelines for breeding birds is April 1 to August 31. Outside of this timing window, it is considered unlikely that most birds would be nesting, with a few exceptions. It should be noted that if an active nest is present before or after the above dates that it is still protected.
- There is a high potential for ground nesting birds (i.e., Killdeer) to be present. These prefer to nest on bare soil or gravel areas. Perform regular walks of the cleared areas looking for ground nesters. If any are present, then contact a biologist for guidance.
- Inform work crew that if a bird flushes at close range (<five m) it is likely flushed off a nest and the nest should be located and the species identified by a trained biologist.
- Should a nest be discovered, stop all work that may disturb the birds (i.e., that cause the adults to fly off the nest) and contact a biologist or MECP or Environment Canada, as appropriate for the species. Nests can be photographed (briefly, for documentation purposes only) and marked with GPS coordinates, but do not flag the nest or linger near it as it can attract predators and cause birds stress.
- A few species have nests which are protected year-round under the MBCA, even when not active. In Southern Ontario, these include Pileated Woodpecker and colonial waders (herons and egrets). It is an offence to tamper with such nests or the trees/platforms containing them, regardless of the time of year or whether they appear to be used by the birds. Work crews should be educated on this and

instructed to report any large stick nests or exceptionally large, round cavities to a trained biologist for inspection.

- Avoid any unnecessary removal of vegetation. In general, dead trees or branches should not be treated differently than live vegetation and should only be removed when specifically included in a work plan.
- Educate staff on the significance of Barn Swallows (these are likely to be common on the construction Site and are often mistaken as pest animals).

7.6.3 Invasive Flora

Throughout project construction, invasive plant species should be managed in accordance with all relevant federal and provincial regulations and the latest research. Relevant regulations that apply to the spread of invasive species include the federal *Plant Protection Act and Seeds Act* as well as the provincial *Invasive Species Act* and *Weed Control Act*. The presence and abundance of invasive plants will be used to inform management actions. Action decisions should include the following considerations:

- The consequence of not treating.
- The invasiveness of the species.
- The potential safety, economic, and ecological impacts likely to be caused by its spreading.
- Site characteristics – including adjacent land uses and proximity to environmental sensitive areas.
- Species composition on the Site and percentage cover.

Due to the broad range of invasive species, few generalizations can be provided for management guidelines. Instead, appropriate management for invasive species will be species- and location-specific. A combination of various management possibilities is likely to be most effective whether targeting a single species or multiple species. The following measures are being recommended to minimize tree disease and the spread of invasive species:

- Machinery arriving on-site will adhere to the Clean Equipment Protocol for Industry and be clean and free of outside plant material or mud to minimize the transfer of invasive plants.
- Clean sludge, dirt, and plant material from equipment and tools before leaving a site infested with invasive species. High pressure air hoses, mobile cleaning stations which retain water runoff, and brushes or brooms are acceptable cleaning methods.

- Disturbed surface areas will be rehabilitated as soon as possible to reduce the duration of soil exposure.
- Vegetate any disturbed areas by planting and seeding native trees, shrubs, or grasses, and cover such areas with mulch to prevent erosion and help seeds germinate. If there is insufficient time remaining in the growing season, the Site should be stabilized (e.g., cover exposed areas with erosion control blankets to keep the soil in place and prevent erosion) and vegetated the following spring.
- Do not include any invasive tree/plant species in the Landscape Plan to compensate for trees that will need to be removed because of project activities. Include only native tree / plant species, compatible with the landscape, in the Landscape Plan
- Fully inspect all trees being planted for invasive pests or diseases prior to planting.
- It is recommended that the removal of all Honeysuckle, Buckthorn, Dog-strangling vine, Phragmites, Purple Loosestrife or other invasive exotic plants be undertaken in accordance with the Best Management Practices (BMP) established by the Ontario Invasive Plant Council (OIPC).
 - Refer to OIPC Series for Honeysuckle here:
https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/06/OIPC_BMP_Honeysuckle.pdf
 - Refer to OIPC BMP Series for Common Buckthorn here:
https://www.ontarioinvasiveplants.ca/wp-content/uploads/2018/05/OIPC_BMP_Buckthorn_May282012_D61.pdf.
 - Refer to OIPC BMP Series for Dog-strangling Vine here:
https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/06/OIPC_BMP_DogStranglingVine.pdf
- When removing invasive plant species, ensure that plant material is appropriately disposed of to minimize spread.
- For material with a heavy presence of invasive species (i.e., Phragmites, Purple Loosestrife), it is recommended that these be removed to a facility or buried in a pit that is 0.5 m deep will be dug and the invasive species buried.

7.7 Site Plant Recommendations

7.7.1 During Construction

- Clearly delineate the area to be cleared on both the Site plans and in the field to prevent the loss of woody vegetation that is not intended for removal.
 - Maintain a 10 m construction buffer around amphibian breeding ponds
 - Maintain a 30 m construction buffer along all woodlands except those exempted due to their proximity to the roadway
 - Avoid any impacts (including walking through or storing materials) in woodlands that are not approved for being cleared
- The removal of trees and shrubs should occur outside of the breeding bird window and active bat season. The appropriate timing for removal is between October 1 and March 31. Outside that window, contact a biologist for advice but note that the completion of bird nest surveys is not recommended due to the potential for a false-negative.
- Utilize small machinery for the removal of woody vegetation and do not work under the drip line of trees that are not intended for removal.
- No stockpiling or infilling should occur within the drip line of the remaining woodland.
- Sediment fencing will be installed along the perimeter of the Site which will also be designed to exclude turtles from the construction zone and to prevent sediment from entering wetlands and watercourses.
- No maintenance or fueling of machinery will occur within 30 m of wetlands or watercourses.
- Machinery should be cleaned prior to arriving on-site to prevent the potential spread of invasive species (see Ontario Invasive Plants Website for guidance <https://www.ontarioinvasiveplants.ca>).

7.7.2 Restoration Plan

Restoration is an important component of the Project in order to minimize long-term impacts to any natural features within the study area. When restoring the Site post-construction, the following standard procedures should be followed:

- Seed bare dirt areas with a mixture of native seed suited to the Site conditions that is approved by CH.

- Plant any disturbed streambanks with wetland shrub species such as Red-Osier Dogwood and native willows.
- Establish and enhance a 30 m buffer along the south side of Woodland Stand 1 consisting of native species resembling those in the woodlot.
- Follow soil stabilization guidelines in the SAR fish subsection above.
- Monitor wildlife and remove invasive species post-construction

7.8 Habitat Offsetting

This investigation found that a small amount of woodland and wetland will be lost to accommodate the road widening. In order to minimize net loss on the amount and ecological function of lands within the NHS, habitat offsetting is the recommended course of action. There is no policy for offsetting currently defined by CH. Rather, offsetting requirements are determined by the authority on a case-by-case basis. To aid in planning, the framework developed by the nearby Toronto and Region Conservation Authority (TRCA, 2023) should be followed as a guiding template but should not be considered an exclusive mandate as CH may determine additional (or fewer) criteria to be applicable. The TRCA framework is as follows:

- Section 3.2 of the TRCA policy states that offset site selection must consider proximity to loss, continuity with the natural system, land ownership and designation (with a preference for publicly owned land with environmental protection zoning), land availability and ecosystem connectivity and configuration.
- Compensation habitat should correspond to the type of habitat lost (i.e., replacing a wetland with a wetland)
- Appendix A of the TRCA policy is to be referred to for detailed habitat-specific restoration specifications
- Compensation habitat should be strategically placed using the following hierarchy:
 - On-site compensation should be considered first as this has the greatest ecological relevance
 - Where on-site compensation is not feasible, lands outside the current NHS should be prioritized so that no net loss of NHS lands occurs
 - If compensation is to occur on NHS lands, it should be done at a site identified by CH as needing restoration
 - Off-site compensation should be located further upstream in the same watershed or (preferably) subwatershed as where the loss occurred.

- Compensation area ratios are to be based on basal areas (habitats with no trees receive an area replacement ration of 1:1). Calculation of basal areas is defined in Appendix B of the TRCA policy
- If basal area calculations are not possible, individual trees are to be replaced at a ratio following Appendix C of the TRCA policy and the Region's Tree Canopy Replacement Policy.
- Project-specific requirements apply (in the case of the Project, Redside Dace habitat compensation is a necessary deliverable)
 - Redside Dace habitat compensation is to occur within the same subwatershed as the impacts
 - The extent of Redside Dace habitat compensation necessary will be an ongoing discussion with the appropriate Provincial or Federal agencies and may depend on the effectiveness of other mitigation measures listed in the report (i.e. erosion and sediment control)
- The status of compensation projects should be monitored, documented and reported to CH and/or the municipality in a timely and transparent manner

In addition, the following are important considerations for habitat offsetting that have been identified by Ontario Nature (n.d.) and may be adopted by CH at their discretion:

- Social and cultural ecosystem values
- Meaningful and respectful engagement with Indigenous communities
- Public infrastructure (i.e., the Project) should not be exempted from adhering to the strictest requirements of the TRCA offsetting policy
- The status of offsetting projects should be made publicly available

7.9 Summary of Residual Impact

By following the avoidance and mitigation measures laid out in Section 6.2.9, impacts of the Project on the Natural Environment are expected to be minor to negligible overall. The following table (Error! Reference source not found.) compares the likelihood and magnitude of potential impacts on the identified significant natural heritage features before and after implementing avoidance and mitigation measures (assuming potential presence of each feature on the Site). All measures listed in Section 7 apply and must be enforced, but there are certain instances where mitigations will make a particularly large difference in reducing impacts and are especially important to be mindful of; these are highlighted in the "level of reduction" column. **Table 17** provides an abbreviated summary of the general type of mitigation needed for each natural heritage feature, but should not be treated as an exclusive guide to required mitigations.

Table 17: Likelihood and Magnitude of Potential Project Impacts on Significant Natural Heritage Features Before and After Implementation of Avoidance and Mitigation Measures

Natural Heritage Feature	Magnitude of Potential Impact to Avoidance and Mitigation [likelihood]	General Types of Mitigation Needed	Magnitude of Potential Impacts After Avoidance and Mitigation [likelihood]	Level of Reduction
SAR				
SAR Fish	Moderate [likely]	Sediment control, contaminant and spill management, adhere to timing windows, follow restoration plan, general measures for SAR, create habitat offsets	Minor [unlikely]	High
SAR Reptiles and Amphibians	Minor to Major [unlikely]	Sediment control, contaminant and spill management, adhere to timing windows, general measures for SAR, further research	Negligible [remote]	High
Bobolink and Eastern Meadowlark	Minor to Moderate [likely]	Adhere to timing windows, general measures for birds and SAR, avoid unnecessary clearing of vegetation	Negligible [remote]	Medium
Other SAR Birds	Major [remote]	Adhere to timing windows, general measures for birds and SAR, avoid unnecessary clearing of vegetation	Negligible [remote]	Medium
SAR Bats	Minor to major [likely]	Adhere to timing windows for tree clearance, avoid unnecessary clearing of vegetation, general measures for SAR	Negligible to minor [remote]	High

Natural Heritage Feature	Magnitude of Potential Impact to Avoidance and Mitigation [likelihood]	General Types of Mitigation Needed	Magnitude of Potential Impacts After Avoidance and Mitigation [likelihood]	Level of Reduction
Significant Woodlands				
Stands 2, 5, 7, 9, 10, 11	Moderate [certain]	General measures for woodlands, avoid unnecessary clearing of vegetation, follow restoration plan	Minor [certain]	High
Stands 1, 3, 4, 6, 8,	Negligible to minor [likely]	General measures for woodlands, avoid unnecessary clearing of vegetation, maintain 30 m buffer	Negligible [unlikely]	Medium
Significant Wildlife Habitat				
Waterfowl Stopover/Staging Areas	Minor [unlikely]	Limit activities during migration period	Negligible [remote]	Low
Raptor Wintering Areas	Minor [unlikely]	General measures for birds, do not poison rodents, avoid unnecessary clearing of vegetation	Negligible [remote]	Low
Bat Maternity Colonies	Minor to major [unlikely]	Adhere to timing windows, avoid unnecessary clearing of vegetation, general measures for SAR	Minor [remote]	Medium

Natural Heritage Feature	Magnitude of Potential Impact to Avoidance and Mitigation [likelihood]	General Types of Mitigation Needed	Magnitude of Potential Impacts After Avoidance and Mitigation [likelihood]	Level of Reduction
Turtle Wintering Areas	Minor to major [unlikely]	Sediment control, timing windows, contaminant and spill management	Negligible [remote]	Medium
Migratory Butterfly Stopover Area	Moderate [likely]	Avoid unnecessary clearing of vegetation, follow restoration plan	Negligible [likely]	Medium
Landbird Migratory Stopover Area	Minor [likely]	General measures for woodlands, adhere to timing windows, avoid unnecessary clearing of vegetation	Negligible [likely]	Low
Old Growth Forest	Negligible to Minor [remote]	General measures for woodlands, sediment control, contaminant and spill management, adhere to timing windows, general measures for birds	Negligible [remote]	Low
Woodland Raptor Nesting Area	Minor [unlikely]	Adhere to timing windows, general measures for woodlands and wildlife	Negligible [remote]	Low

Natural Heritage Feature	Magnitude of Potential Impact to Avoidance and Mitigation [likelihood]	General Types of Mitigation Needed	Magnitude of Potential Impacts After Avoidance and Mitigation [likelihood]	Level of Reduction
Amphibian Breeding Habitat (woodland and wetland)	Minor to major [likely]	Sediment control, contaminant and spill management, adhere to timing windows, general measures for amphibians, general measures for woodlands	Minor [likely]	High
Habitat of Special Concern and Rare Wildlife Species	Minor to moderate [likely]	Adhere to timing windows, avoid unnecessary clearing of vegetation, general measures for birds, turtles and SAR	Negligible [likely]	High
Other Features				
Fish and Fish Habitat	Moderate to major [certain]	Sediment control, contaminant and spill management, adhere to timing windows, follow restoration plan	Minor [certain]	High
Wetlands	Major [certain]	Sediment control, contaminant and spill management, follow restoration plan, avoid unnecessary clearing of vegetation	Moderate [certain]	High

Natural Heritage Feature	Magnitude of Potential Impact to Avoidance and Mitigation [likelihood]	General Types of Mitigation Needed	Magnitude of Potential Impacts After Avoidance and Mitigation [likelihood]	Level of Reduction
Significant Valleylands	Minor [certain]	Sediment control, contaminant and spill management, follow restoration plan, avoid unnecessary clearing of vegetation	Negligible [likely]	Medium
Specially Protected Wildlife and Nests	Minor to moderate [likely]	Adhere to timing windows, general measures for birds and reptiles, avoid unnecessary clearing of vegetation.	Negligible [unlikely]	High

8 Next Steps

8.1 Ecopassage Potential

Desktop research and field investigations both found that the Project bisects many linear Natural Environment Features including Significant Valleylands, Significant Woodlands and Significant Wildlife Habitat, among others. The potential for these features to serve as wildlife corridors is therefore limited by the physical barrier that the roadway presents. This barrier is not new to the current Project, but rather was introduced when the road was constructed decades ago. As evidenced from the findings of Fish Habitat field investigations, many of the drainage crossings underneath RR 25 are currently accommodated by small-diameter culverts (e.g. Photos 39, 40 and 43) that provide insufficient passage to wildlife and may have difficulty withstanding extreme water volumes expected under future climate scenarios. A possible solution to both of these problems is the replacement of such culverts with new, larger-diameter options. On its own, this is a costly operation, but when done as part of a larger upgrade such as a road widening, it can be more manageable.

After visually assessing the aerial imagery and considering the findings of Site Investigations, it was concluded that while there are numerous opportunities to upgrade culverts along the length of the Project, there is limited potential for these upgrades to result in improved connectivity. This is because the Natural Environment along most of the Project corridor is heavily disturbed and managed under agriculture, manicured lawns or other non-natural conditions. Most naturalized corridors in this area follow well-established valleylands that pass under the roadway via bridges or large culverts which may already act as ecopassages.

However, one area where a potential ecopassage improvement was identified was to the south of Highway 407 (43.443, -79.787). This is also a location where the 2006 North Oakville Creeks Subwatershed Study identified a potential linkage (TSH, 2006). There are substantial woodlands to the east and west of this location which are currently connected by only a narrow natural corridor following a highly disturbed drainage system, and the existing culvert acts as a key linkage along that corridor. Replacing the existing culvert with a larger alternative may improve its capacity to act as an ecopassage, but the existing culvert is likely large enough for most small animals to use. Currently these ditches appear heavily loaded with invasive species and devoid of bank-stabilizing woody vegetation, so there is an opportunity for improvement that would be easy and cost-effective to carry out during a road widening project. The removal and cleanout of these culverts may provide improved connectivity, this will be assessed during the detailed design.

With regards to fish passage, removal of the barriers will be considered within the design. This will allow for improved year-round fish movement up and downstream as the watercourses alter over time. The staging, approach, and methodology of removal will be confirmed during detailed design.

8.2 Permitting Process

In-water Works

All Fish Habitat and navigable waters are considered federal property and subject to federal laws, including the Fisheries Act under DFO and the *Species at Risk Act* under Environment and Climate Change Canada (ECCC). Provincial laws also apply. Any work below the ordinary high water mark requires either a permit under the *Fisheries Act*, or a registration under one of the Codes of Practice for exempt projects. In-water works associated with the current design will include culvert replacement, bridge modifications, bank/shoreline alterations within the Site and localized stream realignments. These types of activities are not always exempted under the Codes of Practice, especially when SAR critical habitat is present. Any work below the ordinary

high-water mark of any wetted feature deemed Fish Habitat will require the submission of a Request for Review (RFR) to the DFO, which will describe the proposed works, potential impacts and actions planned to reduce harm to acceptable levels. The DFO will then determine whether the Project is eligible for a permit and would be expected to issue a permit within 3-6 weeks.

For any work within the critical habitat of Redside Dace or Silver Shiner (defined as the meander belt + 30 m) the Ministry of Environment, Conservation and Parks (MECP) will also need to be contacted. This is typically done using an Information Gathering Form (IGF). If the MECP is satisfied in delegating the regulation of SAR habitat to the DFO, no further action would be required. Activities with more substantial impacts may require a permit under the Endangered Species Act or the new Species Conservation Act at the MECP's discretion, and this process can take several months. A permit under SARA is not expected to be required unless federal-level concerns remain that cannot be addressed by the DFO or the MECP.

Barrier removal to promote fish passage must be considered within this application. The barriers identified will be removed to promote improved fish passage which can typically be approved under a COP notification, but may require additional permitting depending on the proposed adjacent works. This will be confirmed during detailed design.

Work Within a Floodplain

A large amount of work will be occurring within floodplains as there are 25 stream crossings being upgraded and a portion of the roadway runs adjacent to Sixteen Mile Creek. In many cases, no work is being proposed within water, but a permit will still be required from Conservation Halton for any work within their regulated floodplain zone. Some unevaluated wetlands will be affected which will also require a permit. These permits are standard practice for road works projects and are typically issued in a reasonable amount of time. Under current law it is not within the Conservation Authority's jurisdiction to prescribe habitat offsets, as was formerly common. Landscape design may still be reviewed to confirm no change to the drainage pattern and volumes within the regulated lands.

Tree Removals

Many trees will need to be removed to accommodate the widening. The field surveys did not identify any SAR trees; thus no permits will be required under the *Species Conservation Act*. However, under Policy 147.5 (a) of the Halton Region Official Plan, tree removals will be regulated by the local tree by-laws of the Town of Oakville and Town of Milton, and under Policy 147.5 (f) a Tree Saving and Planning Plan is required as a part of any development that affects trees. The impacts must be reviewed during the detailed design against the Region's Tree Canopy Replacement Policy.

The tree compensation guidelines vary between governing authorities. The following guidelines are suggested by each.

Conservation Halton

Conservation Halton (CH) suggests under its Guidelines for Landscaping and Rehabilitation Plans (2024) that for tree removals, all individual trees, are to be replaced with at least 3 native trees. This guideline is to be followed unless otherwise succeeded by higher level studies, policies, and/or by-laws (Conservation Halton, 2024).

CH also does not require permitting for trees which are dead/diseased, trees already approved for removal under another process. Trees included in the inventory report are any that may be removed and are over 12 cm DBH.

City of Oakville

The City of Oakville requires a permit for any tree removal of a tree with 15 cm DBH or greater (Town of Oakville, n.d.). For every tree removed, one (1) tree must be replaced for every 10 cm DBH of a healthy tree removed. Cash in-lieu will be accepted only when there is not sufficient area for replanting on the subject's property. The funds will be used to plant any replacement trees on municipal property. A minimum tree replacement size is a 3 cm DBH deciduous tree or a 150 cm high coniferous tree (Town of Oakville, n.d.).

Regional Municipality of Halton

The Halton Region Tree By-law (121-05) applies to all Woodlands with areas of 1 ha or more, woodlands with areas of 0.5 ha to 1 ha, upon delegation of such authority by each Local Municipality to the Region, under Section 135(10) of The Municipal Act, and all Greenlands outside Woodlands with areas of 0.5ha or larger, upon delegation of such authority by each Local Municipality to the Region, under Section 135(10) of The Municipal Act (Regional Municipality of Halton, 2005). The activities in which are exempt by this by-law include those undertaken by a municipality or local board of a municipality, activities under approval of a Site Plan or others included under The Planning Act (1990).

8.3 Recommended Field Surveys

Based on findings of previous field work and the level of anticipated impact risk, it is advised that the following additional surveys be completed prior to detailed design and construction:

- Aquatic Habitat Assessment using detailed footprints.
- Anuran surveys (April – July)

- Woodland amphibian habitat assessment (single visit, ideally in early spring)
- Bat habitat assessment (leaf-off period of December – March)
- SAR Flora survey (2-year validity period only)
- Red-headed and Pileated Woodpecker cavity assessment
- Tree inventory

9 Conclusion

The Proponent is committed to the completion of the Regional Rd. 25 widening project as a means of improving transportation flow across Halton Region. This Natural Environment Report described the results of the field assessments and provided an evaluation of the significance of each Natural Environment Feature confirmed and presumed to be present on the Site. It then gave a high-level assessment of the expected impacts on these features from the proposed alignment alternative. A future iteration of this report will be released during the detailed design stage, which will address specific impacts associated with the finalized alignment and updated legislation that changed during its development and review. Overall, the Project is not expected to negatively impact the Natural Environment in most areas and where impacts are possible, they can be reduced to negligible levels by following standard avoidance and mitigation measures.

10 Study Limitations and Constraints

CIMA+ completed diligent and reasonable research in the conduct of this evaluation, with respect to the recognized laws and standards of practice.

The facts presented in this report are strictly limited to the period of investigation. The conclusions presented in this report are based on the available information and documents, the observations made during the Site visit and the information obtained from communications with various contacts. The interpretation presented in this report is limited to this data.

CIMA+ is not responsible for erroneous conclusions due to voluntary abstention or the non-availability of pertinent information. Any opinion expressed in relation to legal or regulatory conformity is technical and should not be, in any case, considered as legal advice

11 References

- AMEC Environment & Infrastructure. (2015). Sixteen Mile Creek Areas 2 & 7 Subwatershed Update Study. <https://www.milton.ca/en/business-and-development/resources/Boyne-Sixteen-Mile-Creek.pdf>
- Bill 5, Protect Ontario by Unleashing our Economy Act, 2025, 1st Session, 44th Legislature, 2025.
- Birds Canada. (2021-2025). Ontario Breeding Bird Atlas Highest Breeding Evidence per Square; Checklist Data; Point Count Data. Accessed from <https://naturecounts.ca/nc/default/explore.jsp#download> on July 9, 2025.
- Cadman, M.D., D.A. Sutherland, G.G. Beck, and A.R. Couturier (eds.). (2007). Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.
- Conservation Authorities Act, R.S.O. 1990, c. C.27. Government of Ontario.
- Crins, W.J., Gray P.A., Uhlig.P., and Wester M. (2009). The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions. Queen's Printer for Ontario.
- Conservation Authorities Act, R.S.O. 1990, c. C.27. Government of Ontario.
- COSEWIC. (2003). COSEWIC assessment and status report on the Butternut *Juglans cinerea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 32 pp.
- COSEWIC (2007). COSEWIC assessment and update status report on the Prothonotary Warbler *Protonotaria citrea* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 31 pp. (Species at Risk Public Registry website).
- COSEWIC. (2009). COSEWIC assessment and status report on the Whip-poor-will *Caprimulgus vociferus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 28 pp.
- COSEWIC. (2010). COSEWIC assessment and status report on the Bobolink *Dolichonyx oryzivorus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 42 pp.
- COSEWIC (2010) COSEWIC assessment and status report on the Jefferson Salamander, *Ambystoma jeffersonianum*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 38 pp. (Species at Risk Public Registry website).

COSEWIC. (2011). COSEWIC assessment and status report on the Yellow-breasted Chat *auricollis* subspecies *Icteria virens auricollis* and the Yellow-breasted Chat *virens* subspecies *Icteria virens virens* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xvi + 51 pp.

COSEWIC. (2011). COSEWIC assessment and status report on the Eastern Meadowlark *Sturnella magna* on the Status of Endangered Wildlife in Canada. Ottawa. x + 40 pp.

COSEWIC. (2013). COSEWIC assessment and status report on the Bank Swallow *Riparia riparia* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. ix + 48 pp.

COSEWIC. (2016). COSEWIC assessment and status report on the Blanding's Turtle *Emydoidea blandingii*, Nova Scotia population and Great Lakes/St. Lawrence population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xix + 110 pp.

COSEWIC. (2016). COSEWIC assessment and status report on the unisexual Ambystoma, Ambystoma laterale, Small-mouthed Salamander-dependent population, Jefferson Salamander-dependent population, and the Blue-spotted Salamander-dependent population, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xxii + 61 pp.

COSEWIC. (2017). COSEWIC assessment and status report on the Redside Dace *Clinostomus elongatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 63 pp.

COSEWIC. (2018). COSEWIC assessment and status report on the Red-headed Woodpecker *Melanerpes erythrocephalus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xii + 60 pp.

COSEWIC. (2018). COSEWIC assessment and status report on the Yellow False Foxglove Bundle, Smooth Yellow False Foxglove *Aureolaria flava*, Fern-leaved Yellow False Foxglove *Aureolaria pedicularia* and the Downy Yellow False Foxglove *Aureolaria virginica*, in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xx + 100 pp.

Dobbyn, J. (1994). Atlas of Mammals of Ontario. Longpoint Biosphere:
http://longpointbiosphere.com/download/mammals/mammal_atlas-1994.pdf

Drainage Act, R.S.O. 1990, c. D.17. Government of Ontario. Endangered Species Act, S.O. (2007). Government of Ontario.

- Environment and Climate Change Canada. (2018). Recovery Strategy for the Blanding's Turtle (*Emydoidea blandingii*), Great Lakes/St. Lawrence population, in Canada. Species at Risk Act Recovery Strategy Series. Environment and Climate Change Canada, Ottawa. viii + 59 pp.
- Environment Canada. (2020). Species at Risk Act Public Registry. http://www.sararegistry.gc.ca/default_e.cfm
- Environment Canada. (2020). General Nesting Periods of Migratory Birds in Canada. Retrieved from Environment Canada: http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1#_05,
- Environment Canada. (2014). Incidental Take of Migratory Birds in Canada.
- Environmental Assessment Act, R.S.O. 1990, c. C.16. Government of Ontario.
- Eyles, N., Eyles, C., Menzies, J. and Boyce, J. (2011). End moraine construction by incremental till deposition below the Laurentide Ice Sheet: Southern Ontario, Canada. *Boreas*, 40: 92-104.
- Fisheries and Oceans. (2019). Aquatic Species at Risk Mapping. <http://www.dfo-mpo.gc.ca/species-especies/fppppp/index-eng.htm>.
- Fisheries Act, 1985. Government of Canada
- Frei, B., K. G. Smith, J. H. Withgott, P. G. Rodewald, P. Pyle, and M. A. Patten (2020). Red-headed Woodpecker (*Melanerpes erythrocephalus*), version 1.0. In *Birds of the World* (P. G. Rodewald, Editor). Cornell Lab of Ornithology, Ithaca, NY, USA.
- Google Earth Pro. (2020).
- Government of Ontario. (2024). Land Information Ontario (LIO) Warehouse Open Data Products (Composite File Geodatabase).
- Lee et. al. (2001). Ecological Land Classification for Southern Ontario: Training Manual. Ontario Ministry of Natural Resources, SCSIS Training Manual TM-01. North Bay: Ontario Ministry of Natural Resources.
- Linton, J, J. McCarter and H. Fotherby (2018). Recovery Strategy for the Jefferson Salamander (*Ambystoma jeffersonianum*) and Unisexual *Ambystoma* (Jefferson Salamander dependent population) (*Ambystoma laterale* - (2) *jeffersonianum*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. vii + 58 pp.
- Migratory Birds Convention Act, 1994. Government of Canada

Ministry of Environment, Conservation and Parks. (2017). Bronte Creek Provincial Park Management Plan. <https://www.ontario.ca/page/bronte-creek-provincial-park-management-plan>.

Ministry of Natural Resources and Forestry. (2019). The Ecosystems of Ontario – Part 1: ecozones and ecoregions. <https://www.ontario.ca/page/ecosystems-ontario-part-1-ecozones-andecoregions>

Ministry of Natural Resources and Forestry. (2000). Significant Wildlife Habitat Technical Guide.

Ministry of Natural Resources and Forestry. (2014a). BUTTERNUT ASSESSMENT GUIDELINES Assessment of Butternut Tree Health for the Purposes of the Endangered Species Act, 2007 May 2011 Amended: December 2021 (Version 3)

Ministry of Natural Resources and Forestry. (2015). Significant Wildlife Habitat Criteria Schedules For Ecoregion 7E <https://www.ontario.ca/document/significant-wildlife-habitat-ecoregional-criteria-schedules-ecoregion-7e>

Ministry of Natural Resources and Forestry. (2015). Eastern Whip-poor-will general habitat description. <https://www.ontario.ca/page/eastern-whip-poor-will-general-habitat-description>

Ministry of Natural Resources and Forestry (MNRF). (2016). Guidance for Development Activities in Redside Dace Protected Habitat. Version 1.2 Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. iv+32 pp.

Ministry of Natural Resources and Forestry (2019). Species at Risk. from Ministry of Natural Resources: <https://www.ontario.ca/page/species-risk>

Ministry of Natural Resources. Natural Heritage Information Centre. (2020). Retrieved from: <https://www.ontario.ca/page/make-natural-heritage-area-map>

Natural Heritage Assessment Guide for Renewable Energy Projects (December 2010).

Ontario Breeding Bird Atlas. (2001). Guide for Participants. Ontario Breeding Bird Atlas, Guelph, ON.

Ontario Ministry of Natural Resources. (2010). Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition. Toronto: Queen's Printer for Ontario. 248 pp.

Ontario Ministry of Natural Resources and Forestry. (2016). Recovery Strategy for the Least Bittern (*Ixobrychus exilis*) in Ontario. Ontario Recovery Strategy Series. Prepared by the Ontario Ministry of Natural Resources and Forestry, Peterborough, Ontario. v + 5 pp. + Appendix.

Ontario Nature. (2015). Ontario Reptile and Amphibian Atlas: a citizen science project to map the distribution of Ontario's reptiles and amphibians. Ontario Nature, Ontario.
<http://www.ontarionature.org/atlas>

Sandilands, A.P. (2005). Birds of Ontario: Habitat Requirements, Limiting Factors, and Status, Nonpasserines: Waterfowl through Cranes. UBC Press, Vancouver, British Columbia.

Toronto and Region Conservation. (2023). Guideline for Determining Ecosystem Compensation (After the decision to compensate has been made). <https://trcaca.s3.ca-central-1.amazonaws.com/app/uploads/2023/08/18123313/TRCA-Ecosystem-Compensation-Guideline-June-2023.pdf>

TSH. (2006). North Oakville Creeks Subwatershed Study: Management Report.
<https://www.oakville.ca/getmedia/402b8786-ed2-4d63-af86-af3f3b302df5/planning-NOCSS-characterization-study-management-strategy.pdf>

Woodliffe, P.A. (2007). Least Bittern. pp. 156-157, in M.D. Cadman, D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier (eds.). The Atlas of the Breeding Birds of Ontario. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, Ontario.

Town of Oakville. (n.d.). Private tree protection. <https://www.oakville.ca/home-environment/trees-woodlands/tree-protection-removal/private-tree-protection/>

Conservation Halton. (2024). Guidelines for landscaping and rehabilitation plans (Version 4.1). https://www.conservationhalton.ca/wp-content/uploads/2025/07/CH_GLRP_June2024_V4.1-FINAL.pdf

Regional Municipality of Halton. (2005). By-law no. 121-05: A by-law to prohibit or regulate the destruction or injuring of trees in the Regional Municipality of Halton.
<https://www.halton.ca/Repository/By-law-121-05-Trees>



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