Amherstview West Secondary Plan

Natural Heritage Existing Conditions Report

Loyalist Township

FINAL VERSION

PROJECT NO.: 211-01353-00
DATE: MARCH 14, 2022

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March 14, 2022

Date

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March 14, 2022

Date

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TABLES

FIGURES

APPENDICES

1 Introduction

1.1 Purpose

Loyalist Township retained WSP Canada Inc. (WSP) to complete an ecological and natural heritage investigation for the Amherstview West Secondary Plan (herein known as "the Project") in Loyalist Township, Ontario (**Figure 1**). The Study Area is located within the jurisdiction of Loyalist Township and the County of Lennox and Addington.

The objective of the is to provide a policy and implementation framework to guide future growth and development in Amherstview West for a 25-year period. A Municipal Class Environmental Assessment (MCEA) will be undertaken in parallel with the Secondary Plan to address infrastructure requirements needed to implement the Amherstview West Secondary Plan.

The purpose of this document is to assist Loyalist Township in documenting the natural environment's existing conditions and identifying the environmental constraints that the proposed Amherstview West Secondary Plan may have on the natural heritage features, wildlife and wildlife habitat, and Species at Risk (SAR) that may be present within the Study Area.

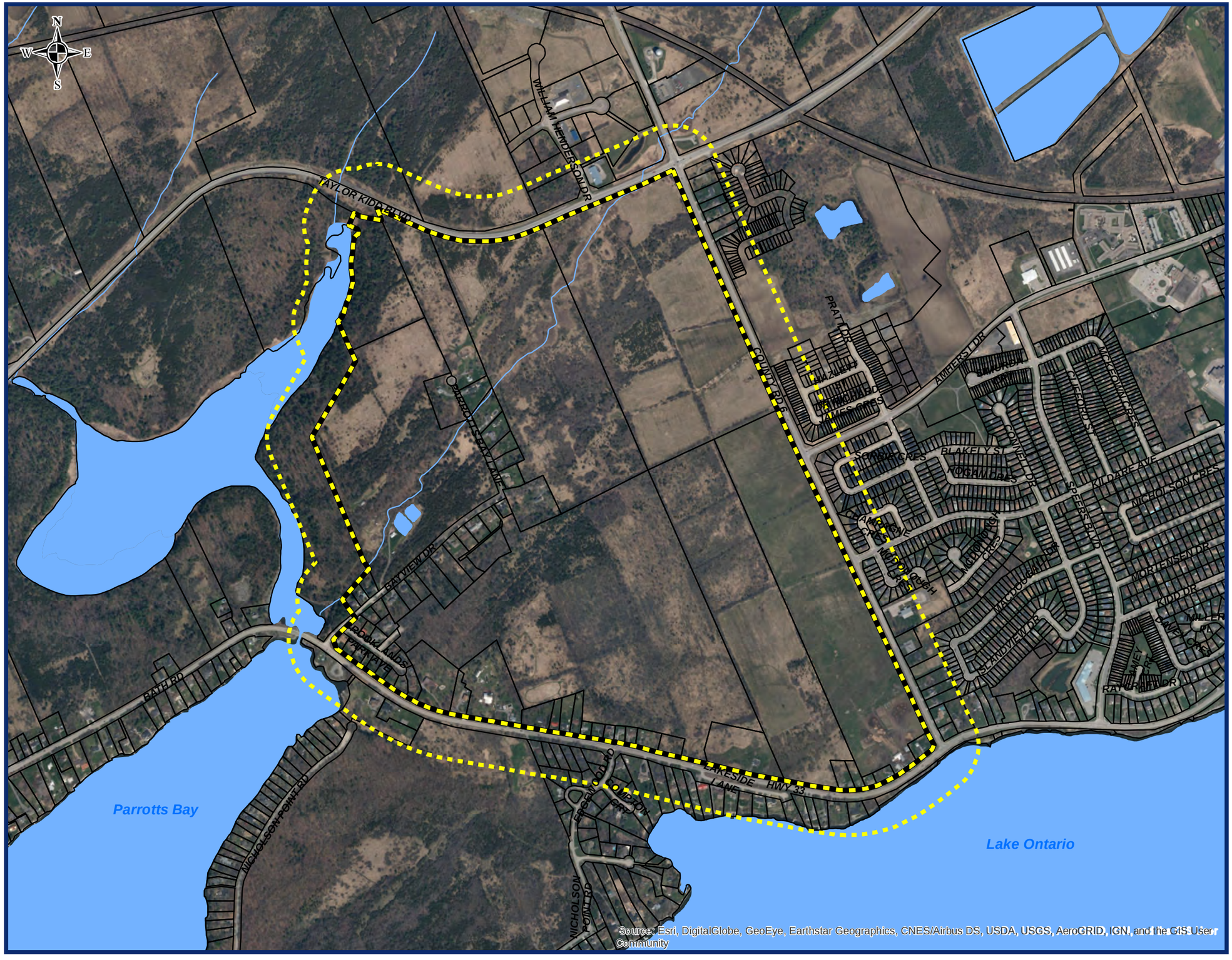
For this report, the Study Area includes the area within 120 m of the Project footprint to account for policy recommendations and setback distances outlined in the *Provincial Policy Statement* (PPS, 2020) and the accompanying *Natural Heritage Reference Manual* (MNR, 2010).

1.2 Scope

The main objective of this ecological assessment was to complete a baseline/preliminary evaluation of the natural heritage features within and adjacent to the Amherstview West Secondary Plan. This work was carried out to identify the natural heritage constraints the Secondary Plan of environmental constraints and to document sensitive natural features that may impact the future development of the Study Area. This process used the following three elements to evaluate the ecological constraints within the secondary plan area:

- A desktop background review of available online biodiversity databases to determine which wildlife/SAR have a record/likelihood of occurrence within the Study Area, as well as any significant natural heritage features;
- An ecological field survey to confirm the presence or absence of wildlife/SAR habitat and record any direct observations of wildlife within the Project Study Area; and
- A risk level assessment (High, Medium, Low) for each SAR with the potential to conflict with future development plans based on field survey results and a habitat suitability analysis.

Note: Further detailed ecological assessments should be considered as part of the Municipal Class Environmental Assessment process, once infrastructure requirements and development plans are established in greater detail.



Loyalist Township

Figure 1: Study Area

Amherstview West Secondary Plan

- Amherstview West Study Area
- Survey Area (120m buffer)
- Land Parcel
- Watercourse
- Waterbody

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July 2021

Source: Loyalist Township; LIO

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2 Policy Framework

This study references the regulatory agencies and legislative authorities mandated to protect different elements of natural heritage features and SAR within Ontario and Canada. **Table 1** provides a list of the policies and legislation that apply to the protection of natural heritage features and SAR within Ontario and Canada.

Table 1 Policies, Legislation and Background Sources

Policy/Regulations	Reference Materials and Supporting Documents
Federal Government of Canada	
Migratory Birds Convention Act **(MBCA) (1994) (S.C. 1994, c. 22)**	Environment and Climate Change Canada – online resources
Species at Risk Act **(SARA) (2002) (S.C., 2002, c. 29)**	Federal Species at Risk Public Registry
Fisheries Act **(1985) (R.S.C., 1985, c. F-14)**	Fisheries and Oceans Canada (DFO) – online resources
Province of Ontario	
Provincial Policy Statement (PPS) (2020), under Planning Act, R.S.O. (1990) c. P.13	Ministry of Natural Resources and Forestry (MNRF) – Peterborough District
	MNRF Natural Heritage Information Centre (NHIC) – Online [Accessed: 2021/05/07] • *SAR and Species of Conservation Concern* • *Natural Heritage Features*
	Natural Heritage Reference Manual (MNRF, 2010)
	MNRF Significant Wildlife Habitat Technical Guide (MNRF, 2000) • *Significant Wildlife Habitat Eco-region 6E Criterion Schedules* (MNRF, 2015)
Endangered Species Act **(ESA) (2007) (S.O. 2007, c. 6)**	Ministry of the Environment, Conservation and Parks (MECP) Species at Risk in Ontario (SARO) List (O.Reg. 230/08)
	MNRF NHIC – Online [Accessed: 2021/05/07] • *SAR occurrence records*
	Ontario Breeding Bird Atlas (OBBA) – Online [Accessed: 2021/05/07]
	Ontario Reptile and Amphibian Atlas – Online [Accessed: 2021/05/07]
	Atlas of the Mammals of Ontario (Dobbyn, 1994)
Great Lakes Protection Act **(2015) (S.O. 2015, c. 24)**	MECP – Online [Accessed: 2021/06/22]
Cataraqui Region Conservation Authority (CRCA)	
Cataraqui Region Conservation Authority: Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses (O. Reg. 175/06), under Conservation Authorities Act, (R.S.O. 1990, c. C.27)	CRCA Regulations Mapping
Parrott's Bay Master Plan (CRCA, 2009)	CRCA Parrott's Bay Master Plan – Online [Accessed: 2021/06/22]
Municipality	

Policy/Regulations	Reference Materials and Supporting Documents
County of Lennox and Addington Official Plan (2018)	Official Plan; Schedules A and B – Online [Accessed:2021/05/07]
Loyalist Township Official Plan (2019)	Official Plan; Schedules C and C1 – Online [Accessed: 2021/05/07]

2.1 Species at Risk Legislation

When assessing the potential risk level associated with a site, the identification of potential SAR habitat is an important factor as numerous species are afforded specific habitat protection under the *Endangered Species Act* (ESA, 2007). In general, species listed as 'Special Concern' do not receive any general habitat protection under the Act. Habitat protection under the ESA is only afforded to species classified as Threatened or Endangered and is classified as either general or regulated habitat.

General habitat is defined as:

"*with respect to any other species of animal, plant or other organism, an area on which the species depends, directly or indirectly, to carry on its life processes, including life processes such as reproduction, rearing, hibernation, migration or feeding.*"

General habitat protection is afforded to all species once they become listed as Threatened or Endangered and remains in place until regulated habitat is designated.

Regulated habitat is defined as:

"*with respect to a species of animal, plant or any other organism for which a regulation made under Clause 55 (1) (a) is in force, the area prescribed by that regulation as the habitat of the species.*"

Regulated habitat provides more precise details on the species-specific habitats, such as specific features, geographic boundaries, or unique requirements of a species.

3 Background Review

Background data was collected and reviewed to identify natural heritage features and SAR with occurrence records within the Study Area. Publicly available databases (**Table 1**) were consulted to develop a list of SAR that have a record within a 1 km^2 or 10 km^2 grid (dependent on the database being consulted) encompassing the Study Area.

Documents and/or online publicly available databases mentioned in **Table 1** were searched for the presence or absence of the following:

- Aquatic Environment
- Natural Heritage Features
  - Provincially Significant Wetlands (PSW)
  - Significant Woodlands
  - Significant Valleylands
  - Areas of Natural and Scientific Interest (ANSI)
  - Significant Wildlife Habitat (SWH)
  - Fish Habitat
  - Linkage Features
- Species at Risk and Species at Risk Habitat

3.1 Landform, Geology, and Soils

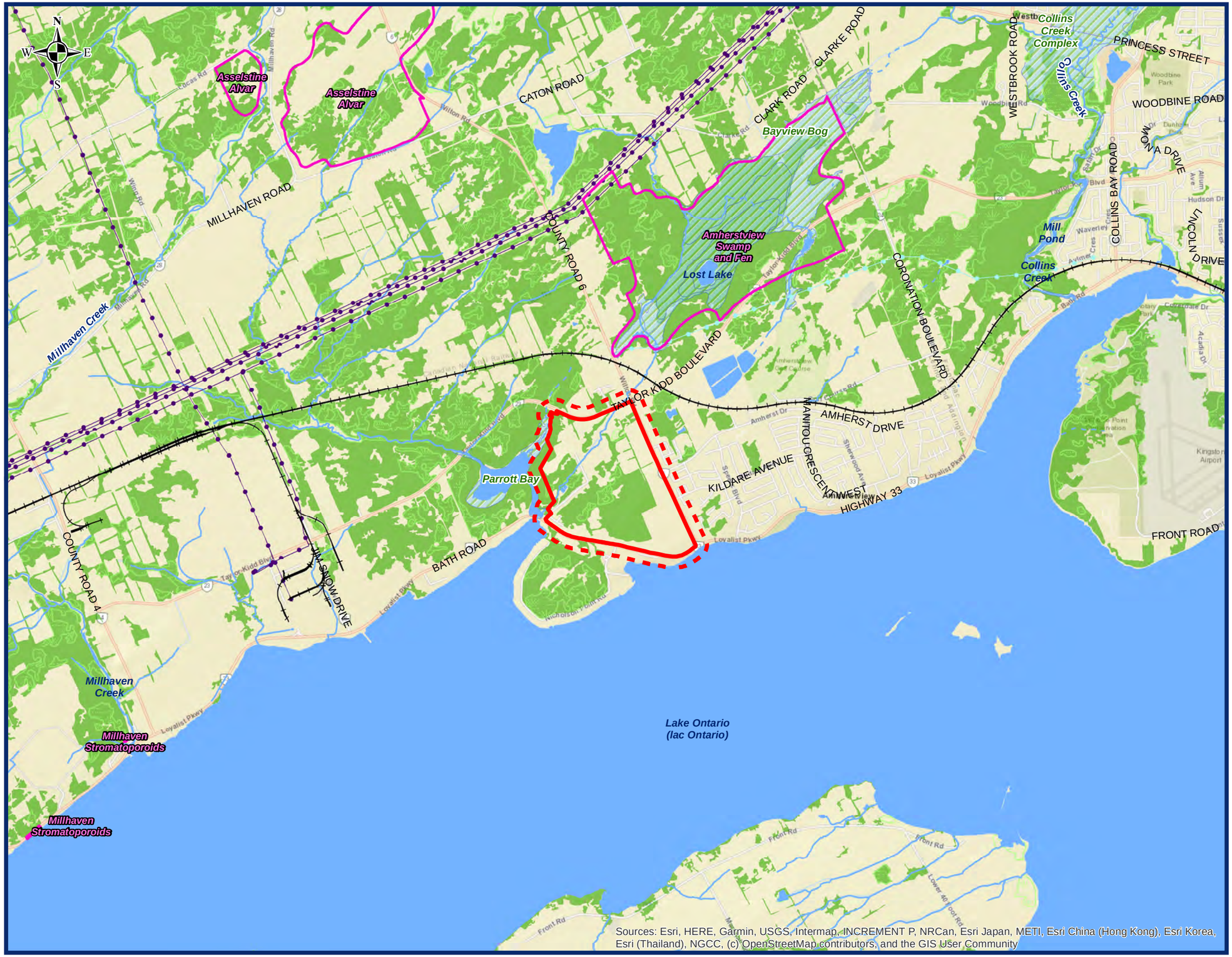
The Study Area is within the Picton Ecodistrict (6E-15). This Ontarian Ecodistrict has shallow soils with limestone plain containing areas of clay and till and includes the entire Prince Edward Peninsula. The north and east boundaries transition between clay plains, limestone plains, and shallow till/rock ridges that are indicative of the Frontenac Axis (Henson and Brodribb, 2005).

The forested natural cover within the ecodistrict remains at approximately 37% with deciduous and mixed forests being the dominant forest type. The remainder of the natural cover has been characterized as swamp and marsh wetlands. True alvars are also known to reside in this ecodistrict, ranked as globally and provincially rare significant vegetation communities (Henson and Brodribb, 2005).

3.2 Aquatic Environment

The Amherstview West Study Area is located within the sub-watershed of Lake Ontario Direct, a segment of the Cataraqui Region watershed (CRCA, 2013). In 2018, the CRCA Watershed received an overall grade of ‘Good’ based on ongoing monitoring of water quality, as well as the current state of forests and wetlands within the watershed (CRCA, 2018).

Four aquatic features are present within 1 km of the Study Area. They include Lake Ontario, Parrott's Bay, and two watercourses in the Study Area. One unnamed watercourse bisects the Study Area, running northeast to southwest. The other unnamed watercourse occurs northwest of the Study Area, within the 120 m buffer area at the head of Parrott's Bay (**Figure 2**). Lake Ontario and Parrott's Bay are located within the Bay of Quinte Area of Concern (AOC) (International Joint Commission, 1985) and have been targeted to undergo a Remedial Action Plan (RAP). An AOC is a location on the Great Lakes system where human activities have damaged the quality of the environment (Lower Trent Conservation, 2021).



Loyalist Township

Natural Heritage Features

Amherstview West Secondary Plan

- Secondary Plan Boundary
- 120m Study Area Buffer
- Area of Natural and Scientific Interest
- Railway
- Hydro Line
- Unknown Transmission Line
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Provincially Significant Wetland
- Unevaluated Wetland
- Wooded Area

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

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May 2021

Source: Loyalist Township; LIO

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The RAP is intended to address and improve degraded environmental conditions of excess nutrients, toxic and bacterial contaminants, and the loss/destruction of fish and wildlife habitat. In 2006, Parrott's Bay underwent coastal wetland monitoring, which included; water quality, an abundance of submerged aquatic vegetation, the aquatic macroinvertebrate community, the fish community, and the breeding marsh bird community (Environment Canada – Canadian Wildlife Services, 2006). Parrott's Bay displayed high-quality results indicating the aquatic environment is in a healthy state:

- Water Quality = Good
- Submerged Aquatic Vegetation = Very Good
- Fish Community = Excellent
- Bird Community = Excellent

3.2.1 Fish Habitat

Lake Ontario and Parrott's Bay are known to support fish and fish habitat with species such as Yellow Pike/Walleye (*Sander vitreus*) and Largemouth Bass (*Micropterus salmoides*) (Angler's Atlas, 2021).

The unnamed watercourse identified in the centre of the Study Area flows south from Lost Lake to Parrott's Bay, and there is potential for it to support aquatic and fish habitat. This watercourse has also been identified as Linkage Feature/wildlife corridor connecting Parrott's Bay to Bayview Bog PSW / Amherst Swamp and Fen (Area of Natural and Scientific Interest) (CRCA, 2009).

The unnamed watercourse identified northwest of the Study Area is also a branch from Parrott's Bay connecting to Lost Lake. This watercourse has been identified by the Loyalist OP (Schedule C1) (2019) as a Linkage Feature/wildlife corridor connecting Parrott's Bay PSW to Bayview Bog PSW / Amherst Swamp and Fen (Area of Natural and Scientific Interest) (**Figure 4**).

The CRCA's *Parrott's Bay Master Plan* (2009) identified the following fish to occur within Parrott's Bay from 1986 – 2008. They include: Common Carp (*Cyprinus carpio*), Northern Pike (*Esox Lucius*), Central Mudminnow (*Umbra limi*), Golden Shiner (*Notemigonus crysoleucas*), Brown Bullhead (*Ameiurus nebulosus*), Banded Killifish (*Fundulus diaphanous*), Rock Bass (*Ambloplites rupestris*), Pumpkinseed (*Lepomis gibbosus*), Largemouth Bass (*Micropterus salmoides*), Black Crappie (*Pomoxis nigromaculatus*), Yellow Perch (*Perca flavescens*), Johnny Darter (*Etheostoma nigrum*), and Round Goby (*Neogobius melanstomus*).

3.2.2 Floodplain and Regulated Area

The CRCA is the governing body that regulates flood potential, protects natural heritage features, and enhances the ecosystems within the Cataraqui Region watershed. Development within regulated areas is governed by O. Reg. 174/06 *Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses.* CRCA also maintains, monitors, and collects information related to water quality/quantity, fisheries resources, forestry, land use, and wetlands.

The CRCA Regulated Limits and Floodplain areas are present within the Study Area and shown in **Figure 3**. It includes the riparian areas surrounding Parrott's Bay and the watercourse running southwest in the middle of the Study Area. The Regulated area was identified through the consultation of the Loyalist Township Official Plan, Schedule F (2019).

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Figure 3:

Natural Heritage Policy Considerations

Amherstview West Secondary Plan

- Amherstview West Study Area
- Watercourse
- Provincially Significant Wetland [OMNRF]
- PSW 120m Setback
- Potential Wildlife Corridor [Loyalist]
- OPRegulatedArea_digitized_20210624
- Environmentally Sensitive Area [Loyalist]
- Significant Valleylands - 50 m setback [Loyalist]
- Significant Valleylands [Loyalist]
- Signifcant Woodlands [Loyalist]
- Signifcant Woodlands - 50m Setback [Loyalist]

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

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July 2021

Source: Loyalist Township; LIO

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3.3 Terrestrial Environment

The following sections provide results of the desktop screening of the natural environment features identified within the Amherstview West project Study Area. A review of available background information has indicated the presence of documented natural environment features with the Study Area (**Figure 2** and **Figure 3**) and are further described below.

3.3.1 Wetlands

Wetlands within Ontario can have varying designations based on whether a wetland has been evaluated as per the Ontario Wetland Evaluation System (OWES) (MNRF, 2014a). This is the only means of evaluating wetlands within Ontario to determine provincial significance. Wetlands can be classified as either provincially significant, other-evaluated, or unevaluated. The Loyalist Township Official Plan and the Lennox and Addington Official Plan states that all wetlands regardless of classification type should be conserved in the long term as well as lands within 120 m of a PSW and 30 m for other-evaluated/unevaluated (Loyalist Township OP, 2019) (Lennox and Addington Official Plan, 2016).

3.3.1.1 Provincially Significant Wetland

One PSW is within 120 m of the Study Area and is named **Parrott's Bay** (**Figure 2**). As this feature is a bay within Lake Ontario, it has been designated a Great Lakes Coastal Wetland. It is 30 hectares (ha) in size and composed of a shallow cattail marsh vegetation community. This wetland is known to host sensitive and at-risk species, such as Snapping Turtle, Blanding's Turtle, Eastern Musk Turtle, Least Bittern, Pied-billed Grebe, Virginia Rail, Bald Eagle, and Osprey (CRCA, 2009). Many locally significant and sensitive vascular plant species also are known to occur (Crowder et. al. 1996).

This significant wetland is also part of the Parrott's Bay Conservation Area, an area owned and operated by the Cataraqui Region Conservation Authority (CRCA, 2021). The CRCA has created the *Parrott's Bay Master Plan* (CRCA, 2009) (which incorporates the PSW and surrounding lands) in order to guide the management, operation, and development of the property. This natural feature is home to many species of flora and fauna serving as a wildlife corridor/linkage feature for species to connect from Lake Ontario to inland wetlands, woodlands, and alvars (CRCA, 2021).

The Parrott's Bay provincially significant coastal wetland is protected under the *Great Lakes Protection Act*, 2005, the PPS (MMHA, 2020), the Loyalist Township OP (2019), and the Lennox and Addington County OP (2016). All of which must be considered during the planning processes. One other PSW occurs north of the Study Area within 1 km. It is named **Bayview Bog** and is 215 ha in size (**Figure 2**). It is comprised of three wetland types such as fen, swamp, and marsh. Special physical features include peatland development on limestone plain and a dystrophic lake (also known as humic lakes with low pH and calcium). Special biological features of rich and diverse wetland bog and fen complexes are of great significance as it is geographically separated from the abundant bog habitats to the

north. As such, it contains boreal plant species and contributes to the abundant biodiversity within the region (CRCA, 2006).

The **Parrott's Bay PSW** and **Bayview Bog PSW** are known to be linked by the unnamed watercourses that are associated with the Amherstview West Study Area (**Figure 2** and **Figure 3**). Therefore, such watercourses and surrounding riparian areas may serve as a natural wildlife corridor/linkage feature for a large diversity of fish, wildlife, and plants (CRCA, 2006).

3.3.1.2 Other-Evaluated Wetlands

No wetlands within the Study Area have been evaluated as per the provincial evaluation system.

3.3.1.3 Unevaluated Wetland

Approximately six unevaluated wetland pockets (mapped by the MNRF) (**Figure 2**) are present throughout the Study Area. Although not significant, a setback distance of 30 m shall be applied during planning processes as per the Loyalist Township Official Plan (2019); 30 m for wetlands > 0.5 ha (CRCA, 2021) as per the O*ntario Regulation 148/06: Development Interference with Wetlands and Alterations to Shorelines and Watercourses*, pursuant to Section 28 of the *Conservation Authorities Act* (2021).

3.3.2 Significant Woodlands

The significance of a woodland is generally established based on a set of criteria established within the Natural Heritage Reference Manual (MNR, 2010). These criteria include species composition, tree age, functionality, and contribution to the broader landscape due to its location, size and amount of forest cover, or holding economic importance.

Significant Woodlands are identified and mapped in municipal Official Plans, such as Loyalist Township OP (2019) and the Lennox and Addington OP (2016). As per the PPS (MMAH, 2020), planning authorities shall protect the ecological function of these Significant Woodlands. The Loyalist Township OP has incorporated Significant Woodlands into their Natural Heritage System/Environmentally Sensitive Areas under Schedule C1 (Environmental Overlay Amherstview – Parrott's Bay) (**Figure 3**).

The woodland to the far northwest of the Study Area, adjacent to the Parrott's Bay PSW, as well as a riparian woodland that surrounds the unnamed watercourse running southwest through the Study Area, at the southern extent, has been designated an Environmentally Sensitive Area (Loyalist Township OP, 2019). The *Central Cataraqui Region Natural Heritage Study* (CRCA, 2006) originally defined and classified these areas as Significant Woodland features. The two Significant Woodland features within the Study Area were classified as significant based on; (1) their adjacency (within 30 m) to a watercourse/waterbody and; (2) either overlapping/abutting (within 120 m) to another significant feature (CRCA, 2006) (**Figure 3**).

3.3.3 Significant Valleylands

For a valleyland to be considered significant, it must be ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of a natural heritage system (MMAH, 2020). As per the PPS (MMAH, 2020), planning authorities shall protect Significant Valleylands.

The *Central Cataraqui Region Natural Heritage Study* (CRCA, 2006) has defined the slopes abutting the Parrott's Bay PSW as a Valleyland (**Figure 3**). This area is within the Amherstview West Study Area. Due to this valued feature within the Loyalist Township's Natural Heritage System, the OP (2019) has designated this area as an Environmentally Sensitive Area within Schedule C1 (**Figure 3**).

3.3.4 Areas of Natural and Scientific Interest

Areas of Natural and Scientific Interest (ANSI) are identified and mapped by the MNRF. As per the PPS (MMAH, 2020), planning authorities shall protect ANSIs.

Two Life Science ANSIs are present within 2 km from the Amherstview West Study Area. The **Amherstview Swamp and Fen ANSI** is closest and occurs within 1 km northeast of the Study Area (**Figure 2**). It is 380 ha in size and is a stream-fed interior wetland basin feature. It is composed of deciduous swamp forest and marsh and a coniferous forest floating bog. The bog features are representative of a limited habitat within the Napanee Plain Physiographic Region (CRCA, 2006). The Amherstview Swamp and Fen ANSI also encompass the Bayview Bog PSW, as discussed in Section 3.3.1.

The **Asselstine Alvar ANSI** occurs approximately within 2 km northwest of the Study Area (**Figure 2**). It is approximately 105 ha in size and composed of flat limestone plain with vegetation associated with alvar communities. The open alvar habitat is mixed with conifer forest and parkland (CRCA, 2006).

3.3.5 Significant Wildlife Habitat

One confirmed Significant Wildlife Habitat (SWH) has been identified by the MNRF and occurs within the Amherstview West Study Area (NHIC, 2021). It is classified as a **Wildlife Concentration Area for colonial nesting water birds**. This SWH feature is located either within the Parrott's Bay PSW or in adjacent uplands. It is known to support species of Great Blue Heron, Black-crowned Night-heron, Great Egret, or Green Heron.

3.3.6 Linkage Features

An important component of the Natural Heritage System incorporates ecological functions like linkages/corridors. Corridors should be preserved or designed to accommodate the natural movement, and life cycles of local flora and fauna as general movement is key for biodiversity conservation and the long-term viability of ecological systems (MNR, 2010).

Riparian and shoreline linkages that interact with terrestrial ecosystems tend to support great biodiversity (MNR, 2010), for which the Amherstview West Study Area is known to contain. The *Parrott's Bay Master Plan* (CRCA, 2009) has identified linkage features with the Amherstview West Study Area. As mention in the above Sections, linkage features are present between the identified PSWs and ANSIs.

As shown in **Figure 4**, the Parrott's Bay PSW is linked to the Bayview Bog PSW/Amherstview Swamp and Fen ANSI; Bayview Bog PSW/Amherstview Swamp and Fen ANSI is linked to the Asselstine Alvar, and Asselstine Alvar is linked to Parrott's Bay PSW. This is a circular movement pattern for flora and fauna, thereby sustaining life cycles, general movement/migration, and genetic diversity for a vast amount of species. However, the Loyalist OP (Schedule C1, 2019) only identified one Linkage Feature from the northern extent of Parrott's Bay PSW to the southwestern extent of Bayview Bog PSW/Amherstview Swamp and Fen ANSI (**Figure 3)**. The two unnamed watercourses identified in the Study Area are the features that allow for connectivity.

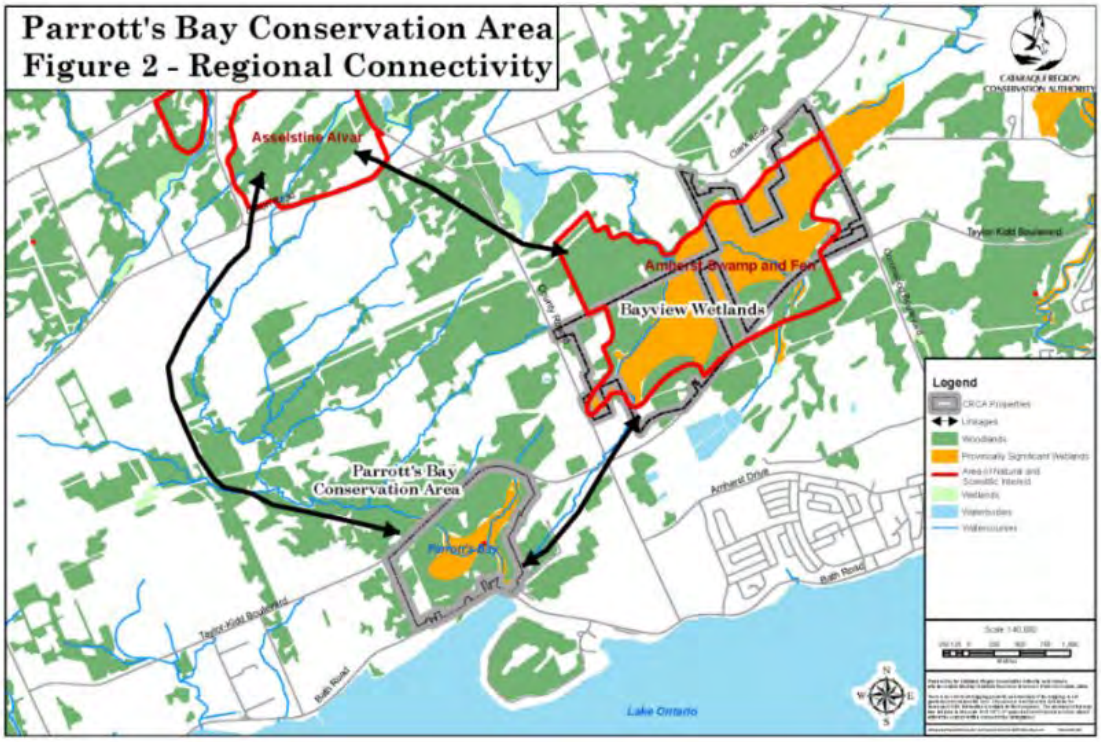

Figure 4: Linkage Features and Wildlife Connectivity associated with the Amherstview West Secondary Plan (CRCA, 2009)

3.4 Summary of Aquatic and Natural Heritage Features

Based on the background records review, many natural heritage features are present within the Amherstview West Study Area. A summary of the results is shown in **Table 2.**

Table 2: Summary of Aquatic and Natural Heritage Features within the Amherstview West Study Area

Feature	Present within the Site	Present within 120 m of the Site (Study Area)	Description
Aquatic Environment	Y	Y	-2 unnamed watercourses -Parrott's Bay / Lake Ontario
Fish Habitat	Y	Y	-Unnamed watercourse -Parrott's Bay / Lake Ontario
Wetland	Y	Y	-Parrott's Bay PSW -Unevaluated wetland pockets -Bayview Bog PSW occurs >1 km from study area
Significant Woodland	Y	Y	-Forested valley slope adjacent to Parrott's Bay and western edge of project site. -Forested valley slope surrounding unnamed watercourse at western end of project site
Significant Valleyland	N	Y	-Forested valley slope adjacent to Parrott's Bay and western edge of project site
ANSI	N	N	-Amherstview Swamp and Bog ANSI and Asselstine Alvar ANSI occur > 1 km from study area
SWH	N	Y	-Wildlife Concentration Area for colonial nesting water birds within Parrott's Bay PSW and Conservation Area
Linkage Feature	Y	Y	-Unnamed watercourse linking Parrott's Bay PSW to Bayview Bog
Loyalist Township: **Natural Heritage System / Environmentally Sensitive Area**	Y	Y	-Associated with unnamed watercourse, significant woodlands and valleylands, and Parrott's Bay PSW

3.5 Species at Risk and Species of Conservation Concern

Background data was collected and reviewed to identify SAR and SCC with occurrence records within the Study Area. Publicly available databases (**Table 1**) were consulted to develop a list of SAR/SCC that have a record within a 1 km^2 or 10 km^2 grid (dependent on the database being consulted) encompassing the project Study Area. **Table 3** provides a list of these species along with corresponding federal, provincial, SAR and/or SCC designations (i.e. S-Ranks). S-Ranks are a provincial status used by the NHIC to set protection priorities for rare species and is

based on the number of occurrences in Ontario. The MNRF tracks species with S1 to S3 (vulnerable to critically imperiled) designations and are therefore, considered provincially rare and/or SCC.

Furthermore, species listed within **Table 3** were further evaluated based on their habitat preferences and likelihood of occurrence for the Study Area. The habitat screening was built on habitat requirements defined by the MNR (2000), background records, and air-photo interpretation in order to identify the presence of suitable habitat for SAR/SCC within the Study Area. The results of the screening are documented in **Appendix A – Species at Risk Screening** and discussed in **Section 5.1.3**

Table 3 SAR Records for the Amherstview West Project Study Area

Common Name	Scientific Name	S-Ranks (Provincial Status)	SARA (Schedule 1) (Federal)	SARO (Provincial)
Insects				
Monarch	*Danaus plexippus*	S2N,S4B	Special Concern	Special Concern
Amphibians/Reptiles				
Western Chorus Frog (*Great Lakes/St. Lawrence pop.*)	*Pseudacris maculate pop. 1*	S3	Threatened	Not at Risk
Blanding's Turtle	*Emydoidea blandingii*	S3	Threatened	Threatened
Midland Painted Turtle	*Chrysemys picta marginata*	S4	Special Concern	No Status
Northern Map Turtle	*Graptemys geographica*	S3	Special Concern	Special Concern
Eastern Musk Turtle	*Sternotherus odoratus*	S3	Special Concern	Special Concern
Snapping Turtle	*Chelydra serpentina*	S4	Special Concern	Special Concern
Eastern Milksnake	*Lampropeltis triangulum*	S4	Special Concern	Not at Risk
Eastern Ribbonsnake	*Thamnophis sauritus*	S4	Special Concern	Special Concern
Birds				
Least Bittern	*Ixobrychus exilis*	S4B	Threatened	Threatened
Black-crowned Night-heron	*Nycticorax nycticorax*	S3B,S3N	No Status	No Status
Short-eared Owl	*Asio flammeus*	S2N,S4B	Special Concern	Special Concern
Common Nighthawk	*Chordeiles minor*	S4B	Threatened	Special Concern
Eastern Whip-poor-will	*Antrostomus vociferus*	S4B	Threatened	Threatened
Chimney Swift	*Chaetura pelagica*	S4B,S4N	Threatened	Threatened
Eastern Wood-pewee	*Contopus virens*	S4B	Special Concern	Special Concern
Loggerhead Shrike	*Lanius ludovicianus*	S2B	Endangered	Endangered
Bank Swallow	*Riparia riparia*	S4B	Threatened	Threatened
Barn Swallow	*Hirundo rustica*	S4B	Threatened	Threatened
Wood Thrush	*Hylocichla mustelina*	S4B	Threatened	Special Concern
Grasshopper Sparrow	*Ammodramus savannarum*	S4B	Special Concern	Special Concern
Henslow's Sparrow	*Ammodramus henslowii*	SHB	Endangered	Endangered
Bobolink	*Dolichonyx oryzivorus*	S4B	Threatened	Threatened
Eastern Meadowlark	*Sturnella magna*	S4B	Threatened	Threatened
Mammals				

Common Name	Scientific Name	S-Ranks (Provincial Status)	SARA (Schedule 1) (Federal)	SARO (Provincial)
Little Brown Myotis	*Myotis lucifugus*	S3	Endangered	Endangered
Northern Myotis	*Myotis septentrionalis*	S3	Endangered	Endangered
Tricolored Bat	*Perimyotis subflavus*	S3?	Endangered	Endangered
Eastern Small-footed Myotis	*Myotis leibii*	S2S3	No Status	Endangered
Fish				
Grass Pickerel	*Esox americanus*	S3	Special Concern	Special Concern
Deepwater Sculpin *(Great Lakes-Upper St. Lawrence pop.)*	*Myoxocephalus thompsonii*	No status	Special Concern	No Status

4 Methodology

4.1 Ecological Field Survey

A visual search of the Project Study Area was completed on May 12, 2021 with special attention paid to vegetation communities, vascular plant species, and wildlife habitat characteristics described below in **Section 4.1.2.**

4.1.1 Vegetation Communities

Vegetation communities within the Study Area were characterized and mapped using the ELC system for southern Ontario (Lee, et al., 1998). Vegetation communities were first delineated by air-photo interpretation and then verified while on-site. The majority of the vascular plants identified and observed were recorded throughout each individual ELC community.

4.1.2 Significant Wildlife Habitat

The MNRF has identified four categories of SWH within the *SWH Criteria Schedules for Ecoregion 6E* (MNRF, 2015). They include:

- Seasonal Concentration Areas of Animals
- Rare Vegetation Communities or Specialized Habitat for Wildlife
- Habitat for Species of Conservation Concern (excluding Endangered or Threatened Species)
- Animal Movement Corridors

The potential for candidate SWH was assessed using the criteria outlined in the MNRF SWH Criteria schedule noted above (MNRF, 2015), available background information, and air-photo interpretation.

In addition, wildlife features associated with the following wildlife life cycles were also included in the search:

- Butternut (*Juglans cinerea*) trees present within 50 m of the proposed work footprint;
- Potential bat roosts and associated evidence (cavity trees);
- Vernal pools within woodland features for amphibian breeding habitat;
- Seeps or springs for winter wildlife;
- Raptor stick nests to detect for woodland breeding nesting habitat;
- Piles of debris and/or broken and fissured rocks for reptile hibernacula;
- Incidental wildlife observations (tracks, scat, and dens) within or adjacent to the Study Area were also recorded.

5 Results

The following sections characterize the existing conditions within the Project Study Area. **Figure 5** represents vegetation communities and potential SAR habitat. Detailed SAR screening results are also included below.

5.1 Ecological Field Survey Results

Field surveys to determine vegetation communities, as well as the presence and/or absence of wildlife/SAR individuals and their habitat, were conducted by a WSP ecologist on May 12, 2021. Weather conditions consisted of 15°C, 10% cloud cover, wind speed of 2 km/hr, and no precipitation. The following subsections provide a summary of the existing natural environment features identified within the Project Study Area and include vegetation communities, wildlife habitat, and the potential for SAR.

5.1.1 Vegetation and Vegetation Communities

The delineation and characterization of vegetation communities were completed as a high-level assessment to evaluate the presence of wildlife habitats within the Study Area. Vegetation communities are shown in **Figure 5** and will aid in the SAR habitat risk assessment as well as the identification of candidate SWH.

At the time of field investigations, the vegetation communities were diverse in classification and generally consisted of valley slopes of mature deciduous and coniferous forest, transitioning to upland meadows with scattered trees and shrubs known to be influenced by historic agricultural practices, thereby changing to red cedar rock barren dominant areas. Wetland cattail marsh areas were present in lowlands and were associated with watercourse features. The eastern border of the Study Area consisted of grassland meadows, while the south was occupied with residential parcels.

The following ELC vegetation communities were identified to occur within the Study Area. They include:

- **Graminoid Meadow (MEM)**: abundant with reed canarygrass and Kentucky bluegrass (*Poa pratensis*);
- **Mixed Meadow (MEM):** abundant with reed canarygrass (*Phalaris arundinacea*), various grass species, wild carrot (*Daucus carota*), common dandelion (*Taraxacum officinale*), common milkweed (*Asclepias syriaca*), and wild parsnip (*Pastinaca sativa*). The meadow also contained scattered shrubs throughout consisting of European buckthorn (*Rhamnus cathartica*), honeysuckle species (*Lonicera sp.*), and staghorn sumac (*Rhus typhina*);
- **Cultural Thicket (CUT):** individual communities varied in species and dominance but generally consisted of staghorn sumac, European buckthorn, grey dogwood (*Cornus racemosa*), eastern red cedar (*Juniperus virginiana*), and honeysuckle species;
- **Cultural Woodland (CUW):** historic agricultural fields regenerating into woodland features with the following species: ash species (*Fraxinus sp.*), American elm (*Ulmus americana*), European buckthorn, staghorn sumac, eastern red cedar, and eastern white cedar (*Thuja occidentalis*);
- **Deciduous Forest (FOD):** an intermediate to mature aged forest, transitioning from lowland to upland, abundant with sugar maple, red/green ash (*Fraxinus pennsylvanica*), ironwood (*Ostrya virginiana*), red oak (*Quercus rubra*), and black cherry;

- **Mixed Forest (FOM):** a mature aged forest associated with valley slopes and contained undulating topography. It consisted of a mix of deciduous and coniferous species of the following: sugar maple (*Acer saccharum*), eastern white pine (*Pinus strobus*), eastern white cedar, trembling aspen (*Populus tremuloides*), black cherry (*Prunus serotina*), and shagbark hickory (*Carya ovata*);
- **Coniferous Forest (FOC):** occurred as young to intermediate aged forest on shallow soils, dominated by eastern red cedar;
- **Meadow Marsh (MAM)**: abundant with broad-leaved cattail (*Typha latifolia*), narrow-leaved cattail (*Typha angustifolia*) with standing water throughout; associated with valleylands and watercourse features;
- **Shallow Marsh (MAS)**: abundant with broad-leaved cattail (*Typha latifolia*), narrow-leaved cattail (*Typha angustifolia*) with standing water throughout; associated with valleylands and watercourse features;
- **Open Water (OAO):** open water aquatic habitat and
- **Residential (RES):** developed residential area**.**

No butternut or other SAR vascular plants were observed within 120 m of the Study Area.

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Figure 5:

Ecological Land Classification (ELC)

Amherstview West Secondary Plan

- Loyalist Township Parcels
- Amherstview West Study Area
- Survey Area (120m buffer)

Ecological Land Classification (ELC)

- Graminoid Meadow (MEG)
- Mixed Meadow (MEM)
- Cultural Thicket (CUT)
- Mixed Thicket (THM)
- Cultural Woodland (CUW)
- Deciduous Forest (FOD)
- Mixed Forest (FOM)
- Coniferous Forest (FOC)
- Meadow Marsh (MAM)
- Shallow Marsh (MAS)
- Open Water (OAO)
- Residential (RES)

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

0 100 200 300 400 m

1:7,500

July 2021

Source: Loyalist Township; LIO

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5.1.2 Wildlife and Wildlife Habitat

Several potential wildlife habitat features were identified within the Study Area. Common species and/or wildlife evidence incidentally observed included the following:

- American Woodcock (*Scolopax minor)* nest (active, female observed incubating eggs)
- Ring-billed Gull (*Larus delawarensis)*
- American Robin (*Turdus migratorius)*
- Northern Cardinal (*Cardinalis cardinalis)*
- Black-capped Chickadee (*Poecile atricapillus)*
- Baltimore Oriole (*Icterus galbula)*
- Northern Flicker (*Colaptes auratus)*
- Chipping Sparrow (*Spizella passerina)*
- American Goldfinch (*Spinus tristis)*
- Song Sparrow (*Melospiza melodia)*
- Ovenbird (*Seiurus aurocapilla)*
- Red-breasted Nuthatch (*Sitta canadensis)*
- Eastern Meadowlark (*Sturnella magna)*
- Mallard (*Anas platyrhynchos)*
- Blue Jay (*Cyanocitta cristata)*
- Mourning Cloak (*Nymphalis antiopa)*
- Snapping Turtle (*Chelydra serpentina)* (anecdotal homeowner observation)
- White-tailed Deer (*Odocoileus virginianus)* tracks/trails

5.1.2.1 Significant Wildlife Habitat

A total of **14 Candidate SWH** features were identified either within or adjacent to the Study Area. All Candidate SWH features were identified based on ELC results, wildlife habitat assessments during the field investigation, and general wildlife incidental observations. Candidate SWH are discussed below, and a summary of habitat descriptions, criteria, and rationale for each specialized wildlife habitat are provided in **Table 4.**

One **Confirmed SWH** has been identified in the background review and includes a Wildlife Concentration Area for colonial nesting waterbirds associated with the Parrott's Bay PSW, as discussed in **Section 3.3.5.**

Table 4: Summary of Candidate SWH for the Amherstview West Study Area

Wildlife Habitat	Summary of Habitat Criteria (MNRF, 2015)	Candidate SWH (Y/N)
Seasonal Concentration Areas		
Raptor wintering area	Combination of fields and woodlands (>20 ha).	**YES** FOD communities adjacent to meadow communities with a combined area >20 ha.
Bat maternity colonies	Mature mixed and deciduous forest stands with large diameter dead/dying cavity trees.	**YES** Forested communities (FOD/FOM) contained suitable cavity trees.
Reptile hibernacula	Rock piles of slopes, stone fences, abandoned crumbling foundations	**YES** Abandoned crumbling foundations and rock crevices are located within mixed meadow (MEM) areas.
Migratory butterfly stopover areas	Minimum of 10 ha with a combination of field and forest and located within 5 km of Lake Ontario	**YES** Field (MEM) and forest features (FOD/FOM/FOC) >10 ha are present within 5 km from Lake Ontario.
Landbird migratory stopover areas	Woodlots to be >10 ha and within 5 km from Lake Ontario	**YES** Woodlots (FOD/FOM/FOC) >10 ha are present within 5 km from Lake Ontario.
Specialized Habitat for Wildlife		
Waterfowl nesting area	Upland habitats adjacent to wetlands (within 120 m).	**YES** Mixed Meadow (MEM) and meadow/shallow marsh (MAM/MAS) wetlands are present within the Study Area.
Bald Eagle and Osprey nesting, foraging and perching habitat	Treed communities adjacent to rivers, lakes, ponds and other wetlands with stick nests of Bald Eagle or Osprey.	**YES** Forest (FOD/FOM/FOC) and woodland (CUW) communities with super canopy trees in the form of white pine are present within the Study Area.
Turtle nesting areas	Exposed soil, including sand and gravel in open sunny areas.	**YES** Patches of exposed soil are present in the mixed meadow (MEM) and is in proximity to wetland features.
Amphibian breeding habitat (woodland)	Forested swamps or treed upland communities with vernal pools.	**YES** Deciduous forest (FOD) communities contained lowland areas with the presence of vernal pools.
Amphibian breeding habitat (wetland)	All wetland communities (swamp, marsh, open aquatic).	**YES** Shallow marsh (MAS) and meadow marsh (MAM) communities are present in the Study Area.
Habitat for Species of Conservation Concern		
Marsh breeding bird habitat	Wetlands with emergent aquatic vegetation.	**YES**

Wildlife Habitat	Summary of Habitat Criteria (MNRF, 2015)	Candidate SWH (Y/N)
		Shallow marsh (MAS) and meadow marsh (MAM) communities are present in the Study Area.
Open country bird breeding habitat	Large grasslands and field >30 ha.	**YES** Grass meadows (MEG) >30 ha are present within the Study Area.
Shrub/early successional bird breeding habitat	Large shrub and thicket habitats >10 ha.	**YES** Shrublands and thicket habitats in the form of cultural thickets (CUT) are present throughout the Study Area.
Special Concern and rare wildlife species	All Special Concern and provincially rare (S1-S3, SH) plant and animal species with record occurrences within 1 km or 10 km grid.	**YES** **SC:** Common Nighthawk, Eastern Wood-pewee, Short-eared Owl, Eastern Milksnake, Eastern Ribbonsnake, Eastern Musk Turtle, Northern Map Turtle, Snapping Turtle, Monarch **S3:** Black-crowned Night-heron

5.1.3 Species at Risk Screening and Risk Assessment

A screening was completed for the SAR identified as potentially occurring in the Study Area. Those species are outlined in **Table 3.** The screening and risk assessment were based on the observed existing conditions and the identified presence of suitable habitat within the Study Area. The results of the screening and risk assessment are documented in **Appendix A – Species at Risk Screening and Risk Assessment**. Summarized below are the species with a likelihood of occurrence (ranked as either High, Moderate, or Low) based on current records and the presence of suitable habitat. There were two direct observations of SAR and included **Eastern Meadowlark and Snapping Turtle**. Therefore, such species have been ranked as having High risk of impacts as a result of the Project.

The list below represents those species that hold a designation under the Ontario *Endangered Species Act*, 2007. Species designated under the federal *Species at Risk Act*, 2002, were considered but deemed not applicable as no federal lands occur within the Amherstview West Study Area.

The following identifies the SAR with potential to occur based on habitat suitability within the Study Area (habitat types are represented by ELC codes and can be referred to Figure 5):

THREATENED AND ENDANGERED SPECIES

- **Least Bittern:** Threatened; breeds in a variety of wetland habitats but prefers cattail marshes with open pools and channels. Potential habitat is present in the Study Area in the form of Shallow Marsh (MAS);
- **Eastern Whip-poor-will:** Threatened; breeds in a mix of habitats; open woodlands, upland forests with open ground layers, savannahs. Potential habitat is present in the Study Area in the form of Cultural Woodlands (CUW), Mixed Forest (FOM), and Deciduous Forest (FOD) with open ground layers and understorey;

- **Chimney Swift:** Threatened; commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water. Potential habitat is present in the Study Area in the form of residential structures (RES) with chimneys;
- **Loggerhead Shrike:** Endangered; pastures or grasslands with scattered shrubs and small trees. Prefers fields or alvars with exposed bedrock. Potential habitat is present in the Study Area in the form of Mixed Meadow (MEM) and Cultural Thicket (CUT) with areas of exposed bedrock;
- **Barn Swallow:** Threatened; farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water. Potential habitat is present in the Study Area in the form of man-made structures (RES) and farmlands of Graminoid Meadow (MEG);
- **Eastern Meadowlark:** Threatened; open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size. Habitat is present in the Study Area as Eastern Meadowlarks were heard in Graminoid Meadows (MEG) at the time of field investigations (MEG);
- **Blanding's Turtle:** Threatened; lives in shallow waters, usually in large wetlands and shallow lakes. Potential habitat is present within 120 m of the Study Area in the form of Shallow Marsh (MAS) with open aquatic (OA) features. Adjacent upland features within the Study Area may provide suitable nesting habitat;
- **Little Brown Myotis:** Endangered; roost in trees and buildings; such as attics, abandoned buildings and barns for summer colonies. Hibernate in caves, abandoned mines. Potential habitat is present in the Study Area in the form of Deciduous Forest (FOD), Mixed Forest (FOM), and Cultural Woodlands (CUW);
- **Northern Myotis:** Endangered; hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, man-made structures but prefers hollow trees or under loose bark; hunts within forests, below canopy. Potential habitat is present in the Study Area in the form of Deciduous Forest (FOD), Mixed Forest (FOM), and Cultural Woodlands (CUW);
- **Eastern Small-footed Myotis:** Endangered; roost in a variety of habitats; under rocks, rock outcrops, buildings. Potential habitat is present in the Study Area in the form of rock outcrops and crevices observed within the Cultural Thicket (CUT) and Mixed Meadow (MEM) communities;
- **Tri-colored Bat:** Endangered; Found in a variety of forested habitats during summer, forms day roosts and maternity colonies in older forest and occasionally in barns or other structures; forage over water and along forested streams; hibernates in a cave or underground structure and roost individually. Potential habitat is present in the Study Area in the form of Deciduous Forest (FOD), Mixed Forest (FOM), and Cultural Woodlands (CUW).

SPECIAL CONCERN AND SPECIES OF CONSERVATION CONCERN

- **Black-crowned Night-heron:** SCC (S3B, provincial rank); nest colonially in cattail marshes. Potential habitat is present within 120 m of the Study Area in the form of Shallow Marsh (MAS);
- **Short-eared Owl:** Special Concern; lives in open areas of grasslands, marshes, and tundra. Potential habitat is present in the Study Area in the form of Mixed Meadow (MEM) and Graminoid Meadow (MEG);
- **Common Nighthawk:** Special Concern; open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs. Potential habitat is present in the Study Area in the form of Mixed Meadow (MEM) and Cultural Woodlands (CUW) with open ground and exposed bedrock;
- **Eastern Wood-pewee:** Special Concern; open deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks. Potential habitat is present in the Study Area in the form of Deciduous Forest (FOD) and Cultural Woodland (CUW);

- **Wood Thrush:** Special Concern; coniferous or deciduous woods with dense young undergrowth; spruce bogs; borders of wooded swamps and damp forest; brushy pasture. Potential habitat is present in the Study Area in the form of Deciduous Forest (FOD) and Cultural Woodland (CUW);
- **Grasshopper Sparrow:** Special Concern; open grassland areas and nests in hayfields, pastures, alvars, and prairies; preferring areas that are sparsely vegetated. Potential habitat is present in the Study Area in the form of Graminoid Meadow (MEG);
- **Snapping Turtle:** Special Concern; permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha. Potential habitat is present within 120 m of the Study Area in the form of Shallow Marsh (MAS) with open aquatic (OA) features. Adjacent upland features within the Study Area may provide suitable nesting habitat;
- **Eastern Musk Turtle:** Special Concern; found in ponds, lakes, marshes, and rivers that are slow-moving and abundant with aquatic vegetation and muddy substrate. Potential habitat is present within 120 m of the Study Area in the form of Shallow Marsh (MAS) with open aquatic (OA) features. Adjacent upland features within the Study Area may provide suitable nesting habitat;
- **Eastern Ribbonsnake**: Special Concern; found close to water, usually marshes where it hunts for frogs and fish. They hibernate in rock crevices and underground burrows. Potential habitat is present within 120 m of the Study Area in the form of Shallow Marsh (MAS). Hibernacula may be present in the form of rock outcrops and crevices observed within the Mixed Meadow (MEM) and Cultural Thicket (CUT) communities;
- **Monarch:** Special Concern; uses three types of habitat; caterpillars feed on milkweed plants and are confined to meadows and open areas with milkweed, adult butterflies can be found in more diverse habitats where they feed on nectar from wildflowers. Potential habitat is present in the Study Area in the form of Mixed Meadow (MEM);
- **Grass Pickerel:** Special Concern; found in wetlands, streams, ponds, and shallow bays of larger lakes. Potential habitat is present within 120 m of the Study Area in the form of Shallow Marsh (MAS) and Open Aquiatc (OA) features.

6 Ecological Constraints

Based on the findings of the background review, field survey, and SAR screening/risk assessment, the following natural heritage features, candidate significant wildlife habitat and SAR should be taken into consideration during the development of the Amherstview West Secondary Plan and Municipal Class Environmental Assessment process. If future land development is proposed, detailed and species-specific ecological surveys shall be required. Ecological constraints have been identified based on the following:

- **Parrott's Bay PSW** occurs adjacent to the Project footprint/within 120 m. It is recommended that the Secondary Plan should not encroach into this area and land use designations should ensure protection of this environmentally sensitive area. Appropriate setbacks of 120 m may be required to ensure protection of this significant natural heritage feature. This significant wetland has potential to contain transient turtle species and individuals may interact with future development activities. Therefore, it recommended that temporary barrier fencing should be installed prior to any future development along this area to reduce or eliminate indirect and direct impacts to turtle species, as well as encroachment into the natural area.
- **Bayview Bog PSW** is located within 1 km from the project Study Area. This feature is not within 120 m of the Study Area; therefore, no direct impacts are anticipated. However, this feature should be considered during planning processes as it may be closely associated with the Parrott's Bay PSW due to the unnamed watercourse transecting the Study Area and thereby linking the two features together. If the unnamed watercourse is not conserved for the long term, the Bayview Bog PSW could experience ecological decline. Therefore, it is recommended for the Secondary Plan to consider a setback of 50 m to 120 m throughout the extent of the unnamed watercourse for the protection of the aquatic environment as well as the terrestrial riparian areas.
- **Parrott's Bay and two watercourses** are present within the Study Area. One watercourse intersects with the Project footprint, whereas the other occurs within 120 m of the project site. There is potential for the two watercourse features to contain fish and fish habitat. It is recommended that the Secondary Plan consider the retention and buffer setback of 30 m to all aquatic features in the Study Area.
- **Unevaluated Wetlands** are present within the Study Area. If land use designations allow for the development with the unevaluated wetland pockets, an Ontario Wetland Evaluation System (OWES) should be required to determine if the Parrott's Bay PSW has other contributing/supporting wetland features in proximity to it. This triggered at the time of a development application. It is recommended that the Secondary Plan consider a setback distance of 30 m from the unevaluated wetlands within the Study Area.
- **Two (2) Life Science ANSIs** are present within 2 km from the Study Area and include the Amherstview Swamp and Fen and Asselstine Alvar. As both features are not within 120 m of the project Study Area, no direct impacts are anticipated. However, both ANSIs may be a natural linkage feature to the Parrott's Bay PSW and Conservation Area and it is recommended that linkage features/wildlife corridors be considered with the development of the Secondary Plan.
- **Significant Woodlands and Valleylands** are present within the Study Area and contribute to the Loyalist Township Environmentally Sensitive Areas as defined by the OP. No development or change in land use in this area shall be considered without a detailed Environmental Impact Assessment completed to the satisfaction of the Township and the Conservation Authority. Lands within 50 m of Significant Woodlands and Valleylands should also be conserved in the long term (Loyalist Township OP, 2019).
- **Eleven (11) Threatened/Endangered** species under the ESA have either a High, Moderate to Low potential to occur within the Study Area. Such species receive automatic species and habitat protection on private and provincial lands. The development of the Secondary Plan should consider such species and targeted SAR surveys are recommended prior to the development of future lands.

- **Eleven (11) Special Concern and/or Species of Conservation Concern** species under the ESA have either a High, Moderate to Low potential to occur within the Study Area. Such species do not receive protection under the ESA but do receive protection under alternative acts such as; *Migratory Bird Convention Act*, 1994 and the *Fish and Wildlife Conservation Act*, 1997.
- **One Confirmed SWH** feature is present within the Study Area and includes a Wildlife Concentration Area for Colonial Waterbird Nesting. This feature is associated with the Parrott's Bay PSW and Conservation Area. It is recommended for the Secondary Plan to consider the indirect effects of future development lands to this significant wildlife habitat. Indirect effects can include temporary and/or permanent vibrations and noise disturbance, increase in sediment and erosion to wetlands and the release of other contaminants in surface runoff, and increased human activity. Such indirect impacts may cause birds to permanently abandon the site as a nesting area. Therefore, a minimum of 150 m radius from the most peripheral nests in a colony determines the area of the SWH. Development is not permitted within this feature unless it can be demonstrated that there will be no negative impacts on the feature or its ecological feature (MNRF, 2014b)
- **Fourteen (14) Candidate SWH** features have been identified to occur within the Study Area. An evaluation of significance shall be conducted for each potential habitat feature prior to future development activities in order to assess impacts and apply appropriate mitigation measures. It is recommended for the following surveys to be conducted in order to evaluate significance. Suggested field surveys could include but may not be limited to the following:
    - Breeding bird (Marsh, Raptors, Grassland, Woodland);
    - Spring and fall landbird bird migration
    - Fall butterfly migration
    - Amphibian call counts (woodland and wetland);
    - Reptile hibernacula emergence;
    - Acoustic bat maternity colony;
    - Turtle emergence and basking
    - Winter raptor

6.1 Recommendations

The identification of potential SWH, candidate SAR habitat, provincially and regionally significant natural heritage features, and associated environmental setbacks provides the necessary framework to identify areas that should be considered a constraint to development. This determination is based on current (2021) policies and regulations (outlined in Section 2), supported by the background review and preliminary field investigation outlined herein. These areas are illustrated in **Figure 6** and depict a range in the level of constraint from Minimal to High constraint dependant on its significant feature, likelihood of SAR, or connectivity to adjacent ecologically significant areas. **Table 5** provides a summary and description for each area, providing policy considerations, recommendations and overall constraint level. It should be noted that these recommendations are intended to inform the Amherstview West Secondary Plan and are not intended replace the need for an Environmental Impact Study (EIS) and the associated targeted field investigations required to assess the impact of a proposed development on the natural heritage system.

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Figure 6: Constraints & Opportunities

Amherstview West Secondary Plan

- Waterbody
- Watercourse
- Amherstview West Study Area
- Loyalist Township Parcels

Natural Heritage Constraints

- Minimal Constraint
- Moderate Constraint
- Moderate - High Constraint
- High Constraint

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1:7,000

July 2021

Source: Loyalist Township; LIO

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Table 5: Summary of Constraints and Opportunities for the Amherstview West Secondary Plan

Area ID	Area (hectares)	Vegetation Community	Ecological Value	Natural Heritage Policy Considerations	Management Recommendations	Constraint to Development
C-1	6.9	Riparian and Meadow Marsh	High	-Environmentally Sensitive Area -Regulated Area -Linkage / Connectivity: (Parrott's Bay PSW to Bayview Bog PSW and Amherstview Swamp and Fen ANSI -Watercourse	Due to the sensitivity of the habitat and wildlife likely to be found in this area; **development within this area is not recommended**.	**HIGH**
C-2	5.8	Deciduous and Coniferous Forests	High	-Environmentally Sensitive Area -Significant Woodland -Regulated Area -Linkage / Connectivity (Parrott's Bay PSW to Bayview Bog PSW and Amherstview Swamp and Fen ANSI) -Unevaluated Wetland -Potential SAR habitat -Watercourse	Due to the sensitivity of the habitat, species at risk potential, and other sensitivities likely to be found in this area, **development within this area is not recommended**.	**HIGH**
C-3	19.8	Residential	Low	N/A	**A scoped EIS may be required** on a case-by-case basis to address specific concerns related to natural heritage features or wildlife within or adjacent to the proposed development.	**MINIMAL**
C-4	8.2	Mixed Forest	High	-Environmentally Sensitive Area -Significant Woodland and Valleyland -Regulated Area -Linkage / Connectivity (Parrott's Bay PSW to Bayview Bog/Amherstview Swamp and Fen ANSI to Asselstine Alvar ANSI)	Due to the sensitivity of wetland habitat, woodlands, the Species at Risk potential, and other significant natural heritage features known to be found in this area, **development within this area is not recommended**.	**HIGH**

Area ID	Area (hectares)	Vegetation Community	Ecological Value	Natural Heritage Policy Considerations	Management Recommendations	Constraint to Development
				-Adjacent to Parrott's Bay PSW -Adjacent to Significant Wildlife Habitat -Potential SAR habitat		
C-5	18.4	Deciduous and coniferous thicket	Moderate	-Potential for Loggerhead Shrike (END) -Candidate SWH for snake hibernacula -Unevaluated Wetland	Due to potential for SAR and other sensitive habitats in this area, **a full Environmental Impact Study (EIS) should be required prior to development**. This EIS should include SAR target surveys and a complete evaluation of habitats (including candidate SWH). Appropriate setbacks should be applied to sensitive features. Species at Risk permitting may be required pending the results of surveys.	**MODERATE - HIGH**
C-6	40.4	Deciduous and coniferous woodland	Low	-Unevaluated Wetland	**A scoped EIS may be required** on a case-by-case basis to address specific concerns related to natural heritage features or wildlife within or adjacent to the proposed development.	**MINIMAL**
C-7	14	Deciduous and coniferous forest	Moderate	-Social Value -Unevaluated Wetland -Potential for Snapping Turtle (SC) and Blanding Turtle (THR)	Due to potential for SAR and other sensitive habitats in this area, **a full Environmental Impact Study (EIS) should be required prior to development**. This EIS should include SAR target surveys and a complete evaluation of habitats (including candidate SWH). Appropriate setbacks should be applied to sensitive features. Species at Risk permitting may be required pending surveys results.	**MODERATE - HIGH**
C-8	2.3	Coniferous Forest	Low	-Social Value -Unevaluated Wetland	**A full EIS should be completed to evaluate the natural heritage values within this area** including wetlands, woodlands, SAR habitat, and	**MODERATE**

Area ID	Area (hectares)	Vegetation Community	Ecological Value	Natural Heritage Policy Considerations	Management Recommendations	Constraint to Development
				-Regulated Area -Environmentally Sensitive Area -Significant Woodland	other sensitive environments. The EIS should also consider the social value the area provides.	
C-9	3.6	Residential/ agricultural	Low	N/A	**A scoped EIS may be required** on a case-by-case basis to address specific concerns related to natural heritage features or wildlife within or adjacent to the proposed development.	**MINIMAL**
C-10	36	Grass Meadow	Moderate	-Potential for Eastern Meadowlark (THR) and Bobolink (THR)	**A full EIS should be completed to evaluate the potential SAR habitat and other natural heritage values.** The EIS should also consider the social value that the area provides. This EIS should include SAR targeted surveys for Eastern Meadowlark and Bobolink. Endangered Species Act (ESA, 2007) permitting or registration may be required.	**MODERATE**
C-11	1.4	Grass Meadow	Moderate	-Eastern Meadowlark (THR) habitat -Potential for Bobolink (THR)	**A full EIS should be completed to evaluate the potential SAR habitat and other natural heritage values.** The EIS should also consider the social value that the area provides. This EIS should include SAR targeted surveys for Eastern Meadowlark and Bobolink. Endangered Species Act (ESA, 2007) permitting or registration may be required.	**MODERATE**
C-12	6.1	Coniferous and deciduous thicket	Moderate	-Potential for Loggerhead Shrike (END)	Due to potential for SAR and other sensitive habitats in this area, **a full Environmental Impact Study (EIS) should be completed prior to development.** This EIS should include SAR target surveys and a complete evaluation of habitats (including candidate SWH). Appropriate setbacks should be applied to sensitive features.	**MODERATE-HIGH**

Area ID	Area (hectares)	Vegetation Community	Ecological Value	Natural Heritage Policy Considerations	Management Recommendations	Constraint to Development
					Endangered Species Act (ESA, 2007) permitting may be required pending the results of surveys.	
C-13	3.9	Deciduous Forest	Moderate	-Regulated Area -Significant Woodland setback	Due to existing regulations limits and significant woodland within the area, **a full Environmental Impact Study (EIS) should be completed prior to development**. This EIS should include SAR target surveys and a complete evaluation of habitats (including candidate SWH). Appropriate setbacks should be applied to sensitive features.	**MODERATE-HIGH**
C-14	2.3	Mixed Meadow and Deciduous Forest	Moderate	-Regulated Area -Significant Woodland setback -Significant Valleyland setback	Due to existing regulations limits, significant woodland and valleylands within the area, **a full Environmental Impact Study (EIS) should be completed prior to development**. This EIS should include SAR target surveys and a complete evaluation of habitats (including candidate SWH). Appropriate setbacks should be applied to sensitive features. Species at Risk permitting may be required pending the results of surveys.	**MODERATE-HIGH**
C-15	0.8	Mixed Meadow	Moderate	-Regulated Area -Significant Woodland setback -Significant Valleyland setback	Due to existing regulations limits, significant woodland and valleylands within the area, **a full Environmental Impact Study (EIS) should be completed prior to development**. This EIS should include SAR target surveys and a complete evaluation of habitats (including candidate SWH). Appropriate setbacks should be applied to sensitive features. Species at Risk permitting may be required pending the results of surveys.	**MODERATE-HIGH**

Area ID	Area (hectares)	Vegetation Community	Ecological Value	Natural Heritage Policy Considerations	Management Recommendations	Constraint to Development
C-16	7.2	Mixed Meadow	Moderate	-Potential for Loggerhead Shrike (END)	**A full EIS should be completed to evaluate the potential SAR habitat and other natural heritage values.** The EIS should also consider the social value that the area provides. This EIS should include SAR targeted surveys for Loggerhead Shrike Endangered Species Act (ESA, 2007) permitting or registration may be required.	**MODERATE**

7 Conclusion

The Amherstview West Study Area is an ecologically diverse landscape consisting of unique vegetation communities and land formations with valley slopes, rock outcrops, undulating topography with wetlands, uplands, forests, and scrublands. Such a diverse landscape promotes wildlife and species diversity that depend on such features to carry out critical life cycles necessary for survival. As potential infrastructure and other development applications are proposed within the Study Area, detailed and context specific ecological impact assessments will be required to evaluate the potential impacts on the Natural Heritage System.

The sensitive ecological components throughout and adjacent to the Study Area not only contribute to a sustainable ecosystem within the Amherstview region of Loyalist Township but holds high social value for local residents. Therefore, the Secondary Plan should promote sustainable development practices where human development goals can be met while simultaneously ensuring the integrity and stability of the surrounding natural heritage systems are protected and sustained.

This report provides a preliminary evaluation of the ecological features and potential SAR habitat within the Study Area, and an assessment of the risk the proposed Secondary Plan and future development may have on these features, based on background records review, field investigations, and wildlife habitat analysis. Once potential infrastructure requirements are better understood, additional review, assessment of impacts, and recommended mitigation measures may be required to satisfy the Municipal Class Environmental Assessment process.
The results and findings of this assessment have been reported without bias or prejudice. The conclusions of this study are based on our own professional opinion substantiated by the findings of this study and have not been influenced in any way.

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APPENDIX

A SPECIES AT RISK SCREENING AND RISK ASSESSMENT

Boundary Road and Highway 401 Utility Line Rebuilt - Cornwall Electric									
SCIENTIFIC NAME	COMMON NAME	GENERAL HABITAT ACCORDING TO THE MNRF SIGNIFICANT WILDLIFE HABITAT TECHNICAL GUIDE	CONSERVATION STATUS			SOURCE2	HABITAT WITHIN PROJECT SCREENING AREA	RATIONALE	RISK ASSESSMENT
			Federal (SARA, Schedule 1)	Provincial (ESA, 2007)	S-Rank1				
SPECIES AT RISK & SPECIES OF CONSERVATION CONCERN									
BIRDS									
Ixobrychus exilis	Least Bittern	Breeds in a variety of wetland habitats, but prefers cattail marshes with open pools and channels	THR	THR	S4B	OBBA	**YES**	Marshes are present in the Study Area	Low
Nycticorax nycticorax	Black-crowned Night-heron	Nest colonially in cattail marshes.	---	---	S3B,S3N	OBBA	**YES**	Cattail marshes are preent in the Study Area	Low
Asio flammeus	Short-eared Owl	Lives in open areas of grasslands, marshes, and tundra.	SC	SC	S4B	OBBA	**YES**	Grasslands are present in the Study Area	Moderate
Chordeiles minor	Common Nighthawk	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	THR	SC	S4B	OBBA	**YES**	Open meadows with barren areas and exposed areas of gravel substrate are present in the Study Area	Moderate
Antrostomus vociferus	Eastern Whip-poor-will	Breeds in a mix of habitats; open woodlands, upland forests with open ground layers, savannahs.	THR	THR	S4B	OBBA	**YES**	Upland open woodlands with open ground are present in the Study Area.	Moderate
Chaetura pelagica	Chimney Swift	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	THR	THR	S4B,S4N	OBBA	**YES**	Chimneys and other structures are present within the Study Area	Low
Contopus virens	Eastern Wood-pewee	Open deciduous, mixed or coniferous forest; predominated by oak with little understory; forest clearings, edges; farm woodlots, parks.	SC	SC	S4B	OBBA	**YES**	Deciduous forests and woodlands within the Study Area may provide breeding habitat for this species.	Moderate
Lanius ludovicianus	Loggerhead Shrike	Pastures or grasslands with scattered shrubs and small trees. Prefers fields or alvars with exposed bedrock.	END	END	S2B	NHIC/OBBA	**YES**	Grassands and meadows with scattered trees and areas with exposed bedrock are present within the Study Area.	Moderate
Riparia riparia	Bank Swallow	Nest in burrows where there are vertical faces in silt and sand deposits.	THR	THR	S4B	OBBA	No	Vertical faces with sand/silt deposits are absent from the Study Area.	No Risk
Hirundo rustica	Barn Swallow	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	THR	THR	S4B	OBBA	**YES**	Man-made structures (buildings and bridges) within the Study Area may provide suitable habitat for this species.	Low
Hylocichla mustelina	Wood Thrush	Coniferous or deciduous woods with dense young undergrowth; spruce bogs; borders of wooded swamps and damp forest; brushy pasture.	THR	SC	S4B	OBBA	**YES**	Deciduous forests and woodlands within the Study Area may provide minimal habitat for this species.	Moderate
Ammodramus savannarum	Grasshopper Sparrow	Open grassland areas and nests in hayfields, pastures, alvars, and prairies; preferring areas that are sparsely vegetated.	SC	SC	S4B	OBBA	**YES**	Grasslands are present in the Study Area	Moderate
Ammodramus henslowii	Henslow's Sparrow	Ontario is this species most northern range limit. Found in old fields, pastures, and wet meadows.	END	END	SHB	NHIC	No	Although habitat of old fields are present in the Study Area, this is a historical observation and is highly unlikey to occur.	No Risk
Dolichonyx oryzivorus	Bobolink	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	THR	THR	S4B	NHIC/OBBA	No	This species requires large expansive grasslands with dense ground cover; no meadows or grasslands are situated within the Study Area.	No Risk
Sturnella magna	Eastern Meadowlark	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	THR	THR	S4B	NHIC/OBBA	**YES**	The meadows and grasslands this species requires are present in the Study Area. This species was heard at the time of field investigations.	High
HERPETOZA									
Pseudacris triseriata	Western Chorus Frog	Occurs in marshes, or wet woodlands; requiring both terrestrial and aquatic habitats in close proximity; found in temporary ponds for breeding.	THR	NAR	S3	ORAA	**YES**	Lowland deciudous forests and swamps occur adjacent to upland habitats within the Study Area, which may provide for breeding habitat.	Moderate
Emydoidea blandingii	Blanding's Turtle	Lives in shallow waters , usually in large wetlands and shallow lakes.	THR	THR	S3	ORAA/NHIC	**YES**	Marshes with shallow water occur within 120 m of the Study Area.	Low
Chrysemys picta marginata	Midland Painted Turtle	Lives in slow-moving, fresh waters with abundant vegetation and basking sites.	SC	---	S4	ORAA	**YES**	Marshes with slow moving waters occur within 120 m of the Study Area.	Low
Graptemys geographica	Northern Map Turtle	Inhabits rivers and lakeshores and hibernates at the bottom of deep, slow-moving river sections.	SC	SC	S3	ORAA	No	Large, deep river systems are absent from the Study Area.	No Risk

Boundary Road and Highway 401 Utility Line Rebuilt - Cornwall Electric									
SCIENTIFIC NAME	COMMON NAME	GENERAL HABITAT ACCORDING TO THE MNRF SIGNIFICANT WILDLIFE HABITAT TECHNICAL GUIDE	CONSERVATION STATUS			SOURCE2	HABITAT WITHIN PROJECT SCREENING AREA	RATIONALE	RISK ASSESSMENT
			Federal (SARA, Schedule 1)	Provincial (ESA, 2007)	S-Rank1				
SPECIES AT RISK & SPECIES OF CONSERVATION CONCERN									
Sternotherus odoratus	Eastern Musk Turtle	Found in ponds, lakes, marshes, and rivers that are slow-moving and abundant with aquatic vegetation and muddy substrate.	SC	SC	S3	ORAA/NHIC	**YES**	Marshes with slow moving waters occur within 120 m of the Study Area.	Low
Chelydra serpentina	Snapping Turtle	Permanent, semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddy banks or bottoms; often uses soft soil or clean dry sand on south-facing slopes for nest sites; may nest at some distance from water; often hibernate together in groups in mud under water; home range size ~28 ha.	SC	SC	S3	ORAA/NHIC	**YES**	Wetland habitat of marsh is present within the Study Area. Anecdotal information also suggests the presence of nesting sites with you turtles.	High
Lampropeltis triangulum	Eastern Milksnake	Inhabits a wide variety of features including prairies, meadows, pastures, hayfields, rocky outcrops, and forests.	SC	NAR	S4	ORAA	**YES**	Meadows and forests with rocky outcrops are present within the Study Area.	Moderate
Thamnophis sauritus	Eastern Ribbonsnake	Found close to water, usually marshes where it hunts for frogs and fish. They hibernate in rock crevices and underground burrows.	SC	SC	S4	ORAA	**YES**	Wetlands of marshes are present within the Study Area. Rock crevices are also present within the meadow features.	Moderate
INSECTS									
Danaus plexippus	Monarch	Uses three types of habitat; caterpillars feed on milkweed plants and are confined to meadows and open areas with milkweed, adult butterflies can be found in more diverse habitats where they feed on nectar from wildflowers.	SC	SC	S2N,S4B	OBA	**YES**	Meadows and open areas containing milkweed plants are present within the Study Area.	Moderate
MAMMALS									
Myotis lucifugus	Little Brown Myotis	Roost in trees and buildings; such as attics, abandoned buildings and barns for summer colonies. Hibernate in caves, abandoned mines.	END	END	S3	AMO	**YES**	Suitable cavity trees are present within the Study Area.	Low
Myotis septentrionalis	Northern Myotis	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, man-made structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.	END	END	S3	AMO	**YES**	Suitable habitat of man-made structures are present within the Study Area. Suitable cavity trees are present.	Low
Myotis leibii	Eastern Small-footed Myotis	Roost in a variety of habitats; under rocks, rock outcrops, buildings.	---	END	S3	AMO	**YES**	Rock outcrops are present within the meadow feature in the Study Area.	Low
Perimyotis subflavus	Tri-Colored Bat	Found in a variety of forested habitats during summer, forms day roosts and maternity colonies in older forest and occasionally in barns or other structures; forage over water and along forested streams; hibernates in a cave or underground structure and roost individually.	END	END	S3?	AMO	**YES**	Suitable cavity trees are present within the Study Area.	Low
FISH									
Esox americanus	Grass Pickerel	Found in wetlands, streams, ponds, and shallow bays of larger lakes.	SC	SC	S3	DFO	**YES**	Wetlands and shallow bay of Lake Ontario are present within 120 m of the Study Area.	Low
Myoxocephalus thompsonii	Deepwater Sculpin *(Great Lakes-Upper St. Lawrence pop.)*	Inhabits cold, deep freshwater lakes.	SC	---	---	DFO	No	Lake Ontario is outside the Study Area.	No Risk

[1]S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common. [2]Information sources include: MNRF = NHIC = Natural Heritage Information Centre; OBBA = Ontario Breeding Bird Atlas; ORAA = Ontario Reptile and Amphibian Atlas; OBA = Ontario Butterfly Atlas; AMO = Atlas of the Mammasl of Ontario; --- denotes no information or not applicable.

APPENDIX

B PHOTOGRAPHIC RECORD

Photo 1 **Date:** May 14, 2021 **Notes:** Representative cavity tree in Mixed Forest community	
Photo 2 **Date:** May 14, 2021 **Notes:** Parrot's Bay trail throughout Deciduous Forest community	

Photo 3 **Date:** May 14, 2021 **Notes:** Open area within Mixed Forest community		
Photo 4 **Date:** May 14, 2021 **Notes:** Mixed Meadow community with scattered shrubs		

Photo 5 **Date:** May 14, 2021 **Notes:** Edge of Mixed Meadow and Mixed Forest		
Photo 6 **Date:** May 14, 2021 **Notes:** Cultural Thicket community		

Photo 7 **Date:** May 14, 2021 **Notes:** Large, mature trees within Mixed Forest community		
Photo 8 **Date:** May 14, 2021 **Notes:** Mixed Forest on west facing valley slope, toward Parrot's Bay Shallow Marsh		

Photo 9 **Date**: May 14, 2021 **Notes:** Mixed Forest on valley slope, toward Parrot's Bay Shallow Marsh		
Photo 10 **Date:** May 14, 2021 **Notes:** Looking toward Parrot's Bay Shallow Marsh		

Photo 11 **Date:** May 14, 2021 **Notes:** White Trillium *(Trillium grandiflorum)* observed on site		
Photo 12 **Date:** May 14, 2021 **Notes:** Parrot's Bay Cattail Shallow Marsh, facing north		

Photo 13 **Date:** May 14, 2021 **Notes:** Parrot's Bay Cattail Shallow Marsh, facing southwest	
Photo 14 **Date:** May 14, 2021 **Notes:** Mixed Forest on valley slope	

Photo 15 **Date:** May 14, 2021 **Notes:** Mixed Meadow and Cultural Thicket communities	
Photo 16 **Date:** May 14, 2021 **Notes:** Meadow, thicket, and coniferous forest	

Photo 17 **Date:** May 14, 2021 **Notes:** Meadow and Cultural Woodland		
Photo 18 **Date:** May 14, 2021 **Notes:** Meadow and Cultural Woodland		

Photo 19 **Date:** May 14, 2021 **Notes:** Active American Woodcock nest in Mixed Meadow community		
Photo 20 **Date:** May 14, 2021 **Notes:** Deciduous Forest community		

Photo 21

Date:
May 14, 2021

Unnamed watercourse at southwestern edge of project area, facing northeast

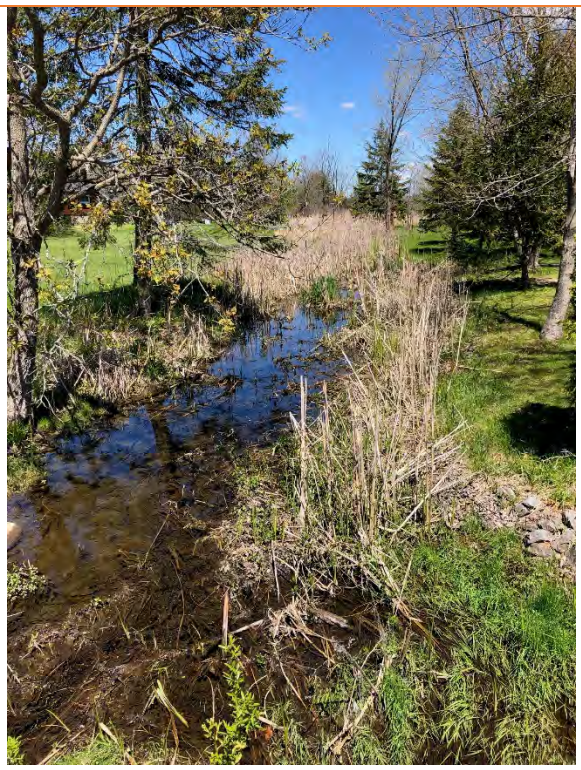
Photo 22

Date:
May 14, 2021

Unnamed watercourse flowing out into Parrott's Bay, facing southwest

Photo 23 **Date:** May 14, 2021 Old foundation and rock crevices within meadow and thicket communities; potential reptile hibernacula feature	
Photo 24 **Date:** May 14, 2021 Exposed bedrock and shallow soils within meadow communities, potential for alvar characteristics	

Photo 25 **Date:** May 14, 2021 Rock crevices and exposed bedrock in meadow community; potential reptile hibernacula feature	
Photo 26 **Date:** May 14, 2021 Rock crevices and exposed bedrock in meadow community; potential reptile hibernacula feature	

Photo 27 **Date:** May 14, 2021 Unnamed watercourse from within the study area, facing northeast from Parrott's Bay Lane	
Photo 28 **Date:** May 14, 2021 Grassland meadows within the study area; potential Eastern Meadowlark and Bobolink habitat.