Environmental Impact Statement

BLOCK 9 SMITHVILLE, TOWNSHIP OF WEST LINCOLN, ON

Prepared for

Lockbridge Developments

75 Scarsdale Road, Suite 201, Toronto ON, M3B 2R2

November 7, 2024
Project No. P2024-922

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Version History

Version	Date	Issue	Description	Author	Approved
1	19/11/2024	1	Issued for review	LB	
2	21/11/2024	2	Final Issue for Submission	LB	

FORWARD

November 7, 2024

Don Manson

Lockbridge Developments
74 Scarsdale Road, Suite 201,
Toronto, ON
M3B 2R2

Re: Smithville Block 9 EIS, Lockbridge Developments, Environmental Impact Statement

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Dear Lockbridge Developments,

GeoProcess Research Associates Inc. (GeoProcess) is pleased to present the following Environmental Impact Statement (EIS) for the proposed development within the Smithville Urban Boundary Expansion. This EIS is associated with the first stage of development within the expansion lands, specifically within Block 9 land area. The draft plan presented is identified as Stage 1 and encompasses three properties, which collectively are herein referred to as the "Subject Property." The EIS builds upon work that was completed for the Subwatershed Study (SWS) and Secondary Plan. The EIS relies on field data collected for the Subwatershed Study by Natural Resource Solutions Inc. (NRSI) and collected by Myler Ecological Consulting as is available. The Subject Property is subject to policies outlined by the Niagara Peninsula Conservation Authority (NPCA), Niagara Region Official Plan (NROP), and the Official Plan of the Township of West Lincoln. This EIS considers the existing character of the Subject Property, the proposed development, and the policy context to establish an impact statement and recommended mitigation measures.

Regards,

GEOPROCESS RESEARCH ASSOCIATES INC

Ken Glasbergen, M.Sc., ERPG.
Senior Ecologist, Principal

Executive Summary

The following Environmental Impact Statement (EIS) was completed by GeoProcess Research Associates (GeoProcess) in accordance with the Niagara Region Official Plan (NROP), Township of West Lincoln Official Plan and the Niagara Peninsula Conservation Authority (NPCA) Regulations and builds upon the natural heritage information included in the Smithville Subwatershed Study conducted by Wood. The Subject Property is the proposed site of future residential development in the urban boundary expansion of Smithville, Ontario. Under Schedule C2 NES of the NROP, the Subject Property contains a small area designated as "Other Wetlands and Non-Provincially Significant Wetlands" in the northwest portion of the property where a tributary of Twenty Mile Creek flows. As per Amendment No. 63 to the Official Plan of the Township of West Lincoln (OPA No. 63) Schedule E-10 and Schedule E-12, one natural heritage system was identified on the Subject Property, a Linkage, along with significant woodlands to the north and south. The linkage located within the Subject Property is classified as a Secondary Linkage and connects the North Creek and Twenty Mile Creek corridors to the south and north of the Subject Property, respectively.

GeoProcess conducted various surveys in the fall of 2024 to characterize and confirm the natural heritage features located in the Study Area outlined by previous work completed by Natural Resource Solutions Inc (NRSI), Matrix, and Myler Ecological Consulting. A review of all relevant policies and applicable existing background information was included in the scope of the EIS.

The EIS found that the proposed development will not impact Species at Risk habitat, significant landforms, significant wetlands or significant wildlife habitat as defined by the province. A small cultural woodland will be removed along with the hedgerow feature. Plantings of native species within the Linkage to be established along the eastern property boundary will replace the treed cover removed in these two features. The SWM strategy will replicate the headwater drainage feature functions, with discharge from the pond to the downstream receiving watercourse meeting release targets set in the SWS. Overall, the EIS concludes that the development will not have a negative impact on surrounding natural heritage features or their functions and, through the establishment of a vegetated Linkage, has the opportunity to provide a net gain to the area.

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1. Introduction

GeoProcess Research Associates Inc. (GeoProcess) has been retained by Lockbridge Developments to complete an Environmental Impact Statement (EIS) for lands within the 63.5-hectare (ha) area identified as 'Block 9' in the Official Plan of the Township of West Lincoln and the Smithville Master Community Plan (Map 1). Specifically, this EIS is for Stage 1 of the Block 9 lands, a 12.5 ha block situated south of Townline Road between Port Davidson Road and Shurie Road in Smithville, Ontario. This is herein referred to as the "Subject Property". the Subject Property is located within the Urban Boundary Expansion for the Community of Smithville and is subject to a Master Community Planning Study to plan for future growth within the Community.

1.1. Site Description

The Subject Property is comprised of agricultural lands, supporting a limited number of natural heritage features, which include a small woodland feature, headwater drainage features and hedgerows. Within the Community of Smithville's future urban boundary expansion, the lands are designated as residential and include a linkage along the eastern boundary that is intended to connect natural heritage features to the north and south (Map 2). The Subject Property is 12.5 ha bounded by Townline Road to the north, an old railway line to the east, and agricultural lands to the west and south. The lands are part of the Smithville Subwatershed Study (SWS) conducted by Wood for the Smithville Urban Boundary expansion. Specifically, the Subject Property, is located within Block 9 of the SWS.

2. Policy Context

Municipal, provincial, and federal natural heritage policies applicable to the Subject Property have been reviewed and described below.

2.1. Provincial Planning Statement

The Provincial Planning Statement (PPS), 2024 is administered under Section 3 of the *Planning Act*. It became effective October 20, 2024, and replaces the Provincial Policy Statement that came into effect May 1, 2020. The PPS applies to planning decisions made on or after that date. It provides policy direction for land use and development within the Province of Ontario and provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment. The policies of the PPS may be complemented by provincial and municipal plans and policies.

The PPS defines eight natural heritage features and provides planning policies for each, listed below. The function of Natural Heritage Features and Areas is further clarified by the definition of a Natural Heritage System, which is *"a system made up of natural heritage features and areas, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems."*.

I. Significant wetlands
II. Coastal wetlands

III. Fish habitat
IV. Significant woodlands
V. Significant valleylands
VI. Habitat of endangered species and threatened species
VII. Significant Wildlife Habitat
VIII. Significant Areas of Natural and Scientific Interest (ANSIs)

Sections 4.0 and 5.0 of the PPS deal with development and site alteration, and where these activities shall not be permitted. Section 4.0 policies surround the conservation of biodiversity, and protection of the health of the Great Lakes, natural heritage, water, agricultural, mineral and cultural heritage and archaeological resources for their economic, environmental, and social benefits. Section 5.0 directs development away from areas of natural or human-made hazards to mitigate risks to public health or safety, and property damage from natural hazards, including the risks that may be associated with the impacts of a changing climate.

Policies in Section 4.1 are particularly relevant as they surround development and site alteration in and adjacent to natural heritage features. These policies and select others are outlined below, in Table 1.

Table 1. Applicable Policies of the Provincial Planning Statement

Policy Number	Policy
(4.1 - Natural Heritage) 4.1.2	The diversity and connectivity of natural features in an area and the long-term *ecological function* and biodiversity of *natural heritage systems* should be maintained, restored or where possible, improved, recognizing linkages between and among *natural heritage features and areas*, *surface water features* and *ground water features*.
4.1.3	*Natural heritage systems* shall be identified in Ecoregions 6E & 7E, recognizing that *natural heritage systems* will vary in size and form in *settlement areas, rural areas*, and *prime agricultural areas*.
4.1.4	*Development* and site alteration shall not be permitted in: a) *significant wetlands* in Ecoregions 5E, 6E and 7E; and, b) *significant coastal wetlands*.
4.1.5	Development and site alteration shall not be permitted in: a) *significant wetlands* in the Canadian Shield north of Ecoregions 5E, 6E and 7E; b) *significant woodlands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River); c) *significant valleylands* in Ecoregions 6E and 7E (excluding islands in Lake Huron and St. Marys River); d) *significant wildlife habitat*; e) *significant areas of natural and scientific interest*; and f) *coastal wetlands* in Ecoregions 5E, 6E and 7E that are not subject to policy 4.1.4(b) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.
4.1.6	*Development* and *site alteration* shall not be permitted in *fish habitat* except in accordance with *provincial and federal requirements*.
4.1.7	*Development and site alteration* shall not be permitted in *habitat of endangered species and threatened species*, except in accordance with *provincial and federal requirements*.
4.1.8	*Development* and *site alteration* shall not be permitted on *adjacent lands* to the *natural heritage features and areas* identified in policies 4.1.4, 4.1.5 and 4.1.6 unless the *ecological function* of the *adjacent lands* has been evaluated and it has been demonstrated that there will be no *negative impacts* on the natural features or on their *ecological functions*.
(4.2 - Water) 4.2.2	*Development* and *site alteration* shall be restricted in or near *sensitive surface water features* and *sensitive ground water features* such that these features and their related *hydrologic functions* will be protected, improved or restored, which may require mitigative measures and/or alternative development approaches.

Policy Number	Policy
(5.2 - Natural Hazards) 5.2.1	Planning authorities shall, in collaboration with conservation authorities where they exist, identify *hazardous lands* and *hazardous sites* and manage development in these areas, in accordance with provincial guidance.
5.2.2	Development shall generally be directed to areas outside of: a) *hazardous lands* adjacent to the shorelines of the *Great Lakes - St. Lawrence River System* and *large inland lakes* which are impacted by *flooding hazards, erosion hazards* and/or *dynamic beach hazards*; b) *hazardous lands* adjacent to *river, stream* and *small inland lake systems* which are impacted by *flooding hazards* and/or *erosion hazards*; and c) *hazardous sites.*
5.2.4	Planning authorities shall prepare for the impacts of a changing climate that may increase the risk associated with natural hazards

2.2. Endangered Species Act (2007)

The Endangered Species Act (ESA) (2007) provides protection to species designated as Threatened or Endangered on the Species at Risk in Ontario list (MECP 2019). The habitat of some species at risk is also protected under the ESA. Protected habitat is habitat identified as essential for life processes including breeding, rearing, feeding, hibernation and migration.

The ESA (Subsection 9(1)) states that:

"No person shall,

(a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

(b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,

(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,

(ii) any part of a living or dead member of a species referred to in subclause (i),

(iii) anything derived from a living or dead member of a species referred to in subclause (i); or

(c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii)."

Clause 10 (1)(a) of the ESA also states that:

"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species."

An authorization or permit between the proponent and the MECP is required to authorize activities that would otherwise be prohibited by subsection 9(1) and 10(1) of the ESA.

There are three applicable regulations under the ESA, 2007; O. Reg. 230/08 - the Species at Risk in Ontario (SARO) List, O. Reg. 242/08 (General), and O. Reg 830/21 (Exemptions – Barn Swallow, Bobolink, Eastern Meadowlark and Butternut). These regulations serve to identify which species and habitats receive protection and provide direction on the current implementation of the ESA.

2.3. Niagara Region Official Plan (2022)

The Niagara Region Official Plan (NROP) Schedule L details the Natural Environment System (NES) components, definitions and criteria. The Official Plan identifies natural heritage and water resource systems for protection and sets out policies to maintain, restore and enhance biodiversity and connectivity of natural features, which exceed provincial requirements.

Section 3.1, objective k) notes the need to *"identify linkages to protect ecological connectivity in the region"*. Furthermore, section 3.1.17 speaks to *"…opportunities for additional, ecologically appropriate linkages…"* not currently included in Schedule C2 to be screened for when a Subwatershed Study (SWS) is being completed in support of a secondary plan.

Section 3.1.17.3 states:

"When a subwatershed study is being undertaken, or when development or site alteration is proposed in, or within 30 metres of a linkage shown on Schedule C2, an evaluation shall be completed that:

a) assesses the ecological features and functions of a linkage, including its vegetative, wildlife, and/or landscape features or functions;
b) identifies appropriate boundaries/widths that permit the movement of wildlife between nearby key natural heritage features, key hydrologic features, and/or natural heritage features and areas;
c) describes the ecological functions the linkage is intended to provide and identifies how these ecological functions can be maintained or enhanced within a development proposal;
d) assesses the potential for compatible uses including, but not limited to, stormwater management ponds, passive recreational uses, and trails within the linkage to determine how the intended ecological functions of the linkage can be maintained or enhanced;
e) assesses potential impacts on the linkage as a result of the development; and
f) makes recommendations on how to protect, enhance, or mitigate impacts on the linkage and its ecological functions through avoidance and planning, design, and construction practices."

As per Section 3.1.20 Enhancements to the Natural Environment, the NROP supports enhancements to the natural environment system, and where the preparation of an SWS or EIS is required, the study should demonstrate *"how enhancements to ecological function, ecological integrity, or biodiversity of the NES can be implemented and achieved."* Example i) pertains to Linkages where the objective is to *"establish or enhance linkages or connectivity between key Natural Heritage Features, and/or Natural Heritage Features and areas"*.

Groundwater, surface water features and other hydrologic functions are included as required components of the NROP integrated NES, however, they are not identified or managed until more detailed watershed planning or equivalent is completed at a subsequent stage of the planning process. The Master Community Plan (MCP) for Smithville, initiated by the Township of West Lincoln required a Subwatershed Study (SWS) be completed. Section 3.1.10.1 states that *"development or site alteration shall not be permitted unless it can demonstrate that it will not have negative impacts on:*

a) the natural hydrologic characteristics of watercourses such as base flow, form and function and headwater drainage areas."

Additionally, the NROP defines "significant surface water contribution areas" as *"headwater drainage features classified as protection, conservation and mitigation"*. Classifying and recommending management for such

areas must be done in accordance with the 'The Evaluation, Classification and Management of Headwater Drainage Features Guideline', prepared by the Toronto and Region Conservation Authority and Credit Valley Conservation (2014).

Under Schedule C2 NES of the NROP, the Subject Property is designated as an Urban Area Expansion as well as an Urban Area. It contains a small pocket of space designated as "Other Wetlands and Non-Provincially Significant Wetlands" in the northwest portion of the property where a tributary of Twenty Mile Creek flows.

2.4. The Official Plan of the Township of West Lincoln (2022)

The purpose of the Official Plan of the Township of West Lincoln (2022) is to "*provide detailed development and land use policies for the Township of West Lincoln and to direct and guide development where it will best contribute to the long-term social, economic and environmental stability of the Township*".

Objective l) under Section 3.6.3. of the Official Plan is *"to promote trails and corridors and linkages across the Township"*. The Subject Property contains a natural area along the former TH&B Railway that acts as a Linkage between larger Natural Heritage Features within the NHS of Smithville. Section 10.3. states that *"the Township Council supports and encourages conservation and restoration of natural vegetation and wildlife throughout the rural and agricultural areas…"*. The Subject Property is an agricultural area (Schedule B-5) and, therefore, subject to encouraged restoration activities on any NH features present, i.e. the proposed Linkage area.

Section 10.3.2. Policies states that *"development plans shall integrate natural features and natural vegetation, including the planting of native species. A landscape plan shall be provided for any commercial, industrial/employment, institutional or multiple-residential development."*. Natural landscaping and natural self-sustaining vegetation involve the practice of designing, cultivating and maintaining plan communities which are native to the area with minimal artificial interference (chemical fertilizers and pest control). Vegetation dominated by native species will grow and persist without direct human management, protection, or tending. Landscape plans should include such principles to contribute to ecological stability and resilience within the Smithville NHS.

Objective j) under Section 11.2 of the Official plan is to *"maintain, restore and improve the linkages among surface water features, groundwater features, hydrologic functions and natural heritage features and areas, and their ecological functions*".

The Official Plan outlines the importance of Linkages within the Core Natural Heritage System of Smithville in Section 10.7. stating the objective to *"recognize the linkages among natural heritage features and ground and surface water resources"*.

Schedule 'B-5' Urban Structure of Smithville classifies the Subject Property as an "Agricultural and Rural Area". As per Amendment No. 63 to the Official Plan of the Township of West Lincoln (OPA No. 63) Schedule E-10: Smithville MCP South Community Area Land Use Plan, and Schedule E-12: Smithville Natural Heritage System, the Subject Property designations have been changed to contain the following:

- Residential
- Medium Density
- Proposed SWM facility (Schedule E-10, Schedule E-12)
- Open Space
- Natural Heritage System (NHS) (Schedule E-10, Schedule E-12)

2.5. Smithville Master Community Plan (SMCP)

The Township of West Lincoln initiated a Master Community Plan (MCP) to help guide the future growth and development of Smithville. The MCP provides a high-level community structure and the planning context for the future development of more detailed Secondary Plan(s) for smaller geographic areas including in the future the companion Master Environmental Servicing Plans (MESPs).

2.6. Niagara Peninsula Conservation Authority (NPCA)

The Niagara Peninsula Conservation Authority (NPCA) is a natural resource management agency that protects, enhances and sustains healthy watersheds within the Niagara Peninsula Watershed in the Province of Ontario. It is responsible for 41 conservation areas held in public trust for recreation, heritage preservation, conservation and education.

Under the Ontario Regulation 97/04, Conservation Authorities such as the NPCA are required to *"prohibit, regulate or provide permission for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream, watercourse or changing or interfering with a wetland"*. Additionally, under Ontario Regulation 12/24 the NPCA is responsible for *"regulating development activities within Regulated Areas which include:*

a) Watercourses (including flood plains and meander belt)
b) Hazardous lands
c) Wetlands (and adjacent lands up to 30 metres)
d) River or stream valleys

Specifically, *"construction, site alteration and development (collectively termed development activities) in these areas is regulated to control changes to watercourses, floodplains, wetlands and steep slopes, in order to prevent flooding and erosion problems."*

Lands regulated by the NPCA are located in the northwest corner of the property, where a mapped tributary of Twenty Mile Creek and associated Headwater Drainage Features (HDFs) exist. The tributary and associated HDFs are mapped on the NPCA Approximate Regulation Lands map. Under Ontario regulation 12/24, the NPCA is responsible for regulating development activities within the Subject Property in order to prevent flooding and erosion issues in the tributary and downstream reaches of Twenty Mile Creek.

3. Study Methodology

This EIS builds on work that has previously been completed for the SWS by Natural Resource Solutions Inc. (NRSI) and work completed by Myler Ecological Consulting (Myler) for the landowners. GeoProcess completed desktop and field studies to supplement and confirm the work that was previously completed.

NRSI completed fieldwork for the entirety of the urban boundary expansion area in Smithville (Map 3) in 2022. The natural heritage information used in this report pertains solely to the work conducted within the Subject Property. GeoProcess staff conducted complementary fieldwork in the fall of 2024 to confirm the characterization of NHS presented in the SWS, primarily vegetation communities.

3.1. Background Studies

The following background documentation and related information sources were reviewed to identify natural heritage features and constraints in the Study Area:

- Ministry of Natural Resources and Forestry (MNRF) Land Information Ontario (LIO) digital mapping of natural heritage features (MNRF 2022)
- Satellite imagery (Google Earth Pro 2022)
- Subwatershed Study Stage 1, Stage 2 and Stage 3 Report prepared by Wood Environment & Infrastructure Solutions, a Division of Wood Canada Limited (Wood, 2022)

A list of species at risk (SAR) and species of conservation concern (SOCC) with potential to occur in the Study Area was prepared by reviewing the following sources:

- Natural Heritage Information Centre (NHIC) Database, 1 km x 1 km square 17PH1871
- Atlas of the Breeding Birds of Ontario (2022)
- Ontario Reptile and Amphibian Atlas (2022)
- Ontario Butterfly and Moth Atlas (2022)
- i-Naturalist- NHIC Rare Species of Ontario
- eBird hotspots
- Ontario Regulation 230/08 Species at Risk in Ontario List
- Provincial and federal assessments, recovery strategies, and management plans

3.2. Field Work

GeoProcess staff conducted field studies in addition to field work completed by NRSI for the SWS, to characterize and inventory the natural heritage features and wildlife activity throughout the Subject Property. A summary of the field work details is provided below in Table 2.

Table 2. Combined Completed Fieldwork

Activity	Protocol	Date	Start/End Time (24 hrs)	Air Temp (˚C)	Beaufort Wind Speed	Cloud Cover (%)	Precip	Staff
Vascular Flora Inventory (Spring) and ELC	Lee et al., (1998), Systematic search by ELC polygon	May 12, 2020	07:00-17:00	8	2-3	20-60	None	NRSI P. Deacon, E. Voogjarv
		May 13, 2020	08:00-15:00	10.5	1-3	50	None	
Vascular Flora Inventory (Summer) and ELC	Lee et al., (1998), Systematic search by ELC polygon	July 6, 2020	08:00-16:30	18	1-3	50	None	NRSI K. Burrell, P. Deacon
		July 7, 2020	08:00-14:00	32	1-3	0-50	None	

Activity	Protocol	Date	Start/End Time (24 hrs)	Air Temp (˚C)	Beaufort Wind Speed	Cloud Cover (%)	Precip	Staff
Vascular Flora Inventory (Fall) and ELC	Lee et al., (1998), Systematic search by ELC polygon	September 22, 2020	09:00-17:00	9-21	0-2	0	None	NRSI K. Richter, P. Deacon
		September 23, 2020	08:00-16:00	11	0	0	None	
Calling Anuran Survey #1	BSC (2009)	April 28, 2020	21:00=23:30	6-10.5	1-3	10-30	None	NRSI K. Richter, K. Burrell, N. Miller, T. Brenton
Calling Anuran Survey #2	BSC (2009)	May 20, 2020	21:00-23:00	10-11	0-1	0-60	None	NRSI A. Reinert, E. Gosnell, E. Milne, J. McCarter
Calling Anuran Survey #3	BSC (2009)	June 23, 2020	21:30-23:00	20-23	3-5	30-75	None	NRSI E. Milne, S. Catry, S. Turner, T. Brenton
Breeding Bird Survey #1	10 min point counts and area searches, breeding evidence as per OBBA (2001)	June 8, 2020	06:30-10:00	12-22	1-2	0-10	None	NRSI K. Richter, K. Burrell, N. Miller
Breeding Bird Survey #2	10 min point counts and area searches, breeding evidence as per OBBA (2001)	June 23, 2020	06:30-10:00	21-25	2-3	10-95	None	NRSI K. Hoo, J. Pickering
Snakeboard Surveys	Stationary boards installed in suitable habitat	April 28, 2020 (installed)	16:30-18:30	11-14	2	40	None	NRSI K. Richter, K. Burrell, N. Miller, T. Brenton
		May 20, 2020	18:30-20:30	13-18.5	3-4	0-3	None	NRSI A. Reinert, E-Gosnell, E. Milne, J. McCarter
		June 8, 2020	06:30-11:40	13-21	0-2	0-10	None	NRSI K. Richter, K. Burrell, N. Miller, T. Brenton
		June 23, 2020	06:30-10:30	21	1-2	10-20	None	NRSI K. Hoo, J. Pickering
		September 22, 2020	09:00-17:00	9-21	0-2	0	None	NRSI

Activity	Protocol	Date	Start/End Time (24 hrs)	Air Temp (˚C)	Beaufort Wind Speed	Cloud Cover (%)	Precip	Staff
								K. Richter, J. Pickering
		September 23, 2020	08:00-16:00	11	0	0	None	NRSI K. Richter, P. Deacon
Reconnaissance of vegetation communities		May 28, 2023						Myler
Reconnaissance of wildlife habitat		May 28, 2023						Myler
Reconnaissance of HDFs		May 28, 2023						Myler
Reconnaissance of breeding bird survey		May 28, 2023						Myler
Site visit with Town, Region, NPCA staff		June 10, 2023						Myler, Town, Region, NPCA staff
Observations of vegetation		June 18, 2023						Myler
Observations of wildlife habitat		June 18, 2023						Myler
Observations of HDFs		June 18, 2023						Myler
Observations of breeding bird survey		June 18, 2023						Myler
Breeding bird survey		July 10, 2023						Myler
Investigation + mapping of PSW northern limit		July 28, 2023						Myler, C. Zoladeski
Floristic Studies	One-season	October 30, 2024	09:00-15:00	22˚C	3	50	None	GeoProcess E. Veres
Snag Survey	Fall 2024	October 30, 2024	09:00-15:00	22˚C	3	50	None	GeoProcess E. Veres

3.2.1. Floristic Studies

NRSI delineated vegetation communities using aerial photography and thorough field investigations. Field surveys were conducted by NRSI on May 12 and 13, July 6 and 7, and September 22 and 23, 2020 (Wood, Appendix B, 2023). Details of vegetation communities were recorded including species composition, dominance, presence of uncommon species/features and evidence of human impact. GeoProcess staff completed a one-season Ecological Land Classification (ELC) visit on October 11, 2024, and a second verification visit on October 30, 2024.

For all field surveys conducted on the Subject Property, species nomenclature and ranking were determined provincially by the Ministry of Natural Resources Natural Heritage Information Database (S_Ranks). Vegetation communities were surveyed, mapped, and described in accordance with the ELC system for Southern Ontario (Lee et al., 2008). Vegetation community boundaries were determined using desktop analysis and further refined in the field. The results of vegetation surveys completed by GeoProcess and NRSI are provided in Section 4.4.1.Vegetation Communities.

3.2.1.1. Hedgerow Assessment

Assessment of the hedgerows within the Subject Property was conducted to gather information on the dominant tree species, size range at Diameter at Breast Height (DBH) and to assess their connection to the surrounding landscape. This includes identifying if the hedgerows provide linkage to other natural heritage features, and if they provide habitat for wildlife, including suitable habitat for bats through the presence of snags. The findings are provided in Section 4.4.2.

3.2.2. **Snake Monitoring**

Snake cover board surveys were conducted by NRSI at suitable locations within the study area, particularly focusing on field and woodland edges in meadow and scrubland habitats (Map 3Coverboards measured 1.0 m by 1.0 m and were black on the top side. Boards were placed on April 20, 2020, and checked on May 20, June 8, June 23, September 22, and September 23, 2020, in association with other field surveys (Wood, Appendix B, 2023). A single snake board monitoring station (SNK-21) was established within the Subject Property and one immediately south of the property (SNK-16).

3.2.1. **Bat Maternity Roost Surveys**

GeoProcess staff conducted a snag survey on October 30, 2024, to assess the presence or absence of potential bat maternity roosting habitat (Map 3). NRSI conducted searches for high quality cavity trees, suitable for bat maternity colony roosting, together with other fieldwork completed during the 2020 field season (primarily vegetation inventories) (Wood, 2023). These findings are presented in Section 4.4.3.

3.2.2. **Breeding Bird Survey**

Breeding bird surveys were completed by NRSI on June 8 and 23, 2020, and data was recorded using standard OBBA call codes (OBBA 2001). Surveys consisted of 10-minute point counts at one location within the Subject Property (Map 3). The surveys occurred between dawn and 10:00 hrs. All visual and auditory observations of birds were recorded, as well as the highest level of breeding evidence exhibited for each recorded species. Birds observed between point count locations were also recorded. One breed bird survey station was established within the Subject Property, BMB-20. Further information is found in Section 4.5.2.

3.2.3. **Incidental Wildlife Surveys**

Formal surveys for mammals were not completed, but NRSI staff documented observations of all mammals on all field visits in the 2020 field season. This included direct observations of individuals, as well as signs of animal presence such as tracks, scat, dens, etc. (Wood, 2023). GeoProcess staff recorded incidental observations during the two October 2024 field visits which can be found in Section 4.5.3.

3.2.4. Headwater Drainage Feature Assessment

Following the 2014 protocol for Headwater Drainage Feature (HDF) assessment developed by the Toronto and Region Conservation Authority and the Credit Valley Conservation Authority, in conjunction with the Ministry of Natural Resources and Forestry, Matrix Consulting conducted HDF assessments for the study area, which includes the Subject Property (Map 5). The HDF results provided in the SWS report will be used to inform conclusions and management recommendations within this EIS.

Headwater drainage features were assessed following the 2014 HDF Guidelines.

Visit 1 is conducted during a window of approximately two weeks, during spring freshet. The survey window is typically during late March or early April but is subject to variation depending on the weather in any given year. During the first site visit, the identified drainage lines are examined for both the flow condition and feature type. The first visit determines if a second HDF evaluation is necessary. If the feature is dry or standing water, or if there is no defined feature present, it is likely that the feature would be considered as "limited functions" and no additional data is required; therefore, no further field visits are required. If the feature exhibits functions beyond the "limited functions" criteria, such as a defined flow path and active flow, further data collection is then required to define those functions more fully.

Visit 2 is conducted after the freshet has ended when the melt/thaw related interflow has ceased and, preferably, after a few days with no precipitation. Timing of this visit should occur before spring plant growth is very far advanced to permit unobstructed examination of features and is typically from late April through mid-May. During this site visit, flow condition and fish presence are assessed.

Visit 3 is conducted if water was present in the feature during site visit 2. The timing of the third visit is from July to mid-September, preferably after several days without a significant (i.e., flow generating) amount of rain. During this site visit, flow condition and fish presence are assessed. The presence of flow during this visit automatically results in classification as an "important" feature, so fish presence has no effect on management recommendations. Where isolated standing pools exist, sampling should be conducted, as described for site visit 2 (above), to determine the upstream limit of year-round fish utilization.

The data and observations collected from site visits are used to inform a series of classifications of the feature in relation to its function regarding hydrology, riparian character, fish and fish habitat, and terrestrial habitat. These classifications are then used to navigate a flow chart (Figure 1) that determines the most appropriate management approach for the feature. Management approaches can range from protection in situ to "no management" requirements (i.e., removal is possible), with interim management approaches that include replication of form and function or replication of function alone.

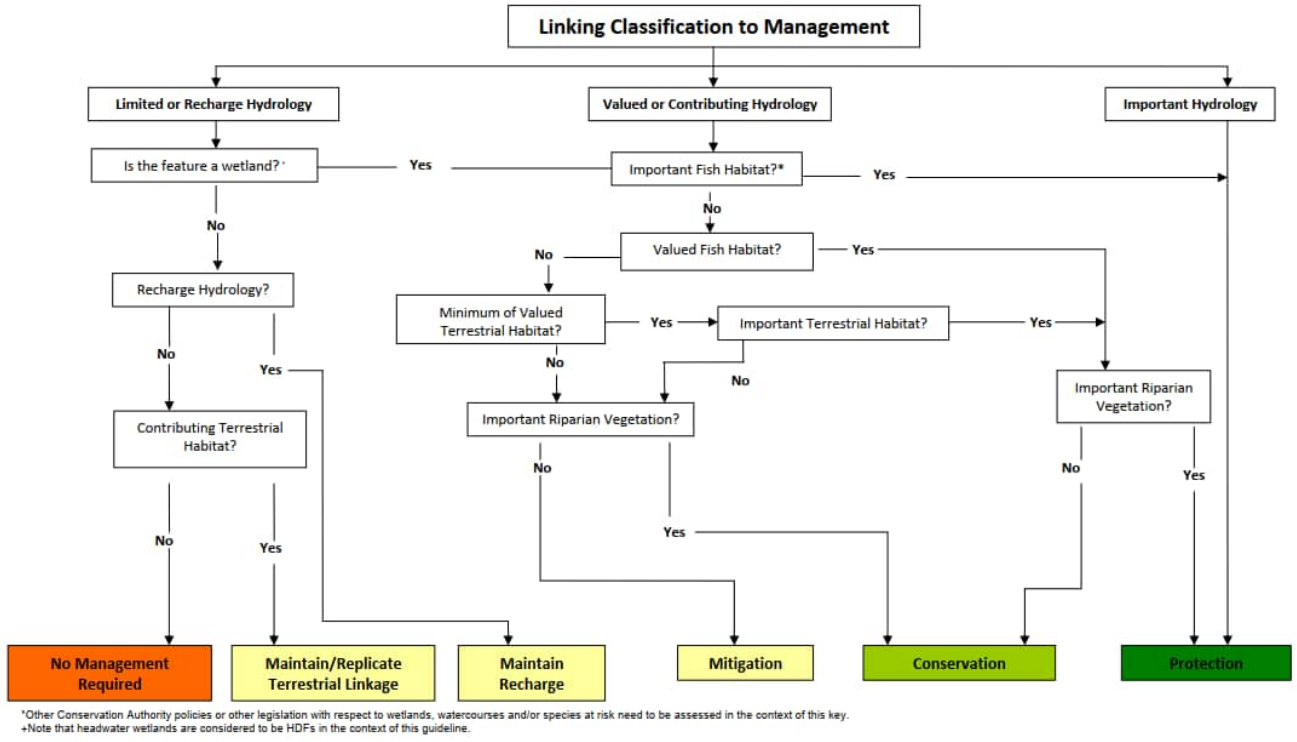

Figure 1. Flow chart providing direction on management options (OSAP)

3.2.5. Watercourse Characterization

An assessment and characterization of the watercourse feature's habitat qualities and function was completed by Matrix in 2020 following the Ontario Stream Assessment protocol. Background information and secondary sources, including the MNRF and NPCA fish records were utilized to further characterize the watercourse features on and downstream of the Subject Property. An active fish community assessment was not completed (i.e. electrofishing).

3.2.6. Species at Risk Screening and Assessment

An assessment and screening of potential Species at Risk was conducted for the Subject Property based on Federal and Provincial status. Following the MECP (2019) Client's Guide to Preliminary SAR Screening, this screening was based on a review of the Natural Heritage Information Centre, the regional species list, atlases (breeding bird, butterfly and moth) citizen science databases (i.e. iNaturalist), and any additional lists provided by the MECP. The Species at Risk assessment results are found in Section 5. The results of the preliminary screening are found in Appendix B.

For the purpose of the screening, SAR are defined as:

- Endangered and Threatened species that are on the Species at Risk in Ontario (SARO) list and protected by the provincial Endangered Species Act, 2007 (ESA)
- Endangered and Threatened aquatic species that are listed on Schedule 1 of the federal Species at Risk Act, 2002 (SARA) and protected by the SARA

Species of Conservation Concern (SOCC) are defined as:

- Special Concern species on the SARO list
- Endangered, Threatened and Special Concern terrestrial species listed on Schedule 1 of SARA, but not protected by the ESA.
- Species with provincial ranks of S1 to S3. Provincial ranks (S ranks) are used by the NHIC to set protection priorities for rare species and vegetation communities. They are based on the number of occurrences in Ontario and are not legal designations. Provincial S ranks are defined as follows:

  S1: Critically imperiled; usually fewer than 5 occurrences
  S2: Imperiled; usually fewer than 20 occurrences
  S3: Vulnerable; usually fewer than 100 occurrences
  S4: Apparently secure; uncommon but not rare, usually more than 100 occurrences
  S5: Secure, common, widespread and abundant
  ? S-rank followed by a "?" indicates the rank is uncertain

3.2.7. Significant Wildlife Habitat Screening and Assessment

A screening for Significant Wildlife Habitat following the Ministry of Natural Resources and Forestry Significant Wildlife Habitat Technical Guide (2000) and Significant Wildlife Habitat Criteria Schedule for Ecoregion 7E (January 2015) was conducted for the Subject Property. Potential SWH identified was assessed during the complementary field studies. The results of this assessment are found in Appendix C.

4. Existing Conditions

4.1. General Landscape Position

The Subject Property is located in the south end of the Community of Smithville, the largest urban centre within the Township of West Lincoln. The community of Smithville exists within the Niagara Peninsula, a geographic area between Lake Ontario, Lake Erie, and the Niagara River in southwestern Ontario characterized by the Niagara Escarpment dividing the region into The Ontario Plain to the north, and The Erie Plain to the south. The site exists south of the Niagara Escarpment on The Erie Plain, an area characterized by poorly drained clay soils and bedrock existing closer to the soil surface. Within the Community of Smithville, the Subject Property is approximately 800 m west of Highway 20, the Subject Property is bounded by Townline Road to the north and Shurie Road to the east. The surrounding land use is predominantly agricultural, with the urban and residential area of Smithville to the north and a smaller residential area to the east. Two watercourses regulated by the Niagara Peninsula Conservation Authority are located to the east and south. Twenty Mile Creek is approximately 500 m east of the Study Area and North Creek, a tributary of Twenty Mile Creek, is approximately 850 m south. Significant woodlands and a Provincially Significant Wetland (PSW) exist to the south, outside of the Subject Property boundary which are classified as Natural Heritage Features.

There are few landscape-scale ecological corridors or connected natural features within the surrounding landscape. The watercourse corridors for Twenty Mile Creek and North Creek represent the most prominent landscape corridors. The Subject Property is located between these two corridors, and as a result, the

proposed Linkage along the eastern property limit provides an opportunity to provide a landscape-scale connection between these two corridors.

4.2. Physiography and Geology

The Subject Property is situated on fine-textured glaciolacustrine deposits of silt and clay with minor sand and gravel (Chapman and Putnam, 1984). Bedrock underlying the Smithville area consists of bedded dolostones and shales sloping from north to south (Wood, 2022a).

4.3. Natural Heritage Systems

A Natural Heritage System (NHS) was identified in Phase 2 and Phase 3 of the Smithville Subwatershed Studies prepared by Wood in March 2022. Within the Subject Property, one NHS feature was identified: a Linkage, connecting stream corridors to the north and south and a Significant Woodland and PSW to the south.

4.3.1. Linkage

The SWS Phase 3 report prepared by Wood in 2022 describes linkages as *"connections between natural heritage features allowing for movement of species between habitats"*. Many of the natural heritage features within the Smithville SWS are isolated but connected through an agricultural matrix, which wildlife can use to move between isolated habitat units (Wood, 2022b). These linkages provide important habitats for species in various life stages and allow for the movement of populations and ecological diversity.

Linkages within the SWS are mapped as Primary Linkages (200 m wide) and Secondary Linkages (50 m wide). The linkage located along the eastern boundary (old TH&B Rail Line) of the Subject Property, SWS Linkage #40, is classified as a Secondary Linkage that runs through the Twenty Mile Creek Corridor (#20). The Linkage connects a significant woodland (#41) and a PSW (#42), as well as larger features within the NHS, specifically Twenty Mile Creek and North Creek to the north and south of the Subject Property, respectively (Map 2).

4.3.2. Significant Woodland

A Significant Woodland is located to the south of the Subject Property, south of Townline Road, between Port Davidson Road and Shurie Road, adjacent to a former railway line (#41 and #42). #42 was classified as significant due to its size (7.67 ha), inclusion of a PSW in the southern end, HDF with conservation status, and significant wildlife habitat from the presence of provincially rare plant species Slightly Hirsute Sedge (*Carex hirsutella*, S3) and Eastern Wood-pewee (*Contopus virens*), a species of Special Concern (Wood, 2022b). 1.5 ha of significant woodland was removed, and as such, the area has been identified in the SWS as a Recommended Restoration Area (#41).

4.4. Vegetation Communities

4.4.1. Vegetation Communities Mapped by GeoProcess

The ELC communities for the Subject Property are shown on Map 4. The ELC communities are based on the vegetation characterizations provided by NRSI in the SWS and verified by GeoProcess (Table 3).

Table 3. ELC Communities

ELC Code and Classification		Vegetation	Comments
CUW: Cultural Woodland	Ground	Tall Goldenrod (*Solidago altissima*), Wild Teasle (*Dipsacus fullonum*), Canada Thistle (*Cirsium arvense*), New England Aster (*Symphyotrichum novae-angliae*), Reed canary Grass (*Phalaris arundinacea*), Greater Burdock (*Arctium lappa*), Enchanter's Nightshade (*Circaea canadensis*), Kentucky Bluegrass (*Poa pratensis*), and Sedge sp. (*Carex sp.*).	Old homestead that has begun to naturalize.
	Sub-canopy	Staghorn Sumac (*Rhus typhina*), Red Raspberry (*Rubus idaeus*), Black Raspberry (*Rubus occidentalis*), Tartarian Honeysuckle (*Lonicera tartaricus*), and Grapevine (*Vitis riparia*).	
	Canopy	Manitoba Maple (*Acer negundo*), and Choke Cherry (*Prunus virginiana*).	
FOD7: Manitoba Maple Woodland	Ground	Tall Goldenrod, Virginia Wild Rye (*Elymus virginicus*), Aster sp. (*Symphyotrichum sp.)*, Wood Avens (*Geum canadensis*), Dame's Rocket (*Hesperis matronalis*), and Kentucky Bluegrass.	
	Sub-canopy	Grapevine, Tartarian Honeysuckle, Black Raspberry, Red Raspberry, Grey Dogwood (*Cornus racemosa*), European Buckthorn (*Rhamnus cathartica*), and Guelder Rose (*Viburnum opulus*).	
	Canopy	Manitoba Maple, Apple Tree (*Malus sp.*), White Ash (*Fraxinus americana*), and Bur Oak (*Quercus macrocarpa*).	
MAM: Meadow Marsh at Culvert Inlet	Ground	Queen Anne's Lace (*Daucus carota*), Purple Vetch (*Vicia cracca*), Lance-leaved Aster (*Symphyotrichum lanceolatum*), Reed Canary Grass, Tall Goldenrod, Poa sp., Wild Teasle, Virginia Wild Rye, Canada Thistle, Self Heal (*Prunella vulgaris*), Fringed Willowherb (*Epilobium ciliatum*), and Wood Avens.	
	Sub-canopy	Tartarian Honeysuckle, Red Osier Dogwood (*Cornus sericea*), and Black Raspberry.	
	Canopy	White Ash.	
CUT1-4:	Ground	Tall goldenrod, Grass-leaved Goldenrod (*Euthamia graminifolia*), Queen Anne's Lace,	

ELC Code and Classification		Vegetation	Comments
Former TH&B Railway Line		Field Strawberry (*Fragaria virginiana*), Wild Teasle, Aster sp., Cattail Hybrid (*Typha X glauca*), Reed Canary Grass, Dame's Rocket, Greater Burdock, Smooth Brome (*Bromus inermis*), and Self Heal.	
	Sub-canopy	Grey Dogwood, European Buckthorn, Tartarian Honeysuckle, Red Osier Dogwood, Guelder Rose, Common Privet (*Ligustrum vulgare*), Black Raspberry, and Multiflora Rose (*Rosa multiflora*).	
	Canopy	Apple Tree, Bird Cherry (*Prunus avium*), White Elm (*Ulmus americana*), Manitoba Maple, Black Walnut (*Juglans nigra*), Norway Maple (*Acer platinoides*), White Ash, and Red Maple (*Acer rubrum*).	
MAMM1-3: Reed Canary Meadow Marsh	Ground	Reed Canary Grass, Tall Goldenrod, Wild Teasle, Crispy Dock (*Rumex crispus*), Canada Thistle, Bull Thistle (*Cirsium vulgare*), White Heath Aster (*Symphyotrichum pilosum*), Poa sp., Common Milkweed (*Asclepias syriaca*), New England Aster, and Queen Anne's Lace.	
	Sub-canopy	Tartarian Honeysuckle, Red Raspberry, European Buckthorn, and Common Lilac (*Syringa vulgaris*).	
	Canopy	Hawthorn sp., (*Crataegus sp.*).	

CUW: Cultural Woodland

This community was observed at the northern edge of the property along Townline Road. It is the location of an old homestead with sections of concrete foundation still present. The only species present in the canopy and sub-canopy was the Manitoba maple (*Acer negundo*). The understory included an *occasional* abundance of black raspberry (*Rubus occidentalis*), chokecherry (*Prunus virginiana*), and staghorn sumac (*Rhus typhina*). The majority of the ground layer consisted of tall goldenrod (*Solidago altissima*) and Kentucky bluegrass (*Poa pratensis*).

FOD7: Manitoba Maple Forest

This community was observed at the northern edge of the property along Townline Road and abutting the CUW community. It is the location of an old homestead with sections of concrete foundation still present. The canopy and sub-canopy were dominated by Manitoba maple (*Acer negundo*) with occasional presence of apple trees (*Malus sp.*) in the canopy. The understory consisted of occasional abundance of invasive honeysuckle (*Lonicera tartarica*) and black raspberry (*Rubus occidentalis*). The ground layer consisted of an abundant amount of tall goldenrod (*Solidago altissima*) and occasional abundance of white avens (*Geum canadense*) and Virginia wildrye (*Elymus virginicus*).

MAM: Meadow Marsh

The meadow marsh is located at the inlet of the culvert that goes under Townline Road. It contains an abundance of red-osier dogwood (*Cornus sericea*) in the shrub layer and wild teasel (*Dipsacus fullonum*) and tall goldenrod (*Solidago altissima*) as the main species in the ground layer.

MAMM1-3: Reed Canary Meadow Marsh

This community was located along the northern edge of the Subject Property behind the houses on Townline Road. It is a small section, approximately 530 m^2 situated between the backyards of three houses where HDFs from the agricultural lands drain to. The community is dominated by reed canary grass (*Phalaris arundinacea*) with occasional abundances of grass species (*Poa sp.*), tall goldenrod (*Solidago altissima*), and aster species (*Symphyotrichum sp.*). A few shrubs exist on the western side of the community, most of which are hawthorn species (*Crataegus sp.*).

CUT1-4: Old Railway Line/Ditch - Linkage

This community is located along the eastern edge of the Subject Property along an old railway line. It is now a ditch between the agricultural fields and the backyards of residential houses on Shurie Road and has been identified as Linkage within the Smithville Natural Heritage System. It is a narrow strip of land with less than 50% cover of young trees comprised mainly of two species: American elm (*Ulmus americana*) and black walnut (*Juglans nigra*). The shrub layer consists of an abundance of gray dogwood (*Cornus racemosa*), two invasive species: common buckthorn (*Rhamnus cathartica*) and honeysuckle (*Lonicera tartarica*).

The ground layer species vary as the community varies from shrub-dominated to open/mowed areas. Cattails (*Typha x glauca)* are present in some sections along the length of the ditch feature. Other ground layer species include tall goldenrod (*Solidago altissima*), wild strawberry (*Fragaria virginiana*), and Lance-leaved Aster (*Symphiotrichum lanceolatum*).

One snag along this feature may provide suitable bat habitat as it is approximately 15 m in height with loose/exfoliating bark (Figure 5. Snag 4).

4.4.2. Hedgerow Assessment

Two hedgerows exist within the Study Area (Map 4), Hedgerow 2 was surveyed by NRSI in 2020, and Hedgerows 1 and 2 were surveyed by GeoProcess staff on October 30, 2024.

Hedgerow 1: Drainage Hedgerow

This hedgerow is located on the Subject Property facing in the north-south direction off Townline Road. The entire hedgerow is approximately 10-12 m wide and 115 m long.

The treed section of the hedgerow consists mainly of sugar maple (*Acer saccharum*) and American elm (*Ulmus americana*) trees in the canopy and sub-canopy with an abundance of gray dogwood (*Cornus racemosa*), common buckthorn (*Rhamnus cathartica*), and invasive honeysuckle (*Lonicera tartarica*) in the understory. The main species in the ground layer include tall goldenrod (*Solidago altissima*), gray dogwood (*Cornus racemosa*), and common buckthorn (*Rhamnus cathartica*).

The representative DBH of the trees along this hedgerow ranges from 15-30 cm, with a few larger trees of up to 100 cm DBH. One living Shagbark Hickory and one deciduous snag occur within the hedgerow ranging in heights from approximately 6-20 m tall with DBH approximately 12-35 cm. Both trees provide suitable bat habitat with exfoliating bark on the living Shagbark Hickory, and exfoliating bark, cracks and small cavities in the deciduous snag (Figure 3. Snag 2, Map 3). Other trees with snag-like qualities exist within this hedgerow, however, none provide suitable habitat for bats. The mapped watercourse TM3(1)3 runs adjacent to a portion of the hedgerow prior to entering a culvert that goes underneath Townline Road.

Hedgerow 2: West Hedgerow

This hedgerow is located just west of the Subject Property and is approximately 10 m wide and 230 m in length. Shagbark hickory (*Carya ovata*) and American elm (*Ulmus americana*) are the most abundant species in both the canopy and sub-canopy, with a few sugar maples (*Acer saccharum*) throughout. The understory contains an abundance of hawthorn (*Crataegus sp.*) and an occasional gray dogwood (*Cornus racemosa*). The ground layer contained mostly smooth brome (*Bromus inermis*) and tall goldenrod (*Solidago altissima*).

This hedgerow is connected to two other hedgerows on the west, outside of the Subject Property, and two HDFs occur to the east of this feature (TM3(1)6-3 and TM3(1)7-1). The representative DBH ranges from approximately 20-60 cm. Two living Shagbark Hickories with loose exfoliating bark and one snag (Figure 4. Snag 3) occur within the hedgerow. All three trees provide potential bat roosting habitat. Other trees within the hedgerow showed minor signs of being suitable bat habitat (loose bark, decay class higher than 2, knot holes, cavities, etc.), however, not enough to qualify as suitable bat habitat. All snags range from approximately 14-30 cm DBH and vary in height.

4.4.3. Snag Survey

A snag survey was completed for the Subject Property during the leaf-off season to assess for potential bat habitat. The survey included an assessment of dead standing trees (snags) with a DBH of 10 cm or greater with loose or exfoliating bark, cavities, hollows, or cracks that provide suitable bat maternity roosting habitat.

Six snags were identified as suitable bat roosting habitat as they were greater than 15 m in height with loose/exfoliating bark and cracks (Table 4, Map 3). In addition, several living shagbark hickory trees with exfoliating bark were found throughout site, mainly along Hedgerow 2, that could provide potential bat habitat.

Table 4. Snag Survey Results

Snag #	Common Name	DBH (cm)	Height (m)	Notes
1	Sugar Maple	35	20	Contained a split in the trunk, small cavities and loose/exfoliating bark.
2	Deciduous Tree	90	20	Cracks and loose/exfoliating bark with some branches falling off
3	Ash Tree	30	20	Loose/exfoliating bark
4	Deciduous Tree (possibly Ash)	25	15	Loose/exfoliating bark
5	Shagbark Hickory	52	20	Living tree with loose/exfoliating bark
6	Shagbark Hickory	51	20	Living tree with loose/exfoliating bark

Figure 2. Snag 1

Figure 3. Snag 2

Figure 4. Snag 3

Figure 5. Snag 4

Figure 6. Snag 5

Figure 7. Snag 6

4.5. Wildlife

4.5.1. Snake Monitoring

NRSI conducted snake board surveys during the 2020 field season. Two snake boards (SNK-21, SNK-16) were placed within the Subject Property, one in the northeast corner and one on the southern property border (Map 3).

No snake observations were made at SNK-21.

Blackport & Associates staff observed approximately 20 Garter snakes in the vicinity of SNK-16 on April 6, 2020. The snakes were observed both in the agricultural field, as well as on the former railway line, indicating a hibernaculum nearby (Wood, Appendix B, 2023). Since the snake observations were made, the woodland feature where the hibernaculum was most likely located has been removed, and it is unknown if this habitat feature is still present.

4.5.2. Breeding Bird Surveys

One breeding bird station was located within Subject Property along the eastern border of the old railway line labelled BMB-20 from the SWS Phase 2 report (Map 3). The results of the Breeding Bird Survey can be found in Table 5.

Table 5. NRSI Breeding Bird Survey Results for Station BMB-20 (Wood, Appendix B, 2023)

Common Name	Latin Name	Station	NRSI Observed Highest Level of Breeding Evidence	S_Rank	SARO	COSEWIC	Comment
			Columbidae				
Mourning Dove	*Zenaida macroura*	BMB-20	PR	S5			
			Charadriiae				
Killdeer	*Charadrius vociferus*	BMB-20	PO	S5B,S4N			
			Cathartidae				
Turkey Vulture	*Cathartes aura*	BMB-20	OB	S5B			
			Vireonidae				
Warbling Vireo	*Vireo qilvus*	BMB-20	PR	S5B			
			Corvidae				
Blue Jay	*Cyanocitta cristata*	BMB-20	PR	S5			
			Hirundinidae				
Barn Swallow	*Hirundo rustica*	BMB-20	PO	S5B	SC	SC	
			Paridae				
Black-capped Chickadee	*Poecile atricapillus*	BMB-20	PO	S5			
			Turdidae				
American Robin	*Turdus migratorius*	BMB-20	PR	S5B			
			Sturnidae				
European Starling	*Sturnus vulgaris*	BMB-20	PR	SNA			
			Bombycillidae				
Cedar Waxwing	*Bombycillia cedrorum*	BMB-20	PO	S5B			
			Passeridae				
House Sparrow	*Passer domesticus*	BMB-20	PO	SNA			
			Fringillidae				
American Goldfinch	*Spinus tristis*	BMB-20	PR	S5B			
			Emberizidae				
Song Sparrow	*Melospiza melodia*	BMB-20	PR	S5B			
Chipping Sparrow	*Spizella passerina*	BMB-20	PO	S5B			
			Icteridae				
Red-winged Blackbird	*Agelaius phoeniceus*	BMB-20	PO	S4			
Baltimore Oriole	*Icterus galbula*	BMB-20	PO	S4B			

Common Name	Latin Name	Station	NRSI Observed Highest Level of Breeding Evidence	S_Rank	SARO	COSEWIC	Comment
Brown-headed Cowbird	*Molothrus ater*	BMB-20	PO	S4B			
Common Grackle	*Quiscalus quiscala*	BMB-20	CO	S5B			
			Cardinalidae				
Northern Cardinal	*Cardinalis cardinalis*	BMB-20	PO	S5			

Table 6. Species Ranking System

Rank System	Code	Meaning
		OBBA Breeding Level
	OB	Observed – atlaser saw species fly over study area.
	PO	Possible – the atlaser saw or heard the species singing during the breeding season in suitable nesting habitat
	PR	Probable – the atlaser observed a pair of birds, territorial behaviour, a courtship display, an adult visit to a probable nst site, agitated behaviour, anxiety calls of an adult, brood patch on an adult or nest building.
	CO	Confirmed – the atlaser observed a distraction display, adults entering or leaving a nest cavity, an adult carrying a fecal sac or food for young, a nest containing eggs or a nest with young, a used nest or eggshells, or recently fledged young.
		NHIC S-Rank
	SH	Possibly Extirpated (Historical); species occurred historically and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years.
	S1	Critically Imperiled. Extremely rare in Ontario; usually 5 or fewer occurrences in the province.
	S2	Imperiled. Very rare in Ontario; usually between 6 and 20 occurrences in the province.
	S3	Vulnerable. Rare to uncommon in Ontario; usually between 21 and 60 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining.
	S4	Apparently secure. Considered to be common in Ontario. It denotes a species that is apparently secure, with over 80 occurrences in the province.
	S5	Secure. Indicates that a species is widespread in Ontario. It is demonstrably secure in the province.
	?	Indicates some uncertainty with the classification due to insufficient information.
	SNR	Not Ranked.
	SNA	Not Applicable, a conservation status rank is not applicable because the species is not a suitable target for conservation activities.
		COSEWIC/ESA & SARA Rankings
	SC	Special Concern.
	END	Endangered.
	THR	Threatened.
	EX	Extirpated.
	NAR	Not at Risk
		Niagara Peninsula Conservation Authority (NPCA) Status
		Niagara Peninsula Conservation Authority (NPCA). 2010. Natural Areas Inventory 2006-2009. Volume 1 & 2.

Rank System	Code	Meaning
VC		Very Common
C		Common
U		Uncommon
R		Rare
H		Historical
I		Introduced
V		Visitor

Out of the 19 summer resident bird species (all with some breeding evidence), there was one species at risk observed, the Barn Swallow (*Hirundo rustica*). One non-native species, the European starling (*Sturnus vulgaris*) was recorded. Barn Swallow habitat is not located on the Subject Property and the individuals are likely feeding on site and nesting on nearby infrastructure (see section 5.2.1.1).

The highest level of breeding evidence obtained during surveys was "confirmed" breeding (OBBA, 2001); this evidence was obtained for one species (Common Grackle). Seven species were observed exhibiting "probable" breeding behaviour as pairs observed in their breeding season in suitable habitat (P), singing in permanent territory during both rounds of surveys (T), and exhibiting agitated behaviour or anxiety calls (A). The remaining 11 summer residents were observed exhibiting "possible" breeding behaviour such as singing (S) in suitable habitat (H) during the breeding season, indicating "possible' breeding evidence (OBBA, 2001). Refer to Table 6 for detailed information on what "confirmed", "probable", and "possible" OBBA ranks entail.

Based on the breeding bird surveys, the Subject Property provides habitat for species that are considered "apparently secure" (S4) and "secure" (S5). These rankings are provided by the Natural Heritage Information Centre (NHIC, 2019). These species are generally considered to be urban tolerant and do not require specialized habitats.

4.5.3. Incidental Wildlife

Incidental wildlife was recorded by GeoProcess staff during the site visit on October 30, 2024, the observations are provided in Table 7.

Table 7. Incidental Wildlife

Common Name	Latin Name	Evidence	Abundance
Northern Cardinal	*Cardinalis cardinalis*	Visual/Audio	3
Dark-eyed Junco	*Junco hyemalis*	Visual/Audio	16
House Sparrow	*Passer domesticus*	Visual/Audio	10
Song Sparrow	*Melospiza melodia*	Visual/Audio	1
Mourning Dove	*Zenaida macroura*	Visual/Audio	3
Turkey Vulture	*Cathartes aura*	Visual	2
Red-tailed Hawk	*Buteo jamaicensis*	Visual/Audio	1
Eastern Gray Squirrel	*Sciurus carolinensis*	Visual	1

All species observed are common and typical of urban or anthropogenically disturbed landscapes. No observed species is an indicator of sensitive or significant habitat conditions.

4.6. Headwater Drainage Feature Assessment

The HDF assessment for the study area was performed by Matrix in 2020 (Map 5Results of the HDF assessment and classification were reported on in the SWS Phase 2 report (Wood, 2022a), and a summary of findings can be found below in Section 4.6.1.

4.6.1. HDF Classification and Evaluation

The 2014 HDF Guidelines provide a classification system for the HDF features based on the field data collected. The classification involves a four-step process which considers hydrology, riparian vegetation, fish habitat, and terrestrial habitat. These four classification steps are then used to assign a recommended management approach. Table 8 below summarizes the classification for each of the HDFs found on the Subject Property. All figures, tables and supporting documents from the 2022 Wood SWS report can be found in Appendix A. Mapping of HDFs within the Subject Property can be found on Map 5.

Green streams (HDFs) (Appendix A, Figure A-3) are identified as Mitigation Features in the SWS Report. These features are typically highly modified but provide some downstream function (e.g. supply of sediment and water, or seasonal fish habitat). Some complexities, like tile drains, can be replicated through a stormwater management (SWM) strategy, while fish habitat may be replicated within another nearby feature, or downstream in the floodplain (e.g. pond creation). All HDFs within the Subject Property have been modified through agricultural practices, therefore, it is recommended that function to downstream features is maintained (Wood, 2023).

Table 8. HDF Guidelines Classification System for HDFs on Subject Property (Wood, 2022a)

HDF #	STEP 1		STEP 2	STEP 3	STEP 4	Management Recommendation (Figure 2)	Rationale
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat		
TM3(1)4	Contributing Functions	Agricultural practices	Contributing Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	Linkage to wetland upstream.
TM3(1)5	Contributing Functions	Agricultural practices	Valued Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	Linkage to wetland upstream.
TM3(1)6	Contributing Functions	Agricultural practices	Limited Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	
TM3(1)6-1	Contributing Functions	Agricultural practices	Limited Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	
TM3(1)6-1-1	Contributing Functions	Agricultural practices	Limited Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	
TM3(1)6-1-2	Contributing Functions	Agricultural practices			Limited Functions		Dry defined channel in April (then plowed). Considered to have

HDF #	STEP 1		STEP 2	STEP 3	STEP 4	Management Recommendation (Figure 2)	Rationale
	Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat		
			Limited Functions	Contributing Functions (no fish habitat)		**Mitigation**	contributing hydrology although dry in April due to channel form, and anecdotal evidence from residents of recent high flows prior to April site visit.
TM3(1)6-2	Contributing Functions	Agricultural practices	Valued Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	SE2 (Low constraint) karst feature. Final recommendation may increase due to presence of karst feature. Low karst constraint indicates the potential for the feature to be removed (excavated and grouted) and by-passed by runoff.
TM3(1)6-3	Contributing Functions	Agricultural practices	Valued Functions	Contributing Functions (no fish habitat)	Limited	**Mitigation**	
TM3(1)7	Contributing Functions	Agricultural practices	Limited Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	Dry defined channel in April (then plowed). Considered to have contributing hydrology although dry in April due to channel form.
TM3(1)7-1	Contributing Functions	Agricultural practices, road runoff	Limited Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	Dry defined channel in April (then plowed). Considered to have contributing hydrology although dry in April due to channel form.
TM3(1)7-1-1	Contributing Functions	Agricultural practices	Limited Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	
TM3(1)8	Contributing Functions	Agricultural practices	Limited Functions	Contributing Functions (no fish habitat)	Limited Functions	**Mitigation**	Dry defined channel in April (then plowed). Considered to have contributing hydrology although dry in April due to channel form.

4.7. Watercourse Characterization

In the SWS Report, watercourses are defined as "permanently to intermittent flowing drainage features with defined bed and banks. They exhibit clear evidence of active channel process, including planform, profile, and material sorting, with evidence of a balance between erosion and deposition throughout the reach. They are often second-order or greater but may be first-order when verified by the practitioner(s)".

Watercourses are currently identified as regulated features by the NPCA, and fish are typically found within these features. NPCA watercourse mapping (Contemporary Watercourse Mapping) was used to identify watercourses and HDFs as a scoping exercise, and field confirmation confirmed and/or updated feature identification and extents. In general, their drainage area exceeds 50ha (Wood, 2023).

One watercourse exists within the northeast section of the Subject property, identified as TM3(1)3, as shown on Map 5 and was classified as a medium constraint (Table 9) in the SWS. Management recommendations from the SWS can be found in Table 10.

Table 9. Watercourse Constraint Rankings (Wood, 2022a)

Reach	Surface Water	Fluvial	Terrestrial	Fisheries	Karst + groundwater	Proposed Classification
TM3(1)3	Low	Medium	Medium	Low	Low	**Medium**

Table 10. Watercourse Management Strategy (Wood, Appendix B, 2023)

Watercourse Classification	Geomorphological Definition	Proposed Management Strategy
Blue Classification (Solid Blue Line on Map) – Medium Constrain	These reaches have well defined morphology (defined bed and banks, evidence of erosion/sedimentation, and sorted substrate). These reaches maintain geomorphic function and have potential for rehabilitation. In many cases, these reaches are presently exhibiting evidence of geomorphic instability or environmental degradation due to historic modifications and land use practices.	Watercourse to be protected with applicable meander belt and setbacks. Realignment may be acceptable when deemed appropriate for restoration and enhancement. Options: • Do nothing: Leave the corridors in their present condition and develop outside of their boundaries: Delineate appropriate meander belt or erosion hazard corridor depending on valley classification. Determine additional regulatory setbacks as required. • Enhance existing conditions: maintain the present location of the corridor but enhance the existing conditions (e.g. bank stabilization, re-establish a meandering planform, connect channel to

functioning floodplain). Natural channel design to be implemented for any adjustments.

- Re-locate and enhance existing conditions: many of the reaches within the study area have undergone extensive straightening and modification for agricultural drainage purposes. As such, they are not as sensitive to re-location and would benefit from enhancements such as the re-establishment of a meandering planform with functioning floodplain and development of a riffle-pool morphology (i.e. natural channel design). In the event that these reaches are re-located, the corridor width (meander belt width/hazard corridor) associated with each reach must, at a minimum, be maintained.

For reaches that have been straightened, appropriate surrogate reaches or empirical methods should be applied to determine the meander belt corridor. Natural channel design to be implemented for any realignment or adjustments.

5. Species at Risk Screening

A list of SAR and SOCC with the potential to occur in the study area (Table 11) was prepared by reviewing the following sources:

- MNRF Land Information Ontario (LIO) digital mapping of natural heritage features
- Natural Heritage Information Centre (NHIC) database (Atlas ID: 17PH1871)
- Species at Risk in Ontario (SARO) List Schedule 2 & 3
- Species at Risk Act (SARA), Schedule 1
- Ontario Breeding Bird, Butterfly, Moth, Reptile and Amphibian Atlases (Atlas Square: 17PH17
- iNaturalist and eBird (citizen science databases)

The desktop background review identified 37 SAR that have been previously documented as occurring in the atlas square or citizen science database associated with the Subject Property (Table 11). Observations of SAR within these squares do not necessarily represent observations within the boundaries of the Subject Property.

Table 11. SAR Screening Results

Species		Status		
Common Name	**Scientific Name**	**S_Rank**	**SARO**	**SARA**
Birds				
American Coot[4, 1]	*Fulica americana*	S3B, S4N	NAR	NAR
Bald Eagle[7]	*Haliataeetus leucocephalus*	S4	SC	NAR
Barn Swallow[4, 2]	*Hirundo rustica*	S4B	SC	THR
Bank Swallow[4]	*Riparia riparia*	S4B	THR	THR
Black Tern[4]	*Chlidonias niger*	S3B, S4M	SC	NAR
Blue-winged Teal[1]	*Spatula discors*	S3B, S4N	NAR	NAR
Bobolink[4, 2, 1]	*Dolichonyx oryzivorus*	S4B	THR	SC
Canada Warbler[4]	*Cardellina canadensis*	S5B	SC	THR
Caspian Tern[4]	*Hydroprogne caspia*	S3B, S5M	NAR	NAR
Chimney Swift[4, 2]	*Chaetura pelagica*	S3B	THR	THR
Common Gallinule[1]	*Gallinula galeata*	S3B	n/a	n/a
Common Nighthawk[4]	*Chordeiles minor*	S4B	SC	SC
Eastern Meadowlark[2, 1]	*Sturnella magna*	S4B, S3N	THR	THR
Eastern Wood-Pewee[4, 2, 1]	*Contopus virens*	S4B	SC	SC
Golden-winged Warbler[4]	*Vermivora chrysoptera*	S3B	SC	THR
Grasshopper Sparrow[4]	*Ammodramus savannarum*	S4B	SC	SC
Horned Grebe[4]	*Podiceps auritus*	S1B, S3N, S4M	SC	SC
Lesser Yellowlegs[4]	*Tringa flavipes*	S3S4B, S5M	THR	THR
Northern Bobwhite[4]	*Colinus virginianus*	S1?	END	END
Peregrine Falcon[4]	*Falco peregrinus*	S4	SC	NAR
Red-Headed Woodpecker[4, 2, 1]	*Melanerpes erythrocephalus*	S3	END	END
Red-necked Grebe[4]	*Podiceps grisegena*	S3	NAR	NAR

Species		Status		
Common Name	**Scientific Name**	**S_Rank**	**SARO**	**SARA**
Red-necked Phalarope[4]	*Phalaropus lobatus*	S3B, S4M	SC	SC
Rusty Blackbird[4]	*Euphagus carolinus*	S4B, S3N	NAR	SC
Upland Sandpiper[4, 1]	*Bartramia longicuada*	S2B	n/a	n/a
Virginia Rail[4]	*Rallus limicola*	S4, S5N	NAR	NAR
Wood Thrush[4, 2, 1]	*Hylocichla mustelina*	S4B	SC	THR
Wilson's Phalarope[4, 1]	*Phalaropus tricolor*	S2B, S4M	n/a	n/a
Amphibians and Reptiles				
Eastern Milksnake[3, 1]	*Lampropeltis triangulum*	S4	NAR	SC
Midland Painted Turtle[3, 1]	*Chrysemys picta marginata*	S4	SC	SC
Insects				
Monarch[5]	*Danaus plexippus*	S2N, S4B	SC	END
Plants				
American Chestnut[7]	*Castanea dentata*	S1S2	END	END
Hairy Green Sedge[1]	*Carex hirsutella*	S3	n/a	n/a
Fish				
Grass Pickerel[6, 1]	*Esox americanus*	S3	SC	SC
Mapleleaf Mussel[1]	*Quadrula quadrula*	S2	THR	SC
Lilliput[1]	*Toxolasma parvum*	S1	THR	END
Wildlife Concentration Area				
Mixed Wader Nesting Colony	*Colonial Wading Bird Colony*	SNR	n/a	n/a

Sources: [1] NHIC Database, [2] OBBA, [3] Ontario Reptile and Amphibian Atlas, [4] eBird Database, [5] Ontario Buttefly Atlas, [6] DFO Aquatic SAR Map, [7] iNaturalist

5.1. SAR Assessment

Based on the screening conducted by GeoProcess staff, in combination with vegetation communities and other environmental features observed and reported on during fieldwork by NRSI (SWS report, Phase 2, 2022) and GeoProcess staff, the following species were identified for further assessment:

5.1.1. Possibly Occurring

An assessment of the above list found that the Subject Property does not have the potential to provide habitat for any species listed in Table 11.

5.1.2. Confirmed Presence

5.1.2.1. Barn Swallow

The Barn Swallow (*Hirundo rustica*) is now designated as Special Concern under the Ontario *Endangered Species Act (ESA)* as of January 25, 2023. It is found throughout southern Ontario and to the north as far as Hudson Bay. This species uses almost exclusively human-made structures to mount their cup-shaped nests on. Males show a glossy colouring of steel-blue on their back and breast band, while females have a pale underbelly and short tail feathers. The tail feathers form a distinctive deep fork with a line of white spots across the end. Since the mid-1980's the population has been in decline due to causes not well understood. Modernization of buildings, especially barns, and the use of agricultural pesticides are probable threats.

Barn Swallows were observed by NRSI staff on the Subject Property during the fieldwork completed in 2020. They were seen and heard during breeding bird surveys and as incidental wildlife flying over the agricultural fields. There are no suitable structures located on-site that would be appropriate for nesting (i.e. open barns, bridges, culverts, and other built infrastructure), but such structures do exist on surrounding properties. As a result, it is likely that Barn Swallows are using the site only for foraging, not nesting. Foraging habitat is not protected under the ESA.

6. Significant Wildlife Habitat (SWH) Screening

Significant Wildlife Habitat (SWH) is protected as per Section 2.1 of the Provincial Planning Statement, 2024. The Significant Wildlife Habitat Technical Guide (OMNRF, 2000) aids in land use planning by providing the identification, description, and prioritisation of significant wildlife habitat in Ontario. The associated Ecoregion Criteria Schedules are used to further provide detailed criteria for assessing and confirming SWH within Ontario. This section will provide a screening in the form of a summary table followed and an assessment of the potentially or confirmed occurring SWH.

Significant (and/or sensitive) Wildlife Habitat features and functions as described within the OMNRF Significant Wildlife Habitat Ecoregion Criteria Schedule for Region 7E (OMNRF, 2015) were reviewed and evaluated for the Study Area. The documented groups wildlife habitat into five main categories:

- Seasonal concentration areas of animals
- Rare vegetation communities
- Specialized Habitat for Wildlife
- Habitat for species of conservation concern: Black Gum, Lizard's Tail, Slightly Hirsute Sedge, Eastern Wood-Pewee, Snapping Turtle, Monarch; and Terrestrial Crayfish
- Animal movement corridors

The full screening found in Appendix C consists of a review of the ELC codes and habitat criteria for candidate SWH. Any SWH on the Subject Property or adjacent lands was noted in Column 4 and a rationale was

provided in Column 5. In the case of potential SWH, Confirmed Defining Criteria Studies were reviewed, and applicable mitigation measures (in summary form) were also provided in Column 5.

6.1. SWH Assessment

Based on a review of background information and accompanying field studies, the assessment Found no candidate or confirmed SWH within the Subject Property.

7. Proposed Development

The Draft Plan for Stage 1 is provided below (Map 6) as prepared by Arcadis Canada Inc. The Draft Plan has two main entrances off Townline Road, and consists of a combination of single-detached, semi-detached homes, one multi-family block, Gas Easement Park, Open Space/Trails and a Stormwater Management Facility (SWMF) Block. Lockbridge Development consists of 105 single-detached homes and Hendler Property consist of 32 single-detached, 12 semi-detached, and estimate 30 townhouses within a multi-family block. Kingma Properties owns the lands west of new Street B comprising of 17 single-family lots for totaling of 196 residential units. The total area of the Stage 1 Draft Plan lands is 12.5ha (Stantec, 2024).

7.1. Natural Heritage System Features

7.1.1. Proposed Linkage

Linkages are connections between natural heritage features that provide movement opportunities for species between habitat patches that would otherwise be isolated. They enhance and maintain the viability of specific species populations by providing habitats for various life processes (e.g. breeding habitat vs summer foraging habitat), preserving genetic variability, and allowing populations to recolonize areas where they are no longer found. Linkage function can be enhanced by locating compatible land uses adjacent to them, such as open space, passive recreational parkland, or naturalization and restoration areas.

As per the 2024 Functional Servicing Report drafted by Wood, a proposed Linkage area is mapped along the eastern border of the Subject Property, which is the location of the former TH&B Rail Line. The proposed feature is highlighted in the SWS Phase 2 Report (Wood, 2022a), and classified as a secondary linkage, 50 m in width and running the entire length of the Subject Property. It would provide a direct connection between the Twenty Mile Creek and North Creek corridors while passing through woodlands and PSWs in between the two valleys. The proposed Linkage also provides abundant naturalization opportunities for the lands which are currently manicured lawns and agricultural fields.

The planting of native species specific to the local area can significantly enhance the quality of the proposed feature and contribute to an effective, naturalized and connective NHS within the Community of Smithville. No buffer for the proposed Linkage feature is included in the draft plan for the Subject Property.

Stormwater Management, grading and Servicing Requirements

7.1.2. Stormwater Management

As per the 2024 Functional Servicing Report (Stantec, 2024), a stormwater management facility (SWMF) is proposed along the northern property limit, discharging into the watercourse (TM3) that flows under Townline Road. The site's minor flows, the 5-year storm event, are captured and directed into SWMF via storm sewers between 300 mm and 1200 mm diameter, and major flows are conveyed over land to the pond following a similar route as the minor piped flows along the roads.

The flow from the proposed SWMF will outlet to the existing 900 mm diameter culvert under Townline Road and ultimately to Twenty Mile Creek. Outlet flows will meet discharge criteria set in the Phase 2 SWS Report (Wood, 2022a) to protect the stability of the downstream watercourse. Surface flows from residential units backing onto the proposed Linkage Area will outlet to the existing 600 mm diameter culvert (Figure 8, Figure 9) via existing surface flows from the swale in the abandoned rail corridor and ultimately to the storm sewer system along Townline Road and ultimately into Twenty Mile Creek.

Figure 8. Upstream of culvert

Figure 9. Facing culvert

7.1.3. Grading

As per Stantec's 2024 Functional Servicing report, the site will be graded generally sloping towards the north (Stantec, 2024). Grades will be matched within the linkage feature along the eastern property limit. Grading will preclude the ability to save the small woodland feature and Hedgerow 1.

7.1.4. Sanitary Servicing Requirements

Based on the 2024 Functional Servicing Report (Stantec, 2024), the proposed sanitary sewer design from the Subject Property includes a 200 mm diameter sewer that connects to the existing 200 mm diameter sewer within the Townline Road right-of-way

7.1.5. Watermain Servicing Requirements

As per the Functional Servicing Report (Stantec, 2024) the Subject Property will connect to the existing 150 mm PVC watermain along Townline Road.

8. Environmental Impact Assessment

Impacts on the various natural heritage features associated within and adjacent to the Subject Property were considered in the impact analysis. Potential impacts were assessed using field-collected data and secondary source information, including an overlay of the proposed site plan.

8.1. Direct Impacts

Direct impacts are those that are directly attributed to the proposed development activities, often occurring during the construction phase or associated with physically altering the landscape, removal of vegetation communities or changes to the surface and groundwater systems. Construction activities, including grading, servicing, and site development, can cause short-term direct impacts on surrounding habitats and possibly local and migrating wildlife. The potential impacts listed in Table 12 were considered, appropriate mitigation measures were identified, and residual effects were identified.

Table 12. Direct Impacts Assessment Table

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
Short-Term Impacts				
Natural Heritage System (NHS)	Grading, Servicing & Development	Release of dust as a result of construction activities.	Implement dust suppression measures during site grading when conditions are dry or strong winds are anticipated.	Impacts from dust to the surrounding landscape should be minimal. No residual effects expected.
Breeding Birds	Site Clearing/ Tree Removal	Impacts to nests and nesting birds	Vegetation and tree clearing should not occur between April 1-September 30th as per the Migratory Birds Convention Act (1994). If clearing is to occur during the nesting season, a nest survey should be completed by a qualified bird biologist 48 hours prior to the proposed works to identify any nests which are not to be disturbed until the young have fledged. Nests are not to be disturbed until the young have fledged or until the nest is deemed inactive. Education of contractors on wildlife encounters.	Tree clearing is scheduled for the Subject Property, if guidelines are followed, impacts and residual effects should be minimal.
Surrounding habitats	Grading, Servicing & Development	Release of petroleum products or other contaminants into surrounding habitats.	To prevent contaminant runoff into the nearby natural heritage features, equipment maintenance and refuelling need to be controlled to prevent any discharge of petroleum products. Vehicular maintenance and refuelling should be conducted at least 30 m from the watercourse. Construction material, excess material, construction debris, and empty containers should be stored in one location with proper containment and spill control measures in place.	No residual effects are expected if mitigation measures are followed.

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
Local and migrating wildlife	Grading, Servicing & Development	Noise from construction works on local and migrating wildlife.	Limited measures can be employed as a certain level of construction noise will occur. Limit construction activities at sunrise and sunset during the active spring breeding bird season.	Noise impacts to wildlife may occur; however, as the majority of the wildlife found within the local landscape is tolerant of disturbances, they are anticipated to return to the area once construction activities end. No residual effects are expected.
Surrounding habitat	Grading, Servicing & Development	Soil compaction and rutting outside of the construction zone	Implement a construction maintenance plan and fencing to delineate where the extent of the development footprint is limited.	Minimal residual effects anticipated.
Stand of Manitoba Maples	Grading, servicing and development	Removal of the stand of Manitoba Maples	Replacement of lost canopy within the proposed Linkage area and within the street tree plantings.	Tree replacement will occur within the Linkage. The woodland's area is approximately 0.25 ha and the Linkage is just over 1 ha in size. Overall, the Linkage will provide a greater treed by approximately four times.
Long-Term Impacts				
Local and migrating wildlife	Development	Light pollution	Lights directed downward will reduce the amount of ambient light issuing from the Subject Property. It is recommended that downward-casting lighting is used across the site. Lighting along the backside of the building that faces the Linkage should be minimized.	Due to the overall size of the proposed development, it is likely to create additional ambient light pollution. If mitigation measures are implemented, the overall impact of light pollution on wildlife and insects can be reduced. The shielding and downward casting lights and closing window coverings at night are good steps to reducing impacts. It is likely there will be some impact due to night-time lighting as all outdoor lighting will not be eliminated.
Surrounding Habitat	During Construction	Movement of invasive species to and from the site	Machinery is a major vector for spreading terrestrial invasive species into new areas as they may spread seeds or plant parts to other properties. Contractors are to follow Clean Equipment Protocol for Industry (2013) as laid out by the Ontario Invasive Plants Council.	No invasive plant species were found on-site during floristic surveys. Minimal residual effects are expected while adhering to the recommended mitigation measures.

Feature and Function	Proposed Activity	Potential Impacts	Recommended Mitigation	Residual Effects
Proposed Linkage	Grading, Servicing and Development	Removal of vegetation supporting wildlife habitat	Planting native species reflective of the local area and installing wildlife structures to account for habitat lost during development.	Long-term residual impacts on wildlife populations within the local area will likely be minor as the habitats supporting these species are well-represented within the local landscape. Incidental wildlife observations were limited to local, generalist species commonly found within the identified vegetation communities and surrounding area. Long-term residual impacts to these species are not expected due to the proposed works not encroaching on or fragmenting NHS. Additionally, all roads and servicing will be integrated with existing services which avoids interrupting/altering wildlife movement through the local landscape.
Proposed Linkage	Wildlife/Human Interactions	Encroachment, dumping and spread of invasive species.	Planting the linkage feature with native species reflective of the local area can help mitigate further abrupt changes to the surrounding NHS of Smithville.	Residual effects of vegetation removal are anticipated to be minor due to their cultural influence. Opportunities for native planting will serve to improve the ecological functions of the Linkage adjacent to the proposed development and mitigate potential impacts from increased human presence. No residual impacts are anticipated.
Surface Water Features (HDFs)	Grading, servicing, and development	Functions such as flow, sediment transport and organic matter can be lost to the downstream receiving system.	Maintain function to downstream features (e.g. sediment supply, water supply, seasonal wildlife habitat) by either keeping the HDF open or by replicating its function through the stormwater management strategy, which can include elements such as enhanced lot level conveyance such as bioswales, low-impact development measures, vegetated swales or constructed wetlands.	The SWMF has been designed to meet flow release targets to ensure the stability of the receiving watercourse will be maintained. Flows will match pre- and post-peak flows and will not increase downstream flooding. A greater volume of water will be released into the downstream system. However, this will be released through the extended detention function of the SWM pond, resulting in a longer duration in baseflow conditions, which can provide an overall net benefit to its aquatic systems, particularly given it is an intermittently flowing system.

8.2. Indirect Impact Assessment

Indirect impacts are those that occur as a secondary result of the proposed activity and not necessarily as a direct result of the activity. These are usually associated with population growth, density changes, or alterations/additions to road networks. Indirect impacts to wildlife and the surrounding environment are expected to be minimal due to the nature of construction work within the proposed development (*Table* 13).

Table 13. Indirect Impact Summary

Impacts	Summary
Wildlife interactions with traffic	The development will result in increased road and foot traffic in the local area, which could result in increased wildlife road mortality and increased human-wildlife conflicts.
Informal trails	It is common for informal trails to develop in natural areas adjacent to new development. Fencing and plantings within the Linkage will discourage access to nearby sensitive habitats.

8.3. Cumulative Impacts

Cumulative impacts are changes to the environment due to past, present and reasonably foreseeable future impacts. Cumulative impacts to adjacent natural areas are difficult to predict as there is a lack of good baseline data for the Subject Property. The Subject Property and surrounding landscape have experienced some disturbance from nearby land use, such as agricultural use and commercial and residential development.

The proposed development is occurring within an area that is in the process of transitioning into an urban landscape that will continue to undergo anthropogenic stressors as the Community of Smithville continues to expand. These stressors have likely already changed the form and function of the local area. Such changes include alterations to ambient noise and light conditions, shifts in insect communities, shifts towards urban tolerant wildlife, and changes in both surface and groundwater flow and volumes. The proposed development, by its very nature, may result in a continuation of the shift towards a natural area that supports species most adapted to living with anthropogenic disturbances and stressors. Recognizing the role that urbanization has and will continue to have on adjacent natural areas, the proposed development has included mitigation measures to reduce these cumulative impacts.

8.4. Impact Summary

The proposed development will result in the alteration of the majority of the property due to the removal of all existing vegetation communities within the Subject Property. The natural heritage features found within the Subject Property were limited and comprised of culturally influenced communities. The small Manitoba maple woodland feature is associated with former structures, likely an old farmhouse and other farm-related structures. The proliferation of Manitoba maple is likely reflective of the trees that were present around the structures, and expanded once the area was no longer being maintained. As the woodland is comprised of one early successional species, it does not represent a diverse and high-quality wildlife habitat and does not support any significant species, SAR or their habitats. The ecological functions that this feature currently

provides will be replaced by planting a diverse range of native species within the Linkage feature, which will support approximately four times the natural cover currently provided within the woodland. The plantings within the Linkage will increase the biodiversity of the Subject Property and provide a more meaningful connection between the natural features north and south of the Subject Property. Tree removals, in addition to the woodland, are limited to Hedgerow 1, as Hedgerow 2 will not be impacted by this draft plan. Again, the plantings within the Linkage will replace the tree removals associated with the removal of Hedgerow 1.

While a number of HDFs are currently present within the Subject Property and will be removed through the development of the site, their function to the downstream receiving system will be maintained. Water from the site will continue to report to the same downstream receiving systems as they currently do. However, the overall water quality will likely be better as both quality and quantity controls will be provided, which are not present in the current condition. An additional volume of water will be generated from the property, which will be released, meeting the targets established in SWS to protect the downstream watercourse from flooding and erosion hazards. This extra volume of water will likely increase the duration of baseflow within the system, which would provide a net benefit to the aquatic ecology of the watercourse.

While six snags were identified, they are spread across the property and do not represent high-quality bat maternity roosting habitats. A snag survey of the Manitoba maple woodland did not identify snags within this feature. Overall, the assessment of bat maternity roosting habitat potential for the Subject Property found limited potential, and as a result, there is limited concern that bat maternity roosting habitat will be impacted by the proposed development.

Due to existing disturbances in the area, existing modification of the surrounding landscape through agriculture and residential development, and the condition of the site, it is unlikely the proposed development will result in any measurable changes to the immediate community composition or nearby ecological systems.

9. Mitigation Measures and Recommendations

The following mitigation measures are recommended to avoid and minimize impacts. The measures have two distinct intended outcomes: mitigation to reduce the impact on the natural heritage system and mitigation to reduce the impact of active construction.

9.1. Natural Heritage System Measures

Before machinery is active on site, a visual search of the work area should be conducted before work commences each day, particularly for the period when most wildlife is active (generally April 1st to October 31st). Visual inspections will target snakes, turtles, and other ground-dwelling wildlife such as small mammals. Visual searches should also include inspecting machinery and equipment left in the work area overnight before starting equipment to ensure that wildlife is safely out of the work area.

Other natural heritage system measures include:

- Outdoor lighting should be angled away from natural areas and should be downward casting.

9.2. Construction Measures

General construction related mitigation measures include the following:

- Clearing of vegetation within the Subject Property as part of site preparation should be conducted in late summer or winter months (September to March) so as not to coincide with breeding bird season. If clearing is to proceed within the breeding bird window, the Subject Property should be screened by a qualified bird biologist to determine if any migratory songbirds are nesting within the work zone. Any identified nests are to be protected until it is confirmed that the young have fledged from the nest.
- Implementation of the erosion and sediment control plan (ESC) is recommended to prevent releases of sediment into the adjacent natural areas. The ESC plan and monitoring should be reviewed and carried out by a qualified environmental professional (i.e. CAN-CISEC certification). Any deficiencies observed are to be recorded and immediately reported to the site contractor. ESC measures should not be removed until the site is deemed sufficiently stabilized by a qualified environmental professional.
- The limits of construction are to be delineated prior to the arrival of heavy equipment on site.
- Heavy machinery on site should be washed prior to entering the Subject Property to prevent the spread of invasive species.
- Implementation of dust control measures is recommended to reduce dust impacts on the adjacent lands.
- A construction work plan should designate specific locations for stockpiling of soils and other material to avoid impacts to the Linkage.
- Topsoil removed during stripping is recommended to be stockpiled for reapplication post-construction.

9.3. Erosion and Sedimentation Control Plan

The following approach to erosion and sediment control on site has been prepared to minimize the potential impacts associated with onsite erosion and/or offsite transport of sediment to downstream areas. Prior to any grading or servicing works commencing on site, erosion and sedimentation control measures shall be implemented as detailed on the Pre-grading, Erosion and Sedimentation Control Plans (prepared during detail design). The erosion and sedimentation controls will include the following items:

- Steep slopes (>3:1) shall have erosion blankets.
- Light and/or heavy-duty silt fencing will be erected on all site boundaries where there is potential for runoff to be discharged offsite, to protect adjacent downstream lands from migration of sediment in overland flow. The location of this fencing will be adjacent to the limit of grading. Silt fence attached to paige wire fencing will be installed periodically throughout the Site adjacent to sensitive areas. Silt fencing should be erected before grading begins to protect adjacent and downstream areas from migration of sediment in overland flow.
- Following completion of construction and site stabilization, all erosion and sediment control measures and accumulated sediment are to be removed. The erosion control measures shall be maintained in good repair during the entire construction period and shall only be removed as

contributing drainage areas are restored and stabilized. In addition, the condition of erosion control works, their overall performance, and any repairs, replacement, or modifications to the installed item shall be noted in the Monitoring Reports submitted to the NPCA and the Township. The Monitoring Reports should be submitted bi-monthly (quarterly during periods of inactivity or house construction) and should be based on inspection completed bi-weekly or after any significant rainfall events (>13 mm), whichever is more frequent.

9.4. Enhancement Measures

As per Section 5.1.2.2. it was listed in the SWS Phase 2 Report that the linkage identified on the eastern border of the Subject Property is identified as an area for restoration action:

"Linkages, buffers, and Restoration Areas are to be naturalized. Naturalization can occur through active restoration of these areas by planting and seeding of native species."

Ecological enhancements would increase the usefulness of the corridor for species. Recommended enhancement measures will include the following:

- Planting of native species reflective of the local area within the confines of the proposed Linkage Area;
    - Native seed mixes will be used, and plantings will range in size (caliper, stock, whips, plugs) to create a range of habitats.
- Providing wildlife habitat features within the proposed Linkage Area such as:
    - Raptor poles to provide viewing/hunting perches for birds of prey.
    - Bat boxes to replicate bat roosting trees lost from development processes.
    - Pollinator boxes for solitary bee and pollinator species.
    - Terrestrial log tangles to provide habitat for small mammals.
    - Rock/brush piles to provide cool spaces for amphibians and other small animals.
    - Invasive species management and removal (if deemed necessary).

The Natural Heritage Features within the Subject Property contribute to the greater Smithville NHS and must be managed and maintained following enhancement to ensure long-term sustainability. This includes enhancement, stewardship and management opportunities such as the following:

- Following the Smithville Block 9 Concept Plan a "Future Active Transportation Trail" (a formal trail) along the border of the proposed Linkage Area would provide recreational opportunities and discourage footpaths and dumping.

- Fencing along the rear yards facing the proposed Linkage Area will require fencing to further discourage informal access.

- Providing nature interpretive signs along formal trails for educational purposes and to foster a sense of respect and belonging with the local environment.

10. Policy Conformity

The proposed site alteration in relation to a residential development conforms with the policies of the Niagara Region Official Plan and the Official Plan of the Township of West Lincoln as it relates to Natural Heritage Systems. Specifically, it ensures that development-related activities before, during and after, do not impact the Linkage within the Subject Property, the nearby Natural Heritage Systems that the linkage connects, and the surrounding landscape. Relevant policies, conformation and rationale can be found inTable 14.

Table 14. Policy Conformity

Agency	Policy	Rationale
Endangered Species Act (2007)	Clause 10(1)(a): *"No person shall damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an endangered or threatened species."*	No species at risk or species at risk habitat was found within the Subject Property. The observed barn swallows were considering fly-overs.
Niagara Region Official Plan (2022)	Section 3.1.17: *"…opportunities for additional, ecologically appropriate linkages…"* not currently included in Schedule C2 to be screened for when a Subwatershed Study (SWS) is being completed in support of a secondary plan.	The SWS for the Community of Smithville identified an opportunity for an ecologically appropriate Linkage feature along the eastern border of the Subject Property. It is ecologically appropriate because it connects two larger components of the Smithville NHS, specifically the Twenty Mile Creek and North Creek Corridors. The Linkage is provided in the Draft Plan.
Niagara Region Official Plan (2022)	Section 3.1.17.3 point c): *"describes the ecological functions the linkage is intended to provide and identifies how these ecological functions can be maintained or enhanced within a development proposal".*	The Linkage will provide connectivity between the Twenty Mile Creek and North Creek corridors.
Niagara Region Official Plan (2022)	Section 3.1.20, objective i): *"establish or enhance linkages or connectivity between key Natural Heritage Features, and/or Natural Heritage Features and areas".*	The proposed Linkage feature will run through Significant Woodland and a PSW and connect larger Natural Areas surrounding Twenty Mile Creek and North Creek, thus contributing to the larger NHS of Smithville.

Agency	Policy	Rationale
Niagara region Official Plan (2022)	Section 3.1.10.1 *"development or site alteration shall not be permitted unless it can demonstrate that it will not have negative impacts on: a) the natural hydrologic characteristics of watercourses such as base flow, form and function and headwater drainage areas."*	The SWM strategy proposed meets release targets and will not impact the tributary to Twenty Mile Creek between Townline Road and the northern border of the Subject Property. Additionally, the draft plan will replicate the hydrologic functions of the smaller HDFs in its water servicing plan.
Niagara region Official Plan (2022)	NROP defines "significant surface water contribution areas" as *"headwater drainage features classified as protection, conservation and mitigation"*. Classifying and recommending management for such areas must be done in accordance with the 'The Evaluation, Classification and Management of Headwater Drainage Features Guideline', prepared by the Toronto and Region Conservation Authority and Credit Valley Conservation (2014)	The HDFs within the Subject Property are classified as mitigation in the SWS Phase 2 Report (Wood, 2022a). The HDF assessment followed the appropriate TRCA and CVC (2014) protocol. All subsequent actions and plans presented in this EIS account for the volume, flow and contribution of water these HDFs have to the greater hydrological landscape of Smithville.
The Official Plan of the Township of West Lincoln (2022)	Objective l) under section 3.6.3. of the Official Plan is *"to promote trails and corridors and linkages across the Township"*, and Section 10.3. states that *"the Township Council supports and encourages conservation and restoration of natural vegetation and wildlife throughout the rural and agricultural areas…"*.	The Subject Property contains a natural area along the former TH&B Railway that acts as a natural Linkage between larger Natural Heritage Features within the NHS of Smithville. The proposed development will recognize these lands as a Linkage and work to enhance the feature through naturalization efforts.
The Official Plan of the Township of West Lincoln (2022)	*"maintain, restore and improve the linkages among surface water features, groundwater features, hydrologic functions and natural heritage features and areas, and their ecological functions"*	The proposed Linkage area will improve connectivity among other Natural Heritage Features in the surrounding landscape.

Agency	Policy	Rationale
The Official Plan of the Township of West Lincoln (2022)	*3.1.17.2. Only linkages which have been mapped as part of the natural environment system are shown on Schedule C2. Opportunities for additional, ecologically appropriate, linkages shall be screened for when a subwatershed study is being completed in support of a secondary plan.* And *3.1.17.3 When a subwatershed study is being undertaken, or when development or site alteration is proposed in, or within 30 metres of a linkage shown on Schedule C2, an evaluation shall be completed.*	The proposed Linkage within the Subject Property was identified during the SWS and implemented in the site plan. The proposed Linkage is not shown on Schedule C2 but was identified during the SWS and an evaluation of the community was undertaken by NRSI in 2020, and observations were confirmed by GeoProcess in October 2024.
The Official Plan of the Township of West Lincoln (2022)	Section 10.3.2. Policies states that *"development plans shall integrate natural features and natural vegetation, including the planting of native species. A landscape plan shall be provided for any commercial, industrial/employment, institutional or multiple-residential development.".*	The Linkage will be planted with native species reflective of the local area.
Niagara Peninsula Conservation Authority	Ontario Regulation 97/04: Conservation Authorities are to *"prohibit, regulate or provide permission for straightening, changing, diverting or interfering in any way with the existing channel of a river, creek, stream, watercourse or changing or interfering with a wetland".*	No alterations are to be made to the Twenty Mile Creek tributary located on the Subject Property.

The proposed development does not affect the NHS identified in Schedules E-10 and E-12 of the Township of Lincoln Official Plan and conforms to policies outlined in the NROP as groundwater, surface water, and other hydrological functions are included in the NES and accounted for in the development plans. The tributary of Twenty Mile Creek regulated under Ontario Regulation 12/24 and administered by the NPCA will not be directly impacted by development activities, and protection measures during construction are outlined in Section 9 above.

11. Closing

This EIS completed a policy review, conducted biophysical surveys to document the existing ecological conditions, consulted regulatory agencies, and reviewed the proposed site alteration plan for urban boundary expansion and residential development. From a natural heritage perspective, the proposed plan meets the requirements of the NROP and Official Plan of The Township of West Lincoln and with the implementation of the standard mitigation measures described, can proceed without negative impacts on the local natural heritage system.

The EIS found that the proposed development will not impact Species at Risk habitat, significant landforms, significant wetlands or significant wildlife habitat as defined by the province. A small cultural woodland will be removed along with the hedgerow feature. Plantings of native species within the Linkage to be established along the eastern property boundary will replace the treed cover removed in these two features. The SWM strategy will replicate the headwater drainage feature functions, with discharge from the pond to the downstream receiving watercourse meeting release targets set in the SWS. Overall, the EIS concludes that the development will not have a negative impact on surrounding natural heritage features or their functions and, through the establishment of a vegetated Linkage, has the opportunity to provide a net gain to the area.

12. References

Alan Macnaughton, Ross Layberry, Rick Cavasin, Bev Edwards and Colin Jones. Ontario Butterfly Atlas Accessed February 2020.

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, 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. 706 pp.

Chapman, L.J. and Putnam, D.F. 1984. The Physiography of Southern Ontario; Ontario Geological Survey, Special Volume 2, 270p. Accompanied by Map P.2715 (coloured), scale 1:600 000.

David Kaposi, Alan Macnaughton and Bev Edwards. Ontario Moth Atlas Accessed December 2020.

Fisheries and Oceans Canada. Available from https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html. Accessed December 2020.

iNaturalist. Available from https://www.inaturalist.org. Accessed December 2020.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological land classification for Southwestern Ontario: first approximation and its application. Ontario Ministry of Natural Resources, South Central Region, Science Development and Transfer Branch. Technical Manual ELC-005.

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

OMNRF. January 2009. Working Draft. Significant Wildlife Habitat Ecoregion 7E Criterion Schedule. Addendum to Significant Wildlife Habitat Technical Guide.

OMNRF. 2013. Southern Ontario Vascular Plant Species List 3rd Edition. Southern Science & Information Section.

Ontario Breeding Bird Atlas. 2001. Guide for Participants. Bird Studies Canada.

Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Sciences Section.

Ontario Ministry of Natural Resources. 2009a. Draft Significant Wildlife Habitat Ecoregion Criteria Schedules. Addendum to Significant Wildlife Habitat Technical Guide.

Ontario, Ministry of Municipal Affairs. (2014). Provincial Policy Statement (Toronto: Ministry of Municipal Affairs, 2014).

Township of West Lincoln. 2023. Smithville Community Master Plan. https://plansmithville.ca/wp-content/uploads/2023/04/Smithville-MCP_Integrated-MCEA-Report.pdf

Wood. 2022a. Subwatershed Study – Phase 2: Impact Assessment (Draft). Smithville Subwatershed Study and Stormwater Management Plan.

Wood. 2022b. Subwatershed Study Phase 3: Management, Implementation, and Monitoring Plan (Draft). Smithville Subwatershed Study and Stormwater Management Plan.

Wood. 2023. Appendix B: Smithville Subwatershed Study and Stormwater Management Plan Reports.

Stantec. 2024. Smithville Phase 3A, Block Plan Area 9, Smithville Ontario, Functional Servicing Report.

Smithville Block 9 EIS

Prepared for Lockbridge Developments

November 21, 2024

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Project Number P2024-922

Maps

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CHECKED BY:	KG	DATE:	Nov 19, 2024

0 150 300 450 600 m

NAD83 / UTM zone 17N (EPSG:26917)

Notes:
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Map 1.

Key Map

Block 9, Smithville
Phase 1

Lockbridge Developments

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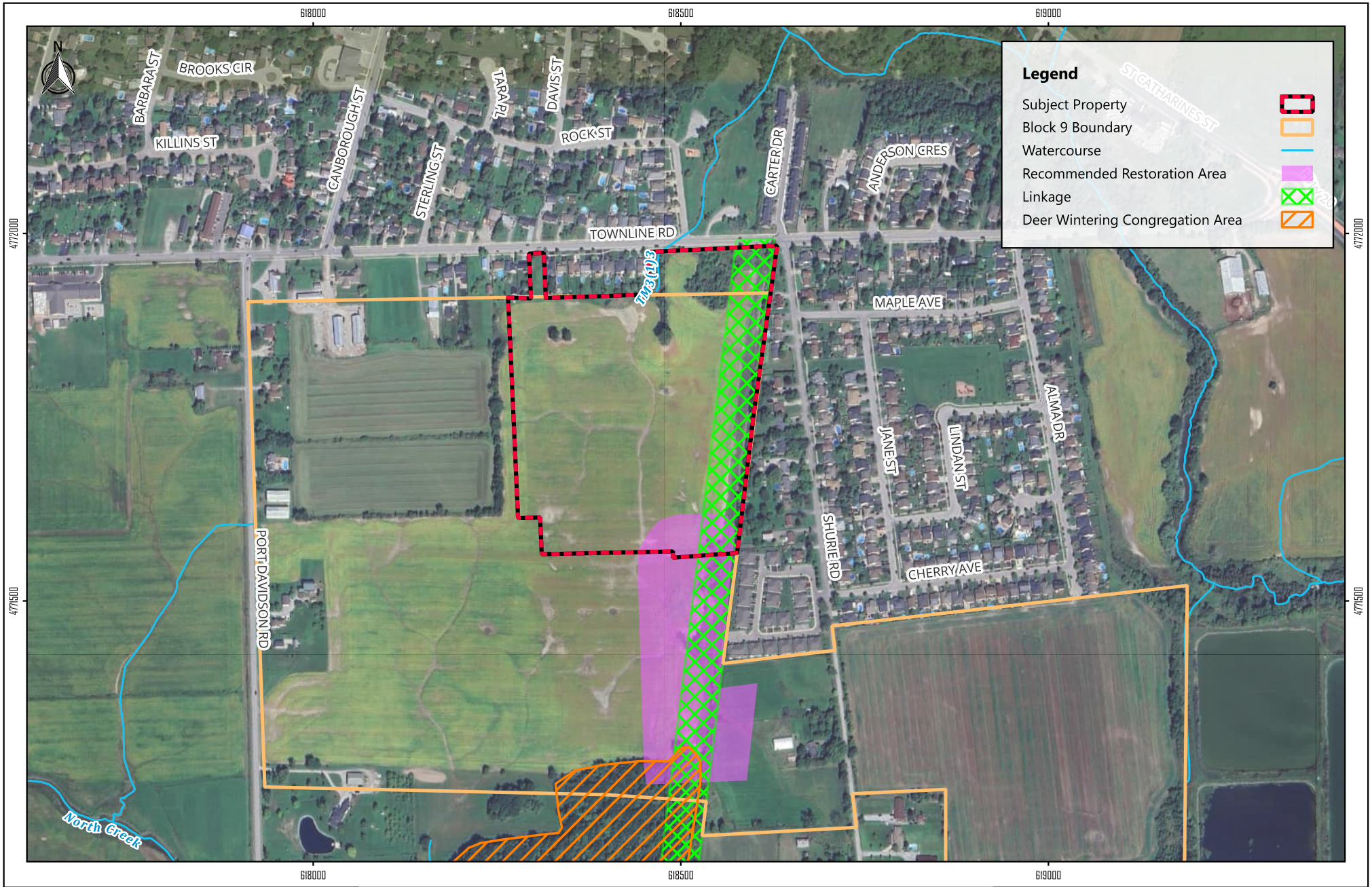

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Map 2.

Natural Heritage System

Block 9, Smithville
Phase 1

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Map 3.

Terrestrial Survey Locations

Block 9, Smithville
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ELC Code	Description
H	Hedgerow
CUT1-4	Gray Dogwood Deciduous Shrub Thicket
CUW	Coniferous Woodland
FOD7	Fresh-Moist Lowland Deciduous Forest
FOD9	Fresh-Moist Oak-Maple-Hickory Deciduous Forest
MAM	Meadow Marsh
MAMM1-3	Reed-canary Grass Graminoid Mineral Meado Marsh

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Map 4.

Ecological Land Classificaiton

Block 9, Smithville
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Map 5.

Headwater Drainage Features

Block 9, Smithville
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Map 6.

Proposed Development

Block 9, Smithville
Phase 1

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Appendix A

Headwater Drainage Features and Watercourses

Figure A-1: Appendix G-3, Table 1: Headwater Drainage Feature Assessment (Wood, 2022a)

Appendix G-3
Table 1 – Headwater Drainage Feature Assessment
All features subject to management strategies in Table 1, Appendix G-1

HDF ID	Outside of Study Area	Assessed	Hydrology	Riparian	Fish Habitat	Terrestrial	HDF Management	Final Recommendation	Rationale / Notes
TM1(2)5		Y	Contributing	Important	Contributing	Limited	Conservation		Wetland vegetation.
TM1(2)5-1		L	Limited	Limited	Contributing	Limited	No Management Required		
TM1(2)6		Y	Contributing	Important	Contributing	Limited	Conservation		Wetland vegetation.
TM1(2)6-1		L	Limited	Valued	Contributing	Limited	No Management Required		
TM1(2)7		Y	Contributing	Limited	Contributing	Limited	Mitigation		
TM1(2)7-1		Y							
TM1(2)8		N							
TM1(2)8-1	Y	N							
TM3(1)4		Y	Contributing	Contributing	Contributing	Limited	Mitigation		Linkage to wetland upstream
TM3(1)5		Y	Contributing	Valued	Contributing	Limited	Mitigation		Linkage to wetland upstream
TM3(1)6		Y	Contributing	Limited	Contributing	Limited	Mitigation		
TM3(1)6-1		Y	Contributing	Limited	Contributing	Limited	Mitigation		
TM3(1)6-1-1		Y	Contributing	Limited	Contributing	Limited	Mitigation		
TM3(1)6-1-2		Y	Contributing	Limited	Contributing	Limited	Mitigation		Dry defined channel in April (then plowed). Considered to have contributing hydrology although dry in April due to channel form, and anecdotal evidence from residents of recent high flows prior to April site visit.
TM3(1)6-2		Y	Contributing	Valued	Contributing	Limited	Mitigation		SE2 (Low constraint) karst feature. Final recommendation

Appendix G-3
Table 1 – Headwater Drainage Feature Assessment
All features subject to management strategies in Table 1, Appendix G-1

HDF ID	Outside of Study Area	Assessed	Hydrology	Riparian	Fish Habitat	Terrestrial	HDF Management	Final Recommendation	Rationale / Notes
									may increase due to presence of karst feature. Low karst constraint indicates the potential for the feature to be removed (excavated and grouted) and by-passed by runoff.
TM3(1)6-3		Y	Contributing	Valued	Contributing	Limited	Mitigation		
TM3(1)6-4		L	Limited	Valued	Contributing	Limited	No Management Required		
TM3(1)7		Y	Contributing	Limited	Contributing	Limited	Mitigation		Dry defined channel in April (then plowed). Considered to have contributing hydrology although dry in April due to channel form.
TM3(1)7-1		Y	Contributing	Limited	Contributing	Limited	Mitigation		Dry defined channel in April (then plowed). Considered to have contributing hydrology although dry in April due to channel form.
TM3(1)7-1-1		Y	Contributing	Limited	Contributing	Limited	Mitigation		
TM3(1)8		Y	Contributing	Limited	Contributing	Limited	Mitigation		Dry defined channel in April (then plowed). Considered to have contributing hydrology although dry in April due to channel form.
TM3(1)9		L	Limited	Limited	Contributing	Limited	No Management Required		
TM4(1)1	Y	N	NA	NA	NA	NA	NA		
TM4(1)2-1	Y	N	NA	NA	NA	NA	NA		

Figure A-2: Appendix G-2, Table 2: Watercourse Constraint Rankings (Wood, 2022a)

Appendix G-2
Table 1 – Watercourse Constraint Rankings
All features subject to management strategies in Table 1, Appendix G-1

Reach	Outside Study Area	Surface Water	Fluvial	Terrestrial	Fisheries	Karst and Groundwater	Proposed Watercourse Classification	Comments
SC1(4)	Y	Medium	Medium	Low	Medium	Low	Medium	Fish present in spring
SC1(5)	Y	Medium	Medium	Low	Medium	Low	Medium	Fish may be present in spring based on connection to SC1(4)
TM1	Y	High	High	High	High	High	High	Fish present year-round, including potential for Grass Pickerel (Special Concern)
TM2		High	High	High	High	High	High	Fish present year-round, including potential for Grass Pickerel (Special Concern) Opportunity to enhance the riparian zone where it is narrow or absent
TM3		High	High	High	High	High	High	Fish present year-round, including potential for Grass Pickerel (Special Concern). Karst feature SE1 (high constraint) is located on this reach near Griffin Street South bridge. High-constraint Karst features indicate that development should avoid the feature which should be buffered. The karst feature does not encompass the entire reach. Management requirements related to high-constraint karst should be considered for this HDF.
TM3(1)1	Y	Low	Medium	High	Medium	Low (karst) High (groundwater)	Medium	Seep located at lower 75m portion of reach which contributes cold water to TM3. Karst feature SE3 (low constraint) present on this reach: Intermittent surface stream draining north to 20 Mile Ck. that loses flow in at least two reaches. Low karst constraint indicates the potential for the feature to be removed (excavated and grouted) and by-passed by runoff
TM3(1)2	Y	Low	Medium	Low	Low	Low	Medium	Karst feature SE3 (low constraint) present on this reach: Intermittent surface stream draining north to 20 Mile Ck. that loses flow in at least two reaches. Low karst constraint indicates the potential for the feature to be removed (excavated and grouted) and by-passed by runoff.
TM3(1)3	Y	Low	Medium	Medium	Low	Low	Medium	
TM4		High	High	High	High	High	High	Karst feature SW4 (high constraint) located at south bank of 20 Mile Creek immediately upstream of pedestrian bridge. Not visible at high flow but otherwise has distinct flow from the creek. High-constraint Karst features indicate that development should avoid the feature and should be buffered. The karst feature does not encompass the entire reach. Management requirements related to high-constraint karst should be considered for this HDF. Opportunity to enhance the riparian zone where it is narrow or absent.
TM4(2)1	Y	Medium	Medium	Low	Low	Low	Medium	Reach downstream of SW2 sinkhole (high constraint), grassy mown area, SWM inputs.

Figure A-3: Appendix G-1, Table 1: Watercourse and Headwater Drainage Feature Classification (Wood, 2022a)

Table 1: Watercourse and Headwater Drainage Feature Classification

Discipline	Definition	Management Strategy
Red Stream Classification (solid red lines). These features are high constraint watercourses that have attributes (e.g. floodplains, unstable banks) that attract NPCA regulations. They must remain open and protected in their present condition and location, with the exception of select locations where rehabilitation may be of benefit to the system.		
Surface Water	These corridors contain a well-defined channel within a well-defined and established valley system, with large contributing drainage areas (i.e. 200 ha or more).	Watercourse and corridor to be protected in current form and location, with applicable regulatory setbacks and ecological buffers.
Geomorphology	These corridors contain a defined active channel with well-developed channel morphology (i.e., riffle-pool), material sorting, floodplain development, and/or a well-defined valley. These corridors offer both form and function and have been identified as 'no touch' reaches that must be maintained undisturbed in their present condition, except for select locations where rehabilitation may be of benefit to the system. They have usually been deemed high-quality systems that could not be re-located and replicated in a post-development scenario.	Watercourse to be protected with meander belt in current form and location. Minor modification through rehabilitation/enhancement may be acceptable in select location where it is a benefit to the system. Options • Do nothing: Corridors must remain where they are in the landscape. Delineate meander belt or erosion hazard corridor depending on valley classification. Determine additional regulatory setbacks as required. • Channel adjustments may be permitted at select locations given sufficient rationale (e.g. addressing an immediate high-risk erosion hazard, or an essential infrastructure for servicing issue such as road crossings or channel lowering). Natural channel design to be implemented for any adjustments. • Degraded (channelized and straightened) portions may by realigned using natural channel design, if realignment does not negatively impact rehabilitation.
Fisheries	Permanently wetted (flowing or standing water over most of watercourse length) that is generally associated with continuous or seasonal groundwater discharge, or with wetland storage and/or pond flows. Fish community (or the potential for) is present and natural habitat is	Watercourse to be protected/enhanced in current form and location. Minor modification through rehabilitation/enhancement may be acceptable in select location where it is a benefit to the system. Options

Discipline	Definition	Management Strategy
	usually fully developed. Either habitat and/or flow source characteristics may be difficult to replicate or maintain. -and/or- Habitat occupied by species at risk.	• Preserve the existing drainage feature and groundwater discharge or wetland in-situ. Key features of this are: 1) Maintain existing water source: e.g. incorporation of shallow groundwater and base flow protection techniques such as infiltration treatment; examine need to incorporate groundwater flows through infiltration measures (i.e. third pipes, etc.) to ensure no net loss or, if appropriate, potential gain. 2) Drainage feature must connect to downstream watercourse/habitat. 3) Stormwater management (e.g. extended detention outfalls) are to be designed and located to avoid and/or minimize impacts (i.e. sediment, temperature) to fish habitat. • Channel adjustments may be permitted at select locations given sufficient rationale (e.g. addressing an immediate high-risk erosion hazard, or a critical servicing issue), and habitat features can be restored. Natural channel design to be implemented for any adjustments. • Degraded (channelized and straightened) portions may by realigned using natural channel design if realignment does not negatively impact rehabilitation potential. For example, a more rigorous investigation may be required to ensure realignment does not result in a reduction in groundwater inputs.
Terrestrial	The watercourse segments that are within terrestrial features that are of high ecological quality; are determined to be provincially, regionally, and/or locally significant; and/or are determined to provide critical habitat functions for wildlife (e.g. consistent with criteria for Significant Wildlife Habitat).	Watercourse to be protected/enhanced in current form and location.

Discipline	Definition	Management Strategy
	Red HDF Classification (dashed red-white lines). These features, classed as [1]Protection, must remain open and, in general, remain protected in their present condition and location. They may have attributes that attract NPCA regulations.	
Surface Water	These are drainage features for which the application of the HDF Guidelines (TRCA/CVC, 2014) result in a "Protection" management strategy.	For drainage features in this category, follow the HDF management guidelines for "Protection".
Geomorphology	same as above	same as above
Fisheries	same as above	same as above
Terrestrial	The drainage feature reach segments that are within terrestrial features that are of high ecological quality; are determined to be provincially, regionally, locally significant, and/or are determined to provide critical habitat functions for wildlife (e.g. consistent with criteria for Significant Wildlife Habitat).	Drainage feature to be protected/enhanced in current form and location.
Blue Stream Classification (solid blue lines). These features are medium constraint watercourses that have attributes (e.g. floodplains, unstable banks) that attract NPCA regulations. They must remain open but they can be realigned using natural channel design.		
Surface Water	These reaches have relatively smaller contributing drainage areas (i.e. between 50 ha and 200 ha), and typically are not located within defined valley corridors.	Watercourse to remain open. Realignment may be acceptable. Reconstructed watercourse and corridor would be protected by applicable regulatory setbacks and ecological buffers.
Geomorphology	These reaches have well-defined morphology (defined bed and banks, evidence of erosion/sedimentation, and sorted substrate). These reaches maintain geomorphic function and have potential for rehabilitation. In many cases, these reaches are presently exhibiting evidence of geomorphic instability or environmental degradation due to historic modifications and land use practices.	Watercourse to be protected with applicable meander belt and setbacks. Realignment may be acceptable when deemed appropriate for restoration and enhancement or to address an essential infrastructure for servicing issue. Options • Do nothing: Leave the corridors in their present condition and develop outside of their boundaries: Delineate appropriate meander belt or erosion hazard

Discipline	Definition	Management Strategy
		corridor depending on valley classification. Determine additional regulatory setbacks as required. • Enhance existing conditions: maintain the present location of the corridor but enhance the existing conditions (e.g. bank stabilization, re-establish a meandering planform, connect channel to functioning floodplain). Natural channel design to be implemented for any adjustments. Channel adjustments may be permitted for essential infrastructure for servicing (e.g. road crossings or channel lowering). All proposed works are to include sufficient rationale and be approved by regulatory agencies. • Re-locate and enhance existing conditions: many of the reaches within the study area have undergone extensive straightening and modification for agricultural drainage purposes. As such, they are not as sensitive to re-location and would benefit from enhancements such as the re-establishment of a meandering planform with functioning floodplain and development of a riffle-pool morphology (i.e. natural channel design). In the event that these reaches are re-located, the corridor width (meander belt width/hazard corridor) associated with each reach must, at a minimum, be maintained. For reaches that have been straightened, appropriate surrogate reaches or empirical methods should be applied to determine the meander belt corridor. Natural channel design to be implemented for any realignment or adjustments. • For features with realignment opportunities around roads, consideration should be made to select appropriate locations for realignment with respect to the road location, and to reduce the number of road crossings, where appropriate. This should reduce

Discipline	Definition	Management Strategy
		overall environmental impacts from roads Such changes require approval by regulatory agencies
Fisheries	Seasonally wetted (flowing or standing water) that is generally associated with seasonally high groundwater discharge or seasonally extended contributions from wetlands/ponds (no perennial flow). May provide an extended seasonal migration route for fish. Fish community (or the potential for) is present for an extended seasonal period. Potential permanent refuge fish habitat may be provided by naturally occurring storage features such as channel pools, wetlands, and other water bodies.	Watercourse to remain open. Realignment may be acceptable if habitat features and/or flow source can be maintained, replicated, or enhanced. Options • Watercourse remains open and in place, while maintaining (or replicating if appropriate) existing flow source from seasonal groundwater, surface or wetland flows. • Watercourse may be realigned using natural channel design techniques to provide habitat features to maintain or enhance overall fish productivity of the reach. Existing seasonal groundwater, surface, or wetland flows must be maintained (or replicated if appropriate), and drainage feature must connect to downstream habitat.
Terrestrial	Watercourse segment that is within terrestrial features that are determined to be of low or moderate ecological quality; are determined to be not provincially, regionally, and/or locally significant; and/or are determined to not provide critical habitat functions for wildlife (e.g. consistent with criteria for Significant Wildlife Habitat). -and/or- Watercourse segment that is determined to provide significant linkage function for wildlife (as per Significant Wildlife Habitat).	Follow management strategies outlined for fisheries and fluvial, and ensure that the corridor is sufficiently wide and has appropriate restored habitat that supports movement of wildlife.

Discipline	Definition	Management Strategy
Yellow Classification (solid yellow lines). These features are HDFs classed as [1]Conservation, must remain open but can be realigned using natural channel design. They do not have attributes that attract NPCA regulations. The classification and management of terrestrial functions will result from being classed [1]Maintain or Replicate Terrestrial Functions.		
Surface Water	These are HDFs for which the application of the HDF Guidelines (TRCA/CVC, 2014) result in a "Conservation" management strategy.	For HDFs in this category, follow the HDF management guidelines for "Conservation".
Geomorphology	same as above	same as above
Fisheries	same as above HDFs classed as "Conservation" may provide an ephemeral aquatic linkage2 that flows for a very short period (typically in the early spring) that may provide a migration route for fish to move upstream to a valued permanent water storage feature, over a period of hours to a few days. 2An ephemeral aquatic linkage does not provide habitat in which fish may take up residence, though fish may become trapped in minor features and persist for a while until they perish.	same as above
Terrestrial	HDF classification guidelines result in a "Maintain Terrestrial Linkage – Terrestrial Functions" management strategy.	Follow HDF management guidelines for "Maintain Terrestrial Linkage – Terrestrial Functions"
Green Classification (solid green lines). These features are HDFs classed as [1]Mitigation, and do not have attributes that attract NPCA regulations. They need not remain open, but their function to the watershed system must be maintained or replicated.		
Surface Water	These are HDFs for which the application of the HDF Guidelines (TRCA/CVC, 2014) result in a "Mitigation" management strategy.	For HDFs in this category, follow the HDF management guidelines for "Mitigation".
Geomorphology	same as above	same as above
Fisheries	same as above	same as above

Discipline	Definition	Management Strategy
Terrestrial	HDF classification guidelines result in a "Replicate Terrestrial Linkage – Terrestrial Functions" management strategy.	Follow HDF management guidelines for "Replicate Terrestrial Linkage – Terrestrial Functions"
Green Classification (dashed green lines). These are HDFs classed as [1]No Management Required.		
Surface Water	These are HDFs for which the application of the HDF Guidelines (TRCA/CVC, 2014) result in "No Management Required".	For HDFs in this category, follow the HDF management guidelines for "No Management Required".
Geomorphology	same as above	same as above
Fisheries	same as above	same as above
Terrestrial	same as above	same as above

Appendix B

Species at Risk Screening Sources

Table A 1. SAR Screening Sources

Screening Resource	Description
Natural Heritage Information Center (NHIC)	The Natural Heritage Information Center (NHIC), operated by the Ontario Ministry of Natural Resources and Forestry, collects, reviews, manages and distributes information on Ontario's biodiversity. Data distributed by the NHIC is used in conservation and natural resource management decision making and was a primary resource for this report. Through the NHIC Make-a-Map tool, data on species, plant communities, wildlife concentration areas and natural areas is made accessible to the public and professionals using generalized 1-kilometer grid units to protect sensitive information. The mapping interface provides current and historical occurrences of SAR within the specified grid unit. The database also identifies environmental designations which provide insight into habitat potential including wetland, areas of natural and scientific interests and woodlands.
Breeding Bird Atlas	The atlas divides the province into 10×10 km squares and then birders find as many breeding species as possible in each square. Atlassers who know birds well by song complete 5-minute "Point Counts", 25 of which are required to provide an index of the abundance of each species in a square. Data from every square are mapped to show the distribution of each species. Point count data from each square show how the relative abundance of each species varies across the province.
eBird	eBird data document bird distribution, abundance, habitat use, and trends through checklist data collected within a simple, scientific framework. Birders enter when, where, and how they went birding, and then fill out a checklist of all the birds seen and heard during the outing. eBird's free mobile app allows offline data collection anywhere in the world, and the website provides many ways to explore and summarize your data and other observations from the global eBird community. eBird hotspots that are within 1 km of the Study Area are selected for species review.
Ontario Moth Atlas	The Ontario Moth Atlas is a project of the Toronto Entomologists' Association. The atlas currently covers about 250 species from 7 of the best-known families. The atlas presently includes 62,000 records. The last update of the atlas was in April 2020. The atlas is updated at least every 3 months. Most atlas data come from iNaturalist records. However, there is some data from Chris Schmidt of Agriculture Canada, the BOLD (Barcode of Life Datasystems) project of the University of Guelph, and from other records submitted directly to the TEA. The atlas uses the same 10×10 km squares at the Breeding Bird Atlas.
Ontario Butterfly Atlas	The Ontario Butterfly Atlas is a project of the Toronto Entomologists' Association (TEA). The TEA has been accumulating records and publishing annual seasonal summaries (Ontario Lepidoptera) for 50 years, with the first edition appearing in 1969. Atlas data comes from eButterfly records, iNaturalist records, BAMONA records, and records submitted directly to the TEA. The atlas uses the same 10×10 km squares at the Breeding Bird Atlas.
i-Naturalist	i-Naturalist is a nature app that helps public identify plants and animals. Using algorithms as well as scientists and taxonomic experts' multiple observations can be identified at a research scale. This data generated by the iNat community can be used in science and conservation. The program actively distributes the data in venues where scientists and land managers can find it. I-Naturalist has a project group for (NHIC) Rare species of Ontario. GeoProcess only records observations with-in 1 km of the Study Area.
Fisheries and Ocean Aquatic Species at Risk Maps	The DFO has compiled critical habitat and distribution data for aquatic species listed under the Species at Risk Act (SARA). The interactive map is intended to provide an overview of the distribution of aquatic species at risk and the presence of their critical habitat within Canadian waters. The official source of information is the Species at Risk Public Registry. Using this map, a 1 km radius circle is outlined around aquatic features located within the Study Area.

Appendix C

Significant Wildlife Habitat Screening for EcoRegion 7E

Table A 2. Significant Wildlife Habitat Table for Ecoregion 7E

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Seasonal Concentration Areas of Animal					
Waterfowl Stopover and Staging Areas (Terrestrial)	CUM, CUT1 - plus evidence of annual spring flooding within these ecosites *Fields with seasonal flooding and waste grains in certain areas are specific to Tundra Swan	Fields with sheet water during Spring (mid-March to May) •agricultural fields with waste grain are not SWH unless they have spring sheet water avaulable.	No	Habitat features present on site however, no species aggregation observed.	•Any mixed species aggregations of 100+ individuals • the flooded field plus 100-300m radius, dependant on localized site and adjacent land us • Annual Use of Habitat is documented from information sources or field studies •Specific evaluation methods required
Waterfowl Stopover and Staging Areas (Aquatic)	MAS1,MAS2,MAS3,SAS1, SAM1,SAF1,SWD1,SWD2, SWD3,SWD4,SWD5,SWD 6,SWD7	Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. • Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.	No	No habitat features on site.	•Aggregations of 100 + of species listred for 7 days, results in > 700 waterfowl use days. •Areas with annual staging for ruddyducks, canvasbacks and redheads. •The combined area of the ELC ecosites and a 100m radius area. •Wetland area and shorelines associated with sites identified within the SWHTG, Appendix K, are significant wildlife habitat. •Annual Use of Habitat is documented from information sources or field studies • Specific evaluation methods required

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Shorebird Migratory Stopover Area	BBO1,BBO2,BBS1,BBS2,BBT1,BBT2,SDO1,SDS2,SDT1,MAM1,MAM2,MAM3,MAM4,MAM5	•Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. •Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores in May to mid-June and early July to October. • No sewage treatment or storm water management ponds.	No	No habitat features on site.	•Presence of 3 or more of listed species and > 1000 shorebird use days during spring or fall migration period. •Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant. •The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area. •Annual Use of Habitat is documented from information sources or field studies • Specific evaluation methods required
Raptor Wintering Area	Combo of one of each Community Series from one of each: Forest (FOD,FOM,FOC) and Upland (CUM,CUT,CUS,CUW). Bald Eagle: Forest on shoreline area adjacent to large rivers and lakes.	A combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. • Need to be > 20 ha. •Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands. • Field area of the habitat is to be wind swept with limited snow depth or accumulation. • Eagle sites have open water and large trees and snags available for roosting .	No	Woodlands south of Subject Property in combination with open agricultural fields provide potential habitat features.	•One or more Short-eared Owls or; •One of more Bald Eagles or; • At least 10 individuals and two of the listed hawk/owl species. •To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds. •for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Specific evaluation methods required
Bat Hibernacula	CCR1,CCR2,CCA1,CCA2. * buildings are not to be considered SWH	May be found in caves, mine shafts, underground foundations and Karsts. •Active mine sites are not considered SWH.	**Yes**	Exfoliating bark on living trees and multiple	•All sites with confirmed hibernating bats are SWH. • area includes 200m radius around the entrance of the hibernaculum for

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
				snags observed on site.	most development types and 1000m for wind farms. •Studies are to be conducted during the peak swarming period (Aug. – Sept.). • Specific survey methods required
Bat Maternity Colonies	All Ecosites in: FOD,FOM,SWD,SWM.	Maternity colonies can be found in tree cavities, vegetation and often in building. *Building are not considered SWH. • Not found in caves or mines in ON. •Located in Mature Deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees. •Prefer snags in early stages of decay (class 1-3 or class 1 or class 2). •SIlver-haired Bats prefer older mixed or deciduous forests with at least 21 snags/ha.	No	Exfoliating Bark and six snags present on site however, quality of snags is not high enough to be considered bat roosting habitat.	•Confimed use by: >10 Big Brown Bats >5 Adult female Silver Haired Bats. •The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies. • Specific evaluation methods required
Turtle Wintering Areas	Snapping and Midland Painted: SW,MA,OA,SA and FEO/BOO Series. Northern Map: Open water areas such as deeper rivers or streams and lakes.	Wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. •Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen. *Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH.	No	No habitat features on site.	•Presence of 5 over-wintering Midland Painted Turtles is significant •One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant • The mapped ELC ecosite area with the over wintering turtles is the SWH. • If the hibernation site is within a stream or river, the deepwater pool where the turtles are over wintering is the SWH. • Search for congregations in Basking Areas in spring and fall.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Reptile Hibernaculum	Any ecosite other that very wet. •Talus, Rock Barren, Crevice, Cave, Alvar may be directly related. •Observations of congregations in spring or fall is good indicator.	Sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line. •Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. •Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures	No	No habitat features on site. Habitat features do exist directly south of southern boundary.	•Presence of snake hibernacula used by - a minimum of five individuals of a snake sp. or; - individuals of two or more snake spp.. •Congregations of -a minimum of five individuals of a snake sp. or; -individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). • If there are Special Concern Species present, then site is SWH. •The feature in which the hibernacula is located plus a 30 m radius area is the SWH. • Hibernacula are used annually, often by the same individuals (strong site fidelity) and other life processes often take place near by
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns. CUM1,CUS1,BLS1,CLO1,CLT1,CUT1,BLO1,BLT1,CLS1.	Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area *does not include man-made structures, recently (2 years) disturbed soil areas or liscenced Mineral Aggregate Operation.	No	No habitat features on site.	•Presence of 1 or more nesting sites with 8 or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
					•Field surveys to observe and count swallow nests are to be completed during the breeding season. • Specific evaluation methods required
Colonially-Nesting Bird Breeding Habitat (Tree/Shrub)	SWM2,SWM3,SWM5,SWM6,SWD1,SWD2,SWD3,SWD4,SWD5,SWD6,SWD7, FET1	Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. •Most nests in trees are 11 to 15 m from ground, near the top of the tree.	No	No habitat features on site.	•Presence of 5 or more active nests of Great Blue Heron or other listed species. •The habitat extends from the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH. •Confirmation of active heronries are to be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells.
Colonially-Nesting Bird Breeding Habitat (Ground)	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1;50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6; MAS1 – 3; CUM,CUT,CUS	Nesting colonies on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands.	No	No habitat features on site.	•Presence of > 25 active nests for Herring Gulls or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern. •Presence of 5 or more pairs for Brewer's Blackbird. •Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant. •The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
					containing the colony or any island <3.0ha with a colony is the SWH. •Studies would be done during May/June when actively nesting. • Specfic evaluation methods required
Migratory Butterfly Stopover Areas	Combo of one of each Field (CUM, CUT, CUS) and Forest (FOC, FOD,FOM,CUP).	Minimum 10 ha in size with combo of field and forest located within 5km of Lake Erie or Lake Ontario. •Should not be disturbed. • Field/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat. •Should provide protection from the elements, often spits of land or areas with the shortest distance to cross the Great Lakes.	No	No habitat features on site.	•Presence of Monarch Use Days (MUD) during Fall migration (Aug/Oct) •Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD. •MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admiral's is to be considered significant.
Landbird Migratory Stopover Areas	All Ecosites within: FOC,FOM,FOD,SWC,SWM ,SWD	Woodlots >10ha in size and within 5km of Lake Erie and Lake Ontario. • If woodlands are rare in area, smaller size can be considered. • If multiple woodlands located along shore line, those <2km from shoreline are more significant. • Sites have a variety of habitats; forest, grassland and wetland complexes. •The largest sites are more significant. •Woodlots and forest fragments are important habitats to migrating birds, these features located along the shore	No	No habitat features on site, however, the SWD wetland down south of the Subject Property has potential, therefore, flyovers are likely.	•Use of the habitat by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey dates. •Studies should be completed during spring (Mar to May) and fall (Aug to Oct) migration using standardized assessment techniques. • Specific evaluation methods required

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
		and located within 5km of Lake Erie and Lake Ontario are Candidate SWH.			
Deer Yarding Areas	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60%.	No	No habitat features on site.	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
		• OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual. •Woodlots with high densities of deer due to artificial feeding are not significant			•
Deer Winter Congregation Areas	All forested ecosites within: FOC,FOM,FOD,SWC,SWM,SWD + conifer plantations much smaller than 50 ha may be used.	Woodlots will typically be >100 ha in size. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha. *Woodlots with high densities of deer due to artificial feeding are not significant.	No	No habitat features on site.	•Will be mapped by MNRF. • All woodlots exceeding the criteria are significant unless determined to be not by the MNRF. •Studies to be completed during winter when >20 cm of snow is on the ground, using aerial survey or pellet count.
Rare Vegetation Communities					

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Cliffs and Talus Slopes	Any Ecosite within: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris. Most cliff and talus slopes occur along the Niagara Escarpment.	No	No habitat features on site.	•Confirm any ELC Vegetation Type for Cliffs or Talus Slopes
Sand Barren	SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicketlike (SBS1), or more closed and treed (SBT1). Tree cover always < or equal to 60%	A sand barren area >0.5ha in size. • Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. Usually located within other types of natural habitat such as forest or savannah. • Vegetation can vary from patchy and barren to tree covered, but less than 60%.	No	No habitat features on site.	•Confirm any ELC Vegetation Type for Sand Barrens. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.
Alvar	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2, Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum	An Alvar site > 0.5 ha in size, only known sites are found in the western islands of Lake Erie. • An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. • Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plants. Undisturbed alvars can be phyto-	No	No habitat features on site.	•Studies that identify four of the five Alvar Indicator Species at a Candidate Alvar site is Significant. • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.). •The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
		and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. • Vegetation cover varies from patchy to barren with a less than 60% tree cover.			
Old Growth Forest	FOD FOC FOM SWD SWC SWM	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest. • Characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	No	No habitat features on site.	•If dominant trees species of the area are >140 years old, then the area containing these trees is Significant Wildlife Habitat. • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities • The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest forest area containing the old growth characteristics
Savannah	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. • No minimum size to site. • Site must be restored or a natural site. *Remnant sites such as railway right of ways are not considered to be SWH.	No	No habitat features on site.	•Field studies confirm one or more of the Savannah indicator species found in Appendix N, Ecoregion 6E of the SWHTG, OMNR (2000). •Entire area of the ELC Ecosite is SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic species).

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm...
	ELC Ecosite Codes	ELC Ecosite Codes			
Tallgrass Prairie	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. •An open Tallgrass Prairie habitat has < 25% tree cover. •No minimum size to site. •Site must be restored or a natural site. *Remnant sites such as railway right of ways are not considered to be SWH.	No	No habitat features on site.	•Field studies confirm one or more of the Prairie indicator species in Appendix N, Ecoregion 6E of The SWHTG, OMNR (2000). •Area of the ELC Ecosite is the SWH. •Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotic sp.)
Other Rare Vegetation Communities	See the Significant Wildlife Habitat Techinical Guide (OMNR, 200), Appendix M for Provincially Rare S1,S2 and S3 ELC Vegetation Types.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in Appendix M. •May include beaches, fens, forest, marsh, barrens, dunes and swamps. See OMNRF/NHIC for up to date list of rare vegetation communities.	**Yes**	Habitat features in vegetation community directly south of site and in southern portion of proposed linkage area.	•Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG, OMNR (2000). •Area of the ELC Vegetation Type polygon is the SWH.
Specialized Habitat for Wildlife					
Waterfowl Nesting Area	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4. * Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur. •Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. • Upland areas should be at least 120 m wide so that predators such as racoons,	No	No habitat features on site.	•Presence of 3 or more nesting pairs for listed species excluding Mallards OR •Presence of 10 or more nesting pairs for listed species including Mallards. •Any active nesting site of an American Black Duck is considered significant. •Nesting studies should be completed during the spring breeding season (April - June). •Specific evaluation methods required •A field study confirming waterfowl nesting habitat will determine the

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
		skunks, and foxes have difficulty finding nests.			boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest.
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. *Nests located on man-made objects are not to be included as SWH. •Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy.	No	No habitat features on site.	One or more active Osprey or Bald Eagle nests in an area. •Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. •For an Osprey, the active nest and a 300 m radius around the nest or the contiguous woodland stand is the SWH. *with additional requirements •For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. * with additional requirements •To be significant a site must be used annually. •When found inactive, the site must be known to be inactive for > 3 years or suspected of not being used for >5 years before being considered not significant. •Observational studies to determine nest site use, perching sites and

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
					foraging areas need to be done from early March to mid August. • Specific evaluation methods required
Woodland Raptor Nesting Habitat	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat. • Interior habitat determined with a 200m buffer. •Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest.	No	No habitat features on site.	Presence of 1 or more active nests from species list is considered significant. •Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha area of habitat is the SWH. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) •Barred Owl – A 200m radius around the nest is the SWH. •Broad-winged Hawk and Coopers Hawk,– A 100m radius around the nest is the SWH. •Sharp-Shinned Hawk – A 50m radius around the nest is the SWH. • Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area.
Turtle Nesting Areas	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within the following ELC Ecosites: MAS1 MAS2	Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. •For an area to function as a	No	No habitat features on site.	Presence of: - 5 or more nesting Midland Painted Turtles OR - One or more Northern Map Turtle or Snapping Turtle nesting is a SWH.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
	MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	turtlenesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. *Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.			•The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat. •Field investigations should be conducted in prime nesting season typically late spring to early summer. •Observational studies observing the turtles nesting is a recommended method.
Seeps and Springs	Where ground water comes to the surface. Often they are found within headwater areas within forested habitats. •Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system.	No	No habitat features on site.	Presence of a site with 2 or more seeps/springs should be considered SWH. •The area of a ELC forest ecosite or an ecoelement within ecosite containing the seeps/springs is the SWH. •The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Amphibian Beeding Habitat (Woodland)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD •Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	Presence of a wetland, pond or woodland pool (including vernal pools) >500m2 (about 25m diameter) within or adjacent (within 120m) to a woodland (no minimum size). • Some small wetlands may not be mapped and may be important breeding pools for amphibians. •Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat.	No	No habitat features on site. However, habitat features >500m south of Subject Property do have potential.	Presence of breeding population of: - 1 or more of the listed newt/salamander species or - 2 or more of the listed frog species with at least 20 individuals (adults or eggs masses) or - 2 or more of the listed frog species with Call Level Codes of 3. •A combo fo observational and call count surveys required during the spring (March-June) . •The habitat is the wetland area plus a 230m radius of woodland area. • If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat.
Amphibian Beeding Habitat (Wetlands)	ELC Community Classes SW, MA, FE, BO, OA and SA. •Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	Wetlands >500m2 (about 25m diameter), supporting high species diversity are significant; •some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats. •Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators.	No	No habitat features on site. However, habitat features >500m south of Subject Property do have potential.	Presence of breeding population of: -1 or more of the listed newt/salamander species or -2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or -2 or more of the listed frog/toad species with Call Level Codes of 3. or; - Wetland with confirmed breeding Bullfrogs are significant. •The ELC ecosite wetland area and the shoreline are the SWH.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
		• Bullfrogs require permanent water bodies with abundant emergent vegetation.			•A combo of observational and call count surveys will be required during the spring (March-June). •If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered.
Woodland Area-Sensitive Bird Breeding Habitat	All Ecosites withing: FOC FOM FOD SWC SWM SWD	Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha. •Interior forest habitat is at least 200 m from forest edge habitat.	No	No habitat features on site.	Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. *any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH. • Conduct field investigations in spring and early summer. • Specific evaluation methods required
Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)					
Marsh Bird Breeding Habitat	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites	Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present. •For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water..	No	No habitat features on site.	Presence of: - 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes or; -breeding by any combination of 5 or more of the listed species. •any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH. •Area of the ELC ecosite is the SWH. •Breeding surveys should be done in May/June. • Specific evaluation methods required

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Open Country Bird Breeding Habitat	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30 ha. •Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years). •Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. •The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species.	No	No habitat features on site.	Presence of nesting or breeding of: -2 or more of the listed species. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. •The area of SWH is the contiguous ELC ecosite field areas. •Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Specific evaluation methods required.
Shrub/Early Successional Bird Breeding Habitat	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 •Patches of shrub ecosites can be complexed into a larger habitat for some bird species.	Large field areas succeeding to shrub and thicket habitats>10ha in size. •Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no rowcropping, haying or livestock pasturing in the last 5 years). •Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species. •Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands.	No	No habitat features present on site.	Presence of nesting or breeding of - 1 of the indicator species and at least 2 of the common species. •A habitat with breeding Yellowbreasted Chat or Golden-winged Warbler is to be considered as SWH. •The area of the SWH is the contiguous ELC ecosite field/thicket area. •Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Specific evaluation methods required

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Terrestrial Crayfish	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1-with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish. •Usually the soil is not too moist so that the tunnel is well formed. •Can often be found far from water.	No	No habitat features on site.	Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable meadow marsh, swamp or moist terrestrial sites. • Area of ELC ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH. •Surveys should be done April to August in temporary or permanent water. • Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult.
Special Concern and Rare Wildlife Species	All plant and animal element occurrences (EO) within a 1 or 10km grid. All Special Concern and Provincially Rare plant and animal species.	identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites	N/A	See SAR Screening Section	Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. •The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat.
Animal Movement Corridors					

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Amphibian Movement Corridors	Corridors may be found in all ecosites associated with water.	Corridors will be determined based on identifying the significant breeding habitat for these species. Movement corridors between breeding habitat and summer habitat. Movement corridors must be determined when Amphibian breeding habitat is confirmed as SWH from this Schedule.	No	No habitat features on site.	Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant. Corridors should have at least 15m of vegetation on both sides of waterway or be up to 200m wide of woodland habitat and with gaps <20m. Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat.
Deer Movement Corridors	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH. A deer wintering habitat identified by the OMNRF as SWH will have corridors that the deer use during fall migration and spring dispersion •Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges).	**Yes**	Proposed linkage feature on E border of Subject Property connects Twenty Mile and North Creek.	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas . • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide with gaps <20m and if following riparian area with at least 15m of vegetation on both sides of waterway •Shorter corridors are more significant than longer corridors.

Wildlife Habitat	Candidate SWH Habitat Criteria		Potential on Site	Rationale	Confirmed Defining Criteria= Studies to confirm…
	ELC Ecosite Codes	ELC Ecosite Codes			
Exceptions for EcoRegion 6E					
Mast Producing Areas (Black Bear) •EcoDistrict 6E-14	All Forested habitat represented by ELC Community Series: FOM FOD	Black bears require forested habitat that provides cover, winter hibernation sites, and mastproducing tree species. • Forested habitats need to be large enough to provide cover and protection for black bears Criteria •Woodland ecosites >30ha with mast-producing tree species, either soft (cherry) or hard (oak and beech)	No	Site not located within EcoDistrict 6E-14	•All woodlands >30 ha with a 50% composition of these ELC Vegetation Types are considered significant: FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7 FOD6-5
Lek (Sharp-tailed grouse) •EcoDistrict 6E-17	CUM CUS CUT	The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topography. • Leks are typically a grassy field/meadow >15ha with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated. Criteria •Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland • Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying) • Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting	No	Site not located within EcoDistrict 6E-17	Studies confirming lek habitat are to be completed from late March to June. • Any site confirmed with sharp-tailed grouse courtship activities is considered significant • The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitat.