BEACON ENVIRONMENTAL

GUIDING SOLUTIONS IN THE NATURAL ENVIRONMENT

Scoped Environmental Impact Study
900 and 904 Mississauga Heights Drive
City of Mississauga

Prepared For:

Diamond Developments (900 Mississauga Heights) Inc.
Investex Holdings Limited

Prepared By:

Beacon Environmental Limited

Date: *Project:*

June 2023 **218165**

Table of Contents

page

Figures

Tables

Appendices

Appendix A. EIS Scoping Checklist and Terms of Reference
Appendix B. Vascular Plant Species List
Appendix C. Breeding Bird Species List
Appendix D. Assessment of Habitat of Threatened or Endangered Species
Appendix E. Significant Wildlife Habitat Assessment

1. Introduction

Beacon Environmental Limited (Beacon) was retained by Diamond Developments (900 Mississauga Heights) Inc. and Investex Holdings Limited to prepare a Scoped Environmental Impact Study (EIS) which is required for an Official Plan Amendment/Zoning By-law Amendment (OPA/ZBA) application for a common element condominium development at 900 and 904 Mississauga Heights Drive in the City of Mississauga (hereafter referred to as the subject property). The location of the subject property is shown in **Figure 1**.

The subject property abuts the Credit River valley to the south and a smaller wooded ravine to the east, which have both been identified as components of the City's Natural Heritage System (NHS). Specifically, the valleylands, both the Credit River valleyward and the eastern tributary, are designated "Significant Natural Areas and Natural Green Spaces" on Schedule 3 of the City's Official Plan, which corresponds with the boundary of Natural Area CRR8 in the City's Natural Area Survey. A "Natural Hazards" overlay was also applied to the Credit River valleyland and the eastern tributary.

The proposed re-development of the subject property consists of 18 residential lots with access provided by a common element condo road.

The policies of the City of Mississauga Official Plan require that an EIS be prepared in support of development and site alteration on lands that are within or adjacent to Significant Natural Areas and Natural Green Spaces. The purpose of the EIS is to demonstrate that the proposed re-development and related site alteration will not have a negative impact on natural heritage features or ecological functions associated with the subject property. Policy 19.4.5 of the City of Mississauga Plan lists an EIS as one of the studies that may be required a part of a complete application submission for an official plan amendment, rezoning, draft plan of subdivision or condominium or consent application.

An EIS was previously prepared by Beacon for 900 Mississauga Heights Drive, which was submitted to the City in December 2021 as part of an OPA/ZBA application. An EIS was also previously prepared in 2021 by Dougan and Associates (Dougan) for 904 Mississauga Heights Drive, which was submitted to the City in June 2021 as part of an OPA/ZBA application.

Subsequent to these previous OPA/ZBA submissions, the owners of both 900 and 940 Mississauga Heights Drive elected to prepare a unified draft plan and retained Beacon to prepare a single consolidated EIS to support the new OPA/ZBA application. This consolidated EIS builds upon the previous EISs, includes updated analyses and impact assessments related to the combined Draft Plan, and revisions to addresses City and agency comments on the previous EIS reports, as well as recent policy changes.

This EIS was prepared in accordance with the Terms of Reference that had been provided by the City for the individual previous individual EISs. Study requirements for 900 Mississauga Heights Drive were scoped with the City of Mississauga (Sarah Piett, Natural Heritage Coordinator) using the City's EIS checklist. Study requirements for 904 Mississauga Heights Drive are outlined in EIS Terms prepared by Wood (2018). Both the checklist and Terms of Reference are included in **Appendix A**.

2. Policy Review

This report section includes an overview of key federal, provincial, and local environmental policies, legislation, and regulations that are directly relevant to the current re-development proposal and OPA/ZBA. Key legislation, policies and regulations that have been reviewed and considered in preparing the EIS include the following:

- Ontario *Endangered Species Act* (2007);
- Provincial Policy Statement (2014);
- Region of Peel Official Plan;
- City of Mississauga Official Plan; and
- *Conservation Authorities Act* – O. Reg. 166/06.

The following review is not intended to be comprehensive, but has been included to highlight key policy, regulatory and legislative requirements as they relate to environmental planning to ensure that the proposed re-development is in conformity with the existing policy framework.

Section 8 of this EIS includes a summary that describes how the proposed development conforms to the various environmental policies and legislation described above.

2.1 Ontario *Endangered Species Act* (2007)

Species at Risk in Ontario are those listed as provincially Endangered, threatened, or special concern at the provincial level, however the act only regulates the habitat of those that are Endangered or Threatened.

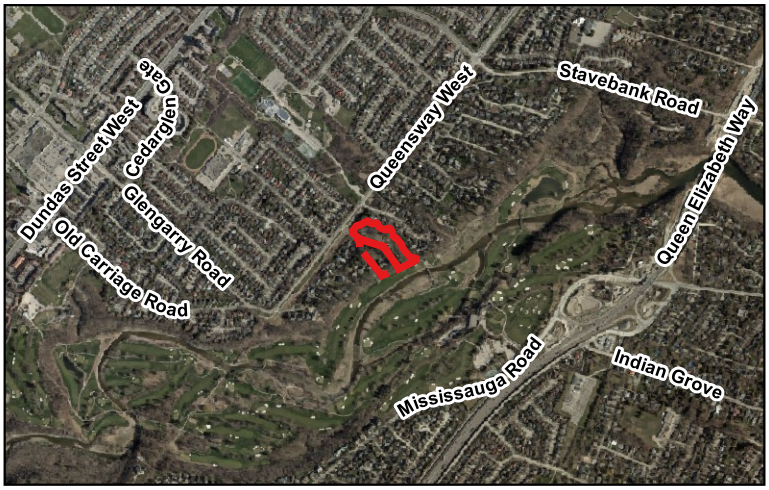
The Ontario *Endangered Species Act* (2007) provides legal protection to Endangered and Threatened species and their habitat. The ESA states that no person shall:

- *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.*
- *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.*

However, under subsection 17(1) of the ESA, MECP may authorize a person to engage in an activity that would otherwise be prohibited. Such activities would require a permit, agreement, or regulatory exemption.

2.2 Provincial Policy Statement (2020)

Section 2.1 of the Provincial Policy Statement (PPS) provides direction to municipalities regarding planning policies specifically for the protection and management of natural heritage features and resources. The PPS identifies seven natural heritage components of interest and establishes policies to ensure their protection as part of land use planning exercises. Natural heritage features include:



Site Location	Figure 1
900 and 904 Mississauga Heights Drive	
BEACON ENVIRONMENTAL	Project: 218165 Last Revised: June 2023
Client: Diamond Developments (900 Mississauga Heights) Inc. and Investex Holdings Limited	Prepared by: BD Checked by: DW
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- Significant wetlands;
- Significant coastal wetlands;
- Significant habitat of endangered and threatened species;
- Fish habitat;
- Significant woodlands;
- Significant valleylands;
- Significant Areas of Natural and Scientific Interest (ANSIs); and
- Significant wildlife habitat.

The policies of Section 2.1 are as follows:

2.1.1 Natural features and areas shall be protected for the long term.

2.1.2 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.

2.1.3 Natural heritage systems shall be identified in Ecoregions 6E & 7E1, recognizing that natural heritage systems will vary in size and form in settlement areas, rural areas, and prime agricultural areas.

2.1.4 Development and site alteration shall not be permitted in:

a) significant wetlands in Ecoregions 5E, 6E and 7E 1 ; and

b) significant coastal wetlands.

2.1.5 Development and site alteration shall not be permitted in:

a) significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E 1;

b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River)significant wildlife habitat; significant areas of natural and scientific interest; and coastal wetlands in Ecoregions 5E, 6E and 7E 1 that are not subject to policy 2.1.4(b)

Unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

2.1.6 Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

2.1.7 Development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.

2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 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.

Policy 3.1 of the PPS provides direction to municipalities regarding land use planning in natural hazard areas. These policies generally prohibit or restrict development in areas prone to flooding and erosion. Conservation Authorities also regulate these lands.

2.3 Regional Municipality of Peel Official Plan (2022)

The Peel Region Official Plan (ROP) contains policies aimed at protecting, maintaining, and restoring a Greenlands System consisting of "Core Areas", "Natural Areas and Corridors (NAC's)", and "Potential Natural Areas and Corridors (PNAC's)". Key elements of the Region's Greenlands System include the following:

- Areas of Natural and Scientific Interest (ANSI);
- Environmentally Sensitive or Significant Areas (ESA);
- Escarpment Natural Areas;
- Escarpment Protection Areas;
- Fish and wildlife habitat;
- Habitats of threatened and endangered species;
- Wetlands;
- Woodlands;
- Valley and stream corridors;
- Shorelines;
- Natural lakes;
- Natural corridors;
- Groundwater recharge and discharge areas;
- Open space portions of the Parkway Belt West Plan; and
- Other natural features and functional areas.

The above key elements are to be interpreted, identified, and protected in accordance with the policies of the Regional Official Plan.

2.3.1 Core Areas

Core Areas represent those features and areas that are considered to be significant at the provincial and regional levels. They generally correspond with significant features and areas listed in the PPS and include:

- Significant Wetlands;
- Significant Coastal Wetlands;
- Core Woodlands;
- Environmentally Sensitive or Significant Areas;
- Provincial Life Science ANSI;
- Significant Habitat of Threatened and Endangered Species;
- Escarpment Natural Areas of the Niagara Escarpment Plan; and

- Core Valley and Stream Corridors.

Core Areas of the Greenlands System are mapped on Schedule A of the ROP. Criteria for identifying additional core features of the Greenlands System are provided in the ROP.

Policy 2.3.2.6 prohibits development and site alteration within the Core Areas of the Greenlands System in Peel except for:

- Forest, fish, and wildlife management;
- Conservation and flood or erosion control projects, but only if they have been demonstrated to be necessary in the public interest and after all reasonable alternatives have been considered;
- Essential infrastructure exempted, pre-approved or authorized under an environmental assessment process;
- Passive recreation;
- Minor development and minor site alteration;
- Existing uses, buildings, or structures;
- Expansions to existing buildings or structures;
- Accessory uses, buildings, or structures; and
- A new single residential dwelling on an existing lot of record, provided that the dwelling would have been permitted by the applicable planning legislation or zoning by-law on May 23, 2014. A new dwelling built after May 23, 2014 in accordance with this policy shall be deemed to be an existing building or structure for the purposes of the exceptions permitted in clauses g) and h) above.

The above noted exceptions are permitted provided that:

a) *the exceptions are permitted in accordance with the policies in an approved local municipal official plan or the Niagara Escarpment Plan, where applicable;*
b) *any development and site alteration will not be permitted unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions and that:*
    i. *there is no reasonable alternative location outside of the Core Area and the use, development or site alteration is directed away from the Core Area to the greatest extent possible;*
    ii. *if avoidance of the Core Area is not possible, the impact to the Core Area feature is minimized;*
    iii. *any impact to the Core Area or its functions is mitigated through restoration or enhancement to the greatest extent possible; and*
    iv. *where ecosystem compensation is determined to be appropriate and feasible, including for essential infrastructure, it may be considered in accordance with local municipal or conservation authority ecosystem compensation guidelines.; and*
c) *within significant wetlands and significant coastal wetlands the above exceptions may only be considered in accordance with federal and provincial legislation, regulations and policies (e.g. Conservation Authorities Act); and*
d) *when developing policies to allow the exceptions, the local municipalities may consider appropriate implementation tools including existing approval requirements and tools of other angecies.*

2.3.2 Natural Areas and Corridors (NAC) and Potential Natural Areas and Corridors (PNAC)

Natural Areas and Corridors (NAC) include:

- Evaluated non-provincially significant wetlands;
- Woodlands meeting one or more of the criteria in Table 1 of the ROP;
- Significant wildlife habitat meeting one or more of the criteria in the Ministry of Northern Development, Mines, Natural Resources and Forestry's Significant Wildlife Habitat Technical Guide and associated Criteria Schedules for Ecoregions 6E and 7E;
- Fish habitat;
- Regionally significant life science Areas of Natural and Scientific Interest;
- Provincially significant earth science Areas of Natural and Scientific Interest;
- Escarpment Protection Areas of the Niagara Escarpment Plan;
- The Lake Ontario shoreline and littoral zone and other natural lakes and their shorelines;
- any other valley and stream corridors that have not been defined as part of the Core Areas;
- sensitive headwater areas and sensitive ground water discharge areas; and
- any other natural features and functional areas interpreted as part of the Greenlands System Natural Areas and Corridors by the local municipalities, in consultation with the conservation authorities and the Ministry of Northern Development, Mines, Natural Resources and Forestry, including, as appropriate, elements of the Potential Natural Areas and Corridors.

Potential Natural Areas and Corridors (PNAC) include:

- Unevaluated wetlands and coastal wetlands;
- Cultural woodlands and cultural savannahs within the Urban System and Rural Service Centres meeting one or more of the criteria in Table 1 of the ROP;
- Any other woodlands greater than 0.5 hectares;
- Regionally significant earth science Areas of Natural and Scientific Interest;
- Sensitive groundwater recharge areas;
- Portions of Historic shorelines;
- Open space portions of the Parkway Belt West Plan Area;
- Potential ESAs identified as such by the conservation authorities; and
- Any other natural features and functional areas interpreted as part of the Greenlands System Potential Natural Areas and Corridors, by the individual area municipalities in consultation with the conservation authorities.

NAC's and PNAC's represent natural features and areas that are considered locally significant. NAC's and PNAC's are considered locally important. Regional policies pertaining to NAC's and PNAC's defer their interpretation, protection, restoration, enhancement, proper management, and stewardship to local municipalities.

2.4 City of Mississauga Official Plan (2016)

Section 6.3 of the Mississauga Official Plan (MOP) contains policies pertaining to the protection of the Green System. The Green System is composed of 1) the Natural Heritage System, 2) the Urban Forest, 3) Natural Hazard Lands; and 4) Parks and Open Spaces.

Components of the Green System that overlap with the subject property include the Natural Heritage System, Natural Hazard Lands, and the Urban Forest. Policies pertaining to each of these Green System components are discussed below.

2.4.1 Natural Heritage System

The Natural Heritage System consists of 1) Significant Natural Areas, 2) Natural Green Spaces, 3) Special Management Areas, 4) Residential Woodlands, and 5) Linkages.

The valley portion of the property is mapped as "Significant Natural Areas and Natural Green Spaces" on Schedule 3 of the MOP.

The exact limit of components of the Natural Heritage System are to be determined through site specific studies such as an Environmental Impact Study. Minor refinements to the boundaries of the Natural Heritage System may occur through Environmental Impact Studies or other appropriate studies accepted by the City without an official plan amendment.

2.4.1.1 Significant Natural Areas

Significant Natural Areas include one or more of the following features:

- Provincially or regional significant life science areas of natural and scientific interest (ANSI);
- Environmentally sensitive or significant areas;
- Habitat of threatened species or endangered species;
- Fish habitat;
- Significant wildlife habitat;
- Significant woodlands;
- Significant wetlands, including Provincially Significant Wetlands (PSW), coastal wetlands, and other wetlands greater than 0.5 hectares; and
- Significant valleylands, including the main branches, major tributaries and other tributaries and watercourse corridors draining directly to Lake Ontario including the Credit River, Etobicoke Creek, Mimico Creek and Sixteen Mile Creek.

According to Section 6.3.26 of the MOP,

> *Lands identified as or meeting the criteria of a Significant Natural Area, as well as their associated buffers will be designated Greenlands and zoned to ensure their long term protection. Uses will be limited to conservation, flood and/or erosion control, essential infrastructure and passive recreation.*

According to Policy 6.3.27, development and site alteration within or adjacent to a Significant Natural Area will not be permitted unless all reasonable alternatives have been considered and any negative impacts minimized through appropriate mitigation measures as determined by an Environmental Assessment or Environmental Impact Study. Negative impacts that cannot be avoided are to be mitigated through restoration and enhancement to the greatest extent possible.

2.4.1.2 Natural Green Spaces

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

- Woodlands greater than 0.5 hectares that do not qualify as significant woodland;
- Wetlands that do not qualify as significant wetland;
- Watercourses that do qualify as significant valleyland; and
- All natural areas greater than 0.5 hectares that have vegetation that is uncommon in the City.

Policy 6.3.32 states that development and site alteration will not be permitted within or adjacent to Natural Green Spaces unless it has been demonstrated through an Environmental Assessment or Environmental Impact Study that there will be no negative impact to the natural heritage features and their ecological functions and opportunities for their protection, restoration, enhancement, and expansion have been identified.

2.4.2 Natural Hazard Lands

Natural Hazard Lands are associated with valley and watercourse corridors and the Lake Ontario shoreline. These areas are prone to flooding and erosion and are generally unsuitable for development.

Development adjacent to valleylands and watercourse features must incorporate measures to ensure public health and safety; protection of life and property; as well as enhancements and restoration of the Natural Heritage System.

Policy 6.3.47 states that development and site alteration will not be permitted within erosion hazards associated with valleyland and watercourse features. Where development or site alteration is proposed adjacent to erosion hazards, an appropriate buffer must be applied to the satisfaction of the City and conservation authority.

2.4.3 Urban Forest Policies

Official Plan polices pertaining to the urban forest are as follows:

> *6.3.44 Development and site alteration will demonstrate that there will be no negative impacts to the Urban Forest. An arborist report and tree inventory that demonstrates tree preservation and protection both pre and post construction, and where preservation of some trees is not feasible, identifies opportunities for replacement, will be prepared to the satisfaction of the City in compliance with the City's tree permit by-law.*
>
> *6.3.45 Where tree replacement cannot be accommodated on-site, the City may require cash-in-lieu for replacement trees elsewhere or replacement plantings at a location approved by the City.*
>
> *6.3.46 Mississauga may require ecologically based woodland management plans of a landowner prior to municipal acquisition.*

2.5 Credit Valley Conservation (CVC) Authority Policies and Regulations

CVC regulates activities within and adjacent to wetlands, watercourses, and hazard lands under Ontario Regulation 160/06 – "Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses" under Section 28 of the *Conservation Authorities Act*. A permit must be obtained from CVC for development or site alteration within regulated areas.

There are anticipated changes to the *Conservation Authorities Act* associated with Ontario's Bill 23 (*More Homes Built Faster Act* 2022). It is Beacon's understanding that a new regulation is proposed by the province that will specify the requirements that apply to all conservation authorities across the province.

One regulation (Ontario Regulation 686/21) is already in force which focuses the scope of the conservation authorities to regulations specifically associated with flooding and natural hazards. In this regard, CVC will review a project related to the risk of natural hazards, including watercourses and wetlands, within its jurisdiction and in accordance with Ontario Regulation 160/06.

CVC's *Watershed Planning and Regulation Policies* (CVC 2010) document contains policies pertaining to the protection of natural heritage features and natural hazards. These policies guide CVC in administering Ontario Regulation 160/06 under Section 28 of the *Conservation Authorities Act*, as well as their review of planning applications under the *Planning Act* and other legislation they may be requested or responsible to provide comment. However, as noted, it is Beacon's understanding that CVC will no longer be providing comments on planning matters beyond the scope of Ontario Regulation 686/21 and 160/06.

3. Methodology

3.1 Background Review

The following background information sources were consulted for this study:

- Historical Aerial Photography
- MNRF Aurora District;
- City of Mississauga Natural Areas Survey (2021);
- Geotechnical Study/Slope Stability Study (Terraprobe 2018);
- Geotechnical Report (GHD 2023)
- Arborist Report (SBK 2023);
- Natural Heritage Information Centre Database;
- Ontario Amphibian and Reptile Atlas; and
- Functional Servicing and Stormwater Management Report (Skira 2023).

3.2 Field Investigations

Ecological field investigations were undertaken as part of this study by Beacon and Dougan (2021) to characterize the natural heritage features and functions associated with the property, which included vegetation surveys, breeding bird surveys, and surveys for endangered bats.

A summary of the field surveys is provided in **Table 1.**

Table 1. Summary of Field Investigations

Field Investigation	Dates	
	900 Mississauga Heights	904 Mississauga Heights
Breeding Bird Surveys	May 28 and June 10, 2018	June 3 and June 12, 2019
Ecological Land Classification and Flora	May 16 and August 21, 2018; August 24, 2022	June 11, 2019; April 25 2023
Bat Maternity Roost (Snag) Survey	April 20, 2018	April 3 and June 11, 2019; April 25 2023
Bat Acoustic Monitoring	June 1 – June 11, 2018	June 2023

3.2.1 Ecological Communities and Flora Inventory

Surveys of the subject property were conducted on May 16 and August 21, 2018, June 11, 2019, and August 24, 2022. Ecological communities were mapped and described following the protocols of the Ecological Land Classification (ELC) System for Southern Ontario (Lee *et al.* 1998). This involved delineating ecological communities on aerial photos of the property, refining boundaries based on ground conditions and uses, and recording information on site condition, community structure and composition.

Floristic inventories were also completed in conjunction with ELC surveys to document spring and summer flora. A list of all vascular plant species was compiled for each ecological community.

3.2.2 Tree Inventory

A tree inventory of the subject property was undertaken by Strybos Barron King and is presented in under separate cover (SBK 2023a, 2023b).

3.2.3 Breeding Bird Surveys

To document birds that may be breeding on the subject property, surveys were completed on May 29 and June 10, 2018 and June 2 and June 12, 2019 for 900 and 904 Mississauga Heights Drive respectively. The surveys were conducted between 5:00 am and 9:00 am, on days with low to moderate winds (0-3 Beaufort Scale), no precipitation, and temperatures within 5 ^{O}C of normal average temperature. The entire property was surveyed such that all singing birds or those demonstrating breeding behaviour could be heard or observed and were subsequently recorded. That is, the surveyor

is within 50 -100 m of all parts of the property depending on habitat. All birds encountered were recorded in the location observed on an aerial photograph of the site.

3.2.4 Bat Habitat Assessment

To confirm whether the subject property supports endangered bats, an assessment was completed in accordance with the *Survey Protocol for Species at Risk Bats within Treed Habitats Little Brown Myotis, Northern Myotis & Tri-Colored Bat* (Guelph District MNRF 2017).

Phase 1 of the MNRF survey protocol requires that areas first be classified using Ecological Land Classification to identify coniferous, deciduous, or mixed wooded ecosites, including treed swamps, that contain trees at least 10 cm diameter-at-breast height (DBH) as these are considered candidate maternity roost habitat. Based on the ELC classifications and mapping described in **Section 3.2.1** above, the subject property supports a deciduous forest ecosite corresponding with ELC Unit 1 (ref. **Figure 2**), and this ecosite represents potential candidate habitat for endangered bats.

Phase 2 of the MNRF survey protocol requires that snag surveys be completed to further identify likely roosting sites and guide placement of acoustic detectors. The snag survey consisted of identifying trees with characteristics that may be favourable to Little Brown Myotis (*Myotis lucifugus*), Eastern Small-footed Myotis (*Myotis leibii*), Northern Myotis (*Myotis septentrionalis*) and Tri-coloured Bat (*Perimyotis subflavus*). Trees containing cavities, or loose bark, and/or cracks, may support maternity roost habitat for Little Brown Myotis and Northern Myotis, while oak trees and, to a lesser extent, maple trees are preferred habitat for Tri-colored Bat (MNRF 2017).

Snag surveys were completed in the spring of 2018, 2019, and 2023 during the leaf off-period and under suitable weather conditions (i.e., no precipitation, not immediately following heavy snowfall) in accordance with methods described in MNRF survey protocols.

In Beacon's experience, when direct impacts on potential SAR bat habitat are not anticipated, then snag surveys are not required. Therefore, snag surveys were completed within the tableland forest(where there was potential for overlap with the proposed development) as well as in the valleyland in the area of the proposed stormwater outfall (where potential tree removals may be necessary). The remainder of the valleylands were not surveyed for snags as no development or site alterations are proposed.

All snags exhibiting characteristics consistent with a roosting habitat were assigned a unique code and documented using the following parameters:

- Species;
- Location;
- Approximate tree height;
- Diameter Breast Height (DBH);
- Number of cavities;
- Characteristics of cavity;
- Approximately height of cavities; and
- Tree condition.

Phase 3 of the MNRF survey protocol requires installation of acoustic monitoring devices or detectors that record bat calls using microphones that capture ultrasonic frequencies. By analyzing the recordings, it is possible to confirm the presence/absence of individual bat species and by examining the number of calls and time of day, it is possible to determine the probability of maternity roost in a localized area. Acoustic monitoring was undertaken within the tableland forest (ELC unit 1b, **Figure 2**) on 900 Mississauga Heights Drive using the methods described within Phase 3 of the MNRF protocol.

A SM4BAT passive monitor equipped with an SMM-U1 ultrasonic microphone was deployed for the first two weeks of June 2018. The monitor was programmed to record bat calls each night for a period of six hours, beginning at sunset.

Recordings from the monitor were analyzed using KaleidoscopePro software. A combination of auto-identification and manual analysis was applied to call fields to make species determinations. All unclassified files (No ID Files) were manually reviewed for call frequency to determine if unclassified calls fell within the 40 kHz Myotis species and Tri-Coloured Bat range. If the call was not within the approximate 40 kHz range, it was not analyzed further as it likely not a species at risk. Furthermore, a random selection of noise files was reviewed to ensure that the batch filters applied functioned as intended.

Acoustic monitoring of the tableland woodlands (ELC units 3 and 4) at 904 Mississauga Heights Drive will be undertaken in June 2023.

4. Study Findings

4.1 Soils

Based on borehole logs included in the geotechnical investigation undertaken by Terraprobe (2018), soils on the subject property consist of 10-15 cm topsoil underlain by sandy silt to silty sand earth fill extending to depths of 0.8 m to 2.3 m. Beneath the earth fill is undisturbed native clayey silt till extended to depths of about 3 m to 4.6 m. The till deposits grade into weathered shale bedrock of the Georgian Bay formation.

4.2 Drainage Features/Aquatic Habitat

A drainage feature is located along the eastern property boundary (**Figure 2**). The drainage enters the property at the northeast corner from a storm drain beneath the Queensway. From there, drainage flows down along the east side of the property and enters a storm drain at the south end of the property before

discharging to the Credit River approximately 60 m to the south. The primary function of this feature is stormwater conveyance. The banks of the upper reach of this feature have been reinforced with armour stone retaining walls and the bed of the channel has been reinforced with cobble stone.

This drainage feature contributes flows to downstream warmwater fish habitat associated with the Credit River. However, it does not support direct fish habitat as it originates from a storm drain and there are numerous barriers to fish passage from the Credit River.

Field Investigations	Figure 2

900 and 904 Mississauga Heights Drive

Legend

- 900 Mississauga Heights Drive
- 904 Mississauga Heights Drive
- Vegetation Inventory and Breeding Bird Survey
- Bat Snag Survey Area
- Watercourse (MNRF 2021)
- Drainage Feature
- Bat Acoustic Monitor (2018)
- Proposed Bat Acoustic Monitors (2023)

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Project: 218165
Last Revised: June 2023

Client: Diamond Developments (900 Mississauga Heights) Inc. and Investex Holdings Limited	Prepared by: BD Checked by: DW

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4.3 Terrestrial Natural Heritage

The valleylands along the south and east sides of the property corresponds with the CRR8 Natural Area identified in the City of Mississauga Natural Areas Survey (NSEI and City of Mississauga 2021). CRR8 is classified as a "Significant Natural Area".

CRR8 is located between Mississauga Road in the southwest and Stavebank Road in the east, along the Credit River from the Queensway in the north to the Queen Elizabeth Way in the south. The site encompasses the floodplain and valley slopes of the Credit River and associated tributary.

A golf course occupies the majority of the Credit River floodplain, while the valley slopes support mature hardwood forest.

4.3.1 Ecological Communities

Ecological communities associated with the subject property are illustrated in **Figure 2**. The mapping is based on site specific investigations conducted between 2018 and 2023. The boundaries of certain ecological communities were established in accordance with the Ecological Land Classification (ELC) System for Southern Ontario (Lee *et al.* 1998) which requires distinguishing natural communities from cultural communities.

ELC Unit 1: Dry-Fresh Sugar Maple-Oak Deciduous Forest (5-3)

This natural mature deciduous forest community occurs on the valley slope (Unit 1a) and extends partially onto the tableland (unit 1b-e) in the eastern portion of the property. The canopy is dominated by Red Oak (*Quercus rubra*), Sugar Maple (*Acer saccharum*), Black Cherry (*Prunus serotina*), American Basswood (*Tilia americana*), and American Beech (*Fagus grandifolia*). The subcanopy consists of Sugar Maple, Ironwood (*Ostrya virginiana*), and Norway Maple (*Acer platanoides*). The understory includes Choke Cherry (*Prunus virginiana*), raspberries (*Rubus* spp.), Alternate-leaved Dogwood (*Cornus alternifolia*), and Gray Dogwood (*Cornus racemosa*). Ground covers include Yellow Trout Lily (*Erythronium americana*), Garlic Mustard (*Alliaria petiolata*), False Solomon's Seal (*Maianthemum racemosum*), Large-leaved Aster (*Eurybia macrophyllum*), Pennsylvania Sedge (*Carex pennsylvanica*), and May Apple (*Podphyllum peltatum*), among others.

ELC Unit 2: Anthropogenic

This cultural unit consists of manicured lawn, paved surfaces, landscaped areas, and buildings were classified as anthropogenic. Vegetation associated with this area includes a mix of native and ornamental trees such as Red Oak, White Pine (*Pinus strobus*), Sugar Maple, Colorado Blue Spruce (*Picea pungens*), Paper Birch (*Betula papyrifera*), White Spruce (*Picea glauca*), Norway Maple, and Shagbark Hickory (*Carya ovata*).

ELC Unit 3: Cultural Woodland (CUW1)

This cultural woodland feature overlaps the west property boundary. The feature was classified as a cultural woodland as it represents a semi-natural woodland with a canopy consisting of a mix of planted trees and remnant native trees, including White Spruce (*Picea glauca*), Scotch Pine (*Pinus sylvestris*), Norway Maple (*Acer platanoides*), Shagbark Hickory (*Carya ovata*), and White Pine (*Pinus strobus*). Groundcovers are primarily ornamental garden species such as hostas, Periwinkle (*Vinca minor*), and Lily of the Valley (*Convallaria majalis*), with some native species such as False Solomon's Seal, Yellow Trout Lily, Canada Mayflower (*Maianthemum canadense*), and Enchanter's Nightshade (*Circaea lutetiana*).

ELC Unit 4: Mixed Plantation (CUP2)

This cultural community was originally classified as Mixed Forest (FOM) (Dougan 2021); however, it was determined that this area, as well as the balance of the tablelands, were formerly farmed and then planted with trees in the 1970's and have not yet naturalized to the extent that it would a composition and structure analogous to a natural forest ecosite. Aerial photography from 1954 (**Photograph 1**) reveals that the tablelands on the subject property as open and devoid of trees. For this reason, this community is more appropriately reclassified as a Mixed Plantation (CUP2).

The community is dominated by mid-aged Norway Maple, White Pine (*Pinus strobus*), and Norway Spruce (*Picea abies*), with occasional Scots Pine (Pinus sylvestris) and Black Locust (*Robinia pseudo-acacia*). The sub-canopy consists primarily of Norway Maple. The shrub layer is patchy and consists of Winged Euonymus (*Euonymus alatus*) and occasional Choke Cherry (*Prunus virginiana*). The ground layer is comprised largely of invasive Garlic Mustard (*Alliaria petiolata*) and introduced ornamental ground covers such as Wintercreeper (*Euonymus fortunei*) and Periwinkle (*Vinca minor*). Patches of Yellow Trout Lily were observed in the spring.

Photograph 1. 1954 Aerial Image of Subject Property

(Source: http://www6.mississauga.ca/missmaps)

4.3.2 Flora

A total of 148 species of vascular plants were identified on the subject property, and 15 plants were identified only to genus. A plant list is presented in **Appendix B**. Of the 148 species identified, 60 (41%) are non-native to Ontario. Of the 88 native species identified, 82 are ranked S5 by the Natural Heritage Information Centre (NHIC) indicating that they are common and secure in Ontario. Three species, Black Walnut, Seaside Spurge (*Euphorbia poloygonifolia*), and Virginia Creeper (*Parthenocissus quinquefolia*) are ranked S4 or S4? indicating they are apparently secure in Ontario.

Both Seaside Spurge and Virginia Creeper, reported by Dougan (2021), are considered Regionally rare by Varga *et al*. (2005). Seaside Spurge inhabits beaches and dunes of the lower Great Lakes. There is no natural habitat for this species on the subject property; therefore, it was likely misidentified or was introduced to the site through planting. Virginia Creeper is considered rare by Varga *et al*. (2005) in Peel Region and other GTA municipalities based on limited records; however, this species may be more common than suggested. Limited records for this species may be due in part to improper identification owing to confusion with the very similar and ubiquitous Thicket Creeper (*Parthenocissus vitacea*). Notably, *P. quinquefolius* is ranked L5 by the Toronto and Region Conservation Authority (TRCA) indicating it is able to withstand high levels of disturbance and is generally secure throughout the jurisdiction, including the urban matrix (which includes portions of Peel Region/Mississauga).

One species, Kentucky Coffee Tree (*Gymnocladus dioicus*) is ranked S2 (imperilled) and is also listed as Threatened in Ontario. Kentucky Coffee Tree is not native to Mississauga and was introduced through planting. It has become commonplace to plant Kentucky Coffee Tree due to its tolerance of urban conditions.

One species, American Alumroot (*Heuchera americana*), which was reported by Dougan (2021), is ranked S1 (critically imperilled) in Ontario. According to NHIC, this species occurs is deciduous woods, thickets, and alvars in Essex County and southwestern Ontario. There are no records of this species from Mississauga. This species is widely used in horticulture, so the observation is most likely that of a cultivar.

4.3.3 Breeding Birds

A total of 24 species of breeding birds was recorded on the subject property, with an additional five noted as foraging or flyovers (**Appendix C**). This is a moderate level of diversity that is reflective of the presence of both open anthropogenic, edge, and mature woodland habitat.

The majority of breeding records were common species regularly found in urban and urbanizing areas including the following: Black-capped Chickadee (*Poecile atricapillus*), Song Sparrow (*Melodia melodpiza*), American Robin (*Turdus migratorius*), and American Goldfinch (*Spinus tristus*). Other common species included, House Wren (*Troglodytes aedon*), House Sparrow (*Passer domesticus*), Brown-headed Cowbird (*Molothrus ater*) and Northern Cardinal (*Cardinalis cardinalis*). A number of birds more closely associated with woodlands were recorded,including Northern Flicker (*Colaptes auratus*), Great Crested Flycatcher (*Myiarchus crinitus*), Red-bellied Woodpecker (*Melanerpes carolinus*) and Cooper's Hawk (*Accipiter cooperi*).

Area-sensitive birds generally require larger tracts of suitable habitat in which to breed or are those that have a higher breeding success in larger areas of suitable habitat. Four such species were recorded as breeding on the subject property, including Cooper's Hawk, Pine Warbler, White-breasted Nuthatch, and Red-breasted Nuthatch (*Sitta canadensis*). Cooper's Hawk and Red-breasted Nuthatch were both observed within the woodland feature along the east side of 900 Mississauga Heights Drive. White-breasted Nuthatch and Pine Warbler were recorded from 904 Mississauga Heights, though Pine Warbler was only observed on one survey date and was not a confirmed breeder. The Cooper's Hawk was observed hunting during both site visits.

Cooper's Hawk, Red-breasted Nuthatch, Pine Warbler, and Common Grackle are ranked as species of conservation concern according to the 2002 Birds of the Credit River Watershed Review (CVC 2002). These occur somewhat regularly in urban settings. Given that only a small portion of woodland extends onto the subject property relative to the surrounding matrix, it is likely that the majority of these birds' territories fall outside of the subject property boundaries. Three other area-sensitive species were encountered during the first site visit in 2018 and are believed to be foraging birds at the tail end of migration: Scarlet Tanager (*Piranga olivacea*), Black-throated Green Warbler (*Setophaga virens*) and American Redstart (*Setophaga ruticilla*). These birds were not re-observed during the second breeding bird survey and are not considered to be breeding on-site or in adjacent lands

No species with rankings of S1 through S3 (Critically Imperiled through Vulnerable) by the Province, or species protected under the ESA, were encountered. A single Eastern Wood-pewee (*Contopus virens*) was observed vocalizing along the northeastern boundary within the woodland. This species is listed as Special Concern provincially and federally based on a declining trend over their range, however this species remains relatively common in both urban and urbanizing woodlands and is somewhat tolerant of forest fragmentation and known to occur along edge habitats as well as forest interior. Species with a Special Concern designation under the ESA are not afforded the same protection as Threatened or Endangered species.

4.3.4 Bat Habitat Assessment

A total of 28 potential bat maternity roost trees were identified from the tableland forest (ELC units 1b and 1c) on 900 Mississauga Drive. Of these, only four trees represented potential roost habitat for Little Brown Myotis and Northern Myotis based on the presence of cavities and/or loose bark, while 23 Red Oak and Sugar Maple trees represented potential habitat for Northern Myotis.

Dougan (2021) identified 41 potentially suitable bat maternity roosting trees during their survey of 904 Mississauga Heights Drive. Eleven are associated with the forested area along the Credit River valleyland (ELC unit 1a), 18 are associated with the manicured area around the existing residence and opposite the driveway within yard of 900 Mississauga Heights Drive (ELC unit 2), and 12 are associated with cultural woodland (ELC unit 3) and cultural plantation (ELC unit 4) on the tableland.

Beacon conducted a snag survey at 904 Mississauga Heights Drive on April 25, 2023 and found 15 trees associated with ELC units 3 and 4 with cavities and/or loose bark that are potentially suitable for Little Brown Myotis, as well as 24 Maple or Oak trees potentially suitable for Tri-colored Bat based on MNRF (2017) criteria (see **Figure 3**).

Table 2 provides the acoustic monitoring results by species at the monitoring location for 900 Mississauga Heights Drive (acoustic monitoring for 904 Mississauga Heights Drive is being undertaken in June 2023).

Table 2. 2018 Acoustic SAR Bat Monitoring Results (900 Mississauga Heights Drive)

ELC	Little Brown Myotis (*Myotis lucifugus*)	Unidentified 40kHz Call	Total
FOD2-4	1	1	**2**

A single call from Little Brown Myotis (*Myotis lucifugus*) was detected on June 3, 2018 at 12:19 am. Additionally, one unidentifiable 40 KHz call was noted on June 10, 2018 at 12:59 am. The 40 Khz call was not identifiable to the species level due to the length of the recordings and the similarities in SAR bat calls. However, given that Little Brown Myotis was the only other SAR species documented on the site it is likely that this call could be attributed to Little Brown Myotis as well. No other SAR bats (Northern Myotis, Small-footed Myotis, or Tri-colored Bat) were detected.

Two calls over a 15-night period is extremely low and confirms roosting habitat for Little Brown Myotis is likely not present. While there are no established thresholds for confirming the presence of a bat roost, in Beacon's experience, roosting activity is typically suspected or confirmed when hundreds of calls over the monitoring period are recorded, particularly during the emergence period. Additionally, when roosts are present, calls are noted daily and there are no extended gaps between observations.

5. Evaluation of Significance and Constraints Assessment

The findings of the background review and field investigations have been relied upon to determine if the subject property supports any of the natural heritage components recognized under the PPS, as well as the Region's and City's Official Plans. The *Natural Heritage Reference Manual* (MNR, 2010) was consulted to provide additional technical guidance, where required. The subject property was screened for the following natural heritage features:

- Significant Wetlands;
- Habitat for Threatened or Endangered Species;
- Significant Areas of Natural and Scientific Interest (ANSI);
- Significant Valleylands;
- Significant Woodlands;
- Significant Wildlife Habitat; and
- Fish Habitat.

5.1 Significant Wetlands

Based on records review and field surveys, there are no significant wetlands or other wetlands on or adjacent to the subject property.

5.2 Habitat for Threatened or Endangered Species

A screening for habitat of threatened or endangered species is included in **Appendix D**. The screening is based on existing species records within 5 km of the subject property based on background information sources. Existing conditions on the property were assessed to determine if suitable habitat for threatened or endangered species is present of the property.

5.2.1 Bats

As discussed in **Section 4.3.4**, potential habitat for endangered bats was identified within the woodland portions of the property based on ELC and snag surveys. Based on acoustic monitoring of the tableland forest associated with 900 Mississauga Heights Drive, one endangered bat species (Little Brown Myotis) was detected during monitoring; however, the extremely low number of calls and gap of seven days between calls, these detections are inconsistent with the presence of roosting habitat and most likely attributable to a flyover.

It is acknowledged that portions of the forest within the valleyland were not monitored for endangered bats, as this is typically not required if development avoids such areas or if an activity will result in removal of a small number of snags but will avoid impairing or eliminating the function of habitat for supporting bat life processes. While maternity roosting for SAR bats within the valley feature cannot be

Existing Conditions

Figure 3

900 and 904 Mississauga Heights Drive

Legend

- 900 Mississauga Heights Drive
- 904 Mississauga Heights Drive
- Area of Disturbance/Tree Removals
- Vegetation Communities
- Physical Top of Slope (Terraprobe 2018)
- Long term Stable Top of Slope (as determined through geotechnical investigations by Terraprobe and GHD)
- Dripline as staked by City of Mississauga and CVC on December 20, 2017
- Watercourse (MNRF 2021)
- Drainage Feature

Snag Locations

- Little Brown Myotis
- Tri-colored Bat

Unit	Vegetation Community
1	Dry-Fresh Sugar Maple-Oak Deciduous Forest (FOD5-3)
2	Anthropogenic
3	Cultural Woodland (CUW1)
4	Mixed Plantation (CUP3)

BEACON ENVIRONMENTAL

Project: 218165
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Client: Diamond Developments (900 Mississauga Heights) Inc. and Investex Holdings Limited

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ruled out, if a roost were present on the subject property; it is expected that calling activity would be significantly higher than was recorded.

Acoustic monitoring will be undertaken within the tableland woodlands (ELC units 3 and 4) associated with 904 Mississauga Heights Drive in June 2023.

5.2.2 Kentucky Coffee Tree

Several planted Kentucky Coffee Trees occur on the subject property. It is Beacon's understanding that these demonstrably planted trees would not receive protection under the ESA based on the Recovery Strategy for this species, which excludes planted/horticultural specimens. The Government of Ontario Website also states, "Kentucky coffeetree is an uncommon tree found in only a few locations in southwestern Ontario, but is increasingly planted as a street tree in urban areas. Native stands are protected by its Threatened status under the *Endangered Species Act*, 2007."

5.3 Significant Areas of Natural and Scientific Interest (ANSI)

No ANSIs have been identified by MNRF on or adjacent to the subject property.

5.4 Significant Valleylands

According to the Mississauga OP, significant valleylands include valleys that are "associated with the main branches, major tributaries and other tributaries and watercourse corridors draining directly to Lake Ontario including the Credit River, Etobicoke Creek, Mimico Creek and Sixteen Mile Creek."

The Credit River valleyland is a major valley feature that drains directly to Lake Ontario and would be considered a Significant Valleyland in the City of Mississauga.

The drainage feature that traverses the east side of the subject property is a minor tributary that does not drain directly to Lake Ontario and is enclosed in pipes both upstream and downstream of the subject property; though it associated with the main branch of the Credit River and based on the definition cited above may qualify as a Significant Valleyland.

5.5 Significant Woodlands

Significant woodlands are defined by the City of Mississauga as any woodland greater than 0.5 hectares that:

- Supports old growth trees (greater than or equal to 100 years old);
- Supports a significant linkage function as determined through an Environmental Impact Study approved by the City in consultation with the appropriate conservation authority;
- Is located within 100 metres of another Significant Natural Area supporting a significant ecological relationship between the two features;

- Is located within 30 metres of a watercourse or significant wetland; or
- Supports significant species or communities.

The forest community at 900 Mississauga Heights Drive (ELC Unit 1) is contiguous with the forested slopes along the Credit River which extend offsite and includes an area greater than 0.5 ha which contains a watercourse and likely contains some trees that are older than 100 years old. Therefore, the forest feature (ELC Unit 1) qualifies as significant woodland in the City of Mississauga based on the above criteria.

In addition, the Peel Region Official Plan adopts the PPS definition of significant woodland and provides more specific criteria for identifying "Core" Woodlands. According to the ROP, Core Areas represent provincially and regionally significant features and areas and are considered a sub-set of what would be significant under the PPS. In the Urban System, woodlands that are ≥4 ha are considered Core Woodlands. The contiguous forest area, which corresponds with ELC unit 1 on the subject property, is over 4 ha; therefore, based on size, the woodland qualifies as a Core Woodland.

The cultural plantation (ELC unit 4) at 904 Mississauga Heights Drive (ELC Unit 4) is weakly connected to the mature deciduous forest community (ELC unit 1) along the Credit River valleyland by a narrow strip of trees that is less than 40 m wide. Woodland strips that are less than 40 m long do not qualify as a woodland under the Peel Region or City of Mississauga Official Plan; thus, ELC unit 4 is considered a separate woodland from the forested area along the Credit River valleyland. Discounting the narrow woodland strip, the tableland woodland (ELC unit 4) is less than 0.5 ha in area and, as such, does not meet the criteria for designation as Core Woodland, Significant Woodland, or Natural Green Space. Therefore, neither ELC units 3 or 4 have been included as part of the significant natural area.

Prior to Beacon's involvement with this project, the edge of the valley and stream corridor as well as the tableland trees on 904 Mississauga Heights Drive were staked by CVC and the City utilizing the dripline of trees that were contiguous with the valley features. Beacon has reviewed the previous limits and does not agree that the staking corresponds with the actual limit of the natural feature as it includes portions of the site that support existing development (residence, driveway, parking area, pool, tennis court and landscaped lawn). These areas have been heavily influenced and altered by human activity and are more appropriately characterized as anthropogenic. In our experience with delineating limits of significant natural areas for similar residential properties within wooded neighbourhoods in the City, anthropogenic structures and associated landscaped areas, have also been excluded from the significant natural area. Simply mapping the extent of the tree canopy, as appears to be the case with the City/CVC staking, is not appropriate as this limit does not distinguish between natural features such as forests from anthropogenic features such buildings, driveways, tennis courts lawns, and landscaped gardens. Including such anthropogenic features within a significant natural area inadvertently assigns a Greenlands designation to portions of residential properties that are used for residential purposes.

Beacon has refined the limits of the significant natural area by precisely mapping the limits of the natural forest communities to exclude anthropogenic elements noted above. Included with the significant natural areas are those areas where natural forest cover and structure is reflected in the canopy, sub-canopy, understory, and ground layer vegetation. The revised limits are illustrated in **Figure 3**.

In 2021, Beacon was informed that some trees had been removed from two tableland areas of the significant woodland in ELC units 1b and 1c and that these removals were in contravention of Mississauga's Private Tree By-law. It is Beacon's understanding that the issue is being resolved through legal proceedings; however, we have not been informed of the status of the violation at this time.

Therefore, this EIS does not address the violation but for information purposes the areas affected by these tree removals are illustrated in **Figures 3** and **4**.

5.6 Significant Wildlife Habitat

According to the Significant Wildlife Habitat Technical Guidelines (MNR 2000), there are four broad categories of Significant Wildlife Habitat (SWH):

- Seasonal Concentration Areas of Animals;
- Rare Vegetation Communities or Specialized Habitat for Wildlife;
- Habitat for Species of Conservation Concern; and
- Animal Movement Corridors.

Within each of these categories, there are multiple types of SWH, each intended to capture a specialized type of habitat that may or may not be captured by other feature-based categories (e.g., significant wetlands, significant woodlands, etc.). In 2015, MNRF published criteria to assist municipalities in identifying SWH in Ecoregion 7E (OMNR 2015).

The previous Region of Peel Official Plan referred to the *Peel-Caledon Significant Woodlands and Significant Wildlife Habitat Study* (NSEI *et al.* 2009) to assist in the identification of SWH. However, the new in-force Regional Official Plan (2022) refers only to the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E and 7E (MNRF 2015); therefore, the Ecoregional Criteria Schedule for 7E was used as a screening for SWH on the property. A full SWH screening table is included in **Appendix E.**

Based on the ecoregional criteria, the deciduous forest community (ELC unit 1) on the subject property supports potential candidate SWH for the following:

- Bat maternity colonies for non-SAR bats;
- Landbird migratory stop-over habitat; and
- Special Concern and Rare Wildlife Species (Eastern Wood Pewee).

5.7 Fish Habitat

The Credit River, located to the south of the subject property is warm water fish habitat.

The tributary to the Credit River that crosses the east side of the subject property contributes storm drainage to downstream fish habitat in the Credit River. The tributary does not support direct fish habitat as it originates from a storm drain, flows down a steep gradient with numerous fish barriers across the subject property, and enters a pipe at the southern property boundary before discharging to the Credit River approximately 60 m to south.

5.8 Constraints Summary

In summary, the subject property supports the following significant natural heritage features and natural hazards, which are part of the City's Natural Heritage System and the Region's Greenlands System and represent constraints to development.

- Significant Valleyland;
- Significant Woodland;
- Potential Significant Wildlife Habitat (associated with Significant Woodland and Significant Valleyland); and
- Indirect Fish Habitat (eastern tributary).

The limits of the significant valleyland were determined based on the top of slope of valley features. As discussed in **Section 5.5**, Beacon demarcated the limits of the significant woodland by including the natural portions of the forest community (ELC unit 1) and excluding areas that are part of the existing development as well and cultural woodland and cultural plantation that did not meet the City's criteria for signficant woodland. The revised limits of the Significant Natural Area are illustrated in **Figure 4**.

It is recommended that development and site alteration be directed away from the Significant Natural Area to avoid direct impacts on the features to the extent feasible.

5.8.1 Hazard Setbacks

The long-term stable slope of the valley features associated with the eastern tributary and the Credit River to the south was determined through slope stability studies undertaken by Terraprobe (for 900 Mississauga Heights Drive) and GHD (for 904 Mississauga Heights Drive), and a 10 m erosion access allowance or setback has been applied as per CVC policy as illustrated in **Figure 4**.

5.8.2 Ecological Buffers

The physical separation of development from a natural feature (e.g., woodlands, wetlands, watercourses) using buffers or vegetated protection zones is often used for softening or reducing the impacts of land use changes on adjacent natural features (OMNR 2010). Buffers may sometimes be prescribed on the basis of policy. It is the policy of the City of Mississauga that buffers be determined on a site-specific basis though an EIS.

Determining whether a buffer is required and/or establishing an appropriate buffer width requires consideration of the sensitivity of the feature and its ecological functions and the nature of the proposed change in adjacent land uses or activities. According to the Natural Heritage Reference Manual (OMNR 2010), to be consistent with the PPS, an evaluation of the ecological function of adjacent lands is required if development and site alteration are proposed. Buffers are prescribed based on their ability to protect existing natural features and their associated ecological functions from changes to adjacent land uses and activities. Buffers represent one of many tools available for mitigating impacts to natural heritage features.

Based on Beacon's assessment of the sensitivity of the existing ecological receptors and the type and magnitude of stressors that may be potentially introduced by the proposed re-development, it is our

Environmental Constraint	Figure 4

900 and 904 Mississauga Heights Drive

Legend

- 900 Mississauga Heights Drive
- 904 Mississauga Heights Drive
- Drainage Feature
- Long term Stable Top of Slope (as determined through geotechnical investigations by Terraprobe and GHD)
- Long Term Stable Top of Slope + 10 m
- Limit of Significant Natural Area (Beacon 2023)

BEACON ENVIRONMENTAL

Project: 218165
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Client: Diamond Developments (900 Mississauga Heights) Inc. and Investex Holdings Limited

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opinion that ecological buffers area not warranted and that mitigating potential impacts to the SNA and its ecological functions can be achieved by implementing equally effective protective measures such as fencing, tree protection, signage and education of future occupants. In our opinion, these measures are appropriate for this type of re-development proposal. Additional rationale for not applying buffers is provided below.

Th subject property and adjacent lands support existing residential development and recreational land uses (golf course within the Credit River valleyland) that were established in the 1960's and early 1970's, and ecological buffers were not applied to any of these former developments.

The proposed re-development is within the urban matrix, not within a greenfield setting. The proposed redevelopment (see **Section 6**) does not represent a significant change in the land use. The use will remain residential, and the anticipated activities will be comparable to existing, so there is no anticipated increase in possible adverse effect on the natural area, provided mitigation measures outlined in this EIS and related technical studies (i.e., Arborist Report, FSR, etc.) are implemented.

The wildlife communities that are currently associated with the SNA have adapted to this urbanized landscape and not highly sensitive. Trees and other forest vegetation along the edge of the natural area have also long been exposed to, and have also adapted to stressors of development (e.g., soil compaction and root cutting due to existing lawn, driveways, tennis courts, buildings, etc.). It is not expected that the proposed re-development (consisting of smaller residential lots) would introduce additional long-term stressors that would impact the valleylands, significant woodlands, or their ecological functions.

Re-development of an existing residential lot to create several additional residential lots within a long-established residential neighbourhood does not have the effect of a direct amplification of all and any potential stressors by the number of people or units.

As the proposed re-development is consistent with the established residential land use within an existing urban matrix and the woodland currently functions without a buffer, it is Beacon's opinion that an ecological buffer is not an essential mitigation measure for this particular redevelopment, and that the signficant woodland and associated functions/habitats can be protected, restored, and enhanced using other recognized mitigation tools such as arboricultural best management practices, restoration plantings, fencing, signage, and educational products as discussed in **Section 7.2**.

6. Description of the Proposed Re-Development

The proposed re-development of the subject property consists of 18 residential lots and a common element condo road as illustrated in **Figure 5**. Each lot will support a single detached dwelling, and the two existing dwellings will be retained on their own lots.

The proposed re-development will be serviced by connecting to the existing sanitary sewer and water supply infrastructure along Mississauga Heights Drive.

Stormwater runoff from the lots will be conveyed to a storm sewer under the proposed private road and discharged by controlled release to the drainage feature located on the east side of the property. Quality

control will be achieved with an oil-and-grit separator. For details on the proposed site servicing, grading, and stormwater management, refer to the Functional Servicing Report (Skira 2023).

7. Impact Assessment and Mitigation

This section discusses the potential direct and indirect impacts that the proposed re-development may have on the natural heritage features on the property and mitigation measures to avoid, minimize, or off-set potential impacts are recommended.

7.1 Impact Assessment

7.1.1 Hazard Lands/Valleylands

A 10 m setback or erosion access allowance has been established from the long-term stable top of slope for the Credit River valley and the eastern tributary. For lots 9 and 11, the existing dwellings (which are expected to remain) are situated within the setback to the long-term stable slope; therefore, the lot lines have been established at the top of stable slope. Aside from a stormwater outfall to the watercourse, no new development is proposed within the valleyland or this 10 m setback.

The proposed stormwater outfall to the drainage feature on the east side of the property will be constructed using directional drilling as opposed to open trench excavation, which will greatly minimize disturbance to the valley slope; however, some localized disturbance to the slope is expected in order to accommodate construction access to the base of the slope to construct the headwall. Short term impacts related to construction access can be mitigated through measures identified in **Section 7.2**.

7.1.2 Significant Woodland and Significant Wildlife Habitat

Several lots (4, 5, 6, and 7) overlap with portions of the significant woodland/SNA on the tableland of the subject property. Where this occurs, it is recommended that the limit of the SNA be adjusted to align with the back of these lots. The proposed SNA limit is illustrated in **Figure 5**. Approximately 330 m2 have been removed from the SNA, 2,300 m^2 has been added.

It is recommended that the remaining treed portion of the significant woodland that overlap with lots 4 and 5 be protected through an appropriate zoning with restrictions on vegetation clearing and construction of buildings or accessory uses. It is understood that the proposed Zoning By-law Amendment introduces a Tree Preservation Area/overlay. The Tree Protection Area zoning permits only conservation purposes, and no buildings or structures, swimming pools, tennis courts or any like recreational facilities, except for fences along the lot lines, shall be permitted. Similar Tree Preservation Area regulations have been utilized in other areas in Mississauga.

As discussed previously, it is acknowledged that a portion of the signficant woodland was subject to tree removals in fall 2022 and it is understood that this was a violation of Mississauga's private tree by-law, which is currently being resolved through a legal process with the City.

Proposed Development	Figure 5
900 and 904 Mississauga Heights Drive	

Legend

- 900 Mississauga Heights Drive
- 904 Mississauga Heights Drive
- Drainage Feature
- Proposed Development
- Physical Top of Slope (Terraprobe 2018)
- Long term Stable Top of Slope (as determined through geotechnical investigations by Terraprobe and GHD)
- Long Term Stable Top of Slope + 10 m
- Limit of Significant Natural Area (Beacon 2023)
- Dripline as staked by City of Mississauga and CVC on December 20, 2017
- ELC Communities
- Proposed Restoration and Enhancement Area
- Approximate Area of Previous Disturbance/Tree Removals
- Significant Natural

BEACON ENVIRONMENTAL

Project: 218165
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As the proposed re-development represents a modest intensification of the existing residential land use, and the existing natural features have long adapted to the surrounding urban environment, it is not expected that the re-development will introduce novel disturbances (e.g. excessive noise or light) or adverse impacts to the woodland feature or its habitat functions. The forested portions of the property will continue to provide potential bat maternity roost habitat and migratory bird stop over habitat, as well as habitat for Eastern Wood-pewee.

With the introduction of buildings adjacent to treed areas, there is a risk of birds colliding against windows. Birds are unable to perceive clear or reflective glass and sometimes fly into windows when trees or sky are reflected in the glass. Mitigative measures exist that can be implemented to limit such impacts and is discussed in **Section 7.2**.

Trees along the edge of the woodland will be protected with tree protection zones and other arboricultural BMPs as recommended in the Arborist Report (SBK 2023).

The stormwater outfall to the drainage feature will be installed via direction drilling instead of open cut to minimize impacts on the valley slope and associated woodland vegetation. While directional boring will greatly minimize the area of disturbance within the natural area, construction access to the bottom of the slope will be required in order to construct the headwall. Localized impacts to shrubs and ground covers are expected along the equipment access route; however, no rare or sensitive vascular plant species were identified in the general area of the outfall. Impacts on the woodland during construction of the outfall are temporary and can be mitigated by restoring the affected areas post-construction.

7.1.3 Removal of Tableland Vegetation

The Arborist Report (SBK 2023) identifies individual trees that will require removal to facilitate the proposed re-development. Tree removals are limited to the tableland portions of the property and include trees within the existing developed area as well as the majority of the tableland woodlands (CUP2 and CUW1) on 904 Mississauga Heights Drive. As discussed in the preceding sections, these woodlands do not meet the criteria of signficant woodland in the City of Mississauga. No trees are proposed for removal from the adjacent significant woodlands/natural area.

The tableland trees do contribute to the Urban Forest, which is part of the City's overall Green System. To mitigate impacts on the Urban Forest canopy, replacement trees are recommended to be planted on-site to compensate for the loss of trees resulting from the re-development. If there is insufficient space to plant an appropriate number of replacement trees, than an alternative form a compensation, such as cash-in-lieu, should be provided to the City to contribute to tree planting elsewhere in the City.

A total of 227 trees >15 cm DHB are proposed for removal (58 from 900 Mississauga Heights Drive and 169 from 904 Mississauga Heights Drive (SBK 2023a, 2023b). Based on the City of Mississauga tree replacement/compensation requirements, 451 replacement trees are required (120 for 900 Mississauga Heights Drive and 331 for 904 Mississauga Heights Drive (SBK 2023a, 2023b).

7.1.4 Temporary or Permanent Disturbance to Urban Tolerant Wildlife

Habitat for a small number of bird species will be disturbed or removed as a result of tree removals discussed in section 7.1.3. The species associated with this area are all common in urban environments

and removal of this habitat is not expected to have a negative impact on the populations of these species.

Wildlife associated with the valleylands and natural woodlands are considered well-adapted to the existing disturbances and stressors of an urban matrix (e.g., noise, light, etc.) and the proposed re-development is not expected to introduce new types of stressors. The subject property and adjacent lands have supported residential uses for over 50 years, so the cumulative impact of any long-term stressors has already exceeded the sensitivity thresholds of the remaining species that utilize the valleylands and woodlands as habitat. The natural areas on and adjacent to the subject property will continue to provide habitats for existing wildlife, including potential bat maternity roost habitat and migratory bird stop over habitat, as well as habitat for Eastern Wood-pewee and other forest birds.

With the introduction of buildings adjacent to treed areas, there is an increased risk of birds colliding against windows. Birds are unable to perceive clear or reflective glass and they sometimes fly into windows when trees or sky are reflected in the glass. This potential impact can be mitigated in the design of the buildings, as discussed in **Section 7.2**

7.1.5 Impacts on Aquatic Habitat

Construction works such as grading, grubbing and excavation have the potential to cause the movement of sediment into the adjacent watercourses, which can degrade water quality and impact downstream aquatic habitat. This impact can be mitigated as discussed in **Section 7.2**.

The headwall and plunge pool are proposed to be located at the edge of the drainage feature, which is currently lined by a 1-2 m high armour stone wall (**Photograph 2**). Modification to the amour stone wall will be required to install the headwall and plunge pool. Mitigation recommendations are provided in **Section 7.2** to avoid or minimize impacts on the drainage feature and downstream aquatic habitat during construction.

Potential impacts on aquatic habitat resulting from stormwater discharge to the tributary and ultimately to the Credit River will be mitigated through the stormwater management plan. On-site stormwater management will be provided for the proposed development to restrict post-development flows to pre-development levels (Skira 2023). Before discharging to the tributary, stormwater will be treated via an oil and grit separator to achieve municipal and provincial water quality standards for removal of 80% total suspended solids (TSS).

Photograph 2. SWM Headwall Location (Armour Stone Covered in Ivy)

7.1.6 Post-development Residential Impacts

Post construction, there is a potential for the residential uses and activities to impact the adjacent natural heritage and hydrological features . Potential impacts include:

- Dumping yard waste and accumulation of debris in natural areas;
- Informal trails and trampling of vegetation;
- Introduction of invasive species used in landscaping;
- Removal of natural vegetation; and
- Storage of materials, placement of structures.

These potential impacts can be minimized by implementing measure identified in **Section 7.2**.

7.2 Mitigation Recommendations

Potential impacts to the SNA can be avoided or substantially minimized by implementing the following mitigation recommendations:

- Direct development to areas outside of the signficant woodland and valleyland to the extent possible;
- Permanent fencing should be established at the limit of development do discourage human encroachment into the adjacent valley/SNA;

- Educational signage should be designed and installed on the fence indicating that the area is a Significant Natural Area;
- Where proposed lots overlap with the treed portions of the signficant woodland on Lots 4 and 5, , the feature should be protected by applying appropriate zoning that prohibits vegetation removal/site alteration;
- Instead of a fence, a series of bollards or monuments should be installed at the limit of the Tree Preservation Zone, and a sign or plaque should be designed and affixed to each bollard identifying the area as Tree Preservation Zone;
- An erosion and sediment control plan should be prepared for the construction phase of the development and approved by the City or CVC prior to the start of construction works and to the standard of Erosion and Sediment Control Guideline for Urban Construction (December 2006). ESC measures should be regularly inspected and maintained in good working order throughout the construction period;
- All construction and development related activities must be confined to the approved limit of development, with the exception of those areas subject to naturalization and/or where landscaping works are approved;
- Trees should be preserved in accordance with the recommendations of the Arborist Report (SBK 2023);
- Tree removals should be conducted between October 1 and March 31 to avoid impacts on breeding birds and potentially roosting bats;
- Stormwater should be managed in accordance with the recommendations of the FSR (Skira 2023) to meet the requirements for quantity and quality control;
- To minimize impacts on the eastern tributary and downstream fish habitat (Credit River), construction of the outfall should occur from the bank rather than within the channel to the extent feasible. If in-stream work is required, then the work should occur during times of low flow or no flow and the work area should be isolated via a temporary coffer dams or suitable alternative;
- The proposed SWM outfall to the eastern tributary should be installed via directional drilling to minimize impacts on the valley slope and associated woodland vegetation;
- Any disturbance to the valley slope and associated vegetation resulting from construction of the SWM headwall should be restored with native species upon completion the work;
- Landscaping plans for the site should utilize a diversity of local native species that are complimentary to the adjacent valley corridor;
- An educational brochure should be prepared and distributed to purchasers to inform them about the natural heritage features on and adjacent to the property and provide stewardship recommendations that can be implemented to protect the health and integrity of the natural heritage system;
- Following construction, temporary erosion and sediment control measures should be removed after soils are sufficiently covered and stabilized. Exposed soils should be stabilized as soon as possible through re-vegetation using native species or other appropriate methods;
- With the construction of buildings adjacent to treed areas, there is a risk of birds colliding against windows. Birds are unable to perceive clear or reflective glass they sometimes fly into windows when trees or sky are reflected in the glass. There are a number of options available that help make glass visible to birds. For example, patterns or films applied to glass can reduce reflection and provide visual markers that allow birds to perceive and avoid the windows. Window applications are especially important at the first 12 m above grade; It is recommended that such measures be implemented; and

- A woodland restoration and enhancement plan is recommended to protect, restore, and enhance the signficant woodland. Potential restoration and enhancement areas are illustrated in **Figure 5**. Dense plantings of native species are recommended to restore and enhance the woodland and provide screening between the residential use and natural area. Further details are provided in **Section 7.3**.

7.3 Restoration and Enhancement Recommendations

Existing disturbed and developed areas (i.e., lawn, pavement) between the development limit and the edge of natural feature should be removed and the areas restored with a diversity of native trees and shrubs that are complimentary to the NHS. Potential restoration and enhancement areas are illustrated in **Figure 5**. A list of recommended species is provided in **Table 3**.

Removal of pavement and structures from the woodland edge to facilitate restoration will need to be done in a manner that minimizes impacts on the roots of existing trees. This may require the use of hand tools, air excavators, or hydro-vac equipment under the supervision of a Certified Arborist. Details and specifications for site preparation, including recommendation for tree protection, will be included with the Woodland Restoration and Enhancement Plan.

A number of invasive plant species were identified within the NHS on the subject property. Opportunities for invasive species management should be identified as part of an overall Woodland Restoration and Enhancement Plan for the subject property.

Table 3. Native Trees and Shrubs Recommended for Woodland Restoration and Enhancement Areas

Scientific Name	Common Name	Form
Cornus alternifolia	Alternate-leaved Dogwood	Shrub
Cornus racemosa	Grey Dogwood	Shrub
Diervilla lonicera	Bush Honeysuckle	Shrub
Prunus virginiana	Chokecherry	Shrub
Rubus odoratus	Purple-flowering Raspberry	Shrub
Sambucus canadensis	Common Elderberry	Shrub
Sambucus racemosa	Red Elderberry	Shrub
Acer rubrum	Red Maple	Tree
Acer saccharum	Sugar Maple	Tree
Betula papyrifera	White Birch	Tree
Pinus strobus	White Pine	Tree
Populus tremuloides	Trembling Aspen	Tree
Quercus macrocarpa	Bur Oak	Tree
Thuja occidentalis	Eastern White Cedar	Tree
Tilia americana	Basswood	Tree
Quercus rubra	Red Oak	Tree
Prunus serotina	Black Cherry	Tree

8. Monitoring

Environmental monitoring is recommended to confirm the mitigation measures recommended in the EIS are effectively implemented and performing as intended. Monitoring should be focused on the areas described below:

8.1 Enhancement Area Monitoring

Following implementation of the restoration and enhancement plan the plantings should be inspected annually during the 2-year warranty period or more frequently during times of drought. Site inspections should focus on assessing and documenting the following:

- Survivorship and health of planted material;
- Presence and extent of weeds; and
- Quality and condition of growing media (soil and mulch).

Any issues or deficiencies (e.g., dead plant material, excessive growth of weeds) will be reported to the contractor in writing with recommendations to address such deficiencies (e.g., replacement of dead trees within the warranty period, watering, etc.).

8.2 Erosion and Sediment Control

Sediment laden runoff from construction sites can adversely impacts adjacent wetlands and watercourses. Inspection of sediment and erosion control measures should be undertaken to ensure exposed soils from the construction site to not reach the adjacent valleyland and watercourse.

8.3 Encroachment Related Impacts

A number of mitigation measures were identified to minimize or avoid potential impacts of human related encroachment on the SNA following redevelopment. These include fencing, signage and bollards demarcating the limits of the SNA, and homeowner brochure.

To evaluate the effectiveness of these measures, it is recommended that the interface between the development and the SNA be monitored following occupancy. The area should be surveyed once annually for three years following occupancy to document evidence of any human-related disturbances and activities that may potentially impact upon the SNA and its ecological functions. Documentation should be conducted in segments, on a lot by lot basis, and be supported by photography.

8.4 Reporting

Annual monitoring reports will be prepared and submitted to the City. The reports will include:

- Details and summary of the monitoring and inspection findings;
- Recommendations for any adjustments to the monitoring program; and
- Summary of any issues identified during the monitoring period.

Findings may provide the basis for site-specific adaptive management recommendations to be undertaken by the Owner within the established monitoring period. The findings may also support suggestions for the City to consider in terms of long-term natural area management.

9. Policy Conformity

A summary of federal, provincial, and municipal environmental protection and planning policies and regulations applicable to this re-development proposal were discussed in **Section 2**. An assessment of how this re-development proposal conforms with the applicable policies and legislation is summarized in **Table 4.**

Table 4. Policy Conformity Assessment

Applicable Policy / Legislation	Relevant EIS Findings and Recommendations
Federal Fisheries Act (1985)	There is no direct fish habitat associated with the subject property; however, the property contains a drainage feature that contributes stormwater flows to downstream fish habitat. This tributary and downstream fish habitat will be protected through mitigation measures identified in this report to ensure conformity with this Act
Endangered Species Act (2007)	Endangered Little Brown Myotis was detected from the subject property. While the general habitat protection provisions of the ESA apply to this species, MECP guidance presently focuses on the protection of maternity roosts and overwintering sites. Based on the acoustic monitoring completed at 900 Mississauga Heights Drives, only one call was detected and confirms that maternity roost habitat is not associated with the surveyed area (tableland forest). Acoustic monitoring of the tableland woodland on 904 Mississauga Heights Drive will be undertaken in 2023 to confirm whether roosting habitat may be present. It is acknowledged that forested valley slope (ELC unit 1a) was not monitored for endangered bats as this is typically not required if development avoids such areas; therefore, the maternity roosting for SAR bats within the valley feature cannot be conclusively ruled out. However, if a roost were present on the subject property; Beacon would expect to have captured significantly more calling activity than was recorded. If tree removals from the valleyland are required to accommodate the SWM outfall, then further study of and/or consultation with MECP regarding the affected areas is recommended. Several planted Kentucky Coffee Trees occur on the subject property. It is Beacon's understanding that these planted trees would not receive protection under the ESA based on the Recover Strategy for this species, which excludes planted/horticultural specimens, and the Government of Ontario Website which states, *Kentucky coffeetree is an uncommon tree found in only a few locations in southwestern Ontario, but is*

Applicable Policy / Legislation	Relevant EIS Findings and Recommendations
	increasingly planted as a street tree in urban areas. Native stands are protected by its Threatened status under the Endangered Species Act, 2007.
Provincial Policy Statement (2020) Section 2.1 – Natural Heritage	
1. Habitat for Threatened and Endangered Species	See above.
2. Significant Valleylands	The Credit River valley is considered a significant valleyland and the eastern tributary is also being treated as a significant valleyland based on Mississauga OP criteria. A 10 m setback has been applied to the long-term stable top of valley slope. No negative impacts on the valleylands are anticipated provided the mitigation recommendations in this report are implemented.
3. Significant Wetlands	Not applicable. There are no wetlands associated with the subject property or adjacent lands
4. Significant Coastal Wetlands	No applicable. There are no wetlands associated with the property.
5. Significant Woodlands	The subject property supports a signficant woodland (based on City of Mississauga criteria) that is mainly associated with the valleylands but does extends partially onto the tableland on the east side of the property. Generally, the proposed re-development avoids areas identified as signficant woodland (i.e., the limit of SNA as identified by Beacon); however, several lots overlap slightly with the tableland forest. It is proposed that the existing treed portion of the significant woodland (approx. 330 m^2) be zoned as a Tree Preservation Area with restriction on vegetation removals. While there is overlap with the proposed lots, the proposed buildings and any accessory uses will be located outside the woodland. No negative impacts on the woodland are anticipated provide the mitigation and enhancement measures identified in this report are implemented.
6. Significant Wildlife Habitat	The subject property supports potential SWH associated with the significant woodland and valleylands. The development overlaps with potential SWH associated (based on suggested Provincial criteria) with the tableland forest on the east side. It is proposed that this portion of the woodland will be designated a Tree Preservation Area and zoned accordingly with restriction on vegetation removals. While there is overlap with the proposed lots, the proposed buildings and any accessory uses will be located outside the woodland and potential SWH.
7. Significant Areas of Natural and Scientific Interest	Not applicable. There are no ANSIs associated with the property.
Provincial Policy Statement (2020) Section 2.3 – Natural Hazards	With the exception of a SWM outfall, the proposed redevelopment of the subject property will be limited to areas outside natural hazards and will be setback 10 m from the long-term stable top of slope. The limits of the new lots which will contain the existing residential dwellings (9 and 11) have been established at the long term stable top of slope.
Region of Peel OP	The Regional Greenlands System consists of “Core Areas”, “Natural Areas and Corridors (NAC)”, and “Potential Natural Areas and Corridors (PNAC)”. Core Areas of the Greenlands System are mapped on Schedule A of the Regional Official Plan. Based on this mapping, the adjacent Credit River valley and the smaller forested ravine along the east side of the property has been designated a Core Area.

Applicable Policy / Legislation	Relevant EIS Findings and Recommendations
	The Core area has been coarsely mapped in the Region's official plan and is associated with the Credit River valleyland and the smaller valley feature along the east side of the subject property. The long-term stable top of slope the valleylands were determined by Terraprobe and GHD through a geotechnical investigation. The limit of vegetation associated with the feature was delineated by the City and CVC through staking exercise, which was further refined by Beacon as part of the EIS. A 10 m setback has been provided to the greater of the physical and long-term stable top of slope. The development generally avoids the core area (i.e. the signficant natural area as delineated by Beacon); however, serval lots overlap slightly with the tableland forest on the east side of the property. The limit of the core area/SNA has been revised to align with the rear lot lines. Existing woodland trees that overlap with the lots (4 and 5) will be zoned a Tree Preservation Area with restriction on vegetation removals. Other components of the Greenlands System include Natural Areas and Corridors and Potential Natural Areas and Corridor. Regional policies pertaining to NAC's and PNAC's defer their interpretation, protection, restoration, enhancement, proper management, and stewardship to local municipalities. No NAC's or PNAC have been identified on the property by the City. Based on a review of Table 1 of the Regional Official Plan *(Criteria and Thresholds for the Identification of Core Areas, Natural Areas and Corridors (NAC) and Potential Natural Areas and Corridors (PNAC) Woodlands*), there are not NACs or PNACs associated with the subject property.
Mississauga OP (2016)	
1. Natural Heritage System	The City's natural heritage system consists of: ● Significant Natural Areas; ● Natural Green Spaces ● Special Management Areas; ● Residential Woodlands; and ● Linkages. The Credit River valley and associated tributary located on the south and east sides of the subject property respectively form part of the City's Natural Heritage System as it has been designated a Significant Natural Area and supports the following features: • Signficant Woodland (FOD5 community) • Potential Significant Wildlife Habitat (based on provincial Ecoregional criteria) • Significant Valleyland (Credit River and eastern tributary) With the exception of a SWM outfall, no development or site alteration is proposed within the valleyland. A 10 m setback has been provided to the greater of the physical and long-term stable top of slope. A SWM outfall is proposed within the valleyland which will outlet to the drainage feature on the east side of the property. Impacts to the valleyland will minimized by installing the outfall via directional horizontal drilling and implementing other mitigation measures identified in this report. The development lot lines overlap with a very small portion of the signficant woodland/SNA associated with the tableland forest. Generally, lot creation within SNA is not permitted; therefore, the SNA limit has been adjusted to the rear of these lots. The loss of area from the SNA (330 m^2) has been off-set by the addition of 2,300 m^2.

Applicable Policy / Legislation	Relevant EIS Findings and Recommendations
	Existing woodland trees that overlap with the lots (4 and 5) will be zoned a Tree Preservation Area with restriction on vegetation removals. According to Policy 6.3.27, development and site alteration within or adjacent to a Significant Natural Area will not be permitted unless all reasonable alternatives have been considered and any negative impacts minimized through appropriate mitigation measures as determined by an Environmental Assessment or Environmental Impact Study. Negative impacts that cannot be avoided are to be mitigated through restoration and enhancement to the greatest extent possible. The proposed development was designed to avoid signficant natural areas to the extent feasible while also making efficient use of underutilized lands to create new housing opportunities to address a housing supply crisis in Ontario. This EIS has determined that the proposed redevelopment will not have a negative impact on the significant natural area provided that the mitigation and enhancement recommendations are implemented.
2. Natural Hazard Lands	With the exception of a SWM outfall, the proposed re-development is limited to areas outside natural hazards and will be setback 10 m from the long-term stable slope. The two existing residences, which are located within the 10 m setback, will be retained in their current locations.
3. Urban Forest	The Urban Forest includes all the trees within the City of Mississauga on both public and private lands, within the Natural Heritage System as well as along streets, in parks, in yards and on a wide range of open spaces and other land uses. A tree inventory and preservation plan was prepared for the subject property. The TIPP identifies trees for removal and protection based on the proposed redevelopment plan. Trees identified for preservation will be protected as per the recommendations in the arborist report (SBK 2023a, 2023b). Tree removals are required to accommodate the proposed development, which will result in reduction to the urban forest canopy. To ensure no negative impact on the urban forest canopy, replacement trees will be planted on the subject property (or cash in lieu provided) to restore the urban forest canopy in accordance with City of Mississauga tree replacement/compensation guidelines.
CVC Regulation and Polices	A 10 m setback has been applied to the long-term stable slope as per CVC policy. Aside from a SWM outfall, no new development is proposed within natural hazard. Lot limits have been established at least 10 m from the long-term stable slope, with the exception of lots 9 and 11, which will retain the existing residential dwellings that overlap with the 10 m setback. In the case of lots 9 and 11, the lot limits are established at the long-term stable slope. Impact related construction of the SWM outfall will be mitigated through measures identified in this report.

10. Conclusion

Diamond Developments (900 Mississauga Heights) Inc. and Investex Holdings Limited are proposing to redevelop the properties located at 900 and 904 Mississauga Heights Drive in the City of Mississauga. The subject property currently contains two existing dwellings and accessory residential uses. The proposed re-development of the subject property consists of 18 residential lots, including two lots which support the existing residential dwellings, and a common element condo road.

The subject property abuts the Credit River valley to the south and overlaps with a woodland and small tributary valley feature to the east, which are identified as Significant Natural Area in the City's Greenlands System and Core Area in the Region's Greenlands System. This EIS describes the natural heritage features and ecological functions associated with the property, assesses the potential direct and indirect impacts of the proposed re-development on these features and functions, and recommends mitigation and enhancement measures to protect and restore significant natural heritage features.

With the exception of a proposed stormwater outfall structure in the tributary valley, the proposed re-development will be limited to the tableland and areas that presently support existing residences, lawns, driveways, pool, tennis court, landscaping, cultural woodland, and cultural plantation. The limits of development for the new lots will be established at least 10 m from the long-term stable slope limit; however, the limits of the new lots which will retain the existing residential dwellings (9 and 11) have been established at the long-term stable top of slope as the existing dwellings overlap with the 10 m setback.

The limits of new lots 4-7 overlap with a small portion of the significant woodland on the tableland of the property. Where this occurs, it is recommended that the limit of the SNA be adjusted to align with the back of these lots. Approximately 330 m2 have been removed from the SNA, while 2,300 m^2 has been added. To protect the trees along the edge of the significant woodland within the proposed lots, it is proposed that this portion of the lot be zoned with restrictions on site alterations such as vegetation removal. Future buildings and accessory uses will be located outside this zone. Areas of existing development (lawn, pavement) between the limit of the proposed development and the natural feature present opportunities to restore and expand the NHS with native species.

In summary, the proposed redevelopment is consistent with applicable natural heritage policies and legislation and is not expected to adversely impact the natural heritage features and ecological functions associated with the Natural Heritage System provided that the mitigation and enhancement measures recommended in this report and companion studies (Arborist Report (SKB 2023a, 2023b) and, FSR (Skira 2023) are implemented.

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Appendix A

EIS Scoping Checklist and Terms of Reference

Environmental Impact Study Checklist
October 2017

MISSISSAUGA

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Email: dwesterhof@beaconenviro.com
PAM and/or DARC # and Date: DARC 17-362, Nov. 22, 2017

Development Application (check): ☑ Official Plan Amendment ☑ Zoning By-law Amendment ☑ Site Plan Application ☐ Subdivision ☑ Condominium ☑ Other *Exemption from Part-Lot Control*

Site / Property Address: 900 Mississauga Heights Drive

Process

- Applicant requests site meeting prior to initial submission
- After site meeting, environmental consultant completes EIS Checklist based on on-site discussion and submits to City for confirmation
- EIS, with EIS Checklist included as an appendix, becomes part of complete application
- Depending on application type, an addendum may be required with subsequent applications (eg. level of detail required at OPA versus Site Plan)
- Natural heritage records generally require updates or field verification after 5 years
- If additional questions, please contact _____

Content

The following is a checklist of all the potential sections that may need to be addressed as part of an EIS. However, depending on the scope and scale of the proposed development and/or site alteration, as well as the nature and extent of natural heritage features and areas to be considered, not all elements will necessarily be required. Components not included in the Terms of Reference, with a rationale for their exclusion, should be marked as "N/A".

1. Introduction

- ☑ Description of subject property (natural features and areas, land cover, existing hard surfaces or buildings)
- ☑ Description of the type and scale of the development proposal (including, but not limited to, servicing, above and below ground structures, proposed grading)
- ☑ Describe the historical and present uses of the subject property:
  - ☐ grading/filling activities
  - ☐ brownfield contamination
- ☑ Description of the site context/study area and the subject property's relationship to the surrounding landscape
- ☑ Include map(s) of the development location, subject property and study area
  - ☐ Orthographic map with known natural heritage features/areas overlaid

2. Planning Context

- ☑ Current land uses designation and zoning for the subject property and for the adjacent lands, including Upper and Lower Tier designations
- ☑ Identify the type of required development applications
- ☑ Include map(s) of the development location and extent of the area to be studied including current Land Use / Zoning
- ☑ Identify environmental legislative, regulatory and policy requirements that may affect the development proposal, including clauses relevant to the proposal (Federal, Provincial, Municipal – Upper and Lower Tier, and Conservation Authority)

3. Background Review

- ☑ Identify relevant information from existing studies, plans, databases and other sources to be analyzed as part of the EIS including, but not limited to, Natural Heritage and Urban Forest Strategy, Natural Areas Survey, Region of Peel data, Conservation Authority data, Natural Heritage Information Centre

4. Characterizing the Natural Environment: Approach and Methodology

- ☑ Detailed study methods for studying natural heritage features and areas, wildlife habitat and Species at Risk (including time of year, level of searcher effort, etc.)
- ☑ Identify and describe the approach and methods to be used to assess natural environment of the subject property and the adjacent lands for:
    - ☐ Geology and Soils *Background review*
    - ☐ Hydrology and Hydrogeology *Background review*
    - ☐ Aquatic and Fish Habitat *Background review*
    - ☐ Terrestrial Vegetation (including wetlands) *Site visit - spring*
    - ☐ Vegetation Communities (Ecological Land Classification) *Background review; Site visit - spring*
    - ☐ Wildlife *Breeding Birds, Spring*
    - ☐ Natural Hazards *Background review*
    - ☐ Connectivity and Ecological Linkages
- ☐ Identify whether there are potential natural heritage features and areas that do not need to be assessed, and provide a rationale for their exclusion
- ☑ Complete a screening for Significant Wildlife Habitat
- ☑ Include map(s) showing locations for field studies (i.e. points, plots, transects)
- ☐ Tree inventory and preservation plan for trees outside of the NAS completed by others

5. Data Analysis: Approach and Methodology

- ☑ Evaluation of Significance and Natural Hazards—identify that the following assessments are in scope and any known analysis that will need to be included
    - ☐ Natural heritage features and areas against the appropriate policies and guidelines to determine significance:
    - ☐ Natural heritage features and areas against the appropriate policies and guidelines related to natural hazards:
    - ☐ Appropriate buffers and/or setbacks to the natural heritage features
- ☑ Natural Heritage Opportunities and Constraints— identify that it is in scope
- ☑ Environmental Policy Analysis (confirmation of policies and legislation to be addressed)
- ☑ Impact Assessment—identify that the scope includes direct, indirect, and cumulative impacts
- ☐ Evaluation of Alternative Options/Measures—establish key analysis points to be addressed in the EIS
- ☑ Recommended Mitigation Measures (including, but not limited to avoidance, enhancement, restoration, education and stewardship)

6. Monitoring

- ☑ Monitoring Plan (outline of the types of monitoring to be included in the EIS)

7. Recommendations and Conclusion

- ☑ Recommendations Concluding Statement (confirm they are to be provided in the EIS)

Signatures

Env. Consultant: _____ Date: _____

City Of Mississauga: _____ Date: _____

From: Sarah Piett
To: Dan Westerhof
Subject: 900 Mississauga Heights Drive scoped EIS
Date: Friday, July 20, 2018 7:06:58 AM
Attachments: image001.png

Hi Dan,

My apologies for the delay in responding – the checklist looks good, with only one addition recommended. I'd request that an additional site visit be conducted to document summer vegetation and ELC due to the extensive nature of the proposed development at the site.

If you have any questions, please let me know.

Thanks,

Sarah

MISSISSAUGA

Sarah Piett, M.E.S.
Natural Heritage Coordinator | Forestry
ISA Certified Arborist ON-1812A
905-615-3200 ext.3379 | sarah.piett@mississauga.ca
City of Mississauga | Community Services Department
Parks and Forestry Division

onemilliontrees.ca
Follow us on Twitter: @MississaugaPF | ***#1milliontrees***

From: Dan Westerhof [mailto:dwesterhof@beaconenviro.com]
Sent: 2018/05/17 1:27 PM
To: Sarah Piett
Subject: 900 Mississauga Heights Drive scoped EIS

Hi Sarah,

Here is another scoping checklist for your review.

Thanks,

Dan Westerhof, B.Sc, MES
Terrestrial Ecologist, Certified Arborist
BEACON ENVIRONMENTAL
373 Woolwich Street, Guelph, ON N1H 3W4
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MEMORANDUM

Project No.: TC180414

To: David Sajecki, Sajecki Planning

From: Melissa Torchia, Wood

Date: 21 November 2018

Subject: **DRAFT: Terms of Reference: 904 Mississauga Heights Drive, Mississauga Ontario**

1.0 INTRODUCTION

Wood Environment & Infrastructure, a division of Wood Canada Limited (Wood), is pleased to provide Sajecki Planning with this Terms of Reference (TOR) to provide natural heritage and biological assessment services as required to support the proposed development of 904 Mississauga Heights Drive, Mississauga, Ontario (Figure 1) (herein after referred to as the Project). The Project Location encompasses the entire parcel, and preliminary design aims to severe the existing parcel and build a total of four (4) or five (5) new residential lots. This TOR has been prepared using the Credit Valley Conservation Authority (CVC) EIS guidelines (2008) and information collected following an initial site walk. The site walk was completed with Wood, City of Mississauga, and CVC staff on October 24, 2018. During the site walk, Wood took part in the natural feature staking of the property with City of Mississauga Urban Forestry staff and CVC staff. Based on the outcome of the site walk, a large portion of the property was determined to be part of natural feature.

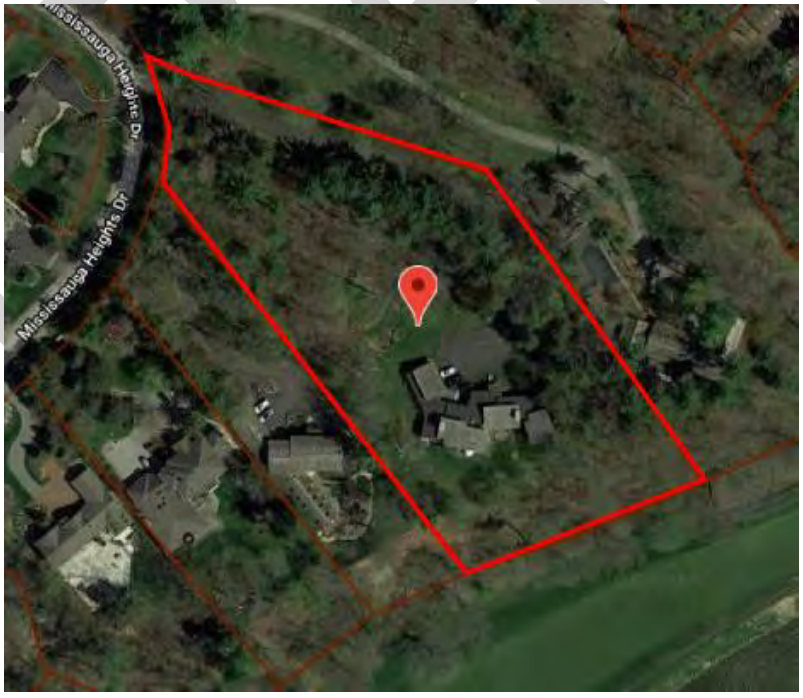

Figure 1: Project Location

2.0 TERMS OF REFERENCE

The goal of this TOR is to provide a framework for the future Environmental Impact Study (EIS) for the Project Location. The EIS will document natural heritage information on the existing conditions within the Project Location and will identify the following:

- The purpose of the proposed project and proposed design details;
- The existing environmental conditions of the Project Location (inclusive of flora and faunal inventory, key natural heritage features (e.g., wetlands), species-at-risk (SAR), and noted hazards (i.e., flood hazard);
- The natural feature constraints and buffer setbacks;
- Groundwater and surface water implications;
- The impacts to physical and biological resources;
- The requirements for the protection and conservation of natural heritage features and functions;
- Avoidance and mitigation measures; and
- Monitoring requirements (as required).

A brief description of the EIS report objectives is provided below.

2.1 Description of the Surrounding Natural Environment

The EIS will describe and justify the level of investigation undertaken as part of the field survey program. The data will be provided in text and tabular form, including the date and time of the surveys, weather conditions, and personnel involved in the fieldwork.

2.1.1 Secondary Source Review

As part of the EIS report and as a component of the background review of natural heritage elements within the Project Location, a secondary source review will be performed. Database searches will be undertaken to ascertain information on natural heritage features, inclusive of SAR. Resources to be reviewed include those but not limited to:

- MNRF Natural Heritage Information Centre (NHIC) database;
- Atlas of the Breeding Bird of Ontario (ABBO; Cadman et al., 2007);
- eBird.org (Audubon and Cornell Lab of Ornithology, 2016);
- Atlas of the Mammals of Ontario (AMO; Dobbyn, 1994);
- Ontario Reptile and Amphibian Atlas (ORRA; Ontario Nature, 2014);
- Ontario Butterfly Atlas (OBA; Jones et al. 2016);
- CVC publications including watershed report cards; and,
- Municipal records associated with the Official and Master Plans and/or other planning documents.

- CVC SAR data (to be released by MECP)
-City of Mississauga NAS data

2.1.2 Agency Consultation

Regulatory agencies (i.e., CVC, City of Mississauga and MECP), will be contacted to provide existing environmental data for the Project Location. Based on recent discussions between Wood and the Ministry of Natural Resources and Forestry (MNRF) regarding SAR, Wood will forego submission of SAR information request to MNRF, and instead will

review the MNRF's Natural Heritage Information Center (NHIC) for information available at the time regarding SAR for the Project Location. Based on the existing conditions of the Project Location observed during the site walk on October 24, 2018, habitat for potential SAR does occur and as such, a series of field investigations will be completed as part of the EIS to confirm presence or absence. If SAR are identified, additional consultation with MNRF will be completed to provide information on the path forward.

2.1.3 Field Survey Program

In support of the EIS, Wood will undertake a natural heritage and biological field survey program within the Project Location. Following the site visit on October 24, 2018 and preliminary desktop analysis, a field survey program has been established. Relevant field studies required to support the EIS have been identified and are indicated below. Note aquatic field studies are not planned at this time and have been omitted from the field survey program.

2.1.3.1 Terrestrial Studies

- Vegetation community surveys and mapping using the Ecological Land Classification (ELC);
- One (1) season (spring / summer) botanical inventory;
- Tree inventory;
- Breeding bird surveys;
- Incidental wildlife observations; and
- Rare species, SAR screening surveys (inclusive of bat cavity search), and Significant Wildlife Habitat screening.

To determine and further evaluate the presence of natural areas, unevaluated wetlands, and significant wildlife habitats, the field survey program will assist in developing a detailed description of the terrestrial environment. These surveys shall be conducted at the seasonally appropriate time to allow for the determination of habitat use for candidate significant wildlife habitat.

Botanical Surveys and Ecological Land Classification

Initial ELC and vegetation community (ecosite) delineation will be undertaken through the review of satellite imagery and existing mapping resources from CVC, the City of Mississauga, Peel Region, and provincial Land Information Ontario (LIO) database. A three (3) season field survey will then confirm and update the vegetation community boundaries and classification from LIO, converting the community delineations into Ecological Land Classifications (ELC; Lee et al., 1998, 2008).

ELC will be utilized to broadly characterize the ecosites within the Project Location, as well as to identify the presence of rare and/or sensitive vegetation communities and/or species. ELC will be further utilized to focus and target efforts for other field survey program components as required.

The inventory and documentation of vegetation and vascular plants will be undertaken through visual observations during the three (3) field surveys. Observations will continuously be recorded and updated throughout the implementation of all components of the field survey program. The identification of species will not only focus on common species, but also on rare and sensitive species, SAR, and invasive/non-native species.

Tree Inventory

The tree inventory will be conducted for the Project Location. The goal of the inventory will be to provide information on species composition and size across the Project Location. The methodology employed in conducting the tree inventory will include the following:

- Survey of all trees greater than 10 cm diameter at breast height (DBH) which will include:

- Identification of tree species;
- Attachment of uniquely numbered tree tag;
- Tree size/caliper (DBH);
- Tree health condition;
- Tree crown dimension estimate (dripline);
- Tree protection zone (TPZ); and
- Tree location (Georeferenced and rectified to previous survey)

An Arborist Report will be prepared of which will provide details of the tree inventory (list of trees greater than 10 cm DBH) with associated UTM coordinates, georeferenced figure of tree locations health condition assessment and arborist recommendations**.**

Breeding Bird Surveys

Breeding bird surveys will be undertaken between May 24 and July 7 at two (2) point count stations within the Project Location and will follow the protocols as described in the Ontario Breeding Bird Atlas Guide for Participants (2001) and the Atlas of Breeding Birds of Ontario (Cadman et al., 2007). Surveys will include morning point counts starting 30 minutes after sunrise to capture the period of maximum bird song activity. Each station will consist of a circle with a 100 m radius from the center point (the location of the observer). All birds heard or observed will be recorded at intervals of 0 – 50 m, 50 - 100 m, >100 m and flyovers (birds seen flying overhead). Each point count will be ten (10) minutes in duration. Birds will be recorded at intervals of 0 - 3 minutes, 3 - 5 minutes and 5 – 10 minutes. Species will be identified through their unique vocalizations and by visual observations. Each bird will be recorded once and mapped on the field data sheets to ensure no duplication of individual birds. All bird surveys will be undertaken in mild weather with warm temperatures, no precipitation, and little or no wind. All observations were recorded on Breeding Bird Survey (BBS) field forms. Breeding evidence will be provided.

Species at Risk

An assessment of potential presence and suitable habitat for SAR within the Project Location will be undertaken. To obtain information on SAR potentially occurring within the vicinity of the Project Location, Wood will undertake a desktop review of the NHIC database and wildlife atlases and consult with the CVC regarding SAR records not publicly available for the area.

The assessment of SAR and SAR habitat will be conducted concurrently with the biological surveys noted herein. Based on the results of the SAR desktop assessment, Wood will compare the preferred habitat of each potential SAR with the physical conditions present at the Project Location and document any SAR occurrences observed during the biological inventories. A summary of potential SAR occurrence will be based on availability of preferred habitat. At present time, no SAR targeted surveys have been identified for the Project Location. The potential for SAR birds will be captured during the breeding bird surveys for the Project, and similarly vegetative SAR will be captured during the botanical inventories. Given the characteristics of the Project Location, additional SAR (e.g., amphibians, reptiles) are not expected to occur. Any SAR identified during the field surveys will be documented within the EIS and further consultation with MNRF will be required to identify the path forward.

Species at Risk Bats

Due to the characteristics of the woodland at the Project Location, a bat habitat survey will be undertaken as part of the field survey program in early 2019. Surveys will include the identification of potential maternal roost habitat (i.e., cavity trees) identified during the leaf-off period. Information collected will denote

whether further survey requirements are needed (i.e., the need for acoustic monitoring) or permitting and approvals under the *Endangered Species Act*, 2007 (as amended) will be required for the Project. MNRF / MECP will be consulted to ensure survey requirements are met.

2.1.3.2 Key Natural Heritage Features

An overview and summary of Key Natural Heritage Features will be completed for the Project Location. This includes documenting the presence and/or absence of:

- Significant Wetlands;
- Significant Woodlands;
- Areas of Natural and Scientific Interest (ANSI's);
- Environmentally Sensitive Areas (ESA's)
- Significant Valleylands;
- Aquatic Habitat and Lake Ontario Shoreline; and
- Significant Wildlife Habitat and Habitat for Endangered and Threatened Species

The significance of a feature will be identified through secondary source information (inclusive of mapping provided by Land Information Ontario), CVC's Natural Heritage Strategy (2015), the Regional and/or City's Official Plans, and the *Significant Wildlife Habitat Criterion Schedule for Ecoregion 7E* (MNRF, 2015) and *Peel Caledon Woodlands and Significant Wildlife Habitat Study* criteria.

2.2 Identification of Potential Project Impacts

The impacts of the proposed Project on the natural heritage features and functions, will be identified and assessed.

Specific impacts may include:

- Direct on-site effects of the proposed project, including direct removals, fragmentation, encroachment or alteration of the significant natural features, altered hydrology and drainage, and anticipated tree removal;
- Introduction of non-native species;
- Effects on the ecological characteristics of the entire natural area (e.g. loss of habitat, edge effect, change in habitat);
- Short-term and long-term effects; and
- Secondary effects, including changes to the aesthetic qualities or educational value of the area, obstruction of greenway connections, and effects on adjacent natural areas.

2.3 Avoiding Impacts and Evaluation of Mitigation Measures

Measures to be taken to avoid and mitigate negative impacts on the natural heritage features and functions will be provided in the EIS. The assessment will consider cumulative, short and long-term impacts, and the potential for further demand or stress on natural features and functions, by the development proposal.

The EIS will:

- Identify and recommend feasible measures necessary to protect, maintain, or improve the identified ecological functions of the natural heritage features;

- Identify and recommend measures for the preservation of significant vegetation communities, special habitats, and specimen trees on the site;
- Identify timing restrictions, buffer setbacks, invasive species management/control, and potential compensation;
- Recommend improvements for the diversity of natural heritage features in the immediate project area and the natural connections between them, as necessary; and
- Recommend options for ongoing rehabilitation, protection, management, and enhancement of the natural heritage features, as necessary.

2.4 Monitoring Plan

A monitoring plan shall be prepared within the context of the EIS, if necessary. Depending on the findings of the EIS (i.e., significance and/or sensitivity of the natural heritage feature and function), on-site or adjacent monitoring may be required pre-construction, during construction and/or post-construction. Details of monitoring requirements will be determined through the EIS and consultation with CVC and the City of Mississauga.

2.5 Recommendations and Conclusion

A summary of the findings, potential impacts on natural features and functions, recommended mitigation, monitoring and residual impacts will be provided within the EIS. The EIS will provide the foundation for future requirements for development approval as it relates to the natural heritage system. As the EIS progresses, consultation with the City of Mississauga and CVC will be maintained throughout to disclose observations and identify concerns and constraints. The EIS will also provide the foundation for impacts (if any) to SAR and/or their habitat and denote recommendations for next steps should SAR be identified.

3.0 TABLE OF CONTENTS OF THE EIS

This TOR has been prepared based EIS guidelines (CVC, 2008). The proposed draft EIS table of contents is as follows:

- Executive Summary
- Introduction
    - Purpose of the Study
    - Scope of the Study
    - Study Area
- Relevant Policies, Legislation and Planning Studies
- Methodology
    - Secondary Source Review Methods
    - Terrestrial Field Methods
- Existing Conditions
    - Abiotic Environment
    - Terrestrial Environment
    - Species at Risk

- Significant Natural Heritage Features
    - Significant Wetlands
    - ANSI's and ESA's
    - Significant Valleylands
    - Significant Woodlands
    - Significant Wildlife Habitat
    - Residential Woodlands
- Assessment of policy implications based on features & functions present
- Summary Table of Predicted Impacts, Mitigation, Monitoring and Residual Effects
- Further recommendations and Conclusions (Inclusive of permit and approval requirements understood at the time of completion).

4.0 PROJECT SCHEDULE

It is important to note that most of the field survey program cannot begin until spring 2019 to meet approved regulatory standards for field methods. The survey program is expected to extend into fall 2019. A formal EIS will be delivered following the collection of field data sometime in late fall 2019.

To provide some preliminary constraints to the project, a cavity search will be completed for SAR bats during leaf-off conditions (early 2019). It is assumed that permission to enter will be provided to Wood to complete the required work program.

5.0 CLOSURE

We trust this information is sufficient for your needs. Should additional information be required, please contact the undersigned at (905) 335.2353 ext. 3196.

Sincerely,

Wood Environment & Infrastructure Solutions,
a division of Wood Canada Limited
3450 Harvester Road, Suite 100
Burlington, Ontario L7N 3W5
T: 905.335.2353 ext. 3196

Prepared by:

DRAFT

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Reviewed by:

DRAFT

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Senior Terrestrial Ecologist
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6.0 REFERENCES

1. Audubon and Cornell Lab of Ornithology. 2015. eBird, Ithaca, New York. Available: http://www.ebird.org.

2. Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage and A.R. Couturier. 2007. Atlas of the Breeding Birds of Ontario. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, Ontario Nature. 728 pp.

3. Credit Valley Conservation (CVC). 2015. Natural Heritage System Strategy Phase 3: Credit River Watershed Natural Heritage System, Final Technical Report, September 2015.

4. Credit Valley Conservation (CVC). 2008. Environmental Impact Study Terms of Reference. Revised January 1, 2008.

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6. Ministry of Natural Resources and Forestry (MNRF). 2018. Make a Natural Heritage Map: Natural Heritage Information Centre (NHIC). https://www.ontario.ca/page/make-natural-heritage-area-map

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9. Lee, H.T. 2008. Southern Ontario Ecological Land Classification: Vegetation Type List. 35 pp.

10. Ontario Breeding Bird Atlas (ABBO). 2001. Guide for Participants. Federation of Ontario Naturalists, Bird Studies Canada, Environment Canada, Ontario Ministry of Natural Resources. 45 pp.

11. Ontario Nature. 2018. Ontario Reptile and Amphibian Atlas (ORAA). http://www.ontarionature.org/protect/species/herpetofaunal_atlas.php.

12. Toronto Entomologists Association (TEA). 2018. Ontario Butterfly Atlas. Records for 17NH41 10km sq. http://www.ontarioinsects.org/atlas_online.html

Appendix B

Vascular Plant Species List

Appendix B

Vascular Plant Species List

Scientific Name	Common Name (FOIBIS)	Beacon	Dougan	COSEWIC[1]	COSSARO[2]	S-Rank[3]	PEEL[4]	CVC/PEEL[5]
Osmorhiza sp.	Sweet-cicely Species	x						
Arctium sp.	Burdock Species		x					
Solidago sp.	Goldenrod Species		x					
Lonicera sp.	Honeysuckle Species		x					
Cerastium sp.	Chickweed Species	x						
Carex sp.	Sedge Species	x						
Ginkgo biloba	Maiden-hair Tree	x						
Hydrophyllum sp.	Water-leaf Species		x					
Mentha sp.	Mint Species		x					
Oxalis sp.	Wood Sorrel Species		x					
Festuca sp.	Fescue Species		x					
Prenanthes sp.	Rattlesnake-root Species	x						
Actaea sp.	Baneberry Species		x					
Amelanchier sp.	Serviceberry Species	x						
Crataegus sp.	Hawthorn Species	x						
Geum sp.	Avens Species		x					
Acer japonicum	Japanese Maple	x	x					
Gymnocladus dioicus	Kentucky Coffee-tree	x		THR	THR	S2		
Heuchera americana var. *americana*	Rock-geranium		x			S2		
Chamaesyce polygonifolia	Seaside Spurge		x			S4	R1	
Juglans nigra	Black Walnut	x				S4?		
Parthenocissus quinquefolia	Virginia Creeper		x			S4?	RLR	
Rhus typhina	Staghorn Sumac	x				S5		
Toxicodendron radicans	Poison Ivy		x			S5		
Toxicodendron rydbergii	Western Poison Ivy	x	x			S5		

Scientific Name	Common Name (FOIBIS)	Beacon	Dougan	COSEWIC[1]	COSSARO[2]	S-Rank[3]	PEEL[4]	CVC/PEEL[5]
Apocynum androsaemifolium ssp. *androsaemifolium*	Spreading Dogbane	x				S5		
Aralia nudicaulis	Wild Sarsaparilla	x				S5		
Bidens frondosa	Devil's Beggar's Ticks	x				S5		
Erigeron canadensis	Fleabane	x				S5		
Eurybia macrophylla	Large-leaved Aster	x				S5		
Solidago altissima var. altissima	Tall Goldenrod	x	x			S5		
Solidago caesia	Bluestem Goldenrod	x				S5		
Solidago canadensis	Canada Goldenrod	x				S5		
Solidago flexicaulis	Broad-leaved Goldenrod	x				S5		
Symphyotrichum cordifolium	Heart-leaved Aster	x				S5		
Symphyotrichum ericoides var. *ericoides*	Heath Aster	x				S5		
Symphyotrichum lateriflorum var. *lateriflorum*	Calico Aster	x				S5		
Symphyotrichum novae-angliae	New England Aster	x				S5		
Podophyllum peltatum	May Apple	x				S5		
Betula alleghaniensis	Yellow Birch		x			S5		
Betula papyrifera	Paper Birch	x	x			S5		
Ostrya virginiana	Eastern Hop-hornbeam	x				S5		
Diervilla lonicera	Northern Bush-honeysuckle	x	x			S5		
Symphoricarpos albus	Snowberry		x			S5	R8	rare
Viburnum acerifolium	Maple-leaf Viburnum	x				S5		
Cornus alternifolia	Alternate-leaf Dogwood	x				S5		
Cornus racemosa	Gray Dogwood	x				S5		
Echinocystis lobata	Wild Mock-cucumber	x				S5		
Carex pensylvanica	Pennsylvania Sedge	x	x			S5		
Pteridium aquilinum var. *latiusculum*	Bracken Fern	x				S5		
Athyrium filix-femina var. *angustum*	Lady-fern		x			S5		
Dryopteris carthusiana	Spinulose Wood Fern	x				S5		

Scientific Name	Common Name (FOIBIS)	Beacon	Dougan	COSEWIC[1]	COSSARO[2]	S-Rank[3]	PEEL[4]	CVC/PEEL[5]
Dryopteris marginalis	Marginal Wood Fern	x				S5		
Equisetum arvense	Field Horsetail	x				S5		
Fagus grandifolia	American Beech	x				S5		
Quercus alba	White Oak	x				S5		
Quercus macrocarpa	Bur Oak	x	x			S5		
Quercus rubra	Northern Red Oak	x	x			S5		
Geranium maculatum	Wild Geranium	x				S5	U	
Ribes americanum	Wild Black Currant		x			S5		
Ribes cynosbati	Prickly Gooseberry	x				S5		
Hamamelis virginiana	American Witch-hazel	x				S5		
Hydrophyllum virginianum	Virginia Waterleaf	x				S5		
Carya ovata var. *ovata*	Shagbark Hickory		x			S5		
Erythronium americanum ssp. *americanum*	Yellow Trout-lily	x				S5		
Maianthemum canadense	Wild-lily-of-the-valley	x	x			S5		
Maianthemum racemosum ssp. *racemosum*	False Solomon's Seal	x	x			S5		
Polygonatum pubescens	Downy Solomon's Seal	x				S5		
Trillium grandiflorum	White Trillium	x				S5		
Fraxinus americana	White Ash	x				S5		
Fraxinus pennsylvanica	Green Ash		x			S5		
Circaea canadensis	Enchanter's Nightshade	x	x			S5		
Oenothera biennis	Common Evening-primrose	x				S5	U	
Oxalis stricta	Upright Yellow Wood Sorrel	x				S5		
Picea glauca	White Spruce	x				S5	R3	
Pinus resinosa	Red Pine		x			S5	R1	rare
Pinus strobus	Eastern White Pine	x	x			S5		
Phalaris arundinacea	Reed Canary Grass		x			S5		
Actaea rubra	Red Baneberry	x				S5		
Anemone quinquefolia var. *quinquefolia*	Wood Anemone	x				S5		
Ranunculus abortivus	Kidney-leaved Buttercup	x				S5		
Thalictrum dioicum	Early Meadowrue	x				S5		
Crataegus punctata	Dotted Hawthorn	x				S5		

Scientific Name	Common Name (FOIBIS)	Beacon	Dougan	COSEWIC[1]	COSSARO[2]	S-Rank[3]	PEEL[4]	CVC/PEEL[5]
Fragaria virginiana	Wild Stawberry		x			S5		
Geum aleppicum	Yellow Avens	x				S5		
Prunus serotina	Wild Black Cherry	x	x			S5		
Prunus virginiana var. *virginiana*	Choke Cherry	x	x			S5		
Rubus allegheniensis	Allegheny Blackberry	x	x			S5		
Rubus idaeus ssp. *strigosus*	Wild Red Raspberry	x	x			S5		
Rubus occidentalis	Black Raspberry	x	x			S5		
Rubus odoratus	Purple-flowering Raspberry	x				S5		
Rubus pubescens	Dwarf Raspberry	x				S5		
Acer negundo	Manitoba Maple	x				S5		
Acer rubrum	Red Maple	x				S5		
Acer saccharinum	Silver Maple	x				S5		
Acer saccharum var. *saccharum*	Sugar Maple	x	x			S5		
Taxus canadensis	Canadian Yew		x			S5		
Tilia americana	American Basswood	x				S5		
Ulmus americana	American Elm		x			S5		
Viola sororia	Woolly Blue Violet	x				S5		
Parthenocissus vitacea	Thicket Creeper	x	x			S5		
Vitis riparia	Riverbank Grape	x	x			S5		
Geranium robertianum	Herb-robert	x				S5		
Populus deltoides ssp. *deltoides*	Eastern Cottonwood	x				S5		
Melilotus altissima	White Sweet Clover	x				SNA		
Salvia officinalis	Common Sage		x			SNA		
Forsythia viridissima	Golden-bells	x				SNA		
Picea pungens	Colorado Spruce		x			SNA		
Daucus carota	Queen Anne's Lace	x	x			SNA		
Vinca minor	Periwinkle	x	x			SNA		
Cynanchum rossicum	European Swallow-wort	x				SNA		
Achillea millefolium var. *millefolium*	Common Yarrow	x				SNA		
Arctium lappa	Greater Burdock	x				SNA		
Cirsium arvense	Creeping Thistle	x				SNA		

Scientific Name	Common Name (FOIBIS)	Beacon	Dougan	COSEWIC[1]	COSSARO[2]	S-Rank[3]	PEEL[4]	CVC/PEEL[5]
Cirsium vulgare	Bull Thistle		x			SNA		
Tanacetum vulgare	Common Tansy	x				SNA		
Taraxacum officinale	Common Dandelion	x	x			SNA		
Tussilago farfara	Colt's Foot	x				SNA		
Cynoglossum officinale	Hound's-tongue	x				SNA		
Alliaria petiolata	Garlic Mustard	x	x			SNA		
Campanula rapunculoides	Creeping Bellflower	x				SNA		
Lonicera tatarica	Tartarian Honeysuckle	x	x			SNA		
Viburnum lantana	Wayfaring-tree		x			SNA		
Euonymus alata	Winged Spindle-tree	x	x			SNA		
Euonymus fortunei	Winter-creeper	x	x			SNA		
Hypericum perforatum	St. John's-wort	x				SNA		
Dipsacus fullonum ssp. *sylvestris*	Common Teasel	x				SNA		
Lotus corniculatus	Bird's-foot Trefoil	x				SNA		
Medicago lupulina	Black Medic	x				SNA		
Robinia pseudo-acacia	Black Locust		x			SNA		
Trifolium repens	White Clover	x				SNA		
Vicia cracca	Tufted Vetch	x				SNA		
Leonurus cardiaca ssp. *cardiaca*	Common Motherwort	x	x			SNA		
Nepeta cataria	Catnip	x				SNA		
Prunella vulgaris ssp. *vulgaris*	Common Heal-all	x				SNA		
Convallaria majalis	European Lily-of-the-valley	x	x			SNA		
Scilla siberica	Squill	x				SNA		
Malva neglecta	Cheeses	x				SNA		
Syringa vulgaris	Common Lilac	x	x			SNA		
Picea abies	Norway Spruce		x			SNA		
Pinus sylvestris	Scotch Pine		x			SNA		
Plantago major	Nipple-seed Plantain	x				SNA		
Bromus inermis ssp. *inermis*	Smooth Brome	x				SNA		
Dactylis glomerata	Orchard Grass	x				SNA		
Elymus repens	Quack Grass	x				SNA		
Poa nemoralis	Woods Bluegrass	x				SNA		

Scientific Name	Common Name (FOIBIS)	Beacon	Dougan	COSEWIC[1]	COSSARO[2]	S-Rank[3]	PEEL[4]	CVC/PEEL[5]
Rhamnus cathartica	Buckthorn	x	x			SNA		
Geum urbanum	Clover-root	x				SNA		
Potentilla recta	Sulphur Cinquefoil	x				SNA		
Rosa multiflora	Rambler Rose	x				SNA		
Sorbus aucuparia	European Mountain-ash		x			SNA		
Spiraea japonica	Japanese Spiraea		x			SNA		
Galium mollugo	White Bedstraw	x				SNA		
Galium odoratum	Sweet Woodruff		x			SNA		
Acer platanoides	Norway Maple	x	x			SNA		
Linaria vulgaris	Butter-and-eggs	x				SNA		
Verbascum thapsus	Common Mullein		x			SNA		
Veronica officinalis	Common Speedwell	x				SNA		
Solanum dulcamara	Climbing Nightshade	x	x			SNA		
Urtica dioica ssp. *dioica*	Stinging Nettle	x				SNA		
Valeriana officinalis	Common Valerian	x				SNA		
Poa pratensis ssp. *pratensis*	Kentucky Bluegrass	x				SNA		
Hedera helix		x						

[1]Committee on the Status of Endangered Wildlife in Canada
[2]Commitee on the Status of Species at Risk in Ontario
[3]Provincial Conservation Rank: S5=Secure, S4=Apparently Secure; S3=Vulnerable; S2=Imperilled; S1=Critically Imperilled
[4]Reginal Status (Varga et al 2005): R=Rare, U=Uncommon
[5]Regional Status (CVC 2002)

Appendix C

Breeding Bird Species List

Appendix C

Breeding Bird List

Common Name	Scientific Name	Status				Beacon 2018 (Number of Territories)	Dougan 2019
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK [b]	Area-sensitive (OMNR)c		
Cooper's Hawk	*Accipiter cooperi*			S4	A	1	Possible
Red-bellied Woodpecker	*Melanerpes carolinus*			S4		1	Possible
Downy Woodpecker	*Picoides pubescens*			S5		1	
Northern Flicker	*Colaptes auratus*			S4		1	
Eastern Wood-Pewee	*Contopus virens*	SC	SC	S4		1	
Eastern Phoebe	*Sayornis phoebe*			S5		1	Possible
Great Crested Flycatcher	*Myiarchus crinitus*			S4		1	Probable
Blue Jay	*Cyanocitta cristata*			S5		1	Possible
Black-capped Chickadee	*Poecile atricapillus*			S5		1	
Red-breasted Nuthatch	*Sitta canadensis*			S5	A	1	
House Wren	*Troglodytes aedon*			S5		1	
American Robin	*Turdus migratorius*			S5		3	Probable
Cedar Waxwing	*Bombycilla cedrorum*			S5		2	Possible
Red-eyed Vireo	*Vireo olivaceus*			S5		1	Possible
Black-throated Green Warbler	*Setophaga virens*			S5	A	F	
American Redstart	*Setophaga ruticilla*			S5	A	F	
Scarlet Tanager	*Piranga olivacea*			S4	A	F	
Northern Cardinal	*Cardinalis cardinalis*			S5		2	Probable
Song Sparrow	*Melospiza melodia*			S5		2	Possible
Brown-headed Cowbird	*Molothrus ater*			S4		1	Possible
Baltimore Oriole	*Icterus galbula*			S4		1	

Common Name	Scientific Name	Status				Beacon 2018 (Number of Territories)	Dougan 2019
		National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK [b]	Area-sensitive (OMNR)c		
American Goldfinch	*Spinus tristis*			S5		2	Possible
House Sparrow	*Passer domesticus*			SNA		1	Possible
Chimney Swift	*Chaetura pleagica*	THR	THR	S4			F
American Crow	*Corvus brachyrhynchos*			S5			Probable
White Breasted Nuthatch	*Sitta carolinesis*			S5	A		Possible
Red-winged Blackbird	*Agelaius phoeniceus*			S4			Possible
Common Grackle	*Quiscalus quiscula*			SS			F
Pine Warbler	*Setophaga pinus*			S5	A		Possible

Field Work Conducted On: May 29 and June 10, 2018, June 2 and 12, 2019
F indicates foraging birds (not breeding)
Number of Species: 23 (3 non-breeding)
Number of (provincial and national) Species at Risk: Eastern Wood-pewee (Special Concern)
Number of S1 to S3 Species: 0
Number of Area-sensitive Species: e breeding (Red-breasted Nuthatch, White-breasted Nuthatch, Pine Warbler, and Cooper's Hawk)

KEY
a COSEWIC = Committee on the Status of Endangered Wildlife in Canada
END = Endangered, THR = Threatened, SC = Special Concern

[b] SRANK (from Natural Heritage Information Centre) for breeding status if:
S1 (Critically Imperiled), S2 (Imperiled),S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)

KEY
[a] COSEWIC = Committee on the Status of Endangered Wildlife in Canada
[b] Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)
END = Endangered, THR = Threatened, SC = Special Concern
[c] SRANK (from Natural Heritage Information Centre) for breeding status if:
S1 (Critically Imperiled), S2 (Imperiled),S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)
SNA (Not applicable…'because the species is not a suitable target for conservation activities'; includes non-native species)
[d] Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

[e] Breeding Status: X = Breeding; FO =flyover; NB = Not Breeding

Appendix D

Assessment of Habitat of Threatened or Endangered Species

Appendix D

Assessment of Habitat of Threatened or Endangered Species

Group	Common Name	Scientific Name	COSSARO	COSWEIC	Assessment of Subject Property
amphibians	Jefferson Salamander	*Ambystoma jeffersonianum*	END	END	No suitable habitat
birds	Bank Swallow	*Riparia riparia*	THR	THR	No suitable habitat
birds	Bobolink	*Dolichonyx oryzivorus*	THR	THR	No suitable habitat
birds	Chimney Swift	*Chaetura pelagica*	THR	THR	No detected by Beacon during surveys in 2018. High fly-over noted by Dougan in 2019. No suitable habitat on the subject property.
birds	Eastern Meadowlark	*Sturnella magna*	THR	THR	No suitable habitat
birds	Eastern Whip-poor-will	*Antrostomus vociferus*	THR	THR	No suitable habitat
birds	Henslow's Sparrow	*Ammodramus henslowii*	END	END	No suitable habitat
dicots	Butternut	*Juglans cinerea*	END	END	Potentially suitable habitat; however, not Butternut were found during surveys
mammals	Eastern Small-footed Myotis	*Myotis leibii*	END		Potentially suitable habitat was identified on the property. This species was not detected during acoustic monitoring in 2018. Additional acoustic monitoring is proposed for 2023.
mammals	Little Brown Myotis	*Myotis lucifugus*	END	END	Potentially suitable habitat was identified on the property. Acoustic monitoring identified this species within the area. Analysis of acoustic data suggests that this species was flying over the property, but not roosting. Additional acoustic monitoring is proposed for 2023.
mammals	Northern Myotis	*Myotis septentrionalis*	END	END	Potentially suitable habitat was identified on the property. This species was not detected during acoustic monitoring in 2018. Additional acoustic monitoring is proposed for 2023.
mammals	Tri-colored Bat	*Perimyotis subflavus*	END	END	Potentially suitable habitat was identified on the property. This species was not detected during acoustic monitoring in 2018. Additional acoustic monitoring is proposed for 2023.

Group	Common Name	Scientific Name	COSSARO	COSWEIC	Assessment of Subject Property
ray-finned fishes	American Eel	Anguilla rostrata	END	THR	No suitable habitat
ray-finned fishes	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	Acipenser fulvescens pop. 3	THR	THR	No suitable habitat
turtles	Blanding's Turtle	Emydoidea blandingii	THR	END	No suitable habitat

Appendix E

Significant Wildlife Habitat Assessment

Appendix E

Significant Wildlife Assessment

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
Seasonal Concentration Areas			
Waterfowl Stopover and Staging Areas (Terrestrial) American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 Plus evidence of annual spring flooding from malt water or run-off within these Ecosites.	Suitable Habitat • Fields with sheet water during Spring (mid-March to May) Suggested Criteria • Studies carried out and verified presence of an annual concentration of any listed species	• No suitable habitat or associated species present on the subject property.
Waterfowl Stopover and Staging Areas (Aquatic) Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed duck Surf Scoter White-winged Scoter Black Scoter Ring-necked duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	Suitable Habitat • Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration • Sewage treatment ponds and storm water ponds do not qualify as SWH, however a reservoir managed as a large wetland or pond/lake does qualify • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) Suggested Criteria Studies carried out and verified presence of: • Aggregations of 100 or more of listed species for 7 days, results in > 700 waterfowl use days • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH • Wetland area and shorelines associated with sites identified within the Significant Wildlife Habitat Technical Guide (SWHTG) (MNRF 2000) Appendix K are SWH	• No suitable habitat or associated species present on the subject property.
Shorebird Migratory Stopover Area Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1	Suitable Habitat • Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats • Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH	• No suitable habitat or associated species present on the subject property.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Suggested Criteria • Presence of 3 or more of listed species and > 1000[i] shorebird use days during spring or fall migration period. (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period) • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100 Whimbrel used for 3 years or more is significant • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100 m radius area	
Raptor Wintering Area Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class; Forest: FOD, FOM, FOC. Upland: CUM; CUT; CUS; CUW. Bald Eagle: Forest community Series: FOD, FOM, FOC, SWD, SWM or SWC on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area)	Suitable Habitat • The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors • Raptor wintering (hawk/owl) sites need to be > 20 ha with a combination of forest and upland Suggested Criteria Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or at least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area	• No suitable combination of vegetation communities or associated species present on the subject property.
Bat Hibernacula Big Brown Bat Tri-colored Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	Suitable Habitat • Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Suggested Criteria • All sites with confirmed hibernating bats are SWH • The area includes 200m radius around the entrance of the hibernaculum for most development types and for wind farms	• No suitable habitat or associated species present on the subject property.
Bat Maternity Colonies Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Suitable Habitat • Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH) • Maternity colonies located in mature deciduous or mixed forest stands with >10/ha large diameter (>25cm dbh) wildlife trees • Female bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2 • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred Suggested Criteria • Maternity colonies with confirmed use by; – >10 Big Brown Bats	• Forest communities (FOD) on and adjacent to the subject property are potentially support for this type of habitat.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
		– >5 Adult Female Silver-haired Bats – The area of the habitat includes the entire woodland or the forest stand ELC Ecosite or an Ecoelement containing the maternity colonies	
Turtle Wintering Areas Midland Painted Turtle Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles; ELC Community Classes; SW, MA, OA and SA, ELC Community Series; FEO and BOO Northern Map Turtle; Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering	Suitable Habitat • For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH Suggested Criteria • 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 deep-water pool where the turtles are over wintering is the SWH	No suitable habitat or associated species present on the subject property.
Reptile Hibernaculum Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Milksnake Eastern Ribbonsnake	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice, Cave, and Alvar sites may be directly related to these habitats. Observations or congregations of snakes on sunny warm days in the spring or fall is a good indicator.	Suitable Habitat • For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural 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 • 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 Suggested Criteria Studies confirming: • 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 (e.g. foundation or rocky slope) on sunny warm days in spring	• No suitable habitat observed on the subject property.
Colonially-Nesting Bird Breeding Habitat (Bank and Cliff) Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns. Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	Suitable Habitat • Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles • Does not include a licensed/permitted Mineral Aggregate Operation Suggested Criteria Studies confirming: • Presence of 1 or more nesting sites with 8 or more cliff swallow pairs or 50 bank swallow 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	• No suitable habitat present on the subject property..
Colonially-Nesting Bird Breeding Habitat (Tree/Shrubs) Great Blue Heron	SWM2 SWM3 SWM5 SWM6 SWD1	Suitable Habitat • 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 suitable habitat or associated species present on the subject property.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
Black-crowned Night-Heron Great Egret Green Heron	SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	Suggested Criteria Studies confirming: • Presence of 2 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 <15.0 ha with a colony is the SWH	
Colonially-Nesting Bird Breeding Habitat (Ground) Herring Gull Great Black-backed Gull Little Gull Common Tern Caspian Tern Brewer's Blackbird	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	Suitable Habitat • Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands Suggested Criteria Studies confirming: • 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 • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant • Presence of 5 or more pairs for Brewer's Blackbird • The edge of the colony and a minimum 150m area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH	• No suitable habitat present on the subject property.
Migratory Butterfly Stopover Areas Painted Lady Red Admiral Monarch	Combination of ELC Community Series; need tov have present one Community Series from each landclass: Field: CUM CUT CUS Forest: FOC FOD FOM CUP Anecdotally, a candidate site for butterfly stopover will have a history of butterflies being observed.	Suitable Habitat • A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario or Lake Erie • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest Suggested Criteria Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct). MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. • Numbers of butterflies can range from 100-500/day - significant variation can occur between years and multiple years of sampling should occur • MUD of >5000 or >3000 with the presence of Painted Ladies or Red Admirals is to be considered significant	• No suitable habitat or associated species present on the subject property.
Landbird Migratory Stopover Areas All migratory songbirds	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Suitable Habitat • Woodlots >5 ha in size and within 5 km of Lake Ontario and Lake Erie • If woodlands are rare in an area of shoreline, woodland fragments 2 ha to 5ha can be considered for this habitat • If multiple woodlands are located along the shoreline those Woodlands <2 km from Lake Erie or Ontario 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 and located within 5km of Lake Ontario are Candidate SWH Suggested Criteria Studies confirm:	• Contiguous forest communities (FOD) on and adjacent to the subject property are potential for this type of habitat.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
		• Use of the woodlot by >200 birds/day and with >35 species with at least 10 bird spp. recorded on at least 5 different survey dates • This abundance and diversity of migrant bird species is considered above average and significant	
Deer Winter Congregation Areas White-tailed Deer	All Forested Ecosites with these ELC Community Series; FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50 ha may also be used.	Suitable Habitat • Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots >50 ha • Deer movement during winter in Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands • Large woodlots > 100 ha 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 Suggested Criteria Studies confirm: • Deer management is an MNR responsibility, deer winter congregation areas considered significant will be mapped by MNRF • Use of the woodlot by white-tailed deer will be determined by MNR, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF	• No suitable habitat identified on the subject property or adjacent lands.
Cliffs and Talus Slopes	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	• A Cliff is vertical to near vertical bedrock >3m in height • A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris • Most cliff and talus slopes occur along the Niagara Escarpment Suggested Criteria • ELC Communities: TAO, TAS, TAT, CLO, CLS or CLT	• Not present on the subject property or adjacent lands.
Sand Barren	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow, (SBO1), thicket- like (SBS1), or more closed and treed (SBT1). Tree cover always < 60%.	• Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion • 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% Suggested Criteria • A sand barren area >0.5 ha in size • ELC Communities: SBO1, SBS1, SBT1 • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics)	• Not present on the subject property or adjacent lands.
Alvar	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum	• An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil • The hydrology of alvars is complex, with alternating periods of inundation and drought • Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant • Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animal species. • Vegetation cover varies from patchy to barren with a less than 60% tree cover Suggested Criteria • An Alvar site > 0.5 ha in size	• Not present on the subject property or adjacent lands.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
	3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 7E	• Alvar is particularly rare in ecoregion 7E where the only known sites are found in the western islands of Lake Erie • Five indicator species specific to alvars within Ecoregion 7E: *1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum* • Field studies identify four of the five Alvar indicator species within ELC communities: ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2 • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics) • The Alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses	
Old Growth Forest	Community Series: FOD FOC FOM SWD SWC SWM	• Old-growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris. Suggested Criteria • Woodland area is >0.5 ha • If dominant trees species of the ecosite are >140 years old, then stand is SWH • The-forested area containing the old growth characteristics will have experienced no recognizable forestry activities (cut stumps will not be present) • The area of forest ecosites combined or an eco-element within an ecosite that contain the old growth characteristics is the SWH	• Not present on the subject property or adjacent lands.
Savannah	TPS1 TPS2 TPW1 TPW2 CUS2	• A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60% • In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario) Suggested Criteria • 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 • Field studies confirm one or more of the Prairie indicator species listed in Appendix N should be present. Note: Prairie plant spp. list from Ecoregion 7E should be used • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics)	• Not present on the subject property or adjacent lands.
Tallgrass Prairie	TPO1 TPO2	• A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover • In ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario) Suggested Criteria • 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 • ELC communities TPO1, TPO2 • Field studies confirm one or more of the Prairie indicator species listed in Appendix N in SWHTG (MNRF 2000) should be present • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics)	• Not present on the subject property or adjacent lands.
Other Rare Vegetation Communities	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of	• Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG (MNRF 2000) • Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps • ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in SWHTG (MNRF 2000) Appendix M	No rare vegetation communities present on subject property or adjacent lands.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
	the SWHTG. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	• The MNRF/NHIC will have up to date listing for rare vegetation communities	
Specialized Habitat for Species			
Waterfowl Nesting Area American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4	Suitable Habitat • A waterfowl nesting area extends 120 m from a wetland (> 0.5 ha) or a wetland (>0.5 ha) with 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 • Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests Suggested Criteria Studies confirmed: • 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 • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40 cm dbh) in woodlands for cavity nest sites	• No suitable habitat or associated species present on the subject property.
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	Suitable Habitat • Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms) Suggested Criteria Studies confirm the use of these nests by: • 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 [ccvii], maintaining undisturbed shorelines with large trees within this area is important • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat • 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	• No suitable habitat or associated species present on the subject property.
Woodland Raptor Nesting Habitat Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD, CUP3	Suitable Habitat • All natural or conifer plantation woodland/forest stands combined >30ha or with >4 ha of interior habitat. Interior habitat determined with a 200 m 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 island • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest Suggested Criteria Studies confirm:	• No suitable habitat present on the subject property.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
		• 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 of suitable 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	
Turtle Nesting Areas Midland Painted Turtle Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) cxlviii or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	Suitable Habitat • Exposed mineral soil (sand or gravel) areas adjacent (<100 m) to within the following Ecosites:MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, BOO1, FEO1 • Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas • Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used Suggested Criteria Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting • 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	• No suitable habitat present on the subject property.
Seeps and Springs Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Suitable Habitat • Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system (could contain a seep or spring - areas where ground water comes to the surface) • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species • The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation the habitat Suggested Criteria Studies confirm: • Presence of a site with 2 or more seeps/springs should be considered SWH • The area of an ELC forest ecosite containing the seeps/springs is the SWH	No seeps or springs were observed in the subject property or adjacent lands.
Amphibian Breeding Habitat (Woodland) Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely	Suitable Habitat • Presence of a wetland, pond, or woodland pool 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 Suggested Criteria Studies confirm;	• No suitable habitat present on the subject property.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
	to be used due to reduced risk to migrating amphibians	• Presence of breeding population of 1 or more of the listed salamander species or 2 or more of the listed frog species with at least 20 individuals (adults, juveniles, eggs/larval masses) or 2 or more of the listed frog species with Call Level Codes of 3	
Amphibian Breeding Habitat (Wetland) Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands	Suitable Habitat • Wetlands >500 m^2 (about 25 m 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 • Bullfrogs require permanent water bodies with abundant emergent vegetation. Suggested Criteria Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog or toad species and with at least 20 individuals (adults, juveniles, eggs/larval masses) or 2 or more of the listed frog species with Call Level Codes of 3 • The ELC ecosite wetland area and the shoreline are the SWH	No suitable habitat present on the subject property.
Woodland Area-Sensitive Bird Breeding Habitat Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series; FOC FOM FOD SWC SWM SWD	Suitable Habitat • 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 Suggested Criteria Studies confirm: • 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	• Two woodland area-sensitive species (listed in column 1) were documented within the woodland on the subject property. The woodland does not meet the size threshold or support interior forest to be considered significant.
Habitat for Species of Conservation Concern			
Marsh Bird Breeding Habitat American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	Suitable Habitat • 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 Suggested Criteria Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species • Note: any wetland with breeding of 1 or more Trumpeter Swans, Black Terns or Yellow Rail is SWH	• No suitable habitat or associated species present on the subject property.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
		• Area of the ELC ecosite is the SWH	
Open Country Bird Breeding Habitat Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Short-eared Owl	CUM1, CUM2	Suitable Habitat • 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 Suggested Criteria Field Studies confirm: • 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	• No suitable habitat or associated species present on the subject property.
Shrub/Early Successional Bird Breeding Habitat <u>Indicator Species</u>: Brown Thrasher Clay-coloured Sparrow <u>Common Species:</u> Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher <u>Special Concern:</u> Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2	Suitable Habitat • Large natural field areas succeeding to shrub and thicket habitats >10ha[clxiv] in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years) • 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. Suggested Criteria Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat • The area of the SWH is the contiguous ELC ecosite field/thicket area	• No suitable habitat or associated species present on the subject property.
Terrestrial Crayfish Chimney or Digger Crayfish (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish (*Cambarus Diogenes*)	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.	Suitable Habitat • Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish • Constructs burrows in marshes, mudflats, meadows; the ground can't be too moist • Can often be found far from water • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels; usually the soil is not too moist so that the tunnel is well formed Suggested Criteria Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites • Area of ELC Ecosite polygon is the SWH	• No suitable habitat present on the subject property.
Special Concern and Rare Wildlife Species		• All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species • When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially rare species	A single Eastern Wood Pewee, a species of Special Concern, was recorded within the woodland on the east side of the subject property.

Wildlife Habitat Category and Associated Species*	ELC Communities	Provincial Guidance for Ecoregion 7E*	Assessment of Subject Property and Adjacent Lands
		• Linking candidate habitat on the site needs to be completed to ELC Ecosites Suggested Criteria Studies confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable • Habitat form and function needs to be assessed from the assessment of ELC vegetation types and an area of significant habitat that protects the rare or special concern species identified • 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			
Amphibian Movement Corridors Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog		• Animal movement corridors should only be identified as SWH where a confirmed or Candidate SWH has been identified by MNRF or the planning authority • Movement corridors between breeding habitat and summer habitat • Movement corridors must be considered when amphibian breeding habitat is confirmed as SWH • 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 be at least 15 m of vegetation on both sides of waterway or be up to 200 m wide of woodland habitat and with gaps <20 m • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat	No suitable habitat

* Adapted from the listed species and habitat criteria provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E* (MNRF 2015) but updated to reflect any relevant changes in species status. For example, Tri-coloured Bat (*Perimyotis subflavus*) is now listed as Threatened so needs to be addressed under the *Endangered Species Act* and not under SWH.


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