



74 Berkeley Street, Toronto, ON M5A 2W7
Tel: 647-795-8153 | www.pecg.ca

Hillsburgh Subdivision – Environmental Impact Study

63 and 63A Trafalgar Road

Palmer Project #
2105001

Prepared For
Beachcroft Investments Inc.

March 10, 2023

March 10, 2023

Uzo Rossouw
Beachcroft Investments Inc.
20 Cachet Woods Court, Suite 6
Markham, ON L6C 3G1

Dear Uzo Rossouw,

Re: Hillsburgh Subdivision – Environmental Impact Study
Project #: 2105001

Palmer is pleased to submit the attached Environmental Impact Study (EIS) for the proposed subdivision development located within the Hillsburgh Urban Area, on the north side of Trafalgar Road, and west of County Road 22.

The findings of our study are the result of a background review, field investigations, an assessment of ecological features and functions, as well as the reference to natural heritage policy and regulations. This report identifies environmental constraints and development opportunities of the Subject Property. Based on the findings and recommendations of this EIS, it is our professional opinion that with the implementation of the mitigation measures as provided in this report, the proposed development is environmentally feasible and no negative impacts to the natural environment are expected.

Please let us know if you have questions or comments on this submission.

Yours truly,

Palmer™



Austin Adams, M.Sc., EP
Senior Ecologist

Table of Contents

Letter

1.	Introduction	1
1.1	Objectives	1
2.	Environmental Policy Framework.....	3
2.1	Provincial Policy Statement (2020)	3
2.2	Wellington County Official Plan	4
2.3	Town of Erin Official Plan.....	5
2.4	Credit Valley Conservation Authority Policies and Procedures.....	6
2.5	Endangered Species Act (2007)	7
2.6	Migratory Birds Convention Act (1994).....	8
3.	Study Approach.....	9
3.1	Background Review	9
3.2	Agency Consultation	10
3.3	Field Investigations	10
3.3.1	Vegetation Communities and Flora.....	10
3.3.2	Amphibian Breeding Surveys.....	11
3.3.3	Breeding Bird Surveys	11
3.3.4	Tree Inventory	11
3.3.5	Incidental Wildlife Observations.....	12
3.4	Species at Risk Screening	12
3.5	Significant Wildlife Habitat Screening.....	12
3.6	Headwater Drainage Features Assessment.....	12
4.	Existing Conditions.....	13
4.1	Physiography	13
4.2	Vegetation Communities	13
4.2.1	Terrestrial System.....	13
4.2.2	Wetland System.....	20
4.3	Flora	21
4.3.1	Butternut / Walnut Hybrids	22
4.4	Wildlife	23
4.4.1	Breeding Birds.....	23
4.4.2	Breeding Amphibians.....	24
4.4.3	Incidental Wildlife Observations.....	25
4.5	Headwater Drainage Features	25
5.	Assessment of Significance.....	27
5.1	Species at Risk	27

5.1.1	Endangered Bats	27
5.2	Wetlands.....	28
5.2.1	Water Balance.....	28
5.3	Woodlands.....	28
5.3.1	Northeastern Woodland Units.....	28
5.3.2	Cultural Woodlands.....	29
5.4	Significant Wildlife Habitat.....	30
5.4.1	Bat Maternity Colonies.....	30
5.4.2	Turtle Wintering Areas	30
5.4.3	Turtle Nesting Areas	30
5.4.4	Seeps and Springs.....	31
5.4.5	Amphibian Breeding Habitat (Woodland)	31
5.4.6	Woodland Area-Sensitive Bird Breeding Habitat	31
5.4.7	Special Concern and Rare Wildlife Species	32
6.	Proposed Development	33
7.	Impact Assessment and Mitigation	35
7.1	Significant Woodland	35
7.1.1	Setbacks and Adjacent Uses	35
7.1.2	Trailway Restoration Concept.....	36
7.1.2.1	Soil Preparation	37
7.1.2.2	Tree and Shrub Planting.....	37
7.1.2.3	Seed Mixtures	38
7.1.2.4	Existing Trail	39
7.1.2.5	Conveyance and Maintenance	39
7.2	Wetlands.....	39
7.2.1	Setbacks	39
7.3	Species at Risk	39
7.3.1	Endangered Bat Maternity Roost Habitat	39
7.4	Significant Wildlife Habitat.....	40
7.5	Tree Removal	40
7.6	Planned Green Spaces and Offsetting	41
7.7	Timing Windows.....	41
7.8	Erosion and Sediment Control Plan	41
7.9	Invasive Species Management	42
7.9.1	Construction Equipment.....	42
7.9.2	Equipment Cleaning Stations.....	42
8.	Policy Conformity.....	44
8.1	Provincial Policy Statement (2020)	44
8.2	Wellington County Official Plan	44
8.3	Town of Erin Official Plan.....	44
8.4	Credit Valley Conservation Authority Policies and Procedures.....	45
8.5	Endangered Species Act (2007)	45
8.6	Migratory Birds Convention Act (1994).....	46

9. Conclusions	47
10. Certification	48
11. References	49

List of Figures

Figure 1. Site Location	2
Figure 2. Existing Environmental Conditions	14
Figure 3. Proposed Development	34

List of Tables

Table 1: Field Investigations	10
Table 2: Breeding Amphibians Recorded (2021).....	24
Table 3: CVC Upland Native Meadow Seed Mix	38

List of Appendices

Appendix A.	Terms of Reference and Agency Responses
Appendix B.	Flora List
Appendix C.	Butternut DNA Testing Results
Appendix D.	Breeding Bird Inventory
Appendix E.	Species at Risk Screening
Appendix F.	Significant Wildlife Habitat Screening
Appendix G.	Subdivision Concept Plan

1. Introduction

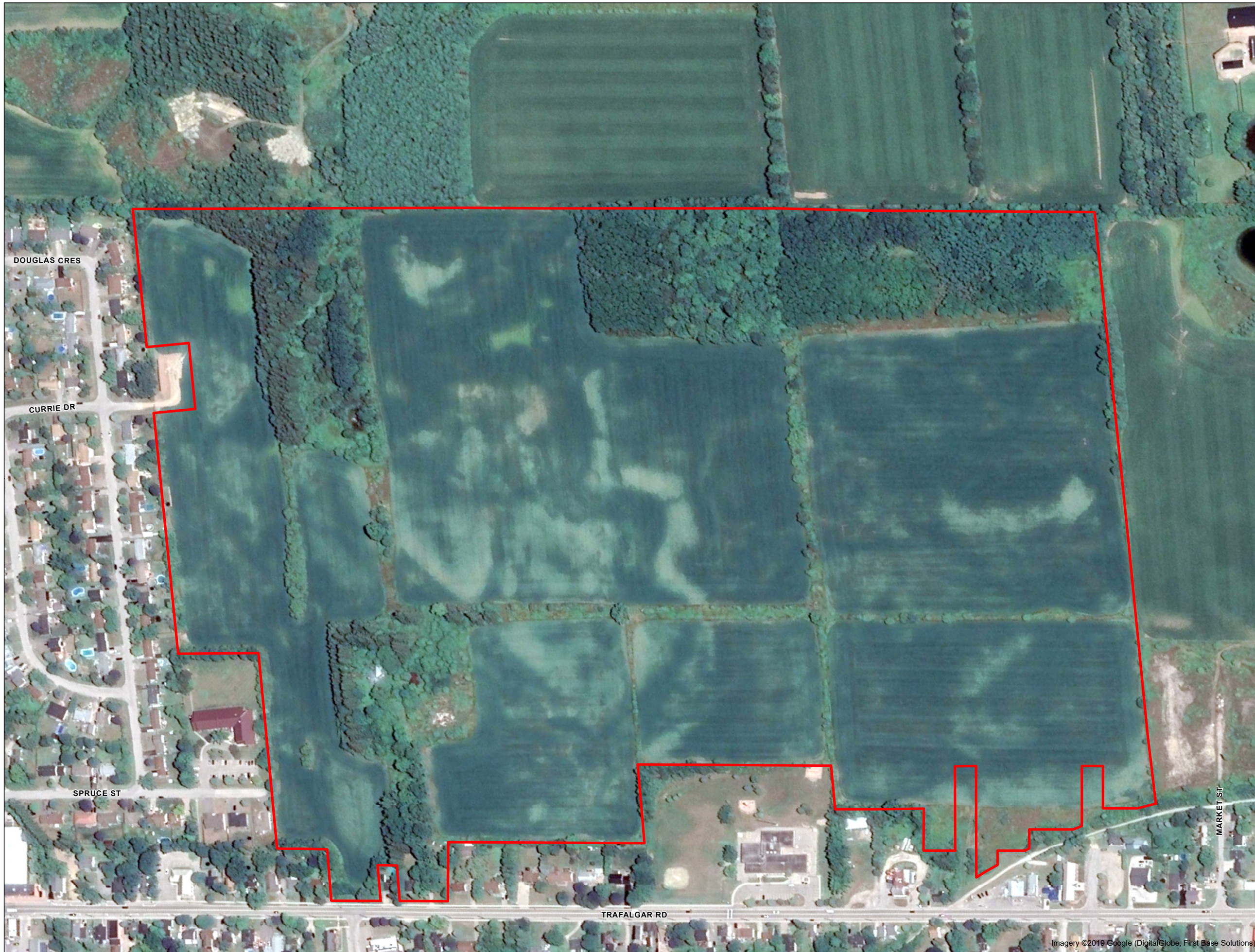
Palmer has been retained to complete this Environmental Impact Study (EIS) for the proposed Plan of Subdivision application for the property located southeast of the developed area of Hillsburgh, on the north side of Trafalgar Road, and west of County Road 22 (the “Subject Property”) (**Figure 1**), in the Town of Erin (the “Town”), County of Wellington (the “County”).

The Subject Property is 52 hectares (ha) and is largely agricultural fields interspersed with fencerows. A former homestead area extends into the property from the 63 Trafalgar Road street address. On the northeastern side of the property, two woodlands are found, the northern one containing a wetland with an open pond. The topography gently slopes down towards Trafalgar Road, though the two woodlands are steeper to the northern property limits. The Subject Property is located in the Credit Valley Conservation’s (CVC) West Credit River subwatershed. The northern portion of the Subject Property is partly regulated by CVC under the Ontario Regulation 166/06.

1.1 Objectives

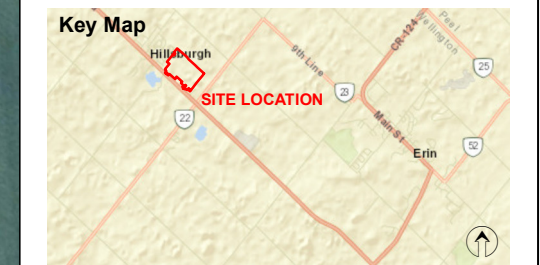
The purpose of this EIS is to identify environmental constraints and development opportunities to inform the draft plan of subdivision application for the Subject Property, assess potential impacts from the proposed development, and provide mitigation measures where appropriate. The EIS includes a description and background review of the ecological characteristics of the Subject Property, their functions, significance and sensitivity. The report includes a description of field survey results, habitat screening for potential Species at Risk (SAR), assessment of feature significance and presence of Significant Wildlife Habitat (SWH). The EIS provides the identification of potential impacts and recommended mitigation measures. The goals of this report are the following:

- Determine the environmental constraints and development opportunities;
- Demonstrate consistency, compliance or conformity, as the case may be, with the applicable natural environment policies and regulations; and,
- Confirm that the proposed development can proceed in a manner that will not result in negative impacts to significant ecological features and functions.



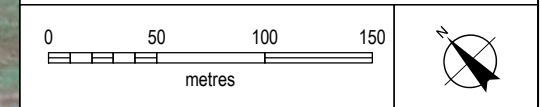
LEGEND:

Subject Site (52.23 ha)



CLIENT:
Ballantry Homes

PREPARED BY:
Palmer™



PROJECT: Hillsburgh Due Dlligence	
PROJECT NO. 2105001	REVISION: 1-1
DATE: Mar 10, 2023	SCALE: 1:3500
DRAWN: CV	DATUM: NAD 1983
CHECKED: AA	PROJECTION: UTM zone 17

Site Location

Figure 1

2. Environmental Policy Framework

The environmental policies applicable to the Subject Property have been reviewed with specific relevant policies summarized in the following sections. The environmental policies of the Province, County of Wellington OP, Town of Erin Official Plan (OP), Credit Valley Conservation (CVC) policies, the provincial *Endangered Species Act, 2007* (ESA), and federal *Migratory Birds Convention Act, 1994* (MBCA) have all been considered. A summary for each policy's *site-specific relevance* to the Subject Property is provided.

2.1 Provincial Policy Statement (2020)

The *Provincial Policy Statement* (PPS) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources. Section 2.1 of the PPS defines ten Natural Heritage Features (NHF) and adjacent lands and provides planning policies for each. Of these NHF, development is not permitted in:

- Significant Coastal Wetlands;
- Significant Wetlands in Ecoregions 5E, 6E and 7E;
- Fish Habitat, except in accordance with provincial and federal requirements; or
- Habitat of species designated as Endangered and Threatened, except in accordance with provincial and federal requirements.

Additionally, unless it can be demonstrated through an Environmental Impact Study (EIS) that there will be no negative impacts on the natural features or their ecological functions, development and site alteration are also not permitted in:

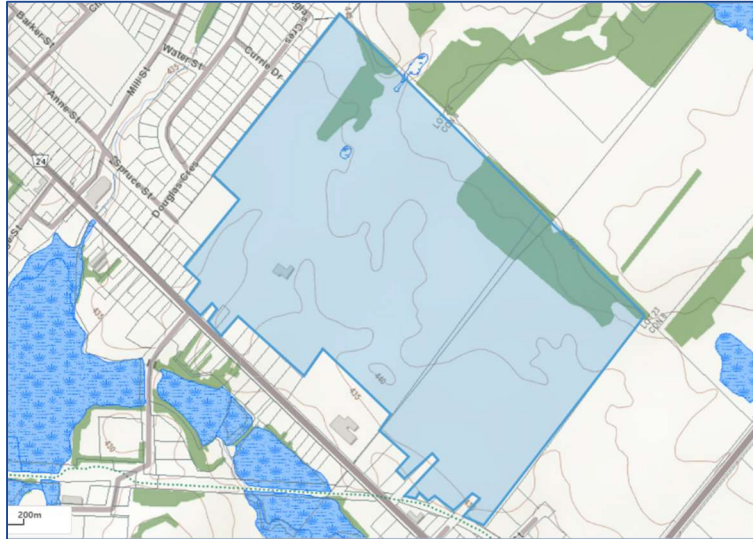
- Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Wildlife Habitat;
- Significant Areas of Natural and Scientific Interest;
- Other Coastal Wetlands in Ecoregions 5E, 6E and 7E; and
- Lands defined as *Adjacent Lands* to all the above natural heritage features.

Each of these natural heritage features is afforded varying levels of protection subject to guidelines, and in some cases, regulations.

Site-specific Relevance of the PPS

- The Subject Property is located within Ecoregion 6E (Crins, Gray, Uhlig, & Wester, 2009).
- There are no Provincially designated significant features (e.g., Provincially Significant Wetlands, Areas of Natural and Scientific Interest) found within or adjacent to the Subject Property (**Map A**). It was noted that there are PSWs (Alton Hillsburgh and West Credit River Wetland Complexes) and one ANSI (Hillsburgh Meltwater Channel) to the north and south of the property.

- There is mapped woodland on the Subject Property, which is defined as Significant Woodland by Regional policy.
- There are small pockets of unevaluated wetlands associated with these woodlands.
- No watercourses or drainage features that may provide direct fish habitat were detected on the Subject Property.



Map A. NHIC Map depicts the Subject Property within woodland features (green layer) and small pockets of unevaluated wetlands (light blue layer)

2.2 Wellington County Official Plan

The *Wellington County Official Plan (OP)*, 2019 Consolidation, designates the Subject Property an ‘Urban Center’ (County of Wellington, 2019). The County’s Greenland System is illustrated beyond the Urban System (**Map B**), as depicted on the County’s OP Schedule A2.

According to Section 9.9.7 (a):

“Towns/Villages, within the boundaries shown on Schedules A2-1 and A7-3, continue to be governed by this Plan and local Official Plans and related programs or initiatives, and are not subject to the policies of the Greenbelt Plan, except for the Urban River Connections policies in Section 9.9.5.”

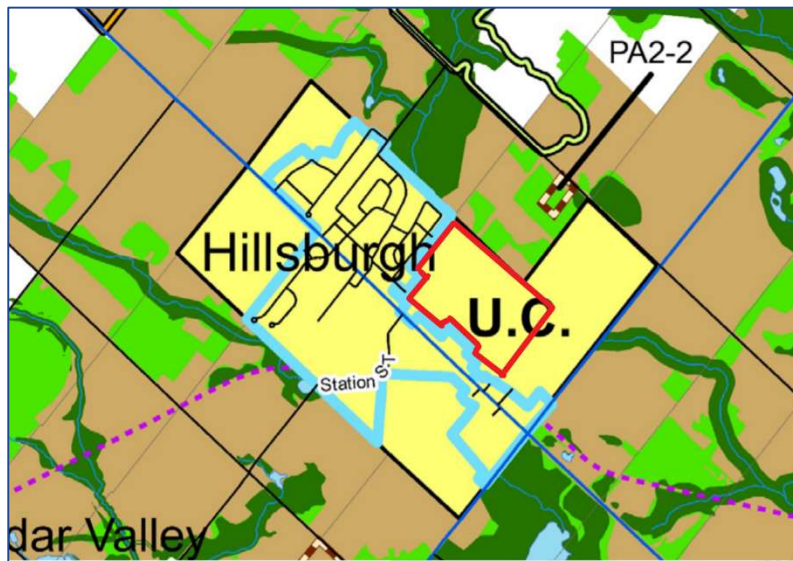
Section 9.9.5 (a) also states that:

“The Natural Heritage System, including the natural features policies of Section 9.9.6, does not apply within the existing boundaries of settlement areas, but does apply when considering expansions to settlements as permitted by the policies of this Plan. The Natural Heritage System connections within settlement areas should be considered when implementing municipal policies, plans and strategies.”

Section 5.4.1 of the OP states that *all wetlands in the County of Wellington are included in the Core Greenlands*. Development and site alteration is not permitted in PSWs, and other wetlands will be protected

from development *that would seriously impair their future ecological functions*. The appropriate Conservation Authority should be contacted when development is proposed in or adjacent to a wetland.

Under Section 5.5.4 of the County's OP, woodlands over 4 ha and plantations over 10 ha are considered to be significant within the Rural System. In the Urban System, the size criteria for Significant Woodlands are over 1 ha. The Subject Property is in the Urban System and a Designated Greenfield Area. As per Section 5.4.1, wetlands are also considered part of the County Greenlands System, and development within or adjacent to these features is to be completed in consultation with the Conservation Authority (e.g., CVC Permitting, Plan Review).



Map B. The County's OP Schedule A2 depicts the Subject Property within an Urban Centre (yellow layer) and adjacent to Greenlands (light green layer).

Site-specific Relevance of the County's OP

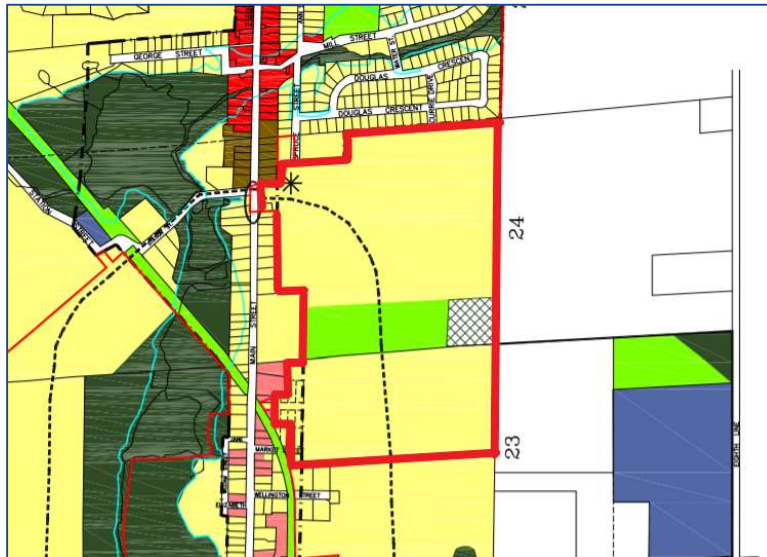
- Significant Woodlands are present within the Subject Property, as defined by County's OP.
- There is also a plantation/cultural woodland that must be evaluated for applicability under the definitions of Significant Woodlands.
- Development within/adjacent to wetlands is to be in consultation with the Conservation Authority (CVC) and be in conformity with those policies (e.g., CVC Plan Review).

2.3 Town of Erin Official Plan

The *Town of Erin Official Plan (OP)*, dated 2012, designates the Subject Property within Residential, Greenlands, and Recreational areas as depicted in the OP's Schedule A-3 (**Map C**). Planning services related to land development and land use policies within the Town of Erin are handled by County of Wellington (Town of Erin, 2012).

Section 4.3.1 of the Town OP states:

“The Greenland designation includes a Core Greenlands component where no development is permitted and a *Greenlands* portion where some development may occur subject to the preparation of an *Environmental Impact Assessment* satisfactory to the Town, the applicable *Conservation Authority* and other applicable agencies.”



Map C. The Town’s OP Schedule A-3 depicts the Subject Property within Residential (yellow layer), Recreational (light green layer), and Greenlands (hatched layer)

Site-specific Relevance of the Town’s OP

- Core Greenlands are not found on the Subject Property. The Recreational and Greenlands designations (**Map C**) do not coincide with existing features on the property.
- An Environmental Impact Assessment/Environmental Impact Study will be required as part of development applications.
- Policy and criteria from the Town and the CVC will need to be applied.

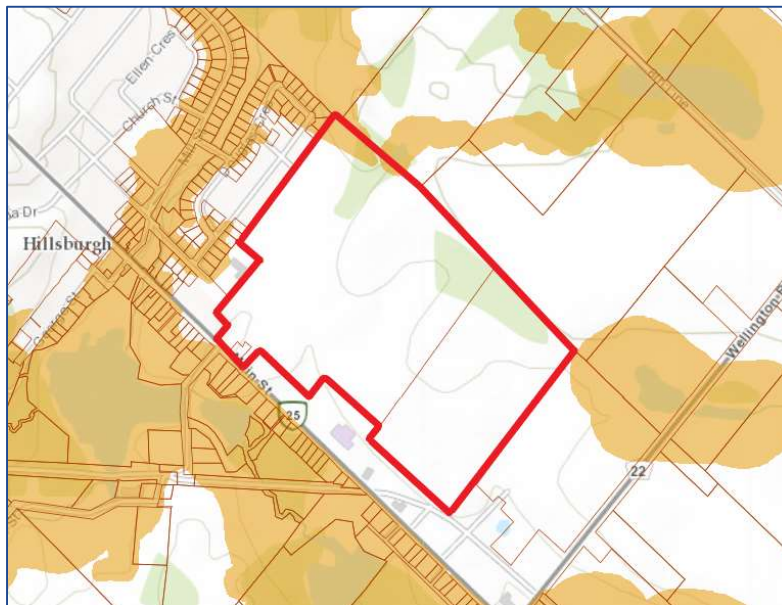
2.4 Credit Valley Conservation Authority Policies and Procedures

Credit Valley Conservation Authority (CVC) regulates hazard lands including watercourses, valleylands, shorelines, and wetlands, including lands adjacent to these features under the *Conservation Authorities Act, 1990* through Ontario Regulation (O. Reg.) 160/06 – *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*. The Regulation allows the CVC to prohibit or regulate development in regulated areas within its jurisdiction where the control of flooding, erosion, dynamic beaches, pollution, or the conservation of land could be impacted by development and in other areas where development could interfere in any way with watercourses or wetlands.

As depicted in the CVC’s regulation mapping, the Subject Property contains lands regulated under O.Reg. 160/06, associated with the northern woodland (**Map D**). Under O.Reg. 160/06, a permit would be required from the CVC prior to development within regulated lands (Credit Valley Conservation Authority, 2010).

The CVC *Watershed Planning and Regulation Policies* provides for criteria to be applied when providing Plan Input and Plan Review for evaluating development proposals. This includes protection of the following features through setback and buffer provisions (Credit Valley Conservation Authority, 2010):

- flood hazard with a 10 m setback;
- watercourse and fish habitat with a 30 m buffer;
- Significant Woodland with a 10 m buffer;
- PSW with a 30 m buffer;
- Other wetlands with a 10 m setback; and
- defined Top of Bank of valleylands with a 10 m setback.



Map D. The CVC's regulation limits within the Subject Property (orange layer)

Site-specific Relevance of CVC Policies

- Wetlands observed within the Subject Property extend the Regulated Area, and would require a development permit if within setbacks, as per CVC policy.
- The CVC policies and criteria would be implemented when reviewing a development proposal. Therefore, setbacks as outlined above would be applied to Significant Woodlands and non-significant wetlands as observed on the Subject Property.

2.5 Endangered Species Act (2007)

Ontario's *Endangered Species Act* (ESA) came into effect on June 30, 2008, and replaced the former legislation. Under the ESA there are over 200 species in Ontario that are identified as extirpated, endangered, threatened, or of special concern (Government of Ontario, 2007).

Species designated as *Threatened* or *Endangered* by the Committee on the Status of Species at Risk in Ontario (COSSARO), otherwise known as Species at Risk in Ontario (SARO), and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation and migration) are afforded legal protection under the ESA).

The protection provisions for species and their habitat within the ESA apply only to those species listed as Threatened or Endangered on the Species At Risk in Ontario list (SARO). Species listed as Special Concern or considered locally rare may be afforded protection through policy instruments respecting significant wildlife habitat as defined by the Province or other relevant authority, or other protections contained in Official Plan policies.

Site Specific Relevance of the ESA

- Species at Risk and potential habitat, together with proposed mitigation are identified through a habitat screening in this EIS to ensure conformity to the Act.
- Grassland breeding birds such as the Eastern Meadowlark (*Sturnella magna*) and Bobolink (*Dolichonyx oryzivorus*) are relatively common Species at Risk for properties in southern Ontario that support open grassland meadow that may include, hayfields and fallow agricultural lands. The plowed agricultural lands are corn row crops that do not represent grassland habitat, and would not support these species.

2.6 Migratory Birds Convention Act (1994)

The *Migratory Birds Convention Act*, MBCA (1994) and Migratory Birds Regulations, MBR (2014), together with the provincial *Fish and Wildlife Conservation Act* (1997), protect most species of migratory birds and their nests and eggs anywhere they are found in Canada. General prohibitions under the MBCA and MBR protect migratory birds, their nests and eggs and prohibit the deposit of harmful substances in waters / areas frequented by them. The MBR includes an additional prohibition against incidental take, which is the inadvertent harming or destruction of birds, nests or eggs.

Compliance with the MBCA and MBR is best achieved through a due diligence approach, which identifies potential risk, based on a site-specific analysis in consideration of the Avoidance Guidelines and Best Management Practices information on the Environment Canada website (Government of Canada, 2018).

Site Specific Relevance of the MBCA

- Tree removal will be required as part of this proposed development. Timing windows and avoidance measures will need to be implemented to ensure that breeding birds are not impacted by the clearing and construction of the development.

3. Study Approach

3.1 Background Review

Palmer has reviewed relevant background material to provide a focus to field investigations and ensure compliance with applicable regulations and policy. Background information collection is guided by the *Natural Heritage Information Request Guide* (Ministry of Natural Resources and Forestry, 2018). Current direction from the Ministry of Natural Resources and Forestry (MNRF) and Ministry of Environment, Conservation and Parks (MECP) is to gather natural heritage information and species occurrence records from available sources; the NHIC Make-a-Map application being the main source of information and records from the Ministry itself (Ministry of Natural Resources and Forestry, 2023). Information gathered is recommended to be balanced and supplemented by professional ecological review of potential habitats and characteristics of a project site.

Background review for the Subject Property included the collection of relevant mapping and reports, including regulations and policies, Official Plans, and zoning by-laws; and the NHIC Make-a-Map application for species occurrences and designated area mapping. In addition to these sources, the following data sources were reviewed for the project:

- **Natural Heritage Information Centre (NHIC):** SAR Records and natural heritage features (Ministry of Natural Resources and Forestry, 2023).
- **Land Information Ontario (LIO):** certain data types including aquatic resource area (ARA) information is available through these publicly available data layers (2023).
- **Atlas of the Breeding Birds of Ontario:** Provides range maps and other information regarding breeding birds in Ontario (Bird Studies Canada, 2023).
- **Ontario Reptile & Amphibian Atlas:** Provides range maps and other information regarding reptile and amphibian species observed in Ontario (Ontario Nature, 2023).
- **Fisheries and Oceans Canada (DFO):** The DFO maintains mapping of aquatic species at risk (SAR) habitats, including the critical habitat, occupied and contributing habitat ranges of SAR and Special Concern species (Fisheries and Oceans Canada, 2023).
- **Aerial Photography:** Available on-line mapping sources were reviewed to identify current potential habitat types, biogeography and terrain.

Other sources of information, such as aerial photography and topographic maps, were also consulted prior to commencing field assessments. Following the *Information Request Guide*, MECP advice and direction should be solicited once Species at Risk (SAR) interactions or potential interactions are identified via field investigation and analysis.

The on-site wetland was reviewed in relation to the TRCA *Wetland Water Balance Risk Evaluation* Guideline to assess the need for a feature-based water balance (Toronto and Region Conservation Authority, 2017).

3.2 Agency Consultation

Natural heritage information for the Subject Property and adjacent lands was obtained from the CVC through a formal data request process, and additional information was obtained from MNRF's Make-a-Map online mapping tool (MNRF, 2023).

A Terms of Reference of the EIS (August 27, 2021) was circulated to the CVC and the County for review. Comments were received from the CVC on August 11, 2021. After integrating the CVC provided comments, approval of the TOR was sent by the CVC on October 13, 2021. The Town and County provided input into natural heritage considerations in the Pre-consultation Meeting Response of March 30, 2022. All comments have been reviewed and taken into account in the preparation of this EIS (**Appendix A**).

In developing the TOR and determining ecological constraints, an agency site meeting was conducted on June 16, 2021 with representatives from the CVC, Town and County, as well as a Palmer ecologist and the client. The natural features of the property were reviewed, and the wetland within the northern woodland was staked with the attendees and surveyed by an Ontario Land Surveyor (OLS). This discussion provided context for the August 11, 2021 comments on the TOR.

3.3 Field Investigations

Field investigations were conducted to collect existing conditions data on flora, fauna, features and ecological functions. Palmer conducted field investigations between June and July 2021 (**Table 1**). Additional tree inventory and ecological overview studies were completed in October and November 2022.

Table 1: Field Investigations

Field Investigations	Dates	Weather Conditions
General Ecology, Vegetation Communities and Flora	June 2, 2021	Sunny, no wind, 19°C
	July 22, 2021	Partially cloudy, light wind, 23°C
General Site Visit, wetland delineation/staking	July 16, 2021	No data; no precipitation, hot.
Amphibian Breeding Surveys	June 6, 2021	Clear sky, light wind, 19°C
Breeding Bird Surveys	June 20, 2021	Sunny, light wind, 12°C
	July 3, 2021	Sunny, light wind, 12°C
Tree Inventory	October 24, 2022	Partially cloudy (5%), light wind, 9 - 20°C
	November 4, 2022	No data; clear
	November 10, 2022	No data; clear

3.3.1 Vegetation Communities and Flora

Vegetation communities were mapped and described following the Ecological Land Classification (ELC) System for Southern Ontario (Lee, *et al.*, 1998). Vegetation community boundaries were delineated on field maps through the interpretation of recent aerial photographs and refined in the field. Information collected during ELC surveys includes dominant species cover, community structure, as well as level of disturbance, presence of indicator species, and other notable features.

A two-season botanical survey was completed by Palmer on June 2 and July 22, 2021, by traversing the Subject Property and recording species observed. As the defined natural features on the Subject Property are generally avoided, the need for a 3-season inventory was not considered necessary (**Appendix A**). Local plant rarity status for the Subject Property is based on CVC/Peel species ranks (Credit Valley Conservation Authority, 2002). Provincial plant status was based on the *Provincially Rare Flora of Ontario* (Oldham & Brinker, 2009) and the NHIC (Ministry of Natural Resources and Forestry, 2023). Searches for Butternut (Endangered) were completed during the botanical surveys.

A wetland confirmation visit was conducted on June 16, 2021 with the CVC in attendance. The boundaries of wetlands within the limits of the Subject Property were delineated in accordance with the Ontario Wetland Evaluation System (OWES) protocols (Ontario Ministry of Natural Resources, 2014), and staked by an OLS for mapping.

3.3.2 Amphibian Breeding Surveys

Breeding Amphibian Surveys were completed along the north of the Subject Property. An amphibian breeding survey was completed on June 6, 2021, following the Environment Canada's *Marsh Monitoring Program* protocol for surveying amphibians (Bird Studies Canada, 2009). The survey method provides an indication of amphibian abundance during the breeding season. Species were identified by call, and an abundance code for each species heard calling was assessed by the following the Amphibian Monitoring protocol:

- Code 0: No calls heard.
- Code 1: Calls not overlapping or simultaneous, number of individual frogs can be counted.
- Code 2: Calls overlapping or simultaneous, number of individuals can still be distinguished, number of individual frogs cannot be counted, but a reliable estimate of numbers can be made based on location and call voices.
- Code 3: Full chorus, calls simultaneous and overlapping, numbers of calling males cannot be reasonably counted or estimated.

3.3.3 Breeding Bird Surveys

Palmer completed a wandering survey throughout the entirety of the Subject Property. Breeding bird surveys were conducted following the principles of the *Ontario Breeding Bird Atlas Guide for Participants* (Bird Studies Canada, 2001). Palmer conducted two breeding bird surveys for most bird species in southern Ontario, more than one week apart within the peak breeding season, on June 20 and July 3, 2021. Surveys were conducted between dawn and 10 a.m. when the wind speed was less than 20 km/h and it was not raining or only light rain. The surveyor recorded all bird species seen and heard within and flying over the survey area on each site visit. The number, breeding evidence, and approximate location of each bird or bird group were recorded on the site map.

3.3.4 Tree Inventory

A tree inventory was completed for the Subject Property on October 24, November 4 and 10, 2022. The data collection methods used follow the *Engineering Design Standards Manual* (Town of Erin, 2021). Within areas of proposed disturbance, all trees >10 cm Diameter at Breast Height (DBH) were inventoried within and adjacent to the Subject Property. Information collected during the inventory included species name,

tree tag number, geo-location, DBH, a general health assessment (structure, vigour, overall), mature tree size (small, large), and notes on tree trunk and canopy conditions. Trees within areas that are to be protected with setbacks were not inventoried, as these setbacks would be larger than defined Tree Protection Zones (TPZ).

3.3.5 Incidental Wildlife Observations

Incidental observations of wildlife were recorded during all visits to the Subject Property. Recorded wildlife observations included direct and indirect evidence. Direct evidence included visual or auditory observations of species. Evidence considered “indirect” included observation of tracks, scat, and browse.

3.4 Species at Risk Screening

For the purposes of this report, Species at Risk (SAR) include species listed as Endangered, Threatened or Special Concern under Ontario’s ESA. The protection provisions for species and their habitat within the ESA apply only to those species listed as endangered or threatened on the SARO list. Special Concern species may be afforded protection through policy instruments respecting significant wildlife habitat as defined by the Province or other relevant authority, or other protections contained in Official Plan policies.

Prior to field work, existing SAR records were queried with the NHIC database and other online resources. Habitat opportunities for SAR on the site were then assessed by comparing habitat preferences of species deemed to have potential to occur against current site conditions. The species noted during the NHIC search and others known through professional experience to have potential to occur were considered in the assessment.

3.5 Significant Wildlife Habitat Screening

The criteria for the identification of Significant Wildlife Habitat features are provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (Ontario Ministry of Natural Resources and Forestry, 2015). These criteria were used to screen wildlife habitat within the Subject Property for potential SWH types. Along with field observations and geographical analysis, these criteria were used to provide an assessment and screening for wildlife habitat within the Subject Property for potential SWH within and immediately adjacent to the Subject Property.

3.6 Headwater Drainage Features Assessment

Figure 1 shows that there is the potential in the agricultural fields for moisture variation that may translate into HDF. Therefore, an evaluation for HDF was conducted during ecological surveys, at the areas with potential HDF in the Subject Property. Methods followed the rapid assessment methods in the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014). The HDF guidelines refer to agricultural practices such as tilling as a hydrological modifier.

4. Existing Conditions

A description of the existing natural heritage conditions on and adjacent to the Subject Property is provided below (Figure 2).

4.1 Physiography

The Subject Property is within Ecoregion 6E - Lake Simcoe-Rideau. The surface geography is characterized as gently undulating to rolling terrain of ice-laid materials deeply covering bedrock (MNR, 2009). The underlying bedrock is Paleozoic Dolomite and limestone (Crins, Gray, Uhlig, & Wester, 2009). The physiography of the Subject Property is defined as the “Spillways” landform, and is located between “Drumlin” features (Chapman & Putnam, 1984). Spillways are broad areas that were carved by immense former meltwater streams.

4.2 Vegetation Communities

Field investigations identified a total of ten (10) vegetation communities on and immediately adjacent to the Subject Property (Figure 2).

4.2.1 Terrestrial System

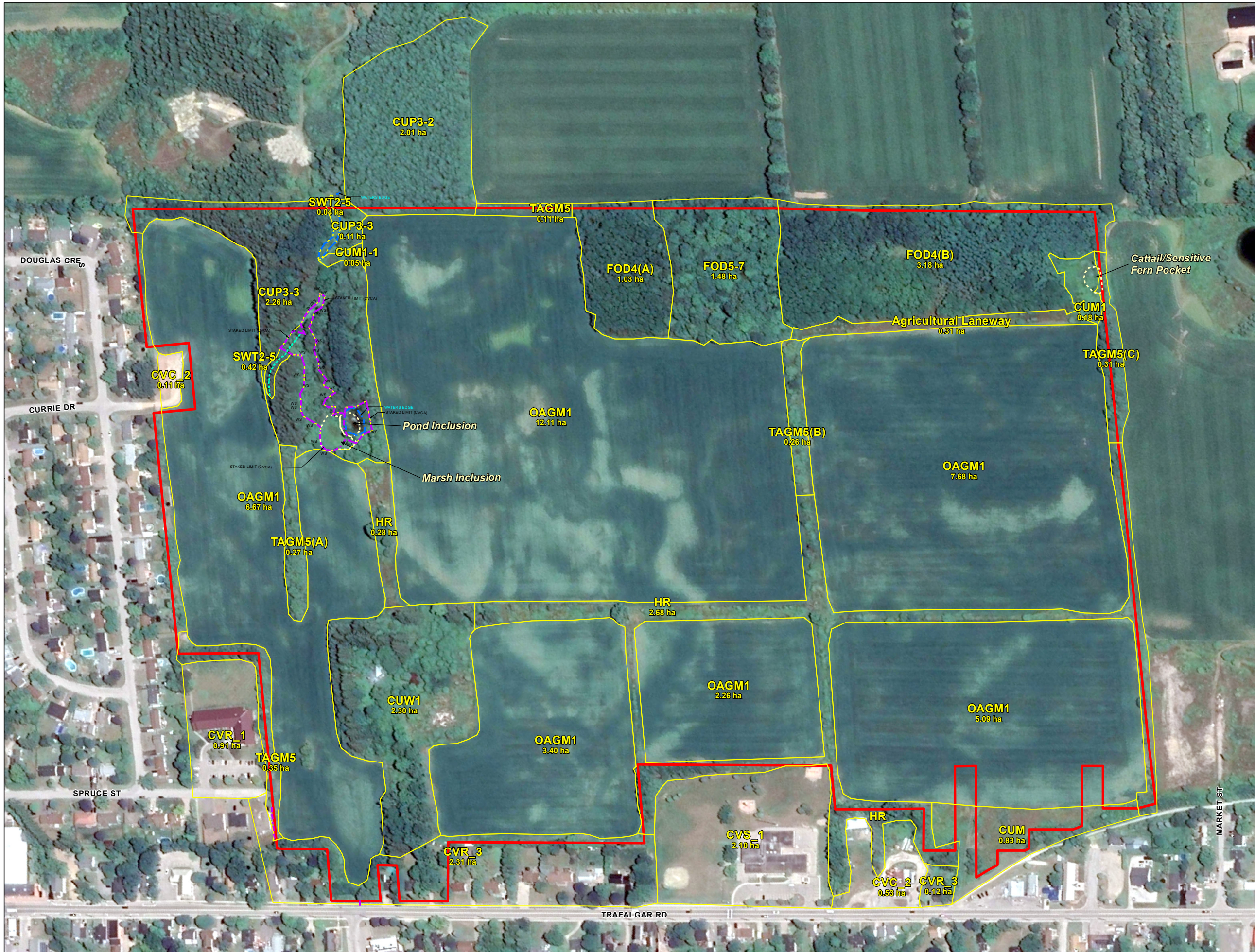
Forest

Mineral Cultural Woodland (CUW1)

This Cultural Woodland community was located northwest of the property, adjacent to a residential property that faces Trafalgar Road (Photo 1). This heavily disturbed area contained debris from a demolished house with a driveway connecting to the adjacent residential property. There is also some evidence of a grain silo and perhaps a barn (Photo 2).

The canopy provided 50% cover, being open in places and denser in others, and was dominated by Norway Spruce (*Picea abies*) and Sugar Maple (*Acer saccharum*). Most of these were planted in rows, evidencing that they were part of the landscaping in that area. The subcanopy provided more cover (60%) and was dominated by Manitoba Maple (*Acer negundo*) with occasional Chokecherry (*Prunus virginiana*). The understory contained mostly Common Lilac (*Syringa vulgaris*) and occasional Alternate-leaf Dogwood (*Cornus alternifolia*). The groundcover was dominated by Orchard Grass (*Dactylis glomerata*) and Kentucky Bluegrass (*Poa pratensis*), providing 80% cover.

A total of 32 exotic species were inventoried in this polygon (many only in this polygon), of 41 observed on the overall Subject Property. This includes the dominance by non-native plantings of Norway Spruce, but also includes a pervasiveness of invasive and problem species including Garlic Mustard (*Alliaria petiolata*), Smooth Brome (*Bromus inermis*), Wild Carrot/Queen Anne’s Lace (*Daucus carota*), Dame’s Rocket (*Hesperis matronalis*), and European Swallowwort/Dog-strangling Vine (*Vincetoxicum rossicum*).



- LEGEND:
- Drainage Feature
 - Staked Limit (CVCA)
 - Waters Edge
 - Subject Site (52.23 ha)
 - Ecological Land Classification (ELC)

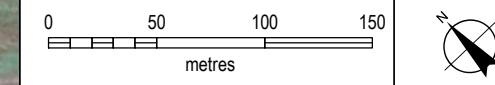
ELC DESCRIPTION:

- CUM: Cultural Meadow
- CUM1: Mineral Cultural Meadow
- CUP3-2: White Pine Coniferous Plantation
- CUP3-3: Scotch Pine Coniferous Plantation
- CUW1: Mineral Cultural Woodland
- FOD4: Dry-Fresh Deciduous Forest
- FOD5-7: Dry-Fresh Sugar Maple - Black Cherry Deciduous Forest
- SWT2-5: Red-osier Mineral Thicket Swamp
- OAGM1: Annual Row Crop
- TAGM5: Fencerow
- HR: Hedgerow
- CVC_2: Light Industry
- CVR_1: Low Density Residential
- CVR_3: Single Family Residential
- CVS_1: Education

Imagery ©2019 Google (DigitalGlobe, First Base Solutions)

CLIENT:
Ballantry Homes

PREPARED BY:
Palmer™



PROJECT: Hillsburgh Due Diligence	
PROJECT NO. 2105001	REVISION: 1-2
DATE: Mar 10, 2023	SCALE: 1:3500
DRAWN: CV/SM	DATUM: NAD 1983
CHECKED: AA	PROJECTION: UTM zone 17

Existing Conditions

Figure 2



Photo 1: Mineral Cultural Woodland (CUW1) community located adjacent to a residential property near Main Street. June 2, 2021.



Photo 2: Former barn and silo within the Mineral Cultural Woodland (CUW1). June 2, 2021.

Scots Pine Coniferous Plantation (CUP3-3)

This naturalized Scots Pine plantation was located near the northeastern limit of the property (**Photo 3**). Though the mature plantation was dominated by non-native Scots Pine (*Pinus sylvestris*) with native White Spruce (*Picea glauca*) in the canopy, it was noted that the community has become naturalized throughout the years, containing a small wetland community, and a drainage feature that runs along the western portion of the forest. The subcanopy provided 25% cover and included Chokecherry with occasional Red Maple (*Acer rubrum*) and Northern Red Oak (*Quercus rubra*). The sparse understory (10%) consisted mostly of Chokecherry and Alternate-leaf Dogwood, while the groundcover (20%) was comprised of Wild Sarsaparilla (*Aralia nudicaulis*) and Field Horsetail (*Equisetum arvense*).



Photo 3: Scots Pine Coniferous Plantation (CUP3-3) located near the northeastern property limit. June 2, 2021.

White Pine Coniferous Plantation (CUP3-2)

This community was located adjacent to the property, near the Scots Pine plantation (**Photo 4**). It was noted as a plantation consisting mostly of Eastern White Pine (*Pinus strobus*). Some Manitoba Maple, Mountain-ash (*Sorbus* sp.) and Tartarian Honeysuckle (*Lonicera tatarica*) were observed in the understory; however, there was almost no ground cover species at the fringe of this plantation.



Photo 4: White Pine Coniferous plantation (CUP3-2) located adjacent to the property. June 2, 2021.

Dry-Fresh Deciduous Forest (FOD4)

Two portions of the woodland found by the northeast property limit were identified as Dry-Fresh Deciduous Forest (**Photo 5**). These mid-aged forest communities were dominated by Black Walnut in the canopy, providing more than 60% cover. The sparse subcanopy (10% cover), included occasional Black Locust (*Robinia pseudoacacia*) and White Spruce. The open understory (20% cover) included abundant Red Raspberry (*Rubus idaeus*) and frequent Chokecherry. The groundcover was dominated by Orchard Grass with Garlic Mustard (*Alliaria petiolata*) and Herb-Robert (*Geranium robertianum*), providing 80% cover.

While FOD(A) had a consistent Black Walnut Canopy, FOD(B) was more diverse (**Figure 2**). Black Walnut was dominant at the north end, transitioning to more Red Oak higher on the slope towards the east. A row of White Spruce and Eastern White Pine was observed on the eastern limits of the property. Towards the southern portion of this polygon, Black Locust became the dominant tree cover. The ground cover of FOD(B) was more open and dominated by Sooth Brome (*Bromus inermis*).

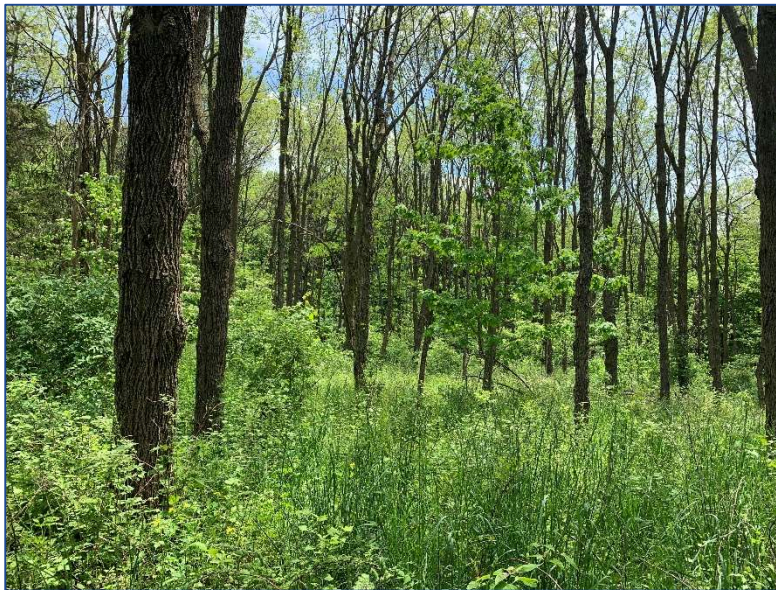


Photo 5: Dry-Fresh Deciduous Forest (FOD4) located near the northeastern property limit. June 2, 2021.

Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest (FOD5-7)

This mid-aged forest community was found in between the FOD4 communities and was part of the large woodland near the northeast property limit (**Photo 6**). The canopy provided 80% cover and was dominated by Sugar Maple and Black Cherry (*Prunus serotina*). Similarly, the sub-canopy contained Sugar Maple, providing 20% cover. The open understory (10% cover) contained occasional Red Raspberry and Red Elderberry (*Sambucus racemosa*), while the groundcover (50% cover) was dominated by Sugar Maple seedlings with frequent Virginia Waterleaf (*Hydrophyllum virginianum*).



Photo 6: Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest (FOD5-7) located adjacent to the FOD4 community. June 2, 2021.

Meadow

Dry-Fresh Old Field Meadow (CUM1-1)

This meadow community was located adjacent to the large woodland found near the southeastern property limit (**Photo 7**). The groundcover was dominated by Smooth Brome, with occasional goldenrod (*Solidago* sp.), and Field Horsetail. In addition, a small area of cattails (*Typha* sp.) and Sensitive Fern (*Onoclea sensibilis*) was noted to be located mid-slope within this community. As these wet-area species were found mid-slope, there is potential that a spring or seepage area is providing the moist conditions for these wetland species to grow.



Photo 7: Mineral Cultural Meadow (CUM1) with a small cattail and Sensitive Fern pocket, located adjacent to the FOD4 community. June 2, 2021.

Another small inclusion of this type was observed in the CUP3-3 Plantation in the northeast. Black Walnut and Eastern White Pine were seen at the fringes with the CUP3-3 area, and a sparse cover of Allegheny Blackberry (*Rubus allegheniensis*) Chokecherry was present. A dense ground cover included Orchard Grass (*Dactylis glomerata*) and Spotted Jewelweed (*Impatiens capensis*), being between two portions of wetland.

Anthropogenic

Fencerow (TAGM5)

These fencerows were found in between the central agricultural lands of the property (**Photo 8**). Fencerows A and B shared a similar species composition with a canopy and subcanopy dominated by Manitoba Maple. The understory contained abundant Red Raspberry and Riverbank Grape (*Vitis riparia*), while the groundcover was dominated by Garlic Mustard and Smooth Brome. Fencerow C provided a more diverse species composition including White Spruce, Silver Maple (*Acer saccharinum*), White Ash (*Fraxinus americana*), and Scots Pine.



Photo 8: Fencerow (TAGM5 A) dominated by Manitoba Maple. June 2, 2021.

Agricultural Fields

At the time of the site visit, annual row crops included corn seedlings (**Photo 9**).



Photo 9: Annual Row Crop (OAGM1) comprised of corn seedlings.

Hedgerows (HR)

While also considered “Fencerows” in ELC classification, these open hedgerows were found throughout the property and were largely defined by Smooth Brome cover and a sparse tree cover. Individual trees and shrubs included Silver Maple, Tartarian Honeysuckle and Chokecherry.

4.2.2 Wetland System

Red-osier Mineral Thicket Swamp (SWT2-5)

This small wetland community was located within the CUP3-3 Scots Pine plantation near the northeastern property limit (**Photo10**). The thicket swamp gradually opened near the southern portion of the plantation where a small pond was found (**Photo 11**). The open canopy and subcanopy (<10% cover) included occasional Balsam Poplar (*Populus balsamifera*) and White Willow (*Salix alba*). The understory provided more than 25% cover and was dominated by Red-osier Dogwood (*Cornus sericea*) and occasional willows. The groundcover was dominated by sedges including Water Sedge (*Carex aquatilis*), Swollen Beaked Sedge (*Carex rostrata*), and Greenish Sedge (*Carex viridula*), providing 90% cover.

The pond was fringed by Bebb’s Willow (*Salix bebbiana*), and Broad-leaved Cattail (*Typha latifolia*), Spotted Jewelweed, and Field Horsetail (*Equisetum arvense*) were common in the ground cover. The pond itself was dense with algae.

This feature was staked with the CVC on July 16, 2021 and the limits are shown on **Figure 2**.



Photo 10: Red-osier Mineral Thicket Swamp (SWT2-5) located within the Scots Pine plantation. June 2, 2021.



Photo 11: A small pond found within the SWT2-5 community. June 2, 2021

4.3 Flora

A total of 135 species were recorded within the Subject Property. The flora records result in 77 species (57%) identified as native, 47 species (35%) as non-native and 11 species (8%) were identified to the genus only. Several highly invasive species were observed on the Subject Property, including Tartarian Honeysuckle, Smooth Brome, and Garlic Mustard (*Ontario Invading Species Awareness Program*, 2018). The recorded presence of non-native species is indicative of past disturbance on the Subject Property.

Within the Red-osier Mineral Thicket Swamp SWT2-5 wetland specifically, 42 species were recorded, with 24 native plant species (57%) and 13 species (31%) considered Exotic. Of the 42 species, 32 are facultative or obligate wetland species (Oldham, Bakowsky, & Sutherland, 1995). Invasive species observed include Tartarian Honeysuckle.

The Coefficient of Conservatism (CC) of a floristic species is a measure of its sensitivity to disturbance and the degree of habitat specificity it requires (Catling, 2013; Oldham, Bakowsky, & Sutherland, 1995). Measured on a scale between 0 and 10, a native species that establishes easily and/or in a variety of ecological communities would score low; while a plant that is very sensitive to human disturbances and/or lives only in specific environments (e.g., only marsh wetlands) would score high. Based on the data collected, the average CC for the Study Area is **3.6**, and **3.8** for the wetland specifically, indicating that most of the species in the Study Area are found in wide variety of plant communities, including disturbed sites. However, this score is on the high side of that range, and many species are “*taxa that typically are associated with a specific plant community, but tolerate moderate disturbance*”. Only one species (Red Pine – *Pinus resinosa*) has a CC of 8, indicating a fidelity to communities of advanced successional stage, but was found in the Cultural Woodland and is potentially planted.

All of the native plants are identified as S5 or S4 ranking, indicating that they are common within Ontario. No provincial or federal Species at Risk were observed in 2021. Water Sedge, Yellow Lady’s Slipper (*Cypripedium parviflorum*) and Coyote Willow (*Salix exigua*) were all observed in the Red-osier Mineral Thicket Swamp (SWT2-5) and are considered locally rare (Credit Valley Conservation Authority, 2002). Pinesap (*Hypopitys monotropa*) was observed on slopes of the CUP3-3 plantation, to the immediate north of the property. Red Pine (*Pinus resinosa*) was also observed in the cultural woodland. These five species are considered Secure or Common within Ontario (Ministry of Natural Resources and Forestry, 2023). A complete list of plant species recorded by Palmer is provided in **Appendix B**.

4.3.1 Butternut / Walnut Hybrids

Within the CUW1 Mineral Cultural Woodland, several trees were observed that appeared to be Butternut (*Juglans cinerea*), an Endangered SAR species. However, due to certain identification characteristics, their location within a previously manicured area, and the proximity and the abundance of Black Walnut (*Juglans nigra*) on the property, these trees were sent for DNA testing to evaluate if these individuals were hybrids between *Juglans* species.

Samples from 11 individuals were submitted for testing (**Appendix C**). Due to suspicion of Butternut/Black Walnut hybridity, one sample was tested for that combination, which was confirmed through the test. The other samples followed the OFRI sample protocol, and were sampled using the Butternut RFLP (Restriction Fragment Length Polymorphism) pipeline, supplemented by Sequence Characterized Amplified Region (SCAR) codominant marker. These tests sample for hybridity with Japanese Walnut (*J. ailantifolia*). Of the 10 samples, a total of 0 butternut sample(s), 3 Japanese Walnut sample(s), 5 hybrid sample(s) and 2 unknown sample(s) were identified. Lab comments note that two samples that could not be identified were most likely not butternut and are listed as unknown.

Based on the DNA testing results, no Butternut were observed on the Subject Property.

4.4 Wildlife

4.4.1 Breeding Birds

The survey documented the birds based on the following habitats and locations: (i) Deciduous Forest, (ii) Cultural Plantation and Swamp, (iii) Cultural Woodland, and (iv) Cultural. A total of 37 bird species were documented on the property, as summarized in **Appendix D**. Most of the birds recorded on the subject property are considered common, widespread and abundant in the province of Ontario. The most frequently observed species found on the property included birds, characteristic of open fields and hedgerows, such as American Crow (*Corvus brachyrhynchos*), American Robin (*Turdus migratorius*), and American Goldfinch (*Cardeulis tristis*).

Species at Risk

Two Species at Risk were recorded at the site: Eastern Wood-Pewee (*Contopus virens*) and Barn Swallow (*Hirundo rustica*). No species with a provincial SRANK of S1 (Critically Imperiled), S2 (Imperiled), or S3 (Vulnerable) were recorded at the site (Ministry of Natural Resources and Forestry, 2023).

Eastern Wood-Pewee is listed as *Special Concern* both nationally and provincially. Two Eastern Wood-Pewees were observed in the Deciduous Forest habitat (FOD), and one was observed Cultural Plantation and Swamp habitat (CUP3-3/SWT2-5). The observations at two locations of what was presumed to be the same individual at least a week apart at the same location provides a Probable breeding status of Territorial at the site for Eastern Wood-Pewee.

Barn Swallow is listed as *Threatened* provincially and federally. One Barn Swallow individual was observed on the first site visit foraging over the annual row crops on the east side of the site. As no suitable nesting structures were observed on the site, it was concluded that Barn Swallow only uses the site for foraging.

Area Sensitive Species

Five area-sensitive species were recorded at the site: Hairy Woodpecker (*Picoides villosus*), Red-breasted Nuthatch (*Sitta canadensis*), White-breasted Nuthatch (*Sitta carolinensis*), American Redstart (*Setophaga ruticilla*), and Savannah Sparrow (*Passerculus sandwichensis*). Area-sensitive species require large areas of continuous habitat for breeding and foraging. The specific habitat requirements vary by species.

Hairy Woodpeckers have territories that cover 4-8 ha and require a number of tall trees and snags >25 cm DBH. One Hairy Woodpecker was observed in Cultural Plantation and Swamp habitat during the first survey. This indicates Possible breeding on the site.

Red-breasted Nuthatch breeds in coniferous and mixed wood forests; nests in cavities in soft, decaying coniferous trees with DBH >12 cm; and requires at least 10 ha of forest. One Red-breasted Nuthatch was observed in the Cultural Plantation and Swamp habitat during the first and second surveys and another was observed in the Cultural Woodland habitat during the first survey. The Red-breasted Nuthatch in the Cultural Plantation and Swamp habitat was presumed to be the same individual observed at least a week apart at the same location, which provides a Probable breeding status of Territorial at the site for Red-breasted Nuthatch.

White-breasted Nuthatch nests in natural cavities in trees with DBH >30 cm in mature, broad-leaved woodland, orchards, or shade trees in suburban and rural areas. It needs at least 10 ha or more of continuous forest and tolerates mixed forest. One White-breasted Nuthatch was observed in the Deciduous Forest habitat during the second survey and another pair was observed in the Cultural Woodland habitat during the second survey. The observations of an adult entering a nest site with behavior suggests the presence of an occupied nest in the Cultural Woodland habitat provides Confirmed breeding status at the site for White-breasted Nuthatch.

American Redstarts nest in deciduous or mixed woods with closed canopy of either tall shrubs or dense young trees or mature trees, woodland edges, in upland or lowland and requires >100 ha of forest habitat. One American Redstart was observed in the Cultural Plantation and Swamp habitat during the first survey. A singing male in suitable nesting habitat during the breeding season provides evidence of Possible breeding for American Redstart.

Savannah Sparrows are typically found in tracts of grassland >50 ha. One Savannah Sparrow was observed in the Cultural habitat during the first survey. A singing male in suitable nesting habitat during the breeding season provides evidence of Possible breeding for Savannah Sparrow.

4.4.2 Breeding Amphibians

Amphibians can be common and widespread in areas with suitable habitat. They will congregate to breed in woodland pools and wetlands with standing water that persists into early summer or long enough for tadpoles to emerge. Breeding amphibian surveys were conducted at the Thicket Swamp, which was the sole potentially suitable area in the Subject Property (**Figure 2**). Species were recorded on the Subject Property during the evening auditory survey. Based on the 2021 survey, a total of two species of amphibians were recorded, including American Toad (*Anaxyrus americanus*) and Green Frog (*Rana clamitans*), (**Table 2**). Green Frogs (*Rana clamitans*) were also overheard during other surveys at this location (Section 4.4.3). These species are considered common in Ontario, and have no provincial rarity status.

Table 2: Breeding Amphibians Recorded (2021)

Species	June 6, 2021
American Toad	1
Grey Tree Frog	1

Note:

The calling codes are designated according to the *Amphibian Road Call Counts* (Gartshore *et al.* 2004).

They are as follows:

- 1 - Individuals of one species can be counted, calls are not overlapping; second number denotes number of individuals.
- 2 - Calls of one species are overlapping; second number denotes estimated number of individuals.
- 3 - Full chorus of one species, calls continuous and overlapping, individuals not distinguishable.

During the Agency Site visit conducted on July 16, 2021, the CVC noted confirmed presence of calling amphibians and concur with the assumption that the on-site wetland is amphibian breeding habitat. CVC further noted that while 3-round surveys are typically required, CVC would be satisfied with a 1-round round

of survey provided that the feature is shown to be appropriately protected within the site plan (and off-lot and appropriate buffers and grading) (**Appendix A**).

As such, regardless of the low level of calls, the area is assumed to be amphibian habitat. The surveyed location is associated with areas with permanent standing water or persistent pools where aggregates of amphibians can successfully breed, and conditions are suitable for tadpoles to mature and emerge from their aquatic environment.

4.4.3 Incidental Wildlife Observations

Incidental wildlife observations and habitat opportunities within the Subject Property were recorded during field investigations and includes the following:

- Grey Squirrel (*Sciurus carolinensis*).
- Cotton-tail Rabbit (*Sylvilagus floridanus*).
- American Crow (*Corvus brachyrhynchos*).
- Hawk species (*Buteo* sp.), flying over field to the north.
- White-tailed Deer (*Odocoileus virginianus*) scat in the wetland area.
- White-tailed Deer observed in the Dry-Fresh Old Field Meadow (CUM1-1) seep/spring area
- Over 2 Green Frogs within the wetland area.
- Grey Treefrog within the wetland area.
- Northern Crescent Butterfly (*Phyciodes cocyta*).
- American Toad (*Anaxyrus americanus*).
- Midland Painted Turtle (*Chrysemys picta*), in the isolated pond.
- Woodpecker species.
- Monarch (*Danaus plexippus*).

4.5 Headwater Drainage Features

As aerial imagery shows potential moisture variations, the agricultural fields were scanned for potential HDF features. The fields demonstrate fairly consistent and even sloping, and no defined channel or distinct topographic depression was noted, nor was open water during any visit (**Photo 12**). There were no areas that were avoided by plowing due to the development of drainage features.

Without the identification of areas that would have elements that would provide a functional classification, there appear to be no HDF on the Subject property that would require a classification with management implications.



Photo 12: Agricultural fields on the property, showing even sloping and consistent tilling. June 2, 2021

5. Assessment of Significance

The identified ecological features on or adjacent to the Subject Property are evaluated below for their significance and application of the policies detailed in **Section 2**. This includes an assessment of SAR and their habitat present within the Subject Property, wetlands and woodlands, as well as an assessment of SWH (**Figure 3**). Other NHF, such as Significant Valleylands were not considered present or potentially present on the Subject Property, and are not further discussed in this report.

5.1 Species at Risk

Prior to field work, existing SAR records were queried through the NHIC database (Ministry of Natural Resources and Forestry, 2023). Based on a review of the NHIC database and in-field SAR habitat screening, a total of eleven (11) SAR were identified for a habitat suitability assessment (**Appendix E**). Of these, SAR bats were considered to have potential habitat on the Subject Property.

Potential Butternut were also observed on the Subject Property; however, DNA Testing (Section 4.3.1) demonstrated that the observed individuals were Walnut hybrids or Japanese Walnut, both of which are not protected by the ESA.

Eastern Wood Pewee were observed on the Subject Property; as a Special Concern species, habitat is evaluated as Significant Wildlife Habitat (SWH) (Section 5.4).

5.1.1 Endangered Bats

Populations of several bat species have been in decline in recent years due to the spread of a fungal pathogen known as “white nose syndrome”. This includes a number of species in Ontario, including the Northern Myotis, Little Brown Myotis, Eastern Small-footed Myotis and Tri-Coloured Bat, which are all listed as Endangered under the *ESA*, and have general habitat protection.

Summer maternal roosting habitat, representing one of the most sensitive life stages for bats, is generally the focus of protection efforts on the part of the MECP in regard to the *ESA* requirements for these species. Maternity roosting for these species occurs in forested communities, preferring mature deciduous and mixed forests with cavity trees (those with cracks, cavities or openings suitable for roosting) >25 cm DBH. The other primary concern is winter hibernation habitats, but these include caves and old mines, none of which are present in the vicinity of the Subject Property.

The woodland on the east side of the Subject Property is considered the highest potential area for SAR bat habitat. Specifically, the Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest (FOD5-7) contains deciduous species with large leaves (e.g., Sugar Maple, Oak) that are preferred roost trees. In addition, trees >25 cm DBH and large standing snags were observed that present good roosting cavities.

The Scots Pine Coniferous Plantation (CUP3-3) and Mineral Cultural Woodland (CUW1) are dominated by coniferous species, which typically are less conducive to the development of snag tree characteristics. However, the Cultural Woodland is a mixedwood and does contain deciduous species, some of which have died or are starting to decay, and present opportunities for roosting. However, the area of deciduous species is small compared to the FOD5-7/FOD4 area, and the SWH criteria of >10 snags/ha is unlikely to be met.

Therefore, loss of the Cultural Woodland area would not greatly affect potential bat maternity colonies in the area.

Without targeted surveys, the forested areas of the Subject Property are assumed to hold potential habitat for SAR bats, with the Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest (FOD5-7) containing the highest potential. General avoidance and mitigation for SAR trees and bat habitats is discussed in **Section 7**.

5.2 Wetlands

The SWD2-5 Red-osier Mineral Thicket Swamp is small, with the two portions being 0.46 ha collectively as staked with the CVC. There is no observable connection to other surface water areas, and the algae in the pond demonstrates a degree of anaerobic conditions. While it does exhibit some more unique species and characteristics for southern Ontario wetlands, it is unlikely to be considered a Significant wetland due to size and lack of hydrologic connection. Regardless, the Wellington OP considers all wetlands as part of the Greenlands System, and CVC policies also protect wetlands in the Regulated Area.

Therefore, while not significant, the wetland would require protection under the above policies. All non-PSW wetlands in CVC's watershed are regulated features, and typically require a 10 m setback (Credit Valley Conservation Authority, 2010).

5.2.1 Water Balance

The on-site wetland was reviewed in relation to the TRCA *Wetland Risk Evaluation Guideline* to assess the need for a feature-based water balance (Toronto and Region Conservation Authority, 2017). The review determined that *the change in catchment area is expected to be <10%, and that the impervious cover is less than the criteria. Based on the hydrological assessment, no construction dewatering or long-term foundation drainage is anticipated in this area. Therefore, there will be no impacts to the wetland water level. Based on the above, the potential hydrological changes are anticipated to be low. Using the decision tree provided by the TRCA Guidelines, the proposed development will be categorized as low risk* (Soil Engineers Ltd., 2023).

5.3 Woodlands

5.3.1 Northeastern Woodland Units

The CUP3-3 Scots Pine Coniferous Plantation has naturalized, and contains the SWD2-5 Red-osier Mineral Thicket Swamp and associated drainage feature. It is 2.26 ha within the Subject Property, but does extend and connect to other woodlands to the northeast including the mapped off-site White Pine Coniferous Plantation (CUP3-2).

The Dry-Fresh Deciduous Forest (FOD4)/Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest (FOD5-7) is collectively 5.69 ha. It contains a diversity of tree and flora species and good potential wildlife habitats, specifically high potential bat maternity habitat and habitat for Eastern Wood Pewee. A portion of this unit is considered non-Core Greenlands in the Town of Erin (**Map C**, Section 2.3)

Following the County of Wellington OP these woodlands are over 1 ha and in the urban system (Section 2.2), are partially considered Greenlands in the Town of Erin OP, and also exhibit qualities of Significant Woodlands described in the MNRF *Natural Heritage Reference Manual* (Ontario Ministry of Natural Resources, 2010).

Therefore, these woodlands are considered Significant Woodlands in Wellington County. Significant Woodlands within CVC's jurisdiction are subject to policy 6.2.1.b., recommending a 10 m buffer from the limit (i.e., dripline) of the feature (CVC, 2010).

5.3.2 Cultural Woodlands

A Significant Woodland in the Wellington and Town of Erin Official Plans are woodlands that are *“ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history”*.

The Mineral Cultural Woodland (CUW1) is 2.39 ha. However, it is the remnant of a former farmstead, and presents a heavy anthropogenic influence. The debris from the demolished structures and former use pattern of the area present obstacles to naturalization. The species composition also limits naturalization potential; specifically, the area is dominated by non-native Norway Spruce, and contains 32 exotic species, including pervasive amounts of invasive and problem species. Among these are Garlic Mustard, Smooth Brome, Wild Carrot/Queen Anne's Lace, Dame's Rocket, and European Swallowwort/Dog-strangling Vine. The dominant Norway Spruce canopy and Common Lilac shrub layer are also non-native species, and Manitoba Maple, while native exhibits aggressive pioneer tendencies, often outcompeting other species in disturbed and anthropogenic areas.

These conditions have led to a condition where the area is overgrown without a noted degree of naturalization or native species replacement. Significant efforts are needed to remove the debris and mitigate past disturbances. It is not contiguous with other natural heritage features and does not hold notable wildlife habitat opportunities or functions such as interior forest habitat or water features.

In comparison to the Official Plan definition, this woodland is not important in species composition, age and stand history as it is largely non-native trees, with pervasive invasive species composition and cover, and marked issues from its history as a farmstead area. It is not functionally important, as it is isolated from other natural features and immediately adjacent to developed areas of Hillsburgh. While over one (1) ha, other forest cover will be maintained in the Subject Property. Nor is it economically important because of the non-native species prominence and the overall site quality and management history as a farmstead.

Due to the diminished quality of the area and its former use as a farmstead/rural residence, it is submitted that the CUW1 area is not considered significant woodland for the purposes of this report. The character and significance of this unit was discussed and concurred with the CVC during the July 16, 2021 Site Visit.

5.4 Significant Wildlife Habitat

Significant Wildlife Habitat (SWH) can be difficult to appropriately determine at the site-specific level, as the assessment must incorporate information from a wide geographic area and consider other factors such as regional resource patterns and landscape effects. Planning authorities have the responsibility to identify Significant Wildlife Habitat. The detailed identification and designation of SWH has not been completed in Wellington County.

SWH is defined by the MNRF in the Significant Wildlife Habitat Technical Guide (Ontario Ministry of Natural Resources, 2000) and Natural Heritage Reference Manual (Ontario Ministry of Natural Resources, 2010) and includes the following categories:

- seasonal concentration areas;
- rare vegetation communities or specialised habitats for wildlife;
- habitats of species of conservation concern, excluding the habitats of endangered and threatened species; and
- animal movement corridors.

To help with site level assessments, criteria for the identification of these features are provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (Ontario Ministry of Natural Resources and Forestry, 2015). These were used to screen wildlife habitat within the Subject Property for potential SWH. Along with field observations and geographical analysis, these criteria were used to provide an assessment and screening for wildlife habitat within the Subject Property for potential SWH within and immediately adjacent to the Subject Property, as detailed in **Appendix F**. The following summaries discuss the SWH types and characteristics that were identified as having the potential to occur within the Subject Property.

5.4.1 Bat Maternity Colonies

The woodlands and cultural woodland may present candidate bat maternity roosts. As mentioned in Section 5.1.1, the woodland on the east side of the Subject Property is considered the highest potential area for SAR bat habitat. Similarly, for general bat SWH, the Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest (FOD5-7) contains deciduous species with large leaves (e.g., Sugar Maple, Oak) used as a criterion for this SWH type (Ontario Ministry of Natural Resources, 2015). In addition, trees >25 cm DBH with large leaves (Maples) and large standing snags were observed that present good roosting cavities.

5.4.2 Turtle Wintering Areas

The open pond within the SWD2-5 Red-osier Mineral Thicket Swamp presents candidate turtle habitat. Midland Painted Turtles were observed incidentally during field surveys. While the presence of at least five turtles is required to confirm this SWH type, targeted surveys were not completed; therefore, candidate SWH is assumed. The swamp/woodland, with the pond in particular is the defined SWH area.

5.4.3 Turtle Nesting Areas

The CUP3-3 Scots Pine Coniferous Plantation surrounding the SWD2-5 Red-osier Mineral Thicket Swamp and open pond present candidate nesting opportunities within 100 m, as Midland Painted Turtles were observed. The ephemeral drainage channel within the CUP3-3 plantation shows exposed gravelly/sandy

soils. Additionally, while agricultural fields cannot be considered specific habitat, these may present opportunistic areas for nesting. In order to maintain nesting opportunities, the open areas within the CUP3-3 plantation should be maintained for this SWH type.

5.4.4 Seeps and Springs

Within the southeastern Dry-Fresh Old Field Meadow (CUM1-1), there is a candidate spring or seepage area is providing the moist conditions that allow a collection of cattails and Sensitive Fern mid-slope. White-tail deer were incidentally observed using the area, showing the wildlife use criteria for this SWH type. While two or more seeps/springs are required to confirm this SWH type, the use of this area adjacent to forest types should be considered. The area of a ELC forest ecosite or ecoelement (the CUM1-1 area) within the ecosite containing the seeps/springs is the SWH (Ontario Ministry of Natural Resources, 2015).

5.4.5 Amphibian Breeding Habitat (Woodland)

Regardless of the low level of calls observed during the single amphibian breeding survey, the SWD2-5 Red-osier Mineral Thicket Swamp is assumed to be candidate amphibian habitat. Specifically, breeding habitat is assumed in the open waters within the swamp area. The open pond is approximately 400 m², and presents areas with permanent standing water or persistent pools where aggregates of amphibians can successfully breed, and conditions are suitable for tadpoles to mature and emerge from their aquatic environment. Note that the SWH type requires open water wetlands, ponds or woodland pools of >500 m² within or adjacent to wooded areas. The on-site pond is below this criteria size.

During the Agency Site visit conducted on July 16, 2021, CVC staff noted confirmed presence of calling amphibians and will assume the on-site wetland is amphibian breeding habitat (**Appendix A**). The CVC further note that while 3-round surveys are typically required, CVC would be satisfied with a 1-round round of survey provided that the feature is shown to be appropriately protected within the site plan (and off-lot and appropriate buffers and grading).

The SWH is defined as the wetlands, and adjacent forest community (CUP3-3), to 230 m beyond the open water (Ontario Ministry of Natural Resources, 2015).

5.4.6 Woodland Area-Sensitive Bird Breeding Habitat

Five area-sensitive species were recorded at the site: Hairy Woodpecker, Red-breasted Nuthatch, White-breasted Nuthatch, American Redstart, and Savannah Sparrow (Section 4.4.1). These species were primarily observed in the northeastern woodland units, with some activity in the Cultural Woodland.

Area-sensitive species require large areas of continuous habitat for breeding and foraging. The specific habitat requirements vary by species, and SWH criteria requires large mature (>60 years old) forest stands or woodlots >30 ha, where interior forest habitat is at least 200 m from forest edge habitat.

While the SWH woodland size and interior habitat criteria are not met on the Subject Property, observation of potential or confirmed breeding for five Area-Sensitive species indicates that the north woodland extending with the adjacent off-site woodlands likely present generally appropriate habitat for these species.

5.4.7 Special Concern and Rare Wildlife Species

Eastern Wood-pewee

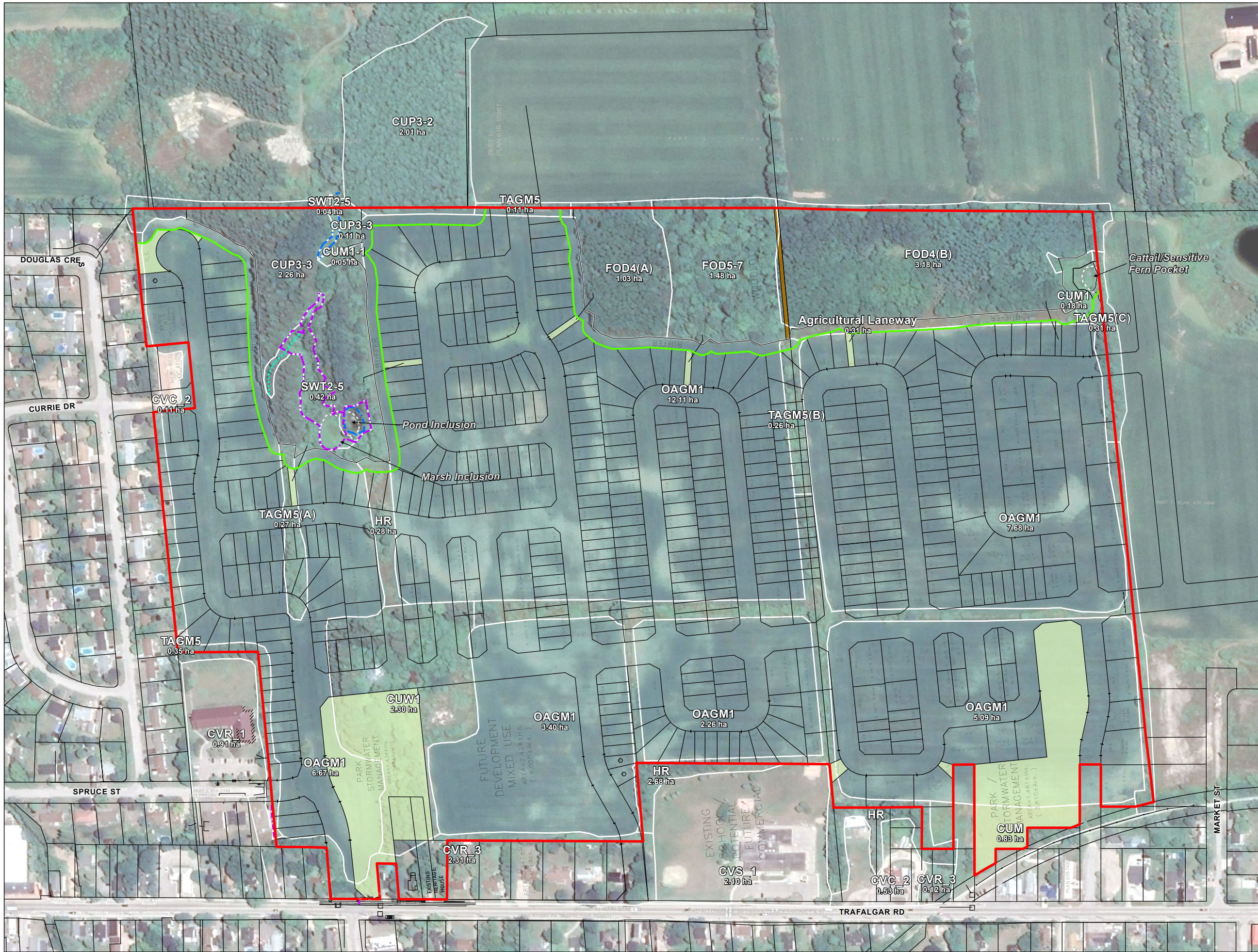
An Eastern Wood-pewee pair was observed displaying territorial behaviours in the northeastern woodland units (Section 4.4.1). Therefore, these areas are considered to be habitat for this Special Concern species. However, this species is widespread over southern Ontario, and defining SWH areas solely on this species at low use numbers should be carefully considered. In the absence of specific threshold criteria provided by the MNRF for the number of pairs or calling males of Special Concern birds required to qualify as SWH (compared to other threshold criteria such as amphibian breeding). Based on the presence of one calling Eastern Wood Pewee male, this would not in our opinion qualify as Confirmed SWH.

Snapping Turtle

NHIC records also indicate that Snapping Turtle (*Chelydra serpentina*) may also be present in the area. However, it is felt that these records are better associated with the Alton Hillsburgh and West Credit River Wetland Complexes PSWs, which hold far more habitat opportunities than the Subject Property. The SWD2-5 Red-osier Mineral Thicket Swamp presents potential habitat in the Subject Property; however, due to the limited size of the pond (400 m²), and the observation of Midland Painted Turtles, it is likely that this small niche is occupied by that species.

6. Proposed Development

The proposed development is representative of a complete ‘complete community’, which includes a wide range of housing types including 442 Single Detached Dwellings, 249 Street Townhouse Dwellings and 108 Back-to-Back Townhouse Dwellings (**Figure 3, Appendix G**). The existing heritage dwelling located at 63 Trafalgar Road is being retained as a separate lot. There are two park and stormwater management blocks and a future mixed-use block, all located near Trafalgar Road. Stormwater management is proposed to be controlled using underground storage tanks, which will be located within the Park blocks. Various trail connections are planned to the adjacent Barbour sports fields and community centre development planned to the east of the Subject Property. An existing trail proposed to be retained as a walking/bike trail, providing a connection to the Barbour use area. Lastly, the natural features and functions of the northeastern woodland units are preserved as part of the development, including appropriate buffers and adjacent green spaces.



LEGEND:

- Drainage Feature
- Staked Limit (CVCA)
- Waters Edge
- Natural Feature Setback (10 m)
- Ecological Land Classification (ELC)
- Existing Trail
- Planned Anthropogenic Green Space
- Development Plan
- Subject Site (52.23 ha)

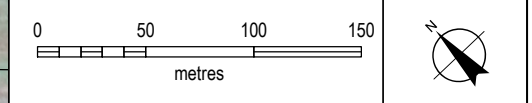
ELC DESCRIPTION:

- CUM: Cultural Meadow
- CUM1: Mineral Cultural Meadow
- CUP3-2: White Pine Coniferous Plantation
- CUP3-3: Scotch Pine Coniferous Plantation
- CUW1: Mineral Cultural Woodland
- FOD4: Dry-Fresh Deciduous Forest
- FOD5-7: Dry-Fresh Sugar Maple - Black Cherry Deciduous Forest
- SWT2-5: Red-osier Mineral Thicket Swamp
- OAGM1: Annual Row Crop
- TAGM5: Fencerow
- HR: Hedgerow
- CVC 2: Light Industry
- CVR_1: Low Density Residential
- CVR_3: Single Family Residential
- CVS_1: Education

Imagery ©2019 Google (DigitalGlobe, First Base Solutions)

CLIENT:
Ballantry Homes

PREPARED BY:
Palmer™



PROJECT: Hillsburgh Due Diligence	
PROJECT NO. 2105001	REVISION: 3-2
DATE: Mar 10, 2023	SCALE: 1:3500
DRAWN: CV/SM	DATUM: NAD 1983
CHECKED: AA	PROJECTION: UTM zone 17

Proposed Development

Figure 3

7. Impact Assessment and Mitigation

Development of the Hillsburgh subdivision will require the grading and preparation of the development area prior to the installation of infrastructure and lot creation. Grading will require tree removal in the areas identified for development. This includes the removal of the cultural woodland and hedgerows within the Subject Property (**Figure 3**). It is also expected that many of the perimeter trees will be removed to help create lots with a level surface. Tree removal has the potential to impact habitats for migratory birds and potential SAR bat habitats.

The Natural Heritage Features and Functions of the Subject Property are largely to be retained by preserving the northeastern woodlands and the wetland contained within. Yet, development will be adjacent to these areas, and a trail system is proposed adjacent to these woodlands, including the use of an existing trail through the FOD woodland as connection to the Barbour community area (**Figure 3**). This adjacency will expand pressures on these woodlands from human activity, with the potential result of increased wildlife avoidance of the area or increased human/wildlife encounters. These effects will require appropriate buffering via setbacks and restoration areas to minimize potential impacts.

Stormwater will be directed into designed stormwater management facilities outletting towards Trafalgar Road, and not expected to impact Natural Heritage features.

Recommended mitigation measures for these potential impacts to identified natural heritage features and functions are described below.

7.1 Significant Woodland

The northeastern woodlands are considered Significant Woodlands, and as such, their natural features and functions will be retained and preserved as part of this development. The adjacency to the development will create additional pressures on these systems that will be minimized and mitigated via buffering, which is planned to be achieved by appropriate setbacks and a restoration/naturalization plan designed to reduce direct interactions

7.1.1 Setbacks and Adjacent Uses

Setbacks and adjacent uses have been considered to transition from the woodland natural features to urban areas. A 10 m setback for these woodlands has been included in the concept design to maintain their form and functions and provide connections between green spaces (**Figure 3**). Concept planning has included consultation on the Barbour sports fields, and green space uses have been planned adjacent to the woodlands. An open space has also been included at the north end of the Subject Property. In addition, backyards of residential lots have been placed adjacent to the woodlands to increase the transitional area, while townhome lots have been avoided in these adjacent areas.

Roadway crossings required to access the Barbour community areas were considered in relation to the woodlands. The demonstrated lotting concept limits roadways to the existing openings, and avoids the existing woodland areas. In considering wildlife habitat and movement, any roadway options that would have required fragmenting and opening the woodland areas were removed from consideration (Credit Valley Conservation Authority, 2017).

The concept for the requested railway connection through the woodland takes advantage of an existing trail and therefore would not require further opening for a walking trail access.

7.1.2 Trailway Restoration Concept

A walking trail system is proposed within the 10 m setbacks to promote passive recreation for the proposed development, as a Town of Erin requirement of the development to provide public areas, parks and open spaces. Specifically, a walking trail through the woodland, connecting the Barbour Fields to the public school on Trafalgar Road has been requested by Town of Erin Infrastructure. This is to be balanced with the ecological buffering requirements of the setback for the Significant Woodlands.

To provide this balance, a conceptual cross-section for the trail system is provided in **Photo 13**. To extend the natural system and discourage off-path use, the woodlands are to be protected by a minimum of two 2.54 m on-centre zig-zag rows of trees, recommended to be primarily native coniferous species. This should be fronted by a row of densely planted shrub species, approximately 1 m on-centre.

Beyond this 4 m restoration band, a 2.4 m wide pathway is proposed, composed of low impact materials such as woodchips, or limestone screenings. A 0.8 m vegetated maintenance strip should be placed on either side, to be planted with a maintainable native seed mix. The asphalt pathway will help to define and limit the use area to also discourage off-path use. Nearest the residential lots, a single row of trees is proposed in a 2 m wide band, again to be 2.54 m on-centre and primarily coniferous species.

This restoration and pathway area is recommended be separated from the adjacent residential lots by a fence of a minimum 1.8 m tall. It is recommended that these barriers be a solid construction (e.g., wood or concrete without gaps). Chain link and individual lot gates would not be acceptable for the trailway. This construction will help limit access to designated points and reduce the temptation for illegal dumping or encroachment. Fencing between any lots adjacent to the natural system will also help deter wildlife movement and human/wildlife interactions as a Best Management Practice (Credit Valley Conservation Authority, 2017). For small mammals, the bottom of fence should be buried 20 - 40 cm underground to prevent animals from digging under.

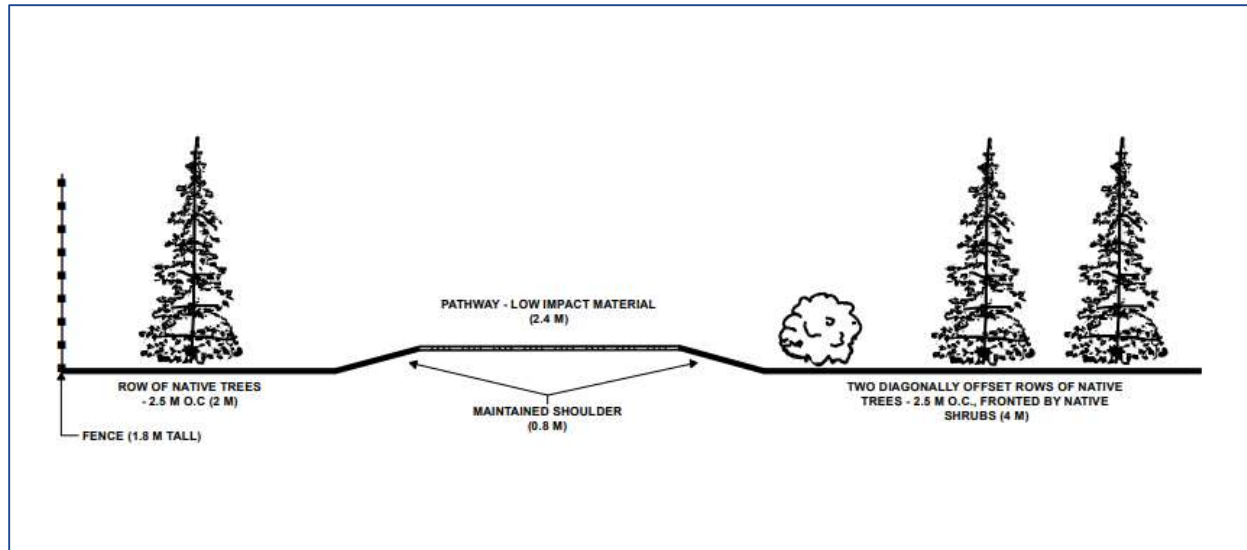


Photo 13: Conceptual Cross-section of the 10 m Setback, to include a walking trail

7.1.2.1 Soil Preparation

The planned setbacks for the woodlands are largely in degraded agricultural lands or compacted agricultural trailway (**Figure 3**). For restoration, it should be ensured that the existing soils are healthy prior to planting and seeding by following the *CVC Healthy Soil Guidelines* (Credit Vally Conservation Authority, 2017). Specifically, because of the observed and expected state of the existing soils, Section 2.2 of the *Guidelines* should be referred to for the steps to follow to decompact and amend the soil prior to restoration. These steps include considerations to:

- Test existing soils to determine a target pH against a natural feature reference area
- Determine topsoil depth and quality deficiencies
- Amend for compaction and organic matter deficiencies and pH.

These requirements should be developed into the tendering requirements for the replanting of the buffer restoration area.

7.1.2.2 Tree and Shrub Planting

The setback restoration planting plan should be developed following the conceptual cross-section described above. For plant material selection, the *CVC Plant Selection Guideline* should be used to select species and seed mixes (Credit Valley Conservation Authority, 2018). Tree planting areas and planting densities are to be determined at the detailed design stage in consultation with the agencies. Recommended species are based on the objectives of the setback restoration and the species that were observed on-site, and that may also perform well based on topography and insolation include (but are not to be limited to):

Coniferous

- Eastern White Pine (*Pinus strobus*)
- White Spruce (*Picea glauca*)
- Eastern Hemlock (*Tsuga canadensis*)

Deciduous

- Northern Red Oak (*Quercus rubra*)
- Black Cherry (*Prunus serotina*)
- Sugar Maple (*Acer saccharum*)

Shrubs

- Smooth Service Berry (*Amelanchier laevis*)
- Alternate-leaved Dogwood (*Cornus alternifolia*)
- Wild Red Raspberry (*Rubus idaeus* ssp. *strigosus*)
- Red Elderberry (*Sambucus racemosa*)

Black Walnut, while present in the northeastern woodlands, is not recommended for restoration plantings. Due to the production of *Juglone*, a compound that inhibits competition, this species may be detrimental to establishment of the restoration area. It is recommended however, to allow this species to naturally colonize.

7.1.2.3 Seed Mixtures

Restoration seeding mixes are recommended within areas disturbed by the proposed construction works in order to protect and preserve the existing soil, as amended (Section 7.1.2.1). The setback restoration areas will be seeded a rate of 22 to 25 kg/ha with the CVC Upland Native Meadow Seed Mixture (CVC 7) (**Table 3**) and should also be seeded with a cover (nurse) crop of Common Oats (*Avena sativa*) or Buckwheat (*Fagopyrum esculentu*) at a rate of 22 kg/ha. A mixture such as this would promote native diversity to the area and conforms to the *Credit Valley Conservation Seed Mixes* (Credit Valley Conservation Authority, 2014).

Table 3: CVC Upland Native Meadow Seed Mix

Common Name	Scientific Name	Percentage of Mix
Black Eyed Susan	<i>Rudbeckia hirta</i>	10%
Blue Wood (Heart Leaved) Aster	<i>Aster cordifolius</i>	1%
Canada Anemone	<i>Anemone canadensis</i>	1%
Canada Goldenrod	<i>Solidago canadensis</i>	2%
Common Milkweed	<i>Asclepias syriaca</i>	2%
Evening Primrose	<i>Oenothera biennis</i>	25%
Grass Leaved Goldenrod	<i>Euthamia graminifolia</i>	1%
Meadow/Open Field Sedge	<i>Carex granularis</i>	15%
New England Aster	<i>Aster novae-angliae</i>	1%
Riverbank Wild Rye	<i>Elymus riparius</i>	40%
Virgins Bower	<i>Clematis virginiana</i>	1%
Wild Bergamot	<i>Monarda fistulosa</i>	1%

7.1.2.4 Existing Trail

The existing trail through the woodland is proposed to be retained to provide access to the Barbour sports fields. This connection takes advantage of existing disturbances and would not require further opening for a walking trail. It is recommended that the existing trail be asphalted in a similar fashion to the trailway to define the use area. Planting shrubs immediately adjacent to the trail as per the above concept is recommended to discourage off-trail use.

7.1.2.5 Conveyance and Maintenance

The Woodlands including the setbacks will be required to be conveyed into the ownership of the Town through Conditions of Draft Plan Approval. As such, after conveyance, maintenance of the trail system would fall on the Town of Erin.

7.2 Wetlands

The SWD2-5 Red-osier Mineral Thicket Swamp is to be retained and setback from development. The preservation of the adjacent CUP3-3 Scots Pine Coniferous Plantation will also serve as additional buffer for this wetland, while maintaining upland/wetland connectivity for wildlife and SWH types.

Concerning the water balance risk evaluation for the wetland, *“the potential hydrological changes are anticipated to be low. Using the decision tree provided by the TRCA Guidelines, the proposed development will be categorized as low risk”* (Soil Engineers Ltd., 2023).

7.2.1 Setbacks

The 10 m setback is to be maintained along the woodland that encompasses the wetland (**Figure 3; Photo 13**). With this additional woodland area on the southwest side adjacent to the wetland, it is recommended that the trail system restoration proposed in Section 7.1 be extended by a minimum of an additional row of trees adjacent to the wetland, to provide additional barriers to the wetland area.

Due to the wetter conditions at the southern fringe of the wetland, compared to the fringes of the adjacent woodlands, Tamarack (*Larix laricina*) might be substituted for some of the coniferous species, as this species is found within the wetland. Bebb’s Willow (*Salix bebbiana*), Pussy Willow (*S. discolor*) and Red-osier Dogwood (*Cornus sericea*) are appropriate substitutes for the shrub species.

7.3 Species at Risk

7.3.1 Endangered Bat Maternity Roost Habitat

The FOD woodland on the east side of the Subject Property is considered the highest potential area for SAR bat habitat. Specifically, the Dry-Fresh Sugar Maple – Black Cherry Deciduous Forest (FOD5-7) contains the highest potential roost opportunities (Section 5.1). The FOD woodland is retained and setback as part of the development concept.

The cultural woodland (CUW1) unit proposed to be removed (**Figure 3**) is expected to provide minimal roosting habitat opportunities for Endangered bats, as the majority of the trees are coniferous trees, where

tree-needles present impediments to roosting. However, there are deciduous trees within the CUW1, including mid-aged to mature deciduous trees, that do present roosting opportunities due to the typical presence of cracks, seams, knot holes, and dry-leaf clusters.

Bat cavity surveys are proposed to be completed in June 2023 to assess the quantity and quality of potential roosting habitat for Endangered bats within the cultural woodland. Should SAR bats be observed, consultation with MECP will be required to ensure that the proposed habitat removal and recommended mitigation measures are acceptable (e.g., installation of bat boxes and timing window for tree removals). General mitigation measures include:

- As SAR bats hibernate in caves generally from late September to early April, tree removal must occur within this period to avoid harm or impacts to individuals (i.e., tree clearing only between October 1 to March 31st). This timing has the advantage of avoiding both the high bat activity and breeding bird (MBCA) windows.
- The MNRF have stated that the avoidance window for SAR bats should be **May 1 to October 31** (Ministry of Environment, Conservation and Parks, May 13, 2021).
- Stated differently, tree clearing between April and the end of October may impact bat roosts. Tree clearing within that window would require acoustic monitoring in June by a qualified biologist, avoiding clearing in April to June. Upon determination that no SAR bats activity is present, there would be the potential to clear trees between July and end of September.
- Should SAR surveys identify SAR bats, proposed mitigation will be discussed with the MECP, and may take the form of providing alternative habitats (e.g., bat boxes, tree plantings) in addition to the timing windows above.

7.4 Significant Wildlife Habitat

The potential and confirmed SWH types identified in Section 5.4 are all contained within the Significant Woodlands in the northeast of the Subject Property, including wetland use areas, and the Mineral Cultural Meadow (CUM1) that contains the seepage/spring area (**Figures 2 and 3**). The implementation and restoration of the 10 m setback areas will ensure that these SWH functions can be retained within the woodlands. The restoration proposed will help ensure that human interactions are limited and managed.

During construction, the following mitigations are also recommended to limit wildlife/human interactions:

- Around the northernmost woodland, turtle exclusion fencing should be combined with ESC fencing and installed prior to species' emergence from hibernation (Ontario Ministry of Natural Resources, 2013).
- The recommended depth of fence to be installed is 10 – 20 cm depth of buried fence, and a height of 60 cm (Ontario Ministry of Natural Resources, 2013). Note that OPSD219.130 standards for ESC should also be maintained for this fencing to the degree feasible.

7.5 Tree Removal

The proposed development will require the removal of the cultural woodland, and isolated and hedgerow trees. These trees have been inventoried and recorded in an Arborist Report, to ensure that an appropriate number of replacement trees are identified to maintain tree cover (Palmer, 2023). The report includes a Tree Preservation Plan, to ensure that all trees that can be preserved are protected with suitable tree protection measures during the construction works.

To minimize negative impacts from adjacent land uses, installation of tree protection fencing/hoarding (as per municipal standards), root pruning, moisture protection efforts (e.g., mulch), and/or compaction mitigation are recommended. Tree protection fencing it is to be located along the outer limit of the buffer to avoid compacting the soil and damaging tree roots.

7.6 Planned Green Spaces and Offsetting

The removal of the Cultural Woodland (CUW1) and Fencerows A to C (TAGM5) will result in the loss of trees and vegetated area that is considered outside the natural heritage system. These areas are approximately 3.14 ha and largely will need to be cleared and graded to accommodate the proposed development including the installation of the stormwater management system.

The CVC *Ecosystem Offsetting Guideline* details that land removed from the *natural heritage system* should be offset at a minimum of a 1:1 ratio (Credit Valley Conservation Authority, 2020). As the areas removed are not considered part of the natural heritage system, and the *Guideline* also has adjustments for areas of high dominance of non-native and invasive species, such as the Cultural Woodland (CUW1), the 1:1 ratio is considered appropriate for the proposed development. Planned green spaces (**Figure 3, Appendix G**) account for 3.0 ha of the proposed development, and the 10 m natural feature setbacks are 1.5 ha; being 4.5 ha total. In addition, the individual lots will be landscaped. While the grading will result in a loss of treed area, in the long run this will result in a net gain in green spaces over the current agricultural lands.

The larger open spaces are necessary for the planned stormwater detention tanks and management with public parks. The SWM Blocks are also Park Blocks. Per Bill 23, encumbered Parkland with infrastructure receives Parkland Credit.

7.7 Timing Windows

To minimize potential impacts to wildlife and avoid conflicts with the *ESA* and the *MBCA* (refer to policy Sections 2.5 and 2.6 above), all vegetation removal should be completed outside of the breeding bird timing window, and outside of the bat maternity roost timing window. To avoid impacts to breeding birds, tree clearing within the C2 nesting calendar period should be avoided, which is primarily April 15 to the end of August (Government of Canada, 2019). Combining this periods with timing to avoid potential impacts to bat species, all tree removals should be completed outside the bat maternity roost season and high activity period of April 15 to October 31 (Ministry of Natural Resources, 1984; Ontario Ministry of Natural Resources, 2011; Ministry of Environment, Conservation and Parks, May 13, 2021).

Therefore, the recommended time for any vegetation removal (woody and/or herbaceous) is between November 1 to April 14th of any given year.

7.8 Erosion and Sediment Control Plan

A detailed Erosion and Sediment Control Plan (ESCP) is recommended. At a minimum, the ESCP should include installation of sediment fencing along the northern extent of the development footprint, to prevent conveyance of sediment-laden stormwater into the adjacent natural features. Regular site inspection of the ESCP measures should be completed during the construction phase, until the site soils and conditions are

stable. This plan should incorporate standard measures such as Installation of erosion and sediment control measures around the development footprint in order to minimize off-site sediment transport. These may include the following:

- Installation of temporary silt fence, mud matt & rock check dams following the *Erosion and Sediment Control Guidelines for Urban Construction* (Greater Golden Horseshoe Conservation Authorities, 2006).
- Restoration of all created exposed surfaces as soon as possible following construction, following the outlined enhancement methods (Section 7.1.2) of restoration areas, and appropriate landscaping of lots, as applicable.
- As per Section 7.4, around the northernmost woodland, ESC fencing should be combined with turtle exclusion fencing and installed prior to species' emergence from hibernation (Ontario Ministry of Natural Resources, 2013).

7.9 Invasive Species Management

Non-native species and highly invasive species such as European Buckthorn were noted within the Subject Property. To reduce the potential for invasive species re-establishment in disturbed areas, restoration areas should be seeded as soon as possible using the seed mix recommended in Section 7.1.2. Certified weed-free topsoils and materials should be used to make up any shortfall in fill materials.

7.9.1 Construction Equipment

To prevent the spread of invasive species, construction equipment should arrive at the site clean and leave the site clean.

- Before arriving on site, construction equipment should be pressured washed with high-pressure steam-cleaning methods.
- Equipment cleaning stations should be established to ensure that invasive species seeds and other viable plant parts cannot escape in runoff or through other means.
- During construction, equipment used in areas with an abundance of invasive species should be cleaned prior to moving to another portion of the site.
- A high-pressure steam-cleaning should also be completed on vehicles prior to leaving the site.

7.9.2 Equipment Cleaning Stations

Equipment should be cleaned in an area where contamination and seed spread are not possible (or limited) (Ontario Invasive Plant Council, 2013). The site should be:

- Ideally, mud free, gravel covered or a hard surface. If this option is not available, choose a well maintained (i.e., regularly mowed) grassy area.
- Gently sloping to assist in draining water and material away from the vehicle or equipment. Care should be taken to ensure that localized erosion will not be created, and that water runs back into the area where contamination occurred.
- A means of collecting equipment washings and adding them to soils destined for landfills should be integrated into standard construction practices.

- Cleaning stations should be at least 30 m away from any watercourse, water body and natural vegetation.
- Cleaning stations should be large enough to allow for adequate movement of larger vehicles and equipment.

8. Policy Conformity

8.1 Provincial Policy Statement (2020)

According to the Provincial Policy Statement, development is generally prohibited within significant natural heritage features (NHF) as defined in the policy. In accordance with this guideline, the development envelope of the proposed development will be situated outside of the on-site natural heritage features, including buffers and/or setbacks outlined in relevant local policies. Furthermore, measures have been recommended (including application of development setbacks and ESC measures) to ensure the protection of these features. The trail system to be implemented also aids in the implementation of PPS Policy 1.5 by *planning and providing for a full range and equitable distribution of publicly-accessible built and natural settings for recreation.*

Through implementation of the recommendations presented in this EIS, the development as proposed complies with the PPS.

8.2 Wellington County Official Plan

The *Wellington County Official Plan (OP)*, 2019 Consolidation, designates the Subject Property an 'Urban Center' (County of Wellington, 2019). As such, the Subject Property is within the existing settlement area, and the Natural Heritage System Policies of Section 9.9.6 would not apply, which generally implement the PPS.

However, Section 5.4.1 of the OP states that *all wetlands in the County of Wellington are included in the Core Greenlands*, and that "other wetlands" will be protected from development *that would seriously impair their future ecological functions*. The retention of the adjacent CUP3-3 Cultural Plantation woodland and the 10 m setback to it encompass the on-site wetland, together with the restoration and other mitigations to be implemented, ensure that the wetland and its ecological functions are maintained for the long term.

Under Section 5.5.4 of the County's OP, woodlands over 1 ha in the Urban System can be considered Significant Woodlands. To this, the two northeastern woodlands are considered Significant Woodlands and will be retained and appropriately setback from the proposed development. As discussed in Section 5.3.2, the Cultural Woodland of the former farmstead area does not meet the definitions for significance due to its isolation and diminished quality.

As such, the proposed development conforms to the natural heritage policies of the Wellington County Official Plan.

8.3 Town of Erin Official Plan

The *Town of Erin Official Plan (OP)*, dated 2012, designates the Subject Property within Residential, Greenlands, and Recreational areas as depicted in the OP's Schedule A-3 (**Map C**). There are no mapped Core Greenlands on the Subject Property; however, this EIS extends the mapped Greenlands from Schedule A-3 to encompass the two northeastern Significant Woodland Areas (Section 7.1).

The 10 m setback area is to be restored to buffer and enhance these Significant Woodland areas and their natural heritage functions. The trail system within the setback area provides a transition from natural to urban areas and provides definition for use of the area. Under Policy 4.3.2 of the Official Plan, passive uses such as trail systems are permitted in Core Greenlands provided no net negative impacts on features and functions, and natural hazards are avoided. The planned trail conforms to this policy. The areas are not Core Greenlands and the trails to be contained primarily within the setbacks. The concept allows for buffering and screening with native vegetation, including for the existing trail, and negative impacts are anticipated to be mitigated. There are no erosion or flooding hazards to consider in this concept.

As such, the proposed development conforms to the natural heritage policies of the Town of Erin Official Plan.

8.4 Credit Valley Conservation Authority Policies and Procedures

Credit Valley Conservation Authority (CVC) regulates hazard lands including watercourses, valleylands, shorelines, and wetlands, including lands adjacent to these features under the *Conservation Authorities Act, 1990* through Ontario Regulation (O. Reg.) 160/06 – *Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses*.

As depicted in the CVC's regulation mapping, the Subject Property contains lands regulated under O.Reg. 160/06, associated with the northern woodland (**Map D**, Section 2.4). These regulated areas have been extended in this EIS to include the staked wetland area (**Figures 2 and 3**). Under O.Reg. 160/06, a permit would be required from the CVC prior to development within regulated lands (Credit Valley Conservation Authority, 2010). However, the staked wetland area has been retained and appropriate 10 m setbacks have been planned for, including restoration (Sections 7.1.2 and 7.2.1). These setbacks and mitigations ensure that the O.Reg. 160/06 implementation (Chapter 7) policies of the *Watershed Planning and Regulation Policies* are satisfied (Credit Valley Conservation Authority, 2010).

The CVC *Watershed Planning and Regulation Policies* also provides for criteria to be applied when providing Plan Input and Plan Review for evaluating development proposals. For the proposed development, relevant setbacks include 10 m for Significant Woodlands and wetlands other than PSWs. Similar to the above, the Significant Woodlands and the staked wetland area have been retained and appropriate 10 m setbacks have been planned for, including restoration (Sections 7.1.2 and 7.2.1). These setbacks and mitigations ensure that the Plan Review (Chapter 6) policies of the *Watershed Planning and Regulation Policies* are satisfied (Credit Valley Conservation Authority, 2010).

8.5 Endangered Species Act (2007)

Based on the results of our field surveys and habitat screening, there is the potential for negligible impacts to SAR bat habitat due to tree removal in cultural lands. Clearing outside the May 1 to October 31 timing window mitigation outlined in Section 7.3.1 avoids potential contravention of the Act in the unlikely event SAR bats are present. The avoidance window is recommended to be extended from **April 15 to October 31** to combine bat activity and breeding bird timing windows.

It is recommended that acoustic monitoring for SAR species be conducted in June 2023, or the June prior to clearing. Should acoustic surveys identify SAR bats in the Cultural Woodland, proposed mitigation will

be discussed with the MECP, and may take the form of providing alternative habitats (e.g., bat boxes, tree plantings) in addition to the timing windows above.

Providing these mitigations and enhancements, the proposed development is considered to conform to the ESA.

8.6 Migratory Birds Convention Act (1994)

Works with potential *Migratory Birds Convention Act* (MBCA) implications may occur during the construction phase of the project when the Subject Property is cleared and grubbed of vegetation. Compliance with the MBCA may be achieved using the following due diligence approach (Government of Canada, 2018), including:

- Proponent awareness of the MBCA and the potential for bird nesting in the area and for inadvertent impacts to migratory birds, nests and eggs.
- Avoiding tree/vegetation removal within the “regional nesting period” for this area (generally mid April to late August).
 - However, it is recommended that this timing window be extended to include the bat maternity roost season and hibernation period, and a collective avoidance window of **April 15 to October 31** is recommended.

9. Conclusions

The findings of the EIS are the result of a background review, field investigations, compilation of data from the 2012 EIS, and an analysis of data using current scientific understanding of the ecology of the area, as well as current natural heritage policy and legal requirements.

Based on the ecological findings, we have identified natural environmental sensitivities, constraints and development opportunities for the Subject Property. The environmental constraints consist of various natural heritage features and functions and respective buffers or setbacks in accordance with planning and regulatory policies and guidelines as described and illustrated (**Figure 3**).

Environmental opportunities such as refinement of feature limits and habitat functions are proposed for future studies. The assessment of features and their functions proposed for removal are described in detail, with recommendations for suitable mitigation measures. This EIS has been completed as part of the Official Plan Amendment, Zoning By-law Amendment and Draft Plan of Subdivision submission for the Subject Property.

10. Certification

This report was prepared, reviewed and approved by the undersigned:

Prepared by:



Austin Adams, M.Sc., EP
Senior Ecologist

Approved by:



Dirk Janas, B.Sc.
Principal, Senior Ecologist

11. References

- Bird Studies Canada. (2001). *Ontario Breeding Bird Atlas Guide for Participants*. Retrieved from https://www.birdsontario.org/download/atlas_feb03.pdf
- Bird Studies Canada. (2009). *Marsh Monitoring Program Participant's Handbook for Surveying Amphibians*.
- Bird Studies Canada. (2023). *Atlas of the Breeding Birds of Ontario*. Retrieved from Atlas of the Breeding Birds of Ontario: <http://www.birdsontario.org/atlas/index.jsp?lang=en>
- Catling, P. (2013). Using Coefficients of Conservatism and the Floristic Quality Index to Assess the Potential for Serious and Irreversible Damage to Plant Communities. *Canadian Field-Naturalist*, 127(3), 285-288.
- Chapman, L. J., & Putnam, D. F. (1984). *The Physiography of Southern Ontario - Third Edition*. Ontario.
- County of Wellington. (2019). *County of Wellington Official Plan*. Retrieved from <https://www.wellington.ca/en/resident-services/resources/Planning/Official-Plan/Wellington-County-Official-Plan---June-26-2019.pdf>
- Credit Valley Conservation Authority. (2002). *Plants of the Credit River Watershed*. Retrieved from Credit Valley Conservation Authority: <https://cvc.ca/wp-content/uploads/2011/01/PlantsComplete.pdf>
- Credit Valley Conservation Authority. (2010, April). *Watershed Planning and Regulation Policies*. Retrieved from Credit Valley Conservation Authority: https://cvc.ca/wp-content/uploads/2011/01/004-CVC-WPR-Policies_APR-2010.pdf
- Credit Valley Conservation Authority. (2014). *Credit Valley Conservation Seed Mixes - Version 1.1 August 2014*. Retrieved from Credit Valley Conservation Authority: <https://cvc.ca/wp-content/uploads/2013/05/planning-seedmix-flyer-may-20131.pdf>
- Credit Valley Conservation Authority. (2017). *Fish and Wildlife Crossing Guidelines*. Retrieved from cvc.ca: <https://cvc.ca/wp-content/uploads/2017/05/CVC-Fish-and-Wildlife-Crossing-Guidelines-final-web.pdf>
- Credit Valley Conservation Authority. (2018). *Plant Selection Guideline*. Retrieved from cvc.ca: <https://cvc.ca/wp-content/uploads/2018/04/Plant-Selection-Guideline-FINAL-APRIL-24th-2018.pdf>
- Credit Valley Conservation Authority. (2020). *Ecosystem Offsetting Guideline*. Retrieved from cvc.ca: https://files.cvc.ca/cvc/uploads/2021/06/rpt_CVCEcoOffset_FINAL_20200313.pdf

- Credit Vally Conservation Authority. (2017). *Healthy Soils Guideline*. Retrieved from [cvc.ca: https://cvc.ca/wp-content/uploads/2017/09/CVC-Healthy-Soils-Guidelines-NHS-Web-V5.pdf#:~:text=CVC%20Healthy%20Soils%20Guideline%20Height%20of%20Stockpiles%20%EF%82%B7Less,soil%20microorganisms.%20%EF%82%B7%20Stockpiles%20material%20should%20be%20dry](https://cvc.ca/wp-content/uploads/2017/09/CVC-Healthy-Soils-Guidelines-NHS-Web-V5.pdf#:~:text=CVC%20Healthy%20Soils%20Guideline%20Height%20of%20Stockpiles%20%EF%82%B7Less,soil%20microorganisms.%20%EF%82%B7%20Stockpiles%20material%20should%20be%20dry)
- Crins, W. J., Gray, P. A., Uhlig, P. W., & Wester, M. C. (2009). *The Ecosystems of Ontario, Part 1: Ecozones and Ecoregions*. Peterborough, Ontario: Ontario Ministry of Natural Resources. Retrieved from <https://www.ontario.ca/page/ecosystems-ontario-part-1-ecozones-and-ecoregions>
- Fisheries and Oceans Canada. (2023). *Aquatic Species at Risk Map*. Retrieved from Fisheries and Oceans Canada: <http://www.dfo-mpo.gc.ca/species-especies/sara-lep/map-carte/index-eng.html>
- Government of Canada. (1994). Migratory Birds Convention Act, 1994 (S.C. 1994, c. 22). Retrieved from <http://laws-lois.justice.gc.ca/eng/acts/m-7.01/>
- Government of Canada. (2018). *Beneficial Management Practices - Avoiding Harm to Migratory Birds*. Retrieved from [canada.ca: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/beneficial-management-practices.html](https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/beneficial-management-practices.html)
- Government of Canada. (2019). *Nesting Zones*. Retrieved from Government of Canada - Environment and Climate Change: https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/general-nesting-periods/nesting-periods.html#_zoneC_calendar
- Government of Ontario. (2007). Endangered Species Act, 2007, S.O. 2007, c. 6. Retrieved from <https://www.ontario.ca/laws/statute/07e06>
- Government of Ontario. (2023). *Land Information Ontario*. Retrieved from [ontario.ca: https://www.ontario.ca/page/land-information-ontario](https://www.ontario.ca/page/land-information-ontario)
- Greater Golden Horseshoe Conservation Authorities. (2006). *Erosion and Sediment Control Guidelines for Urban Construction*. Retrieved from www.trca.on.ca/dotAsset/40035.pdf
- Lee, H. T., Bakowsky, W. D., Riley, J., Bowles, J., Puddister, M., Uhlig, P., & McMurray, S. (1998). *Ecological Land Classification for Southern Ontario: First Approximation and its Application*. Ontario Ministry of Natural Resources, Southcentral Science Section, Science Development and Transfer Branch.

- Ministry of Environment, Conservation and Parks. (May 13, 2021). *Personal Communication with Jeff Andersen RE: Bat timing windows.*
- Ministry of Natural Resources. (1984). *Habitat Management Guidelines for Bats in Ontario.* Retrieved from Ontario Ministry of Natural Resources and Forestry: file:///C:/Users/Austin%20Adams/AppData/Local/Packages/Microsoft.MicrosoftEdge_8wekyb3d8bbwe/TempState/Downloads/guide-bats%20(1).pdf
- Ministry of Natural Resources and Forestry. (2018). *Natural Heritage Information Request Guide.* Ministry of Natural Resources and Forestry.
- Ministry of Natural Resources and Forestry. (2023). *Natural Heritage Information Centre.* Retrieved from Ministry of Natural Resources and Forestry: <https://www.ontario.ca/page/natural-heritage-information-centre>
- Ministry of Natural Resources and Forestry. (2023). *Natural Heritage Information Centre Species Lists.* Retrieved from Ministry of Natural Resources and Forestry: <https://www.ontario.ca/page/get-natural-heritage-information>
- Oldham, M. J., & Brinker, S. R. (2009). *Rare Vascular Plants of Ontario, Fourth Edition.* Peterborough, Ontario: Natural Heritage Information Centre, Ministry of Natural Resources.
- Oldham, M. J., Bakowsky, W. D., & Sutherland, D. A. (1995). *Floristic Quality Assessment System for Southern Ontario.* Peterborough, ON: Natural Heritage Information Centre, Ontario Ministry of Natural Resources.
- Ontario Invading Species Awareness Program. (2018). *Invasive Plants.* Retrieved from Ontario Invading Species Awareness Program: <http://www.invadingspecies.com/plants/>
- Ontario Invasive Plant Council. (2013). *Clean Equipment Protocol for Industry.* Retrieved from [ontarioinvasiveplants.ca:](https://www.ontarioinvasiveplants.ca/) https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf
- Ontario Ministry of Natural Resources. (2000). *Significant Wildlife Habitat Technical Guide.* Peterborough: Queen's printer for Ontario. Retrieved from <https://www.ontario.ca/document/guide-significant-wildlife-habitat>

- Ontario Ministry of Natural Resources. (2010). *Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Second Edition*. Toronto: Queen's Printer for Ontario. Retrieved from <http://cloca.ca/resources/Outside%20documents/Natural%20Heritage%20Policies%20of%20the%20Provincial%20Policy%20Statement%20MNR%202010.pdf>
- Ontario Ministry of Natural Resources. (2011). *Bats and Bat Habitats: Guidelines for Wind Power Projects*. Queen's Printer for Ontario. Retrieved from <https://www.ontario.ca/document/bats-and-bat-habitats-guidelines-wind-power-projects>
- Ontario Ministry of Natural Resources. (2013). *Reptile and Amphibian Exclusion Fencing: Best Practices, Version 1.0. Species at Risk Branch Technical Note*. Retrieved from https://files.ontario.ca/environment-and-energy/species-at-risk/mnr_sar_tx_rptl_amp_fnc_en.pdf
- Ontario Ministry of Natural Resources. (2014). *Ontario Wetland Evaluation System: Southern Manual, 3rd Edition, Version 3.3*. Retrieved from Ontario Ministry of Natural Resources: <https://files.ontario.ca/environment-and-energy/parks-and-protected-areas/ontario-wetland-evaluation-system-southern-manual-2014.pdf>
- Ontario Ministry of Natural Resources. (2015). *Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E*. Peterborough: Regional Operations Division, Southern Region Resources Section.
- Ontario Ministry of Natural Resources and Forestry. (2015). *Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E*. Peterborough: Ontario Ministry of Natural Resources and Forestry Regional Operations Division, Southern Region Resources Section.
- Ontario Nature. (2023). *Ontario Reptile and Amphibian Atlas*. Retrieved from Ontario Nature: <https://ontarionature.org/programs/citizen-science/reptile-amphibian-atlas/>
- Palmer. (2023). Arborist Report and Tree Protection Plan - Hillsburgh Subdivision. Palmer Environmental Consulting Group Ltd.
- Soil Engineers Ltd. (2023). *Wetland Water Balance (Hydrological) Risk Evaluation Proposed Residential Development 63 and 63A Trafalgar Road*. For Beachcroft Investments Inc. .

Toronto and Region Conservation Authority. (2017). *Wetland Water Balance Risk Evaluation*. Retrieved from [trca.ca:](https://trca.ca/app/uploads/2017/12/WetlandWaterBalanceRiskEvaluation_Nov2017.pdf)

https://trca.ca/app/uploads/2017/12/WetlandWaterBalanceRiskEvaluation_Nov2017.pdf

Toronto and Region Conservation Authority and Credit Valley Conservation. (2014). *Evaluation, Classification and Management of Headwater Drainage Features Guidelines*. Toronto.

Town of Erin. (2012). *Town of Erin Official Plan*. Retrieved from <http://www.erin.ca/file.ashx?id=53624332-4f09-45be-9d0b-a9298cc446d7>

Town of Erin. (2021). *Engineering Design Standards Manual*. Town of Erin. Retrieved from <https://www.erin.ca/media/3422/2022-town-of-erin-engineering-design-standards.pdf>



Appendix A

Terms of Reference and Agency Responses

August 27, 2021

Dorothy Di Berto, RPP
Senior Manager, Planning
Planning and Development Services
Credit Valley Conservation Authority
1255 Old Derry Road
Mississauga, ON L5N 6R4
dorothy.diberto@cvc.ca

Planning Consultant for the Town of Erin:
Angela Sciberras, MCIP RPP
Principal
Macaulay Shiomi Howson Ltd.
#202–520 Industrial Pkwy S
Aurora, Ontario L4G 6W8
sciberras@mshplan.ca

Dear Dorothy Di Berto and Angela Sciberras,

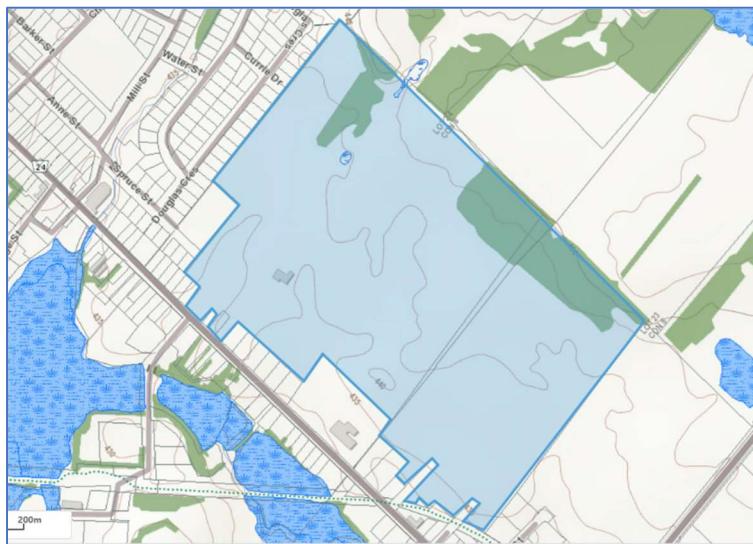
Re: Revised Terms of Reference for a Scoped Environmental Impact Study (EIS) for the Ballantry Homes Inc. Hillsburgh Project (Project 2105001)

Palmer is pleased to provide this revised Terms of Reference (TOR) for a scoped Environmental Impact Study (EIS) at the above-referenced Site (the “Subject Property” – **Figure 1**). The revisions are based on input from the Credit Valley Conservation Authority (CVC) and Angela Sciberras for the Town of Erin. This TOR is based on and will build on preliminary ecological field observations Palmer recently completed for the Project, wherein initial natural features have been identified for further analysis. The Subject Property forms part of the Town of Erin’s Growth Management and Wastewater Servicing Strategy wherein they have been allocated Wastewater Servicing with our Client contributing to the required Allocation and Front Ending Agreements generated by the Town of Erin. Accordingly, in anticipation of *Planning Act* applications being prepared for the Subject Lands, to implement a Residential Plan of Subdivision, these TOR have been prepared for your review and approval.

The current land use is agricultural fields. Following our preliminary assessments, including a Site Visit and preliminary review of regulatory agency mapping and background information, Palmer has identified the following:

- There is a cultural woodland (the former farmstead area) and a cultural plantation (northeast corner) present on the property that must be evaluated for their developability and/or applicability as protected Significant Woodlands;
- The plantation area contains a wetland whose limits should be confirmed with the Credit Valley Conservation Authority (CVC);
- There is a cultural meadow in the east corner that may contain a seep area, requiring evaluation; and
- Overall, the natural areas on-site must be completely evaluated for potential Natural Heritage Features (NHF); in particular, the stretch of woodland along the northeastern boundary (**Map A**).

The EIS will be completed to confirm and refine existing natural features that have been documented previously, assess the potential impacts on these features from the proposed development, and recommend measures to mitigate such impacts.



Map A. NHIC Map depicts the Subject Property within woodland features (green layer) and small pockets of unevaluated wetlands (light blue layer)

Scope of Work

As the overall Subject Property is primarily agricultural fields, and habitat features are generally limited, Palmer is proposing a scoped EIS, relative to the potential natural heritage features. The proposed scoped work plan for completion of the EIS consists of the key task items, as described below.

Task 1 – Background Review

Following from the preliminary ecological assessment, a thorough background review will be conducted as part of the study. Documents will include background information relating to the Subject Property's biological and physical resources, including records for Species at Risk (SAR). Natural heritage mapping and associated environmental policies at the provincial, regional and local levels will be identified. **We will also consult with the conservation authority, the Town, and provincial agencies (MECP) regarding any other natural heritage related records (including SAR) pertaining to the Subject Property.**

The on-site wetland will be reviewed in relation to the TRCA *Wetland Risk Evaluation Guideline* to assess the need for a feature-based water balance.

Task 2 – Agency Consultation

This proposed TOR represents the initiation of agency consultation for the Project. As part of the agency consultation process, Palmer will schedule an on-site meeting with CVC to stake the limits of any potential features (e.g., wetland, treed dripline). This will also provide an opportunity for an on-site discussion of the proposed development and potential issues to address in advance of the EIS submission.

A technical memo will be prepared and circulated to the Ministry of the Environment, Conservation and Parks (MECP). The memo will address SAR that may be impacts by the proposed development and will provide suggest mitigation measures to ensure that the proposed development plan is in conformity with the *Endangered Species Act (ESA), 2007*.

In relation to the on-site wetland, as they are within 750 m of mapped and evaluated Provincially Significant Wetland, the MNRF will be provided with the results of the wetland assessments for the project.

Task 3 – Field Investigations

The objective of the field investigations is to provide site-specific information as part of the assessment of the feasibility of the proposed development configuration. The scope of field surveys will cover all of the natural features on the property, with a focus on the natural features identified through the preliminary ecological assessment and background review. Based on the character of the site and the potential natural heritage features, Palmer proposes the following surveys:

- *Ecological Communities Assessment*
 - The on-site ecological communities will be confirmed and refined in accordance with Ecological Land Classification of Southern Ontario (ELC) protocols (Lee et al. 1998). Vegetation surveys, focusing on the edge environment of the Natural Heritage System, will be completed to inventory and map existing vegetation communities to include an inventory of plant species, ecological features and functions and observations of incidental wildlife.
 - A two-season (spring/summer) vegetation and ecology program is being undertaken.
 - **Note:** CVC has suggested a 3-season survey if natural areas are to be encroached upon, but that it may not be necessary if the natural areas and setbacks are to be incorporated into the design and avoided. The latter is the case, and a 2-season survey was completed.
- *Species at Risk (SAR) Habitat and Significant Wildlife Habitat (SWH) Screenings*
 - A SAR screening for potential habitat opportunities or occurrences on the Subject Property (e.g., Butternut) will be completed, in consultation with the Ministry of the Environment, Conservation and Parks (MECP). An assessment of significant wildlife habitat (SWH) and screening for potential plant or wildlife species of conservation concern will also be completed.
- *Breeding Bird Surveys*

- Two standard breeding birds surveys will be completed, as per accepted Bird Studies Canada protocols. Breeding evidence codes will be provided for each observation(s).
- *Amphibian Surveys*
 - A single amphibian study will be completed following Marsh Monitoring Program protocols to better understand the breeding potential of the pond found within the northeast wetland.
Note: During the Agency Site visit conducted on July 22, 2021, the CVC noted confirmed presence of calling amphibians and will assume the on-site wetland is amphibian breeding habitat. CVC further note that while 3-round surveys are typically required, CVC would be satisfied with a 1-round round of survey provided that the feature is shown to be appropriately protected within the site plan (and off-lot and appropriate buffers and grading). The feature is to be appropriately protected and incorporated into the concept site plan.
- *Headwater Drainage Assessment*
 - The potential headwater drainage feature (HDF) extending from the woodland/wetland feature in the north corner will be investigated according to the Evaluation, Classification and Management of the Headwater Drainage Features Guidelines (CVC and TRCA).

Task 4 – Impact Assessment and EIS Reporting

The following components will be addressed as part of the EIS:

- Documentation of existing conditions and associated constraints and opportunities (constraints mapping).
- Review and summary of applicable environmental policies and regulatory requirements.
- Impact assessment in relation to the proposed development.
- Confirmation of the development limits and appropriate setbacks.
- Identification of appropriate mitigation measures; and
- Project conformity with applicable environmental policies and regulatory requirements.

An impact assessment of the proposed development will be completed in the context of the ecological constraints and applicable environmental policies. An analysis of the background and field data will be completed in order to determine the ecological functions, significance, and sensitivity of the natural heritage features found on and directly adjacent to the subject property. This will include delineation or confirmation of information already available for vegetation community boundaries, buffers/setback, identifying significant ecological features, such as potential habitat for SAR and Significant Wildlife Habitat.

The above information will be used to identify / confirm the proposed development limits. The concept site plan will show appropriate retention and protection of Natural Heritage Features (features and buffers). The goal of the EIS will be to the degree feasible to demonstrate protection, enhancement and creation of a connected Natural Heritage System within the site and enhance connections off site. Mitigations will consider options such as transitional land uses and integrated stormwater management. Palmer will provide specific mitigation recommendations as needed.

August 27, 2021

PalmerTM

Closing

We trust that this revised TOR for the preparation of an EIS for the Hillsburgh Project, in the Town of Erin, fulfills the Town's and the CVC's requirements. Please feel free to contact me at 647-461-2372 or austin.adams@pecg.ca should you have any questions regarding this letter.

Yours truly,

PalmerTM

A handwritten signature in blue ink that reads "Austin Adams". The signature is written in a cursive, flowing style.

Austin Adams, M.Sc., EP.
Senior Ecologist

austin@pecg.ca

From: Hosale, Lisa <Lisa.Hosale@cvc.ca> on behalf of Hosale, Lisa
Sent: Wednesday, October 13, 2021 11:12 AM
To: Austin Adams; Maurizio Rogato; Angela Sciberras; Paudel, Elizabeth; Meagan Ferris; Bobby Bhoola; David Hill; Leo Liu; Labrie, Sarah
Cc: Tanjot Bal; Colucci, Nick
Subject: RE: [External] RE: CVC review of EIS TOR for Ballantry Homes, 63 Trafalgar Erin (PD 21/149)
Attachments: Hillsburgh_EIS_RevisedTOR_2105001.pdf

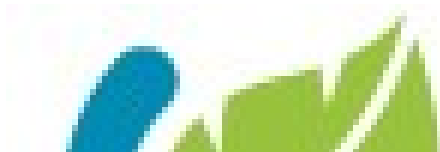
Hi Austin,
Good morning and my apologies for the delay in getting back to you. We understand that fieldwork is well underway, but wanted to formally confirm here that CVC staff have reviewed the revised EIS TOR (attached) and all of our TOR comments (from our email below dated August 11, 2021) have been adequately addressed. Thanks for working with us on this.

Aside from us, please do coordinate with Tanjot and Megan at the Town and Region as needed, but you can consider CVC satisfied on the TOR.

Best wishes,
Lisa

I'm working remotely. The best way to reach me is by email, mobile phone or Microsoft Teams.

Lisa Hosale | M.A., M.Sc., AICP | she/her/hers
Planner, Planning and Development Services | Credit Valley Conservation
905-670-1615 ext 268 | M: 437-881-1737
lisa.hosale@cvc.ca | cvc.ca



Credit Valley

[View our privacy statement](#)

From: Austin Adams <austin.adams@pecg.ca>
Sent: Friday, August 27, 2021 9:22 AM
To: Maurizio Rogato <mrogato@blackthorncorp.ca>; Angela Sciberras <sciberras@mshplan.ca>; Hosale, Lisa <Lisa.Hosale@cvc.ca>; Paudel, Elizabeth <Elizabeth.Paudel@cvc.ca>; Meagan Ferris <meaganf@wellington.ca>; Bobby Bhoola <bobby@ballantryhomes.com>; David Hill <dhill@ballantryhomes.com>; Leo Liu <liliu@jdbarnes.com>; Labrie, Sarah <Sarah.Labrie@cvc.ca>
Cc: Tanjot Bal <Tanjot.Bal@erin.ca>; Colucci, Nick <Nick.Colucci@erin.ca>
Subject: [External] RE: CVC review of EIS TOR for Ballantry Homes, 63 Trafalgar Erin (PD 21/149)

[CAUTION] This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. If in doubt contact help211@cvc.ca

Hello Lisa, Angela, all,

Please find our revised TOR based on the comments provided. For convenience, I have highlighted the areas where we have addressed the comments. Note, I felt that some of the comments (6 and 8 specifically) are more planning guidance than TOR actions. Rest assured, we will also include those considerations into the planning of the development as well.

Regards,
Austin Adams, M.Sc., EP
Senior Ecologist



| t (647) 461 2372 | e austin.adams@pecg.ca

Learn More:
www.pecg.ca

From: Maurizio Rogato <mrogato@blackthorncorp.ca>
Sent: August 11, 2021 2:08 PM
To: Angela Sciberras <sciberras@mshplan.ca>; Hosale, Lisa <Lisa.Hosale@cvc.ca>; Paudel, Elizabeth <Elizabeth.Paudel@cvc.ca>; Meagan Ferris <meaganf@wellington.ca>; Bobby Bhoola <bobby@ballantryhomes.com>; Austin Adams <austin.adams@pecg.ca>; David Hill <dhill@ballantryhomes.com>; Leo Liu <liliu@jdbarnes.com>; Labrie, Sarah <Sarah.Labrie@cvc.ca>
Cc: Tanjot Bal <Tanjot.Bal@erin.ca>; Nick Colucci <Nick.Colucci@erin.ca>
Subject: Re: CVC review of EIS TOR for Ballantry Homes, 63 Trafalgar Erin (PD 21/149)

Angela

Thanks for this. Always helpful 😊

I'll be sure to reach out.

Thanks again

Maurizio

Maurizio Rogato [B.U.R.Pl.](http://www.blackthorncorp.ca), M.C.I.P., R.P.P.

Principal
BLACKTHORN DEVELOPMENT CORP.
Tel: 416-888-7159
www.blackthorncorp.ca

“This message (and any associated files) is intended only for the use of the individual or entity to which it is addressed. The content of the message is the property of the sender-writer. The message may contain information that is privileged, confidential, subject to copyright and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are notified that any dissemination, distribution, copying, or modification of this message is strictly prohibited. If you have received this message in error, please notify the sender immediately, advising of the error and delete this message without making a copy. (Information related to this email is automatically monitored and recorded and the content may be required to be disclosed by Blackthorn Development Corp. to a third party in certain circumstances). Thank you.”

From: Angela Sciberras <sciberras@mshplan.ca>
Sent: Wednesday, August 11, 2021 2:06:48 PM
To: Maurizio Rogato <mrogato@blackthorncorp.ca>; Hosale, Lisa <Lisa.Hosale@cvc.ca>; Paudel, Elizabeth <Elizabeth.Paudel@cvc.ca>; Meagan Ferris <meaganf@wellington.ca>; Bobby Bhoola <bobby@ballantryhomes.com>; Austin Adams <austin.adams@pecg.ca>; David Hill <dhill@ballantryhomes.com>; Leo Liu <lliu@jdbarnes.com>; Labrie, Sarah <Sarah.Labrie@cvc.ca>
Cc: Tanjot Bal <Tanjot.Bal@erin.ca>; Nick Colucci <Nick.Colucci@erin.ca>
Subject: RE: CVC review of EIS TOR for Ballantry Homes, 63 Trafalgar Erin (PD 21/149)

Hi Maurizio –
That is great thanks very much.

You can access the application form online; however, if you need any assistance with respect to fees, etc., please follow up with Tanjot, and she can provide whatever additional info you require. She will also be able to set up the meeting upon receipt of the application, documents and fee.

Regards,
Angela

Angela Sciberras, MCIP RPP
Principal
Macaulay Shiomi Howson Ltd.

E sciberras@mshplan.ca #202–520 Industrial Pkwy S
T 905.503.3440, ext 221 Aurora, Ontario
F 905.503.3442 L4G 6W8 Canada



From: Maurizio Rogato <mrogato@blackthorncorp.ca>
Sent: Wednesday, August 11, 2021 1:49 PM
To: Angela Sciberras <sciberras@mshplan.ca>; Hosale, Lisa <Lisa.Hosale@cvc.ca>; Paudel, Elizabeth <Elizabeth.Paudel@cvc.ca>; Meagan Ferris <meaganf@wellington.ca>; Bobby Bhoola <bobby@ballantryhomes.com>; Austin Adams <austin.adams@pecg.ca>; David Hill <dhill@ballantryhomes.com>; Leo Liu <lliu@jdbarnes.com>; Labrie, Sarah <Sarah.Labrie@cvc.ca>
Cc: Tanjot Bal <Tanjot.Bal@erin.ca>; Nick Colucci <Nick.Colucci@erin.ca>
Subject: Re: CVC review of EIS TOR for Ballantry Homes, 63 Trafalgar Erin (PD 21/149)

Angela

Hope all is well.

We will be updating the Concept Plan to reflect the staked limits and some changes.

Once the Plan is updated, we will formally apply for the Pre Application Consultation Meeting and hopefully soon.

Looking forward.

Thanks

Maurizio

Maurizio Rogato [B.U.R.Pl.](#), M.C.I.P., R.P.P.

Principal
BLACKTHORN DEVELOPMENT CORP.
Tel: 416-888-7159
www.blackthorncorp.ca

“This message (and any associated files) is intended only for the use of the individual or entity to which it is addressed. The content of the message is the property of the sender-writer. The message may contain information that is privileged, confidential, subject to copyright and exempt from disclosure under applicable law. If the reader of this message is not the intended recipient, you are notified that any dissemination, distribution, copying, or modification of this message is strictly prohibited. If you have received this message in error, please notify the sender immediately, advising of the error and delete this message without making a copy. (Information related to this email is automatically monitored and recorded and the content may be required to be disclosed by Blackthorn Development Corp. to a third party in certain circumstances). Thank you.”

From: Angela Sciberras <sciberras@mshplan.ca>
Sent: Wednesday, August 11, 2021 9:59:45 AM
To: Hosale, Lisa <Lisa.Hosale@cvc.ca>; Paudel, Elizabeth <Elizabeth.Paudel@cvc.ca>; Meagan Ferris <meaganf@wellington.ca>; Maurizio Rogato <mrogato@blackthorncorp.ca>; Bobby Bhoola <bobby@ballantryhomes.com>; Austin Adams <austin.adams@pecg.ca>; David Hill <dhill@ballantryhomes.com>; Leo Liu <lliu@jdbarnes.com>; Labrie, Sarah <Sarah.Labrie@cvc.ca>
Cc: Tanjot Bal <Tanjot.Bal@erin.ca>; Nick Colucci <Nick.Colucci@erin.ca>
Subject: RE: CVC review of EIS TOR for Ballantry Homes, 63 Trafalgar Erin (PD 21/149)

Hi Lisa –
Thank you for your comments below.

At this time the Town has not received a formal request for Pre-Consultation; and, as a result, we have no direction to provide any comments.
Ballantry is encouraged to submit a Pre-Consultation Meeting application as soon as possible.

Regards,
Angela

Angela Sciberras, MCIP RPP
Principal
Macaulay Shiomi Howson Ltd.

E sciberras@mshplan.ca #202–520 Industrial Pkwy S
T 905.503.3440, ext 221 Aurora, Ontario
F 905.503.3442 L4G 6W8 Canada

From: Hosale, Lisa <Lisa.Hosale@cvc.ca>

Sent: Wednesday, August 11, 2021 9:56 AM

To: Paudel, Elizabeth <Elizabeth.Paudel@cvc.ca>; Meagan Ferris <meaganf@wellington.ca>; Angela Sciberras <sciberras@mshplan.ca>; Maurizio Rogato <mrogato@blackthorncorp.ca>; Bobby Bhoola <bobby@ballantryhomes.com>; Austin Adams <austin.adams@pecg.ca>; David Hill <dhill@ballantryhomes.com>; Leo Liu <lliu@jdbarnes.com>; Labrie, Sarah <Sarah.Labrie@cvc.ca>

Subject: CVC review of EIS TOR for Ballantry Homes, 63 Trafalgar Erin (PD 21/149)

Hi Maurizio and Bobby,

Good morning- that you for your patience as we finished review of the EIS TOR for the Ballantry Homes proposal on 8th Line, Erin (PD 20/199). Also, thank you for inviting us to the site for the feature staking on July 16 - we do understand that you have already commenced ecological fieldwork/studies given seasonal constraints and based on our discussions from July 16. I cc'd colleagues at the Town/County on this email - please do take CVC's comments, below, in context of any forthcoming Town/County review, and we are happy to have any meetings as necessary to integrate in that regard.

CVC Comments

1. CVC has no objection to a Scoped EIS provided the concept plan shows appropriate retention and protection of Natural Heritage Features (features and buffers); where encroachments or impacts are proposed more detailed surveys may be required.
 - a. ELC methodology was not specified. CVC recommends ELC be consistent with Lee *et al.* 1998.
 - b. Ideally a 3-season botanical inventory would be undertaken to fully assess the site for species at risk and locally/regionally significant species. If encroachment into natural heritage features is not proposed then a 3 season inventory may not be required. If impacts to the natural areas are proposed then 3 season surveys are recommended in those areas.
 - c. Please confirm the protocol and dates for the standard breeding bird surveys. Survey and reporting are to include breeding evidence codes for each observation.
 - d. It is assumed the amphibian surveys are for calling anurans. To fully assess the feature, three rounds of surveys following standard protocol during appropriate season will need to be completed. Please confirm the dates and details of the survey.
 - i. If this feature is shown to be appropriately protected within the site plan (& off-lot and appropriate buffers and grading), CVC is satisfied with 1 round of survey given that CVC noted confirmed presence of calling amphibians and CVC will assume it is amphibian breeding habitat. If potential risk is identified (i.e. any impact

to this feature is anticipated), then 3 rounds of surveys during appropriate times of year are recommended.

2. The subject property contains natural heritage features that meet criteria for Core Greenlands and Greenlands including wetland and *significant woodlands*. The concept plan and EIS should ensure these features and their supporting features (and buffers) are retained and appropriately protected through the mitigation hierarchy (avoidance first principles).
3. The EIS and resulting concept plan should demonstrate protection, enhancement and creation of a connected Natural Heritage System within the site and enhance connections off site. Adjacent land uses should be planned to allow for a transition from NHS to urban (e.g. park system, stormwater management adjacent, etc.).
 - a. The connected Natural Heritage System would ideally not be bisected by road infrastructure. Where crossings do occur wildlife passage should be considered. The CVC Fish and Wildlife Crossing Guideline should be reviewed and recommendations implemented.
4. The subject property contains wetlands features that may be impacted by the proposed development and therefore the feature should be assessed and the development plan should demonstrate no negative impact to the hydrologic and ecological function. The EIS TOR should include a discussion on the use of the TRCA Wetland Risk Evaluation guideline to assess the need for a feature-based water balance as well as determine appropriate mitigation measures to help achieve similar pre to post construction hydrological conditions.
5. The wetlands on site are within 750m of mapped and evaluated Provincially Significant Wetland. The wetlands on site should be assessed for inclusion as PSW; please contact the MNR with any results / recommendations.
6. The subject lands contain woodlands with internal wetland. This connectivity between upland and wetland habitat should be maintained through the lot framework.
7. The EIS TOR doesn't appear to include provision for screening or assessment of Significant Wildlife Habitat. Given the presence of suitable habitat on site, Significant Wildlife Habitat needs to be addressed within the EIS using MNR criteria and the limit of development planned accordingly. Please update the EIS TOR to include provision for screening or assessment of SWH. If field assessments are proposed, please provide details on protocol used and include data sheets.
8. The EIS should account for trails when discussing impacts. Trails should be planned to be contained within the limit of development (outside of the feature and buffer areas) and should not be placed internal to the Natural Heritage System. Where trails are planned within the buffer to the feature the buffer should be widened to accommodate the trail and still achieve protection of woodland function.
9. Based on site visit observations there is potential for a headwater drainage feature to be present on site. The EIS TOR should be updated and the feature should be investigated according to the Evaluation, Classification and Management of the Headwater Drainage Features Guidelines (CVC and TRCA).

10. The EIS should account for impacts related to stormwater management on natural heritage features.

11. The subject property contains habitat that is suitable for Species at Risk (e.g. Butternut, Bats, Birds). It is strongly recommended that the applicant contact the Ministry of Environment Conservation and Parks (sarontario@ontario.ca) to discussing potential survey and permitting requirements.

Thank you for submitting the EIS TOR for our review- we look forward to working with you on the file.
Best wishes,
Lisa

I'm working remotely. The best way to reach me is by email, mobile phone or Microsoft Teams.

Lisa Hosale | M.A., M.Sc., AICP | she/her/hers
Planner, Planning and Development Services | Credit Valley Conservation
905-670-1615 ext 268 | M: 437-881-1737
lisa.hosale@cvc.ca | cvc.ca



[View our privacy statement](#)



Appendix B

Flora List

Appendix B – Flora List

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	CVC Rank
						Global	Provincial	Exotic				
Aceraceae	<i>Acer negundo</i>	Manitoba Maple				G5	S5		0	0		
Aceraceae	<i>Acer rubrum</i>	Red Maple				G5	S5		4	0		
Aceraceae	<i>Acer saccharum</i>	Sugar Maple				G5	S5		4	3		
Aceraceae	<i>Acer tataricum ssp. ginnala</i>	Amur Maple				G--TNR	SNA	SE1		5	-2	
Anacardiaceae	<i>Rhus typhina</i>	Staghorn Sumac				G5	S5		1	3		
Apiaceae	<i>Aegopodium podagraria</i>	Goutweed				GNR	SNA	SE5		0	-3	
Apiaceae	<i>Daucus carota</i>	Wild Carrot				GNR	SNA	SE5		5	-2	
Apocynaceae	<i>Asclepias syriaca</i>	Common Milkweed				G5	S5		0	5		
Apocynaceae	<i>Vincetoxicum rossicum</i>	European Swallowwort				GNR	SNA	SE5		5		
Araceae	<i>Arisaema triphyllum</i>	Jack-in-the-pulpit				G5	S5		5	-3		
Araliaceae	<i>Aralia nudicaulis</i>	Wild Sarsaparilla				G5	S5		4	3		
Asteraceae	<i>Achillea borealis var. borealis</i>	Woolly Yarrow				G5TNR	S5		0	3		
Asteraceae	<i>Achillea millefolium</i>	Common Yarrow				G5	SNA	SE5?		3	-1	
Asteraceae	<i>Ambrosia artemisiifolia</i>	Common Ragweed				G5	S5		0	3		
Asteraceae	<i>Arctium minus</i>	Common Burdock				GNR	SNA	SE5		3	-2	
Asteraceae	<i>Centaurea stoebe</i>	Spotted Knapweed				GNR	SNA	SE5		5		
Asteraceae	<i>Cichorium intybus</i>	Wild Chicory				GNR	SNA	SE5		5	-1	
Asteraceae	<i>Cirsium arvense</i>	Canada Thistle				G5	SNA	SE5		3	-1	
Asteraceae	<i>Erigeron annuus</i>	Annual Fleabane				G5	S5		0	3		
Asteraceae	<i>Eupatorium perfoliatum</i>	Common Boneset				G5	S5		2	-3		
Asteraceae	<i>Eutrochium maculatum</i>	Spotted Joe Pye Weed				G5	S5		3	-5		

Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

Coefficients (Conservatism and Wetness) – Oldham et al., 1995

CVC Rank – Credit Valley Conservation, 2002.

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	CVC Rank
						Global	Provincial	Exotic				
Asteraceae	<i>Inula helenium</i>	Elecampane				GNR	SNA	SE5		3	-2	
Asteraceae	<i>Lactuca canadensis</i>	Canada Lettuce				G5	S5		3	3		
Asteraceae	<i>Lactuca</i> sp.	Lettuce Species										
Asteraceae	<i>Solidago</i> sp.	Goldenrod Species										
Asteraceae	<i>Taraxacum officinale</i>	Common Dandelion				G5	SNA	SE5		3		
Balsaminaceae	<i>Impatiens capensis</i>	Spotted Jewelweed				G5	S5		4	-3		
Berberidaceae	<i>Caulophyllum thalictroides</i>	Blue Cohosh				G5	S5		5	5		
Boraginaceae	<i>Myosotis sylvatica</i>	Woodland Forget-me-not				G5	SNA	SE4		5	-1	
Brassicaceae	<i>Alliaria petiolata</i>	Garlic Mustard				GNR	SNA	SE5		0	-3	
Brassicaceae	<i>Cardamine hirsuta</i>	Hairy Bittercress				GNR	SNA	SE4		3	-1	
Brassicaceae	<i>Hesperis matronalis</i>	Dame's Rocket				G4G5	SNA	SE5		3	-3	
Brassicaceae	<i>Thlaspi arvense</i>	Field Pennycress				GNR	SNA	SE5		5	-1	
Caprifoliaceae	<i>Lonicera tatarica</i>	Tatarian Honeysuckle				GNR	SNA	SE5		3	-3	
Caprifoliaceae	<i>Sambucus racemosa</i>	Red Elderberry				G5	S5		5	3		
Caprifoliaceae	<i>Symphoricarpos occidentalis</i>	Western Snowberry				G5	SNA	SE3		3	-1	
Caprifoliaceae	<i>Viburnum opulus</i>	Cranberry Viburnum				G5	S5		5	-3	-1	
Caryophyllaceae	<i>Gypsophila vaccaria</i>	Cowcockle				GNR	SNA	SE3		5	-1	
Caryophyllaceae	<i>Saponaria officinalis</i>	Bouncing-bet				GNR	SNA	SE5		3	-3	
Caryophyllaceae	<i>Stellaria media</i>	Common Chickweed				GNR	SNA	SE5		3	-1	
Chenopodiaceae	<i>Chenopodium album</i>	Common Lamb's-quarters				G5	SNA	SE5		3	-1	

Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

Coefficients (Conservatism and Wetness) – Oldham et al., 1995

CVC Rank – Credit Valley Conservation, 2002.

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	CVC Rank
						Global	Provincial	Exotic				
Clusiaceae	<i>Hypericum perforatum</i>	Common St. John's-wort				GNR	SNA	SE5		5	-3	
Cornaceae	<i>Cornus alternifolia</i>	Alternate-leaved Dogwood				G5	S5		6	3		
Cornaceae	<i>Cornus racemosa</i>	Grey Dogwood				G5	S5		2	0		
Cornaceae	<i>Cornus sericea</i>	Red-osier Dogwood				G5	S5		2	-3		
Cucurbitaceae	<i>Echinocystis lobata</i>	Wild Cucumber				G5	S5		3	-3		
Cupressaceae	<i>Thuja occidentalis</i>	Eastern White Cedar				G5	S5		4	-3		
Cyperaceae	<i>Carex aquatilis</i>	Water Sedge				G5	S5		7	-5		rare
Cyperaceae	<i>Carex brunnescens</i>	Brownish Sedge				G5	S5		6	-3		
Cyperaceae	<i>Carex gracillima</i>	Graceful Sedge				G5	S5		4	3		
Cyperaceae	<i>Carex intumescens</i>	Bladder Sedge				G5	S5		6	-3		
Cyperaceae	<i>Carex rostrata</i>	Swollen Beaked Sedge				G5	S4?		10	-5		
Cyperaceae	<i>Carex stipata</i>	Awl-fruited Sedge				G5	S5		3	-5		
Cyperaceae	<i>Carex viridula</i>	Greenish Sedge				G5	S5		5	-5		
Cyperaceae	<i>Schoenoplectus tabernaemontani</i>	Soft-stemmed Bulrush				G5	S5		5	-5		
Cyperaceae	<i>Scirpus atrovirens</i>	Dark-green Bulrush				G5	S5		3	-5		
Cyperaceae	<i>Scirpus cyperinus</i>	Common Woolly Bulrush				G5	S5		4	-5		
Dryopteridaceae	<i>Athyrium filix-femina</i>	Common Lady Fern				G5	S5		4	0		
Dryopteridaceae	<i>Cystopteris bulbifera</i>	Bulblet Bladder Fern				G5	S5		5	-3		
Dryopteridaceae	<i>Onoclea sensibilis</i>	Sensitive Fern				G5	S5		4	-3		
Equisetaceae	<i>Equisetum arvense</i>	Field Horsetail				G5	S5		0	0		
Fabaceae	<i>Medicago lupulina</i>	Black Medick				GNR	SNA	SE5		3	-1	

Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

Coefficients (Conservatism and Wetness) – Oldham et al., 1995

CVC Rank – Credit Valley Conservation, 2002.

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	CVC Rank
						Global	Provincial	Exotic				
Fabaceae	<i>Robinia pseudoacacia</i>	Black Locust				G5	SNA	SE5		3	-3	
Fabaceae	<i>Trifolium hybridum</i>	Alsike Clover				GNR	SNA	SE5		3	-1	
Fabaceae	<i>Vicia cracca</i>	Tufted Vetch				GNR	SNA	SE5		5	-1	
Fagaceae	<i>Fagus grandifolia</i>	American Beech				G5	S4		6	3		
Fagaceae	<i>Quercus rubra</i>	Northern Red Oak				G5	S5		6	3		
Geraniaceae	<i>Geranium robertianum</i>	Herb-Robert				G5	S5		2	3	-2	
Grossulariaceae	<i>Ribes</i> sp.	Currant Species										
Hydrophyllaceae	<i>Hydrophyllum virginianum</i>	Virginia Waterleaf				G5	S5		6	0		
Iridaceae	<i>Iris</i> sp.	Iris Species										
Juglandaceae	<i>Juglans nigra</i>	Black Walnut				G5	S4?		5	3		
Juglandaceae	<i>Juglans</i> sp.	Walnut Species										
Lamiaceae	<i>Glechoma hederacea</i>	Ground-ivy				GNR	SNA	SE5		3	-2	
Lamiaceae	<i>Leonurus cardiaca</i>	Common Motherwort				GNR	SNA	SE5		5		
Lamiaceae	<i>Lycopus europaeus</i>	European Water-horehound				GNR	SNA	SE5		-5	-2	
Lamiaceae	<i>Mentha arvensis</i>	field mint							3	-3		
Liliaceae	<i>Convallaria majalis</i>	European Lily-of-the-valley				G5	SNA	SE5		5	-2	
Liliaceae	<i>Maianthemum canadense</i>	Wild Lily-of-the-valley				G5	S5		5	3		
Liliaceae	<i>Trillium</i> sp.	Trillium Species										
Monotropaceae	<i>Hypopitys monotropa</i>	Pinesap				G5	S4		6	5		rare
Myricaceae	<i>Myrica gale</i>	Sweet Gale				G5	S5		6	-5		
Oleaceae	<i>Fraxinus americana</i>	White Ash				G5	S4		4	3		
Oleaceae	<i>Syringa vulgaris</i>	Common Lilac				GNR	SNA	SE5		5	-2	

Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

Coefficients (Conservatism and Wetness) – Oldham et al., 1995

CVC Rank – Credit Valley Conservation, 2002.

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	CVC Rank
						Global	Provincial	Exotic				
Onagraceae	<i>Circaea alpina</i>	Small Enchanter's Nightshade				G5	S5		6	-3		
Onagraceae	<i>Oenothera biennis</i>	Common Evening-primrose				G5	S5		0	3		
Orchidaceae	<i>Cypripedium parviflorum</i>	Yellow Lady's-slipper				G5	S5		5	0		rare
Oxalidaceae	<i>Oxalis</i> sp.	Wood Sorrel Species										
Papaveraceae	<i>Chelidonium majus</i>	Greater Celandine				GNR	SNA	SE5		5	-3	
Papaveraceae	<i>Sanguinaria canadensis</i>	Bloodroot				G5	S5		5	3		
Pinaceae	<i>Larix laricina</i>	Tamarack				G5	S5		7	-3		
Pinaceae	<i>Picea abies</i>	Norway Spruce				G5	SNA	SE3		5	-1	
Pinaceae	<i>Picea glauca</i>	White Spruce				G5	S5		6	3		
Pinaceae	<i>Pinus resinosa</i>	Red Pine				G5	S5		8	3		rare
Pinaceae	<i>Pinus sylvestris</i>	Scots Pine				GNR	SNA	SE5		3	-3	
Plantaginaceae	<i>Plantago lanceolata</i>	English Plantain				G5	SNA	SE5		3	-1	
Plantaginaceae	<i>Plantago major</i>	Common Plantain				G5	SNA	SE5		3	-1	
Poaceae	<i>Bromus inermis</i>	Smooth Brome				G5	SNA	SE5		5	-3	
Poaceae	<i>Dactylis glomerata</i>	Orchard Grass				GNR	SNA	SE5		3	-1	
Poaceae	<i>Elymus repens</i>	Quackgrass				GNR	SNA	SE5		3	-3	
Poaceae	<i>Phalaris arundinacea</i>	Reed Canarygrass				G5	S5		0	-3		
Poaceae	<i>Phleum pratense</i>	Common Timothy				GNR	SNA	SE5		3	-1	
Poaceae	<i>Poa palustris</i>	Fowl Bluegrass				G5	S5		5	-3		
Poaceae	<i>Poa pratensis</i>	Kentucky Bluegrass				G5	S5		0	3		
Polygonaceae	<i>Rumex crispus</i>	Curled Dock				GNR	SNA	SE5		0	-2	

Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

Coefficients (Conservatism and Wetness) – Oldham et al., 1995

CVC Rank – Credit Valley Conservation, 2002.

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	CVC Rank
						Global	Provincial	Exotic				
Primulaceae	<i>Lysimachia ciliata</i>	Fringed Yellow Loosestrife				G5	S5		4	-3		
Primulaceae	<i>Lysimachia nummularia</i>	Creeping Yellow Loosestrife				GNR	SNA	SE5		-3	-3	
Ranunculaceae	<i>Actaea rubra</i>	Red Baneberry				G5	S5		6	3		
Ranunculaceae	<i>Anemonastrum canadense</i>	Canada Anemone				G5	S5		3	-3		
Ranunculaceae	<i>Ranunculus acris</i>	Common Buttercup				G5	SNA	SE5		0	-2	
Rosaceae	<i>Agrimonia striata</i>	Woodland Agrimony				G5	S4		3	3		
Rosaceae	<i>Fragaria virginiana</i>	Wild Strawberry				G5	S5		2	3		
Rosaceae	<i>Geum urbanum</i>	Wood Avens				G5	SNA	SE3		5	-1	
Rosaceae	<i>Prunus nigra</i>	Canada Plum				G4G5	S4		4	3		
Rosaceae	<i>Prunus pensylvanica</i>	Pin Cherry				G5	S5		3	3		
Rosaceae	<i>Prunus serotina</i>	Black Cherry				G5	S5		3	3		
Rosaceae	<i>Prunus virginiana</i>	Chokecherry				G5	S5		2	3		
Rosaceae	<i>Rubus allegheniensis</i>	Allegheny Blackberry				G5	S5		2	3		
Rosaceae	<i>Rubus idaeus</i>	Red Raspberry				G5	S5		2	3		
Rosaceae	<i>Sorbus</i> sp.	Mountain-ash Species										
Salicaceae	<i>Populus balsamifera</i>	Balsam Poplar				G5	S5		4	-3		
Salicaceae	<i>Salix alba</i>	White Willow				G5	SNA	SE4		-3	-2	
Salicaceae	<i>Salix bebbiana</i>	Bebb's Willow				G5	S5		4	-3		
Salicaceae	<i>Salix discolor</i>	Pussy Willow				G5	S5		3	-3		
Salicaceae	<i>Salix eriocephala</i>	Cottony Willow				G5	S5		4	-3		
Salicaceae	<i>Salix exigua</i>	coyote Willow							3	-5		rare
Solanaceae	<i>Solanum dulcamara</i>	Bittersweet Nightshade				GNR	SNA	SE5		0	-2	

Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

Coefficients (Conservatism and Wetness) – Oldham et al., 1995

CVC Rank – Credit Valley Conservation, 2002.

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			Coefficient of Conservatism	Coefficient of Wetness	Weediness Index	CVC Rank
						Global	Provincial	Exotic				
Tiliaceae	<i>Tilia americana</i>	Basswood				G5	S5		4	3		
Typhaceae	<i>Typha latifolia</i>	Broad-leaved Cattail				G5	S5		1	-5		
Ulmaceae	<i>Ulmus americana</i>	White Elm				G4	S5		3	-3		
Urticaceae	<i>Urtica dioica</i>	Stinging Nettle				G5	S5		2	0		
Violaceae	<i>Viola canadensis</i>	Canada Violet				G5	S5		6	3		
Violaceae	<i>Viola</i> sp.	Violet Species										
Vitaceae	<i>Parthenocissus quinquefolia</i>	Virginia Creeper				G5	S4?		6	3		
Vitaceae	<i>Vitis riparia</i>	Riverbank Grape				G5	S5		0	0		

Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

Coefficients (Conservatism and Wetness) – Oldham et al., 1995

CVC Rank – Credit Valley Conservation, 2002.



Appendix C

Butternut DNA Testing Results



Precision Biomonitoring Inc.
361 Southgate Drive
Guelph, ON, N1G 3M5

Butternut Hybridization Report

Report Contents

Item	Page
Background and Methodology	2
Results	2
Conclusion	3-4
References Cited	4

Report Issued:

Prepared By: Chris Grainger	Date: 08-23-2021	Email: chris.grainger@harvestgenomics.ca
Validated by: Jay Cashubec	Date: 08-23-2021	Email: jay.cashubec@precisionbiomonitoring.com

Prepared for

Palmer Environmental Consulting Group

74 Berkeley Street
Toronto, ON
M5A 2W7

Contact Name	Email Address	Phone
Austin Adams	austin.adams@pecg.ca	(647) 461 2372

Background

Two samples of butternut (*Juglans cinerea* L.) were submitted by Palmer to determine if there has been hybridization with black walnut (*Juglans nigra* L.) trees. To test for hybridization, a series of microsatellite markers (SSR markers) were selected from a previous study (Ross-Davis A and Woeste K, 2008, Conserv Genet 9:465-469) to identify any alleles that are specific to black walnut which would indicate possible hybridization with butternut.

Methodology

A total of ten SSR markers were run across the two samples. The details of each SSR marker are provided in the table from the study in which the markers were selected from (table is included in this report). DNA fragment sizes produced from the PCR were reported as a number (in base pairs) and the various alleles (amplicon size) at each locus (SSR marker) are presented in Table 1.

Results

Table 1: Results from genotyping using the SSR markers that produced the highest quality data. Number and size of alleles (in base pairs) are listed for each sample at each marker. Single vs multiple alleles at a given marker indicate homozygous vs heterozygous status at each marker.

SSR Marker	Sample1	Sample2
WGA 004	242/245	240
WGA 033	227	220/229
WGA 082	141/155	141/165
WGA 090	124/143/176	133/143/158
WGA 142	182	182
WGA 147	127	127
WGA 148	230/233	253/259
WGA 204	182/184	175/182
WGA 221	223/230	221/242
WGA 256	220/226	228

Conclusion

Due to the limited reference samples (i.e. known pure samples of both butternut and black walnut trees) the rationale used to determine hybrid status was based on researching all known literature on allele size ranges known in either *Juglans cinerea* L. or *Juglans nigra* L. This information is reported in the table included from Ross-Davis A and Woeste K (2008). There is considerable overlap in the allele size ranges at each marker between both species, which complicates the ability to determine hybrid status with a high level of certainty. An additional complicating factor is the high level of heterozygosity observed at many of the markers, which while expected (trees are highly heterozygous) makes determining what is a pure butternut species difficult.

The important result which led to declaring a potential hybrid status for both of the samples (sample 1 and sample 2) was the alleles found at marker **WGA 090** which are unique to black walnut. The allele range for butternut at WGA 090 is between 126-144, while in black walnut is 134-172. The allele size of 176bp in Sample 1 and 158bp in Sample 2 are larger than what is known to be in butternut. There is a high degree of confidence in this as the sample size of trees used in the study was large (422). The results from the testing suggest that Sample 1 and Sample 2 are hybrids of butternut and black walnut. It is recommended that future testing include known reference samples to improve the certainty of the genotyping assays used.

Table 2 Allele size range (size) and number observed (N_a) for each locus and overall allelic richness (A) for each species

Species (sample size)		WGA 004	WGA 033	WGA 082	WGA 090	WGA 142	WGA 147	WGA 148	WGA 204	WGA 221	WGA 256
<i>Juglans regia</i> L. (8)	Size	228–240	NA	NA	NA	^a 130–218	190–195	253–271	172–178	230–232	227–253
	N_a	5	NA	NA	NA	^a 20	5	7	4	2	7
<i>Juglans hindsii</i> (Jepson) R.E. Smith (8)	Size	245–257	^a 202–258	170–190	126–150	^a 178–191	171–197	251–267	176–186	228–234	207–237
	N_a	4	^a 7	8	2	^a 7	3	3	2	2	4
<i>Juglans major</i> (Torrey) Heller (8)	Size	241–275	249–271	164–198	124–136	^a 163–186	188–196	239–245	172–188	204–238	207–217
	N_a	6	8	12	4	^a 11	5	4	4	6	4
<i>Juglans microcarpa</i> Berlandier (3)	Size	236–246	^a 236–268	166–194	^a 134–165	^a 165–207	195–213	233–247	166–178	224–236	223–231
	N_a	4	^a 9	5	^a 8	^a 12	5	5	4	2	4
<i>Juglans nigra</i> L. (8)	Size	234–246	^a 236–284	156–188	^a 134–172	^a 163–181	187–209	243–247	168–184	216–238	215–237
	N_a	6	^a 12	7	^a 10	^a 8	5	3	4	4	8
<i>Juglans ailanthifolia</i> Carr. (8)	Size	233–249	222–230	NA	157–185	128–158	183–209	230–264	175–191	220–230	207–243
	N_a	6	4	NA	10	6	8	8	7	4	10
<i>Juglans manschurica</i> Maxim. (8)	Size	239–255	222–230	NA	133–173	128–158	181–209	230–260	169–197	220–228	215–237
	N_a	6	4	NA	7	6	9	7	10	5	10
<i>Juglans cathayensis</i> Dode (2)	Size	239–241	222–228	NA	159–175	142–150	183–213	238–266	179–187	224–234	235–237
	N_a	2	2	NA	3	3	3	4	3	3	2
<i>Juglans cinerea</i> L. (422)	Size	225–273	228–268	150–182	126–144	161–199	173–211	232–282	168–200	221–247	205–241
	N_a	20	6	16	7	10	14	15	16	11	15
<i>Juglans x bixbyi</i> Rehd. (3)	Size	245–275	228	162	132–165	134–158	197	260–264	166–184	226	219–227
	N_a	2	1	1	2	2	1	2	2	1	2
<i>Juglans x intermedia</i> Carr. (7)	Size	228–244	236–286	154–186	142–172	^a 130–205	189–221	235–261	168–178	224–236	215–249
	N_a	6	9	5	6	^a 18	5	7	5	4	6
<i>Juglans x quadrangulata</i> (Carr.) Rehd. (1)	Size	228–243	228	156	144	187–194	185	242	174–182	230	223
	N_a	2	1	1	1	2	1	1	2	1	1
<i>Juglans x paradox</i> Burbank (7)	Size	228–251	202–258	156–194	126–152	^a 130–205	181–197	243–267	174–188	228–236	219–249
	N_a	4	6	6	3	^a 10	3	5	4	4	6
<i>Juglans x royal</i> Burbank (1)	Size	238–245	^a 236–260	156	^a 146–172	165–169	193–209	243–247	168	236–238	221–247
	N_a	2	^a 3	1	^a 3	2	2	2	1	2	2
<i>Carya illinoensis</i> (Wangenh.) K. Koch (8)	Size	235–239	NA	NA	NA	NA	NA	NA	169–185	^a 217–230	220–244
	N_a	8	NA	NA	NA	NA	NA	NA	6	^a 3	10

Species are arranged by Section (i.e., Dioscaryon (*J. regia*), Rhysocaryon (*J. hindsii*, *J. major*, *J. microcarpa*, *J. nigra*), Cardiocaryon (*J. ailanthifolia*, *J. manschurica*, and *J. cathayensis*) and Trachycaryon (*J. cinerea*) followed by hybrids and *Carya illinoensis*. NA = no amplification

^a Multiple peaks (>2) were observed for each individual, which may be explained by a gene duplication event and subsequent independent mutations in the repeat motif (but not the primer sequences) leading to amplification of multiple alleles per individual

References Cited

Ross-Davis, A. & Woeste, K. E. (2008). Microsatellite markers for *Juglans cinerea* L. and their utility in other Juglandaceae species. *Conservation Genetics*, **9**, 465–469.



BUTTERNUT HYBRIDITY TESTING RESULTS

Order number:	NA-SO00173
Report number:	NM-QNO742
Company:	Palmer Environmental Consulting Group
Contact:	Austin Adams
Project:	Hillsburg 2105001
BC Project:	Hillsburg 2105001
Sample type:	Plant tissue
Date of report:	14 Dec 2022
Number of samples:	10

Thank you for sending your samples for analysis by NatureMetrics. Your samples have been **analysed** following our **Butternut RFLP (Restriction Fragment Length Polymorphism)** pipeline supplemented by **Sequence Characterized Amplified Region (SCAR)** codominant marker.

Butternut (*Juglans cinerea* L.) is considered an **endangered (EN)** tree species in Ontario. This report contains biodiversity information that may be sensitive, particularly with respect to endangered or protected species. It is the responsibility of the client to ensure that due consideration is given to the data and that the information is shared in a responsible way.

Disclaimer: Provided test only detects the occurrence of a hybridization event between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.) similar to the previous OFRI test derived from the publication by Zhao and Woeste (2011).

Here we present an overview of the key results, followed by a more detailed report that starts with the taxonomic composition of the samples followed by a more detailed look at the steps taken to extract, amplify, sequence, and analyse your DNA. A glossary for terms in **bold** is provided at the end of the report to define key terms used within the report.

OVERVIEW OF YOUR RESULTS

- A total of 0 **butternut** sample(s), 3 **Japanese** Walnut sample(s), 5 **hybrid** sample(s) and 2 **unknown** sample(s) (see **Disclaimer**) were identified.
- All laboratory **controls** performed as expected.



FULL REPORT

Sample composition

A total of 0 butternut sample(s), 3 Japanese Walnut sample(s), 5 hybrid sample(s) and 2 unknown sample(s) were identified (**Table 1, Figure 2, Suppl. Figure 1**). The detailed explanation is included in the comment 2.

High-quality PCR products were obtained from all four tested markers with corresponding restriction enzyme profiles, where applicable.

All laboratory controls performed as expected.

Table 1. The concentration of extracted DNA(s) and summary of RFLP and SCAR results.

Customer ID	Barcode	Date arrived	DNA (ng/ μ l)	trnT-R RFLP	ITS RFLP	15R-8 RFLP	22-5 SCAR	Identification
Tree 70	NAS-01-H0292	29-Nov-22	0.27	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>
Tree 72	NAS-01-H0293	29-Nov-22	0.414	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>
Tree 75	NAS-01-H0294	29-Nov-22	0.266	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>
Sample 1	NAS-01-H0295	29-Nov-22	6.06	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	Hybrid	Hybrid	Hybrid
Sample 2	NAS-01-H0296	29-Nov-22	5.5	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	Hybrid	Hybrid	Hybrid
Sample 3	NAS-01-H0297	29-Nov-22	4.96	<i>J.ailantifolia</i>	<i>J.ailantifolia</i>	Hybrid	Hybrid	Hybrid
Sample 4	NAS-01-H0298	29-Nov-22	0.338	N/A	N/A	N/A	N/A	N/A
Sample 5	NAS-01-H0299	29-Nov-22	6	<i>J. cinerea</i>	<i>J.ailantifolia</i>	N/A	<i>J.ailantifolia</i>	Hybrid
Sample 6	NAS-01-H0300	29-Nov-22	12.3	N/A	N/A	N/A	N/A	N/A
Sample 7	NAS-01-H0301	29-Nov-22	4.24	<i>J. cinerea</i>	Hybrid	N/A	Hybrid	Hybrid

Figure 1. Reference **butternut** PCR for 3 markers with corresponding restriction profiles and 22-5 SCAR marker PCR.

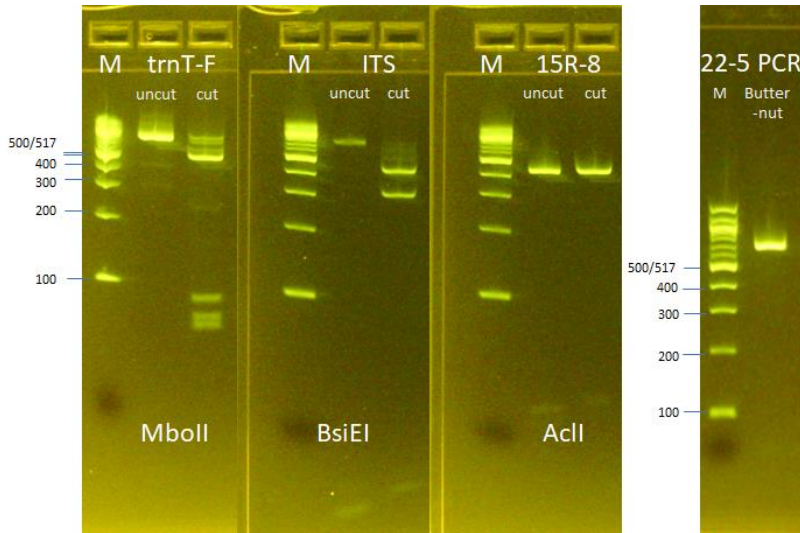
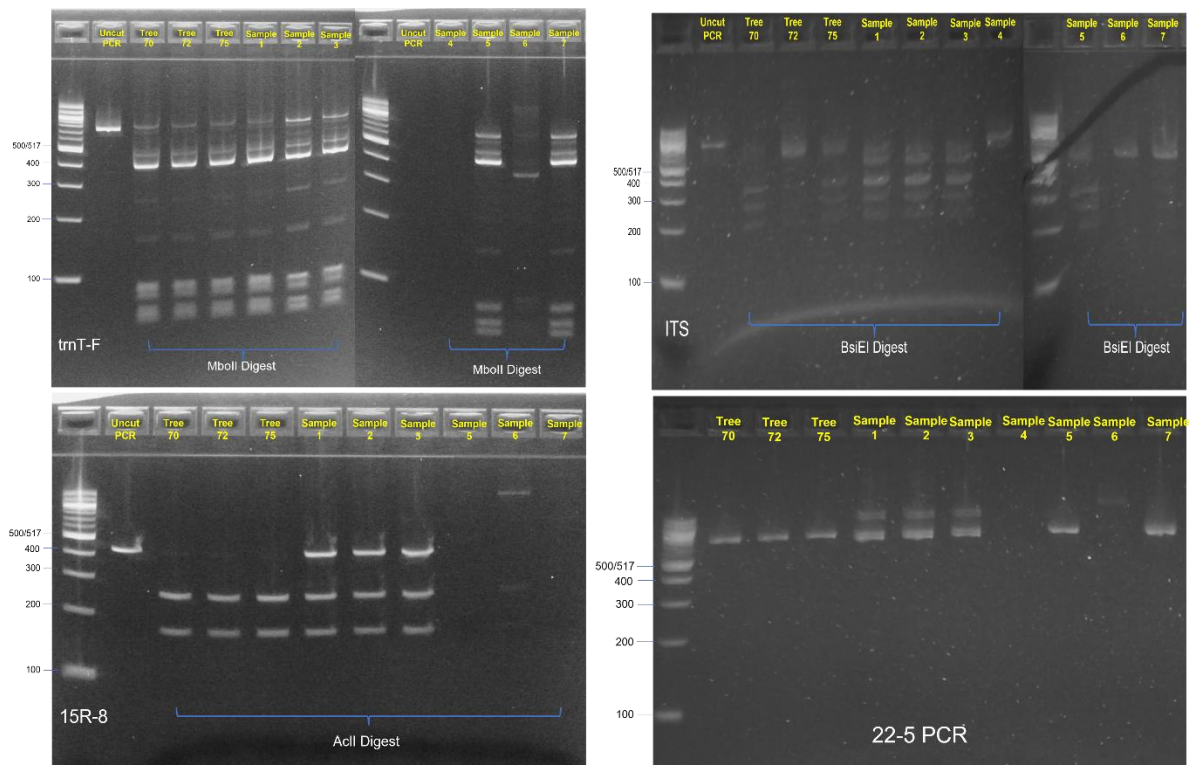


Figure 2. Non-digested (uncut)/digested amplicons and 22-5 SCAR marker PCR profile for submitted sample(s). Note: sample 4 is not loaded for 15R-8 marker (refer to Suppl. Figure 1).





METHODS

DNA from plant sample(s) was extracted using a commercial plant DNA extraction kit with a protocol modified to produce standard DNA yields suitable for PCR and restriction analysis. An extraction blank was also processed for the extraction batch.

Comment 1: DNA yield was as expected (**Table 1**).

Extracted DNAs for sample(s) and negative extraction control were amplified with **PCR** for four regions: trnT-F, ITS, 15R-8 and 22-5.

All PCRs were performed using pre-validated PCR mixes in the presence of both a **negative DNA extraction control** and a **negative PCR control**. Amplification and restriction enzyme digestion products were analyzed by **gel electrophoresis**.

Markers and corresponding restriction digests:

Assay #1) PCR amplification of chloroplast gene trnT-F, followed by restriction digest with enzyme MbolI.

Assay #2) PCR amplification of ITS region of ribosomal nuclear DNA, followed by restriction digest with enzyme BsiEI.

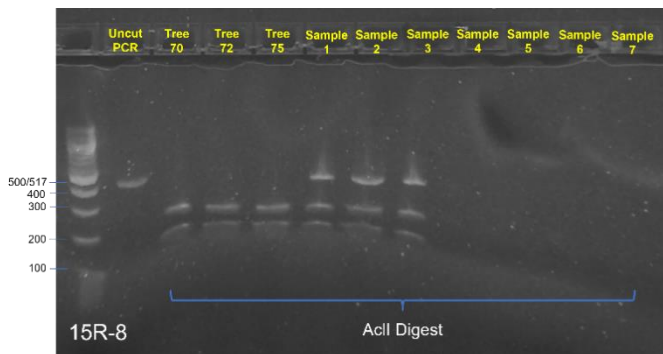
Assay #3) PCR amplification of random nuclear fragment called “15R-8”, followed by restriction digest with enzyme AclI.

Assay #4) PCR amplification of SCAR marker 22-5 without restriction digest.

Comment 2: PCR reactions were consistently successful for all four markers for 6 sample(s). Electrophoresis bands were visible and of the expected size for these 6 samples. No bands or bands with unexpected size were observed on electrophoresis gels for samples 4 and 6 across all markers and for samples 5 and 7 for marker 15R-8 (Figure 2). The PCR reactions for these markers were repeated on these samples. To exclude the effect of inhibitors, serial dilutions, 2- and 10- folds, were tested. The results were the same, either no amplification or the size did not match expected size. We were able to identify samples 5 and 7 as hybrid using 3 markers, whereas samples 4 and 6 were most likely not butternut and are listed as unknown. No bands were observed on electrophoresis gels for the extraction blank or negative controls.



Suppl. Figure 1: Non-digested (uncut)/digested amplicons profile for submitted sample(s) as shown on original gel electrophoresis for marker 15R-8 which was reloaded on a different gel due to the poor quality of the image (Figure 2, where sample 4 is not shown). There were no bands for sample 4, 5, 6 and 7.



END OF REPORT

Report issued by: **May Mei**

Report reviewed by: **Natalia Ivanova**

Contact: team@naturemetrics.co.uk

REFERENCES

Zhao, P. & Woeste, K. E. (2011). DNA markers identify hybrids between butternut (*Juglans cinerea* L.) and Japanese walnut (*Juglans ailantifolia* Carr.). *Tree Genetics & Genomes*, 7, 511-533.



GLOSSARY

Butternut

Juglans cinerea L. hybrid event between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.)

Extraction Blank

A DNA extraction with no sample added to assess potential contamination during the DNA extraction process.

Gel Electrophoresis

The process in which DNA is separated according to size and electrical charge via an electric current, while in a gel. The process is used to confirm the successful amplification of a specific size fragment of DNA.

Inhibitors/inhibition

Naturally-occurring chemicals/compounds that cause DNA amplification to fail, potentially resulting in false negative results. Common inhibitors include tannins, humic acids and other organic compounds. Inhibitors can be overcome by either diluting the DNA (and the inhibitors) or by additional cleaning of the DNA, but dilution carries the risk of reducing the DNA concentration below the limits of detection. At NatureMetrics, inhibition is removed using a commercial extraction/purification kit.

Hybrid

In this report – hybrid between butternut (*J. cinerea* L.) and Japanese Walnut (*J. ailantifolia* Carr.).

IUCN Red List

The IUCN (International Union for the Conservation of Nature) is a global union of government and civil organisations that disseminates information to assist conservation. The IUCN Red List of Threatened Species is an inventory of the conservation status of over 100,000 species worldwide. The Red List evaluates data such as population trends, geographic range and the number of mature individuals in order to categorise species based on their extinction risk:

Extinct (EX) - No individual of this species remains alive.

Extinct in the Wild (EW) - Surviving individuals are only found in captivity.

Critically Endangered (CE) - species faces an extremely high risk of extinction in the wild. e.g. Population size estimated at fewer than 50 mature individuals.

Endangered (EN) - species faces a very high risk of extinction in the wild. e.g. Population size estimated at fewer than 250 mature individuals.

Vulnerable (VU) - species faces a high risk of extinction in the wild. e.g. Population size estimated at fewer than 10,000 mature individuals and declining.

Near Threatened (NT) - species is below the threshold for any of the threatened categories (CE, E, V) but is close to this threshold or is expected to pass it in the near future.

Least Concern (LC) - species is not currently close to qualifying for any of the other categories. This includes widespread and abundant species.

Data Deficient (DD) - There is currently insufficient data available to make an assessment of extinction risk. This is not a threat



	<p>category - when more data becomes available the species may be recategorised as threatened.</p>
Negative Control PCR	<p>Used to determine if PCR reactions are contaminated.</p> <p>Short for Polymerase chain reaction. A process by which millions of copies of a particular DNA segment are produced through a series of heating and cooling steps. Known as an 'amplification' process. One of the most common processes in molecular biology and a precursor to most sequencing-based analyses.</p>
RFLP	<p>Short for Restriction Fragment Length Polymorphism which is a difference in homologous DNA sequences that can be detected by the presence of fragments of different lengths after digestion of the DNA samples in question with specific restriction endonucleases.</p>
Positive Control Primers	<p>Used to determine whether the assay is working correctly.</p> <p>Short sections of synthesised DNA that bind to either end of the DNA segment to be amplified by PCR. Can be designed to be totally specific to a particular species (so that only that species' DNA will be amplified from a community DNA sample), or to be very general so that a wide range of species' DNA will be amplified. Good design of primers is one of the critical factors in DNA-based monitoring.</p>
SCAR	<p>Short for Sequence Characterized Amplified Region. SCARs are DNA fragments amplified by the PCR using specific 15-30 bp primers, designed from nucleotide sequences established from cloned RAPD fragments linked to a trait of interest. Obtaining a codominant marker may be an additional advantage of converting RAPDs into SCARs, although SCARs may exhibit dominance when one or both primers partially overlap the site of sequence variation. Length polymorphisms are detected by gel electrophoresis.</p>
Taxon (s.) / taxa (pl.)	<p>Strictly, a taxonomic group. Here we use the term to describe groups of DNA sequences that are equivalent to species. We do not use the term species because we are unable to assign complete identifications to all of the groups at this time due to gaps in the available reference databases.</p>
Taxonomy	<p>species (s./pl.) - A group of individuals capable of interbreeding. This is the most important taxonomic unit defined by scientists and the population trends of individual species are a key indicator in judging the effect of conservation programs. Related species are grouped together into progressively larger taxonomic units, from genus to kingdom. <i>Homo sapiens</i> (human) is an example of a species.</p> <p>genus (s.) / genera (pl.) - A group of closely related species. Each genus can include one or more species. <i>Homo</i> is an example of a genus.</p> <p>family (s.) / families (pl.) - A group of closely related genera. <i>Homo sapiens</i> is in the family Hominidae (great apes).</p> <p>order (s.) / orders (pl.) - A group of closely related families. <i>Homo sapiens</i> is in the order Primates.</p> <p>class (s.) / classes (pl.) - A group of closely related orders. <i>Homo sapiens</i> is in the class Mammalia.</p>



Appendix D

Breeding Bird Inventory

Breeding Birds of Hillsburgh EIS

Common Name	Scientific Name	Status				Number of Pairs/Territories			
		National Species at Risk COSEWIC ^a	Species at Risk in Ontario Listing ^a	Provincial breeding season SRANK ^b	Area-sensitive (OMNR) ^c	Deciduous Forest	Cultural Plantation and Swamp	Cultural Woodland	Cultural
Red-tailed Hawk	<i>Buteo jamaicensis</i>			S5					1
Wild Turkey	<i>Meleagris gallopavo</i>			S5					1
Killdeer	<i>Charadrius vociferus</i>			S5					1
Mourning Dove	<i>Zenaidura macroura</i>			S5				1	1
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>			S4		1			
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>			S4		1			
Hairy Woodpecker	<i>Picoides villosus</i>			S5	A		1		
Northern Flicker	<i>Colaptes auratus</i>			S4		1			
Eastern Wood-Pewee	<i>Contopus virens</i>	SC	SC	S4		2	1		
Great Crested Flycatcher	<i>Myiarchus crinitus</i>			S4			1		
Eastern Kingbird	<i>Tyrannus tyrannus</i>			S4					1
Barn Swallow	<i>Hirundo rustica</i>	THR	THR	S4					1
Blue Jay	<i>Cyanocitta cristata</i>			S5		1	2	1	2
American Crow	<i>Corvus brachyrhynchos</i>			S5			1	4	10
Black-capped Chickadee	<i>Poecile atricapillus</i>			S5		2	2	1	
Red-breasted Nuthatch	<i>Sitta canadensis</i>			S5	A		1	1	
White-breasted Nuthatch	<i>Sitta carolinensis</i>			S5	A	1		1	
House Wren	<i>Troglodytes aedon</i>			S5			1		5
Golden-crowned Kinglet	<i>Regulus satrapa</i>			S5				1	
American Robin	<i>Turdus migratorius</i>			S5		2	2	3	4
Gray Catbird	<i>Dumetella carolinensis</i>			S4			1		
Cedar Waxwing	<i>Bombicilla cedrorum</i>			S5		1			
European Starling	<i>Sturnus vulgaris</i>			SE					5
Red-eyed Vireo	<i>Vireo olivaceus</i>			S5		4	2	1	3
American Redstart	<i>Setophaga ruticilla</i>			S5	A		1		
Mourning Warbler	<i>Geothlypis philadelphia</i>			S4		1			
Northern Cardinal	<i>Cardinalis cardinalis</i>			S5		1	2	2	1
Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>			S4		1			
Indigo Bunting	<i>Passerina cyanea</i>			S4		2	3	2	2
Chipping Sparrow	<i>Spizella passerina</i>			S5		1	1	1	
Vesper Sparrow	<i>Poocetes gramineus</i>			S4					1
Savannah Sparrow	<i>Passerculus sandwichensis</i>			S4	A				1
Song Sparrow	<i>Melospiza melodia</i>			S5		4	2	2	13
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			S4					2
Common Grackle	<i>Quiscalus quiscula</i>			S5			1	3	1
Brown-headed Cowbird	<i>Molothrus ater</i>			S5		1			1
American Goldfinch	<i>Carduelis tristis</i>			S5			2	1	3

Field Work Conducted On:	Date	Temp (C)	Wind speed (km/h)	Cloud cover (%)	Start time	End time	Level of effort (h:min)
Site visit 1	20-Jun-21	12	5	5	6:35	9:40	3h 5m
Site visit 2	3-Jul-21	12	7	5	6:50	10:10	3h 20m

Location 1 - Deciduous Forest
 Location 2 - Cultural Plantation and Swamp
 Location 3 - Cultural Woodland
 Location 4 - Cultural

Number of Species:	37
Number of (provincial and national) Species at Risk:	2
Number of Area-sensitive Species:	5

Location 1 Deciduous Forest

Common Name	Scientific Name	Status				Number of Pairs/Territories			
		National Species at Risk COSEWIC ^a	Species at Risk in Ontario Listing ^a	Provincial breeding season SRANK ^b	Area-sensitive (OMNR) ^c	Deciduous Forest	Cultural Plantation and Swamp	Cultural Woodland	Cultural

Number of Species:	17
Number of (provincial and national) Species at Risk:	1
Number of Area-sensitive Species:	1

Location 2 - Cultural Plantation and Swamp

Number of Species:	18
Number of (provincial and national) Species at Risk:	1



Appendix E

Species at Risk Screening

Appendix E: Species at Risk Screening

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
AVIFAUNA										
Barn Swallow (<i>Hirundo rustica</i>)	THR	THR	THR	1	S4B	The Barn Swallow is a threatened species, is found throughout southern Ontario, and can range into the north as long as suitable nesting locations can be found. These birds prefer to nest within human made structures such as barns, bridges, and culverts. Barn Swallow nests are cup-shaped and made of mud; they are typically attached to horizontal beams or vertical walls underneath an overhang. A significant decline in populations of this species has been documented since the mid-1980s, which is thought to be related to a decline in prey. Since the Barn Swallow is an aerial insectivore, this species relies on the presence of flying insects at specific times during the year. Changes in building practices and materials may also be having an impact on this species (Ministry of Natural Resources and Forestry, 2015).	Field Observation	No	As no suitable nesting structures were observed on the site, it was concluded that Barn Swallow only uses the site for foraging.	None
Bobolink (<i>Dolichonyx oryzivorus</i>)	THR	THR	THR	1	S4B	The Bobolink is found in grasslands and hayfields, and feeds and nests on the ground. This species is widely distributed across most of Ontario; however, are designated at risk because of rapid population decline over the last 50 years (Ministry of Natural Resources and Forestry, 2014). The historical habitat of the bobolink was tallgrass prairie and other natural open meadow communities; however, as a result of the clearing of native prairies and the post-colonial increase in agriculture, bobolinks are now widely found in hayfields. Due to their reproductive cycle, nesting habits, and use of agricultural areas, bobolink nests and young are particularly vulnerable to loss as a result of common agricultural practices (i.e. first cut hay).	NHIC	No	The fields are actively farmed, and no potential habitats are found.	None
Eastern Meadowlark (<i>Sturnella magna</i>)	THR	THR	THR	1	S4B	The Eastern Meadowlark is a bird that prefers pastures and hayfields, but is also found to breed in orchards, shrubby fields and human use areas such as airports and roadsides. Eastern meadowlarks can nest from early May to mid-August, in nests that are built on the ground and well-camouflaged with a roof woven from grasses. The decline in population of these species is thought to be at least partially related to habitat destruction and agricultural practices (Ministry of Natural Resources and Forestry, 2014).	NHIC	No	The fields are actively farmed, and no potential habitats are found.	None
Eastern Wood-Pewee (<i>Contopus virens</i>)	SC	SC	SC	1	S4B	The Eastern Wood-pewee is classified as a species of special concern by COSSARO. Their population has been gradually declining since the mid-1960's (The Cornell Lab of Ornithology, 2015). The Eastern Wood-pewee is a "flycatcher", a bird that eats flying insects, that lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It prefers intermediate-age forest stands with little understory vegetation. Threats to the population are largely unknown; however, causes may include loss of habitat due to urban development and decreases in the availability of flying insect prey (Ministry of Natural Resources and Forestry, 2014).	Field Observation	Yes	Woodland blocks at north of property determined to be Probable Breeding Territories	Woodlands at north of the Property to be retained and setback per policy.
HERPTILES										
Snapping Turtle (<i>Chelydra serpentina</i>)	SC	SC	SC	1	S3	The snapping turtle is a species of special concern in Ontario due to the potential for the species to become threatened or endangered as a result of biological factors or other identified threats. While not presently protected by law, the snapping turtle has been recognized as a species of special concern by COSSARO. Snapping turtles spend the majority of their lives in water and travel slightly upland to gravel or sandy embankments or beaches to lay their eggs (Ontario Ministry of Natural Resources and Forestry, 2014).	NHIC	Potential	Swamp with pond may present potential habitat for this species. However, Midland Painted Turtles were observed occupying this niche.	This wetland and woodland at north of the Subject Property is to be retained and setback per policy.
VASCULAR PLANTS										

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Butternut (<i>Juglans cinerea</i>)	END	END	END	1	S2?	The butternut is designated as endangered by COSSARO and is tracked by the NHIC as a species at risk. The tree is federally regulated by the Species at Risk Act (2002). Butternut belongs to the walnut family and produces edible nuts which are a preferred food source for wildlife. The range of butternut trees is south of the Canadian Shield on soils derived from calcium rich limestone bedrock. Butternut trees, which at one time were much more common to the south extending to the northern aspect of zone 6E, have been declining due to factors including forest loss and disease. Butternut trees suffer from a highly transmissible fungal disease called butternut canker. Butternut canker is causing very rapid decline in this tree species across its native range. The fungal disease is easily transmitted by wind and is very difficult to prevent. Trees often die within a few years of infection by butternut canker (Ministry of Natural Resources and Forestry, 2014).	Field Observation	No	Individuals observed are hybrids.	None. All individuals observed were DNA tested for hybridity. 9 of 11 were determined to be either Japanese Walnut or hybrids. 2 were "undetermined". However, as they are in the same area as the other 9, hybridity can be inferred.
MAMMALS										
Tri-colored Bat (Eastern Pipistrelle) (<i>Perimyotis subflavus</i>)	END	END	END	1	S3?	The eastern pipistrelle is a small bat that is widely distributed in eastern North America and whose range extends north to southern Ontario. The eastern pipistrelle is rare in this region of Ontario which is at the northernmost limit of the natural range for the species. These bats prefer to nest in foliage, tree cavities and woodpecker holes, and are occasionally found in buildings; though this is not their preferred habitat. Winter hibernation takes place in caves, mines and deep crevices. Eastern pipistrelles feed primarily on small insects and prefer an open forest habitat type in proximity to water (University of Michigan Museum of Zoology, 2004).	Professional Experience	Potential	Woodlands present potential habitat for this species	Woodlands at north of the Property to be retained and setback per policy, retaining potential habitats. Removal of the Cultural Woodland/farmstead area to adhere to avoidance timing windows.
Eastern Small-footed Myotis (<i>Myotis leibii</i>)	No Status	END	No Status	Schedule	S2S3	The eastern small-footed myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Eastern small-footed bat's fur has black roots and shiny light brown tips, giving it a yellowish-brown appearance. Its face mask, ears and wings are black, and its underside is grayish-brown, about 8 cm long in size and weighs 4-5 grams. In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. They change their roosting locations daily and hunt at night for insects to eat, including beetles, mosquitos, moths, and flies. They hibernate in winter, often in caves and abandoned mines. They can be found from south of Georgian Bay to Lake Erie and east to the Pembroke area, and choose colder and drier sites (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Potential	Woodlands present potential habitat for this species	Woodlands at north of the Property to be retained and setback per policy, retaining potential habitats. Removal of the Cultural Woodland/farmstead area to adhere to avoidance timing windows.
Little Brown Myotis (<i>Myotis lucifugus</i>)	END	END	END	1	S4	Little brown myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Little brown bats have glossy brown fur and usually weigh between four and 11 grams. Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young. Little brown bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing – an ideal environment for the fungus to grow and flourish. The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Potential	Woodlands present potential habitat for this species	Woodlands at north of the Property to be retained and setback per policy, retaining potential habitats. Removal of the Cultural Woodland/farmstead area to adhere to avoidance timing windows.
Northern Myotis (<i>Myotis septentrionalis</i>)	END	END	END	1	S3	The northern long-eared myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Northern long-eared bats have dull yellow-brown fur with pale grey bellies. They are approximately eight cm long, with a wingspan of about 25 cm, and usually weigh six to nine grams. Northern long-eared bats can be found in boreal forests, roosting under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April, most often in caves or abandoned mines (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	Potential	Woodlands present potential habitat for this species	Woodlands at north of the Property to be retained and setback per policy, retaining potential habitats. Removal of the Cultural Woodland/farmstead area to adhere to avoidance timing windows.
OTHER										

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Monarch Butterfly (<i>Danaus plexippus</i>)	SC	SC	END	1	S2N,S4B	The monarch is an orange and black butterfly with small white spots and is classified as a species of special concern by COSSARO. The monarch relies on milkweed plants as a food source for growing caterpillars, but the adult butterflies forage in diverse habitats for nectar from wildflowers. The greatest threat to the monarch is loss of overwintering habitat in Mexico. Other threats include use of pesticides and herbicides throughout its range (Ministry of Natural Resources and Forestry, 2014).	Field Observation	No	No viable habitats or abundant nectar species were observed on-site. Observation likely transient.	None

Notes:

SC - Special Concern

THR - Threatened

END - Endangered

S1 - Extremely rare in Ontario

S2 - Very rare in Ontario

S3 - Rare to uncommon in Ontario

S4 - Considered to be common in Ontario

S5 - Species is widespread in Ontario

SH - Possibly extirpated

S#S# - Indicates insufficient information exists to assign a single rank.

S#? - Indicates some uncertainty with the classification due to insufficient data.

S#N - Nonbreeding

S#B - Breeding



Appendix F

Significant Wildlife Habitat Screening

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence	Rationale
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial)	Ducks	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May	No	With a gradual slope, the fields of the Subject Property do not accumulate sheet water.
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, Swamps, Shallow Water Ecosites	Sewage & SWM ponds not SWH. Reservoir managed as a large wetland or pond/lake qualifies.	No	Open waters of appropriate size not found on the Subject Property.
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Sewage treatment ponds and storm water ponds not SWH.	No	No shoreline area on the Subject Property.
Raptor Wintering Area	Eagles, Hawks, Owls	Hawks/Owls: Combination of both Forest and Cultural Ecosites Bald Eagle: Forest or swamp near open water (hunting ground)	Raptors: >20ha, with a combo of forest and upland. Meadow (>15ha) with adjacent woodlands. Eagles: open water, large trees & snags for roosting.	No	While forests are present, there is a lack of meadow habitat on-site.
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites not SWH.	No	No caves, crevices, mines, or karsts on the Subject Property.
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Deciduous or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	Candidate	The woodlands and CUW may present potential maternity roosts. Woodlands are to be retained.
Turtle Wintering Area	Turtles (Midland, N. Map, Snapping)	SW, MA, OA, SA, FEO, BOO (requires open waters)	Free water beneath ice. Soft mud substrate. Permanent water bodies, large wetlands, bogs, fens with adequate DO.	Candidate	Open pond within swamp presents habitat. Midland Painted Turtles were observed incidentally, so SWH is assumed.
Reptile Hibernaculum	Snakes	Snakes: Any ecosite (esp. w/ rocky areas), other than very wet ones. Five-lined Skink: FOD and FOM, FOC1, FOC3 - with rock outcrops	Access below frost line: burrows; rock crevices, piles or slopes, stone fences or foundations. Conifer/shrubby swamps/swales, poor fens, depressions in bedrock w/ accumulations of sphagnum moss or sedge hummock ground cover.	No	Areas with ease of access to below frost line not observed.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	Cliff Swallow, N. Rough-winged Swallow	Banks, sandy hills/piles, pits, slopes, cliff faces, bridge abutments, silos, barns.	Exposed soil banks, not a licensed/permitted aggregate area or new man-made features (2 yrs).	No	Cliffs/banks not present on the Subject Property.
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	Great Blue Heron, Black-crowned NightHeron, Great Egret, Green Heron	SWM2, SWM3, SWM5, SWM6, SWD1 to SWD7, FET1	Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and emergents may be used. Nests in trees are 11 - 15 m from ground, near tree tops.	No	Appropriate habitat features not present on the Subject Property.
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer's Blackbird	Gulls/Terns: Rocky island or peninsula in lake or river. Brewer's Blackbird: close to watercourses in open fields or pastures with scattered trees or shrubs.	Gulls/Terns: islands or peninsulas with open water or marshy areas. Brewer's Blackbird colonies: on the ground in low bushes close to streams and irrigation ditches.	No	Appropriate habitat features not present on the Subject Property.
Migratory Butterfly Stopover Area	Painted Lady, Red Admiral, Special Concern: Monarch	Combination of open (CU) and forested (FO) ecosites (need one from each).	≥10 ha, located within 5 km of Lake Ontario. Undisturbed sites, with preferred nectar species.	No	Appropriate habitat features not present on the Subject Property. Site is >5 km from L. Ontario.
Landbird Migratory Stopover Areas	All migratory songbirds. All migrant raptor species.	Forest (FO) and Swamp (SW) ecosites	Woodlots >10 ha within 5 km of Lake Ontario. If multiple woodlands are along the shoreline, those <2 km from L. Ontario are more significant.	No	Site is >5 km from L. Ontario.
Deer Yarding Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	No	Not mapped on-site
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	No	Not mapped on-site
Rare Vegetation Communities					
Cliffs and Talus Slopes		TAO, TAS, CLO, CLS, TAT, CLT e.g., Niagara Escarpment (contact NEC)	Cliff: near vertical bedrock >3m Talus Slope: coarse rock rubble at the base of a cliff	No	Cliffs and Talus Slopes not found on Subject Property.
Sand Barren		SBO1, SBS1, SBT1	Sand Barrens >0.5 ha. Vegetation can vary from patchy and barren to tree covered, but <60%. <50% vegetation cover are exotic species.	No	Sand Barren not found on Subject Property.
Alvar	<i>Carex crawei</i> , <i>Panicum philadelphicum</i> , <i>Eleocharis compressa</i> , <i>Scutellaria parvula</i> , <i>Trichostema brachiatum</i> , Loggerhead Shrike	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Alvar >0.5 ha. Need 4 of the 5 Alvar Indicator Spp. <50% vegetation cover are exotic species.	No	Alvar not found on Subject Property.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence	Rationale
Old Growth Forest	Trees >140 yrs; heavy mortality = gaps. Multi-layer canopy, lots of snags and downed logs	FOD, FOC, FOM, SWD, SWC, SWM	Woodland areas ≥30 ha with a ≥10 ha interior habitat, assuming a 100 m buffer at edge of forest.	No	Woodlands of adequate size not found on Subject Property.
Savannah	Prairie Grasses w/ trees	TPS1, TPS2, TPW1, TPW2, CUS2	A Savannah is a <u>tallgrass prairie</u> habitat that has tree cover of 25 – 60%. <50% cover of exotic species.	No	Savannah not found on Subject Property.
Tallgrass Prairie	Prairies Grasses dominate	TPO1, TPO2	An <u>open Tallgrass Prairie</u> habitat has < 25% tree cover. Less than 50% cover of exotic species.	No	Tallgrass Prairie not found on Subject Property.
Other Rare Vegetation Communities		Provincially Rare S1 - S3 veg. comm. are listed in Appendix M of SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	No	Rare Vegetation Communities not found on Subject Property.
Specialized Habitat for Wildlife					
Waterfowl Nesting Area	Ducks	Upland habitats adjacent to: MAS1 to MAS3, SAS1, SAM1, SAF1, MAM1 to MAM6, SWT1, SWT2, SWD1 to SWD4 (>0.5 ha open water wetlands, alone or collectively).	Extends 120 m from a wetland or wetland complex. Upland areas should be at least 120 m wide. Wood Ducks and Hooded Mergansers use cavity trees (>40 cm dbh).	No	On-site wetland not of adequate size or open character necessary for waterfowl.
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat	Osprey, Bald Eagle	FOD, FOM, FOC, SWD, SWM, SWC directly adjacent to riparian areas	Nesting areas are associated with waterbodies along forested shorelines, islands, or on structures over water.	No	Appropriate habitat features not present on the Subject Property.
Woodland Raptor Nesting Habitat	Barred Owl. Hawks: N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations	>30 ha with > 10 ha interior habitat.	No	Woodlands of adequate size not found on Subject Property.
Turtle Nesting Areas	Midland Painted Turtle Special Concern: Snapping Turtle, Northern Map Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within: MAS1 to MAS3, SAS1, SAM1, SAF1, BOO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	Candidate	Woodlands surrounding Swamp present nesting opportunities.
Seeps and Springs	Wild Turkey, Ruffed Grouse, Spruce Grouse, White-tailed Deer, Salamander spp.	Seeps/Springs are areas where ground water comes to the surface.	Any forested area within the headwaters of a stream/river system. (2 or more confirms SWH type).	Candidate	Larger seep/spring found in SE corner of Subject Property. White-tail deer observed using the area.
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders	FOC, FOM, FOD, SWC, SWM, SWD	Open water wetlands, pond or woodland pool of >500 m ² within or adjacent to wooded areas. Permanent ponds or holding water until mid-July preferred.	Candidate	Breeding Habitat is assumed in the open waters within the swamp area. Open pond is approximately 400 m ² .
Amphibian Breeding Habitat (Wetlands)	Toads, Frogs, and Salamanders	SW, MA, FE, BO, OA and SA. Typically isolated (>120m) from woodland ecosites, however larger wetlands may be adjacent to woodlands.	Open water wetland ecosites >500m ² isolated from woodland ecosites with high species diversity. Permanent water with abundant vegetation for bullfrogs.	No	Appropriate wetlands not present on Subject Property.
Woodland Area-Sensitive Bird Breeding Habitat	Birds (area-sensitive species)	FOC, FOM, FOD, SWC, SWM, SWD	Large mature (>60 years) forest stands/woodlots >30 ha. Interior forest habitat >200m from forest edge.	Candidate	Observation of 5 Area-Sensitive species indicates that the north woodland with adjacent off-site woodlands likely present appropriate habitat for these species.
Habitat of Species of Conservation Concern					
Marsh Bird Breeding Habitat	Wetland Birds	MAM1 to MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 Green Heron: SW, MA and CUM1	Wetlands with shallow water and emergent vegetation. Gr. Heron @ edges of these types w/ woody cover.	No	Appropriate wetlands not present on Subject Property.
Open Country Bird Breeding Habitat	Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, N. Harrier, Savannah Sparrow, Short-eared Owl (SC)	CUM1, CUM2	Grassland/meadow >30 ha. Not being actively used for farming. Habitat established for 5 years or more.	No	Agricultural areas on Subject Property are actively farmed.
Shrub/Early Successional Bird Breeding Habitat	Brown Thrasher + Clay-coloured Sparrow (indicators) , Field Sparrow, Black-billed Cuckoo, E. Towhee, Willow Flycatcher, Yellow-breasted Chat, Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2	Large field areas succeeding to shrub and thicket habitats > 10 ha. Areas not actively used for farming in the last 5 years.	No	Required habitats not present on Subject Property.
Terrestrial Crayfish	Chimney or Digger Crayfish; Devil Crayfish or Meadow Crayfish	MAM1 to MAM6, MAS1 to MAS3, SWD, SWT, SWM. CUM1 sites with inclusions of the aforementioned.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish (typc. protected by wetland setbacks).	No	Required habitat character not present on Subject Property.
Special Concern and Rare Wildlife Species	Any species of concern or rare wildlife species	Any ELC code.	Presence of species of concern or rare wildlife species.	No	Eastern Wood-pewee were observed during the 2021 breeding bird survey in the northern woodlands. Based on this observation, potential habitat may be provided within the subject property. However, multiple breeding pairs of SC SAR would be required to warrant Candidate or Confirmed SWH in our opinion.



SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence	Rationale
Animal Movement Corridors					
Amphibians	Amphibians	all ecosites assoc. w/ water	When Breeding Habitat - wetland confirmed	No	No other water features identified beyond breeding wetland.
Deer Movement	White-tailed Deer	all forested ecosites	When Deer Wintering Habitat confirmed	No	No mapped deer wintering habitat
Exceptions for Ecoregion 6E					
Mast Producing: 6E-14	Black Bear	Forested Ecosites	>30 ha w/ mast producing species: Cherry (berries), Oak, Beech (nuts).	No	Not in Eco-district 6E-14
Leks: 6E-17	Sharp-tailed Grouse	CUM, CUS, CUT	Grassland/meadow >15 ha adjacent to shrublands, >30 ha adjacent to woodlands. Low agricultural intensity.	No	Not in Eco-district 6E-17



Appendix G

Subdivision Concept Plan