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Focused Environmental Impact Study – 1944 Bradley Avenue

City of London, Ontario

Palmer Project #
2007712

Prepared For
Elite Developments

July 24, 2023

Table of Contents

List of Figures

List of Tables

List of Appendices

1. Introduction

Palmer is pleased to provide this Focused Environmental Impact Study (EIS) for the property identified as 1944 Bradley Avenue, City of London (the Subject Property – **Figure 1**). It is Palmer's understanding that the investigations are required to support a development approval application with the City of London.

The Subject Property is approximately 42 hectares (ha) and is located north of Bradley Avenue and east of Jackson Road. The property currently supports a residential dwelling, barn structures, agricultural lands, a hydro corridor, and natural lands. The Subject Property occurs within the planning jurisdiction of the Upper Thames River Conservation Authority (UTRCA) and includes Regulated Lands throughout much of the site.

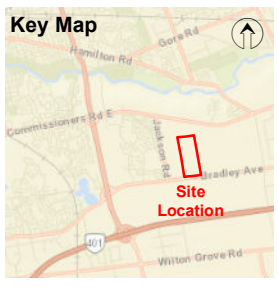
The intent of this Focused EIS is to inventory and evaluate the sensitivity of the existing natural heritage features and ecological functions associated with the Property and assess the impacts of the proposed development. With the agreement of the City, it is a Focused EIS because the full buffer widths have been applied to the natural features on the Subject Property. For the natural heritage features requiring protection, avoidance and mitigation measures are recommended where appropriate.

LEGEND

- Watercourse[1]
- Meadowlilly Woods (UT21) - Provincially Evaluated Wetland[1]
- Subject Site

1. LIO/MNRF

Key Map



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Date: Jul 24, 2023

NORTH

Source Notes:
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CLIENT: Elite M.D. Developments

PROJECT: 1944 Bradley

TITLE: **Site Location**

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REF. NO. 2007712-1-1

Figure 1

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2. Environmental Policy Review

The environmental policies applicable to the site have been reviewed with specific relevant policies summarized in the following sections. Environmental policies including the Provincial Policy Statement, City of London Official Plan (OP), and Upper Thames River Conservation Authority (UTRCA), have all been considered.

2.1 Provincial Policy Statement (2020)

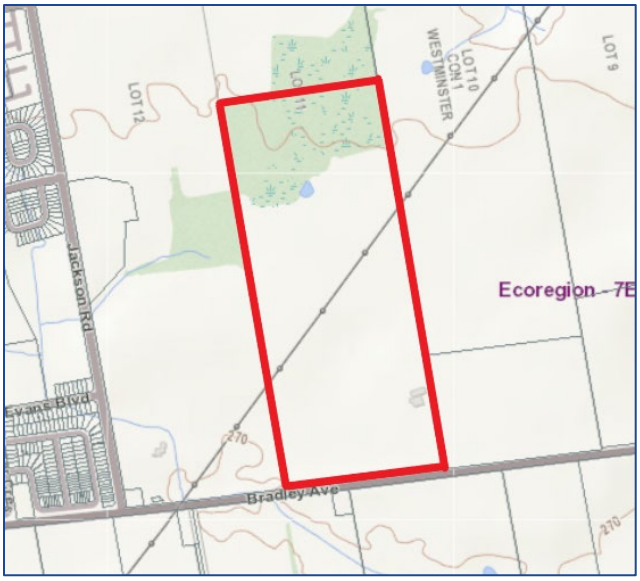
The Provincial Policy Statement (PPS) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources (Ontario Ministry of Municipal Affairs and Housing, 2020). The PPS defines eight types of Natural Heritage Features (NHF) and adjacent areas 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. The Subject Property is located in Ecoregion 7E. There is a Provincially Significant Wetland (Meadowlilly Woods), woodlands, and watercourses, on, or adjacent to, the Subject Property. A hydro corridor also transects the property (**Map A**).



Map A. NHIC Make A Map – the approximate boundaries of the Subject Property (red outline). Woodlands (green polygon), Provincially Significant Wetland (wetland symbol), waterbodies (blue polygon), watercourses (blue line).

2.2 City of London Official Plan (2016)

The London Official Plan (City of London, 2016) was adopted by City Council in June 2016 and approved by the Province in December 2016. On May 25, 2022, the Ontario Land Tribunal resolved the final phase of policy appeals, with some site-specific appeals remaining.

The London Plan aims to identify, protect, conserve, enhance, and manage the City's natural heritage system and natural resources. Development and site alteration are not permitted in significant natural heritage features unless it has been demonstrated there will be no negative impacts on the natural heritage features and areas or their ecological functions. **Map B** indicates Place Types from the 2016 OP. The land use figure from the 2016 OP (Map 1 Place Types) indicates the Subject Property is primarily considered 'Neighbourhoods' and 'Farmland', with some 'Green Space' in the northern portion where the Provincially Significant Wetland is located. The Urban Growth Boundary transects the property. **Map C** indicates the presence of a PSW, Significant Woodlands, Potential Naturalization Areas, Watercourse/Ponds on the Subject Property, with Valleylands and watercourses immediately adjacent.

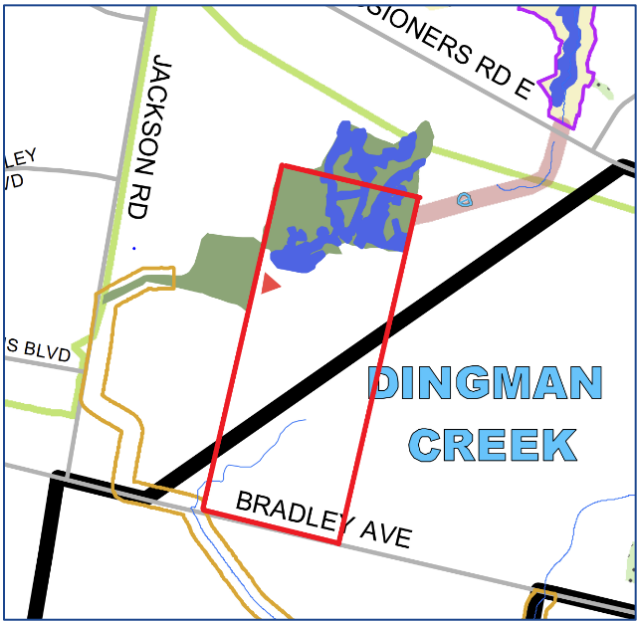
Section 1391 states:

Development and site alteration shall not be permitted in significant woodlands, significant valleylands, significant wildlife habitat, wetlands, and significant areas of natural and scientific interest unless it has been demonstrated that there will be no negative impacts on the natural heritage features or their ecological functions

Section 1379 states:

Potential naturalization areas are an important component of the Natural Heritage System. Potential naturalization areas can include lands adjacent to natural heritage features and areas, other natural features, lands that have been restored or have the potential to be restored to a natural state, areas that support hydrologic functions, and working landscapes that enable ecological functions to continue. Potential naturalization areas may enhance, restore or strengthen and expand the health and viability of a natural heritage feature or area.

Map B. City of London OP (2016) Map 1 – Place Types. Subject Property (black outline), Green Space (green polygons), Neighbourhoods (beige area), Farmland (light green area), Environmental Review (dark green polygon), Urban Growth Boundary (red outline).



Map C. City of London OP (2016) Map 5 – Natural Heritage. Subject Property (red outline), PSW (blue polygons), Significant Woodlands (green polygons), Potential Naturalization Areas (red arrow), Watercourse/Ponds (blue line), Valleylands (beige outline), Urban Growth Boundary (black outline).

2.2.1 City of London Buffers

In the 2016 OP, Section 1412-1416 (Ecological Buffers) states that:

1412_ Ecological buffers serve to protect natural heritage features and areas, and their ecological functions and processes, to maintain the ecological integrity of the Natural Heritage System.

1413_ Ecological buffers will generally be required on lands contiguous to a specific natural heritage feature or area. Ecological buffer requirements shall be determined as part of an Environmental Impact Study.

1414_ The location, width, composition and use of ecological buffers necessary to protect natural heritage areas from the impacts of development on adjacent lands will be specified through application of the City Council approved Guidelines for Determining Setbacks and Ecological Buffers as part of an approved secondary plan and/or an environmental impact study. The City may also consider technical and/ or scientific documents that reflect improvements in scientific knowledge regarding natural features.

1416_ Where different components of the Natural Heritage System overlap, the limit of development shall be set at the limit of the maximum ecological buffer as determined through an approved environmental impact study. Where the limits of a natural hazard overlap with the limits of an ecological buffer determined for a natural heritage feature, the development limit shall be set as the greater of the limit of the natural hazard corridor or the limit of the ecological buffer.

2.3 Upper Thames River Conservation Authority

Upper Thames River Conservation Authority (UTRCA) regulates hazard lands including watercourses, valleylands, shorelines, and wetlands, including lands adjacent to these features under the Conservation Authorities Act through *Ontario Regulation (O. Reg.) 157/06 – Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* (Upper Thames River Conservation Authority, 2022). The Regulation allows the UTRCA 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. The majority of the Subject Property is within UTRCA Regulated Lands (**Map D**).

The UTRCA has a minimum setback of 30 m from the bank of any coldwater/coolwater watercourses and warmwater sportfish watercourses, and 15 m from the bank of any warmwater baitfish watercourse, as stated in point 4 of Section 4.2.5 of the Environmental Planning Policy Manual for the Upper Thames River Conservation Authority (2017). Furthermore, as per point 11 of Section 4.2.5, a minimum setback of 15 m from all watercourses is required for all ponds.

Significant Wetland and Woodland Policy (Upper Thames River Conservation Authority , 2017):

Section 4.2.4 (3.) A(c):

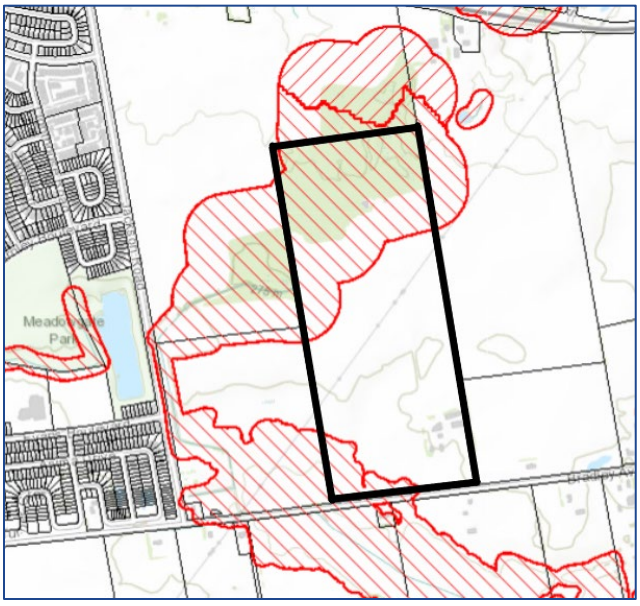
Except as provided for in policies 4.2.4 (3.) A(a) and 4.2.4 (3.) A(b.), no new development or site alteration is permitted within 30 metres of a Provincially Significant Wetland or a wetland greater than or equal to 2 hectares in size.

Section 3.3.3.1 Significant Woodlands:

1. New development and site alteration is not permitted in Woodlands considered to be significant.
2. New development and site alteration is not permitted on adjacent lands to Significant Woodlands (within 50 metres) unless an EIS has been completed, to the satisfaction of the UTRCA, with no negative impact on the feature and its ecological function.

Section 3.3.3.2 Other Woodlands:

1. Development and site alteration is not permitted in other Woodlands, or the 50 metre adjacent lands, unless an EIS has been completed, to the satisfaction of the UTRCA, which demonstrates that there will be no negative impact on the feature and its ecological function. The creation of strategically placed new habitat, linkages or restoration of other ecosystem functions may be considered as mitigation measures.



Map D. UTRCA Regulated Area Screening Map (2021) of the Subject Property (black outline). UTRCA Regulated Area (red hatching).

2.4 Migratory Birds Convention Act (1994)

The Migratory Birds Convention Act (Government of Canada, 1994) and Migratory Birds Regulations (MBR), 2014 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.

2.5 Endangered Species Act (2007)

Species designated as Endangered or Threatened by the Committee on the Status of Species at Risk in Ontario (COSSARO) are listed as Species at Risk in Ontario (SARO). These species at risk (SAR) and their habitats (e.g., areas essential for breeding, rearing, feeding, hibernation and migration) are afforded legal protection under the Endangered Species Act, 2007 (ESA) (Government of Ontario, 2007). This Act is administered by the Ministry of Environment, Conservation and Parks (MECP).

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, being Ontario Regulation 230/08 of the ESA. Species listed as Special Concern may be afforded protection through policy instruments respecting significant wildlife habitat (e.g., the Provincial Policy Statement (PPS)) as defined by the Province or other relevant authority, or other protections contained in Official Plan policies.

3. Study Approach

The approach to the study has been focused in consideration of existing site conditions, applicable policy, and feedback received through ongoing agency liaison. A City of London checklist was provided to the City and UTRCA at the beginning of the EIS process. Following this a meeting on October 21, 2022 was held in which staff from the City, the City associated Environmental and Ecological Planning Advisory Committee, UTRCA, EXP, Palmer and the landowners (Elite Development) were in attendance. At this meeting the scope of the study was discussed. A scoped EIS process was agreed upon given that the standard 30 m buffers were to be applied to the natural features. The revised Scoping checklist is given in **Appendix A**.

City of London, Upper Thames Conservation Authority and Palmer staff, met a surveyor on the property on July 5, 2023 to determine the limit of the natural feature (which is primarily Significant Woodland with sections of wetland). A preliminary boundary had been determined by Palmer on November 4, 2022.

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 Make-a-Map application being the main source of information and records from the Ministry itself (Ministry of Natural Resources and Forestry, 2022). 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 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, 2022).
- **Land Information Ontario (LIO):** certain data types including aquatic resource area (ARA) information is available through these publicly available data layers (Government of Ontario, 2022).
- **Atlas of the Breeding Birds of Ontario**: Provides range maps and other information regarding breeding birds in Ontario (Bird Studies Canada, 2022).
- **Ontario Reptile & Amphibian Atlas**: Provides range maps and other information regarding reptile and amphibian species observed in Ontario (Ontario Nature, 2022).
- **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, 2022).

- **Aerial Photography, including historical photos**: Available on-line mapping sources were reviewed to identify current potential habitat types, biogeography and terrain.

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

3.2 Ecological Surveys

3.2.1 Ecological Land Classification

Ecological field investigations were undertaken on September 28, November 4, 2022, April 3 and July 5, 2023. Vegetation communities were mapped and described following the Ecological Land Classification (ELC) System for Southern Ontario protocols (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 includes community structure, as well as level of disturbance, presence of indicator species, and other notable features. Botanical observations werewas conducted during all visits.

3.2.2 Aquatic Habitat Assessment

A aquatic habitat observations were made during 2022 and 2023 field investigations on the tributary of Dingman Creek just west of the Subject Property. Since the tributary is not located within the Subject Property, Palmer Ecologists were limited to what was visible from the property limits. A description of the feature and representative photographs are included in section 4 of this report.

3.2.3 Headwater Drainage Feature Assessment

A Headwater Drainage Feature (HDF) Assessment occurred during Palmer's fall 2022 and spring (April 3 and May 18) 2023 field investigations, on the potential HDF feature on the Subject Property in the south half of the Subject Property. A description of the feature and representative photographs are included in section 4 of this report.

3.2.4 Breeding Amphibians

Amphibian breeding surveys were conducted on the property on April 3, May 18 and June 21 2023. Ecologists conducted three breeding surveys, in accordance with standard field protocols (Bird Studies Canada, 2001) . Surveys will be completed in the evenings between an hour after sunset and midnight. Weather conditions should be between 5-17°C, with low to no wind.

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.

3.2.5 Species at Risk Habitat Assessment

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 threated 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.

A list of species considered potentially present, or known to be present, within the Property and general area was investigated using a combination of NHIC square data. Ontario Breeding Bird Atlas, Ontario Reptile and Amphibian Atlas, professional experience, and direct observation. An initial SAR screening was conducted for this EIS, however additional information may change this assessment based on 2023 surveys.

3.2.6 Significant Wildlife Habitat Assessment

A screening for Significant Wildlife Habitat (SWH) for Ecoregion 7E was conducted for this EIS; the SWH type and criteria used in this appendix was derived from the SWH Schedule for Ecoregion 7E provided by the MNRF (Ontario Ministry of Natural Resources and Forestry, 2015).

3.2.7 Incidental Wildlife Observations

All incidental observations of wildlife were recorded by Palmer during the investigations. Incidental observations included direct sightings and indirect evidence such as nests, tracks, scat, and browse.

4. Existing Conditions

4.1 Physiography and Soils

A Hydrogeological Assessment Report produced by Golder Associates (2017) defined the physiography and soil type of the Subject Property and adjacent lands to the north and west:

The Site lies within the physiographic region of southern Ontario known as the Mount Elgin Ridges. The Mount Elgin Ridges are comprised of a series of moraines composed of pale brown calcareous clay or silty clay, while in the valleys it is common to find alluvium of gravels, sands or silts. The Site is located on the Ingersoll Moraine.

The ground surface in the vicinity of the Site generally slopes gently towards the south and the ground surface elevation ranges from about 278 metres (m) above mean sea level (amsl) in the northeast to about 275 m amsl in the southwest corner of the Site. The topographic relief in the vicinity of the Site is shown on Figure 1.

More recent soil boreholes by EXP indicate that soils generally consist of sandy silt over clayey silt till. See EXP Geotechnical Investigation (EXP 2022a).

4.2 Vegetation Communities and Flora

The Subject Property primarily consists of agricultural fields and hedgerows, with anthropogenic areas (AN) (i.e., residential building, barn structures) in the southeastern corner, and at the edge of the woodland (wooden storage building/sugar shack). There is also an abandoned wooden building in the northeastern corner of woodland.

The woodland/wetland in the northern quarter of the property which was a focus of ecological investigations. A woodland/swamp and permanent/intermittent stream are immediately to the west of the Subject Property. Adjacent to the Subject Property are mainly agricultural fields, with a residential development under construction along the northwestern corner and Bradley Avenue along the southern border.

Ecological Land Classification (ELC) vegetation communities are mapped on **Figure 2,** based on fall 2022 observations. These may be changed or supplemented after 2023 field investigations**.** Photos of these communities are given in **Photos 1** through **10**. The differences between our ELC mapping and the PSW mapping are discussed under the Assessment of Significance Section 5.0.

4.2.1 Vegetation Communities

Table 1. ELC Community Descriptions

Vegetation Community	Description
Hedgerow (HR)	Several Hedgerow communities were recorded running north-south on the Subject Property. The main hedgerow is composed of White Cedar (*Thuja occidentalis*),

	Norway Spruce (*Picea abies*), and European Buckthorn (*Rhamnus cathartica*). The occasional Eastern White Pine (*Pinus strobus*), Black Walnut (*Juglans nigra*), Manitoba Maple (*Acer negundo*), Sugar Maple (*Acer saccharum*), White Spruce (*Picea glauca*), and Blue Spruce (*Picea pungens*) were observed.
Agricultural (AG)	Agricultural fields occupied much of the Subject Property. Oat crops dominated these communities however, Soy was observed in the southeast corner. The occasional Timothy (*Phleum pratense*), Common Plantain (*Plantago major*), Fox Sedge (*Carex vulpinoidea*), Common Lamb's Quarters (*Chenopodium album*), Horse Weed (*Erigeron canadensis*), Wild Carrot (*Daucus carota*), Barnyard Grass (*Echinochloa* sp.), Common Dandelion (*Taraxacum officinale*), and Common Burdock (*Arctium minus*) were observed along the edges of the agricultural communities.
White Pine Coniferous Plantation (CUP3-2)	The western edge of the woodland was composed of a strip of full canopy planted White Pine (*Pinus strobus*).
Terrestrial System – Forest	
Dry-Fresh Sugar Maple- Beech Deciduous Forest (FOD5-2)	This vegetation community was the largest of the natural communities on the property. It was dominated by mid-aged (10 to 40 cm dbh range) Sugar Maple (Acer saccharum) with American Beech (*Fagus grandifolia*). Black Walnut, Black Cherry (*Prunus serotina),* Ironwood (*Ostrya virginiana*), Basswood (*Tilia americana*), Red Oak (*Quercus rubra*) and Bitternut Hickory (*Carya cordiformis*) also recorded. There are a few mature oaks in this community. Ground cover was quite sparse (in fall) but species present included: Aster (*Aster* sp.), Yellow Archangel (*Lamiastrum galeobdolon),* Woodland Strawberry (*Fragaria vesca*), Anemone (*Anemone* sp.), Solomon Seal (*Maianthemum* sp.), Broad-leaved Goldenrod (*Solidago flexicaulis),* and Virginia Creeper (*Parthenocissus quinquefolia*), and in the moister areas Coltsfoot (*Tussilago farfara*), Poison Ivy (*Toxicodendron radicans*), Green Ash (*Fraxinus pennsylvanica*) and Trembling Aspen (*Populus tremuloides*) saplings, and the occasional Sensitive Fern (*Onoclea sensibilis*). It is likely that some woodland spring ephemerals are present in this woodland. Three wetland inclusions are shown on Figure 2. This are too small to be considered wetlands of their own and have no or few wetland woody species (e.g. Red Maple), however the ground cover species are generally wetland. Ground cover species observed in these inclusions included: Grey Dogwood (*Cornus racemosa*), Boneset (*Eupatorium perfoliatum*), Fowl Manna Grass (*Glyceria striata*), and asters. No standing water was observed in any part of this community in the fall of 2022 ihowever, micro-topographic depressions were present throughout the community. The main ones are shown as possible ephemeral ponds on Figure 2. There was negligible evidence of wetland plants (woody or herbaceous) in these areas in the fall of 2022. The differences between Palmer mapping and the PSW mapping are further discussed in Section 5. Anthropogenic disturbance (i.e., dumping, trails) were observed as was Sugar Maple tapping activity, especially in the south of the woodland.

Dry-Fresh Mixed Oak Deciduous Forest (FOD1-4)	In the southwestern portion of the woodland there is a small area where Red Oak and White Oak (*Quercus alba*) are more dominant than elsewhere in the woodland. Black Cherry and some American Beech are present.
Mixed Forest (FOM)	This small community is a mix of presumably planted Tamarack (*Larix laricina*) and White Pine along with naturally occurring Sugar Maple and American Beech. There was no evidence of a wetland community here in the fall of 2022.
Maple Mineral Deciduous Swamp (SWD3-3)	Part of the Provincially Significant Wetland in the northern portion of the Subject Property was identified as a Maple Mineral Deciduous Swamp community. In the fall of 2022, no ground cover was present and the canopy was composed of Swamp Maple (*Acer freemanii*). Red Maple (*Acer rubrum*) may also be present. There is likely standing water in the spring in this community however none was present in the fall of 2022.
Mineral Meadow Marsh (MAM2)	Another part of the PSW consists of a small meadow marsh underneath a deciduous forest canopy. Apart from a few young American White Elm (Ulmus americana) there are not wetland woody species in this unit. Ground cover species include: Clearweed (*Pilea pumila*), Fowl Manna Grass (*Glyceria striata*), Common Reed (*Phragmites australis*) and Coltsfoot and aster species (*Symphiotricum* sp.)
Off-site	
Mineral Deciduous Swamp (SWD) / Mineral Deciduous Forest (FOD)	A Deciduous Swamp or Forest community was observed adjacent to the Subject Property, along the western boundary. Due to limited access, Palmer ecologists assessed the community from its edge. The southern portion appeared to be swamp and the northern portion either swamp or upland woodland. The community was dominated by mature Silver Maple or Freeman's Maple (*Acer saccharinum/ freemanii*), with frequent Black Walnut and the occasional dead Ash (*Fraxinus* sp.), Bitternut Hickory, and Eastern Cottonwood (*Populus deltoides*). Riverbank Grape (*Vitis riparia*), European Buckthorn, Red Raspberry (*Rubus idaeus*), Goldenrod (*Solidago* sp.), Thistle (*Cirsium* sp.), and Panicled Aster (*Symphyotrichum lanceolatum*) were observed along the community junction with the agricultural field, and are not expected to be typical ground cover species in the woodland.

ELC LEGEND

Cultural and Anthropogenic
AG: Agriculture
ANTH: Anthropogenic
HE: Hedgerow
CUP3-2: White Pine Coniferous Plantation

Forest
FOD5-2: Dry-Fresh Sugar Maple- Beech Deciduous Forest
FOD1-4: Dry-Fresh Mixed Oak Deciduous Forest
FOD: Deciduous Forest
FOM: Mixed Forest

Wetland
SWD3-3: Maple Deciduous Swamp
SWD: Deciduous Swamp
MAM2: Mineral Meadow Marsh

1. LIO/MNRF

0 20 40 60 80 100
METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

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NORTH

Source Notes:
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CLIENT: Elite M.D. Developments

PROJECT: 1944 Bradley

TITLE: **Existing Environmental Conitions**

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REF. NO. 2007712-2-3

Figure 2

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Photo 1. A hedgerow (HE) community transecting the Subject Property (September 28, 2022).

Photo 2. Agricultural field (oat) (AG) in the eastern portion of the Subject Property (September 28, 2022).

Photo 3. Anthropogenic area (AN) in the southeastern portion of the Subject Property September 28, 2022).

Photo 4. Sugar Shack (AN) (November 4, 2022)

Photo 5. Dry- Fresh Sugar Maple- Beech Deciduous Forest community (September 28, 2022).

Photo 6. Dry- Fresh Sugar Maple- Beech Deciduous Forest community (November 4, 2022).

Photo 7. Track into woodland community in between FOD5-2 and FOM (November 4, 2022).

Photo 8. Swamp Maple Mineral Deciduous Swamp (November 4, 2022).

Photo 9. Mineral Meadow Marsh (MAM2) (November 4, 2022).

Photo 10. Mineral Deciduous Swamp / Mineral Deciduous Forest community adjacent to the Subject Property (September 28, 2022).

4.3 Flora

A floral inventory is given in **Appendix B**. 64 species, and eight identifed to their genus, were recorded. No listed SAR or rare vegetation species were observed have been observed to date. The species recorded within the woodland are generally native species with little no non-native or invasive species. The floral diversity was not particularly high however.

4.4 Aquatic Habitat

4.4.1 On-site Potential Drainage Feature (1)

A potential headwater drainage feature was surveyed in the southern portion of the property running southwest through the agricultural field on the Subject Property (**Figure 2**). Drainage features are shown on **Figure 2** as 1 through 3 and numbered as in the headers in this report. The initial survey was carried out on September 28, 2022 with the potential feature being found as undefined (**Photo 11**). No standing or flowing water was observed however, evidence of water presence was observed such as saturated soils and reduced crop/vegetation growth within the area. Following discussions with UTRCA and the City of London (October 2022), it was determined that further investigations would be carried out in the appropriate seasons in 2023. During two visits in spring of 2023 (April 3 and May 18) the observations made on both occasions were that there was: no channel, no water presence (neither flow nor standing water); and no riparian vegetation, as the area was completely plowed. Using the TRCA and CVC (2014) HDF Evaluation process this results in a outcome of No Management Required, unless there is groundwater recharge, in which case Maintain Recharge is the result.

Evaluation, Classification and Management of Headwater Drainage Features Guidelines Approved July 2013 (Finalized January 2014)
prepared for Toronto and Region Conservation Authority, Credit Valley Conservation and other conservation authorities.

Photo 11. Assessed drainage feature (1) in the southern portion of the Subject Property (September 28, 2022).

4.4.2 Off-site Drainage Feature (To West) (2)

A LIO mapped, deeply incised watercourse was observed to the immediate west of the subject property, along the south edge of the adjacent woodland. This is the upper end of this drainage feature. No standing or flowing water was recorded in September or early November (**Photo 12**). A culvert was observed at the edge of the property boundary and it is our understanding from the hydrogeology team (EXP) that this drainage feature is fed by tile drains on the subject property **(Photo 13**).

Declan Corp. (2005) describes this tributary overall as a 'heavily altered' drainage feature containing a 'tolerant warmwater fishery'. However, this description may apply only to lower portions of the drainage feature and there may or may not be fish presence in the drainage feature to the immediate west of 1944 Bradley Ave. Additionally, it is our understanding that this portion of the drainage feature has been recently reconstructed by the City, and thus it is likely that any natural designation has been removed.

Photo 12. Drainage Feature 2 immediately to the west of 1944 Bradley and along the south edge of the adjacent woodland (September 28, 2022).

Photo 13. Drainage Feature 2 outlet from the fields on 1944 Bradley outletting westward to the adjacent property (September 28, 2022).

4.4.3 Off-site Drainage Feature (To Southwest of Bradley Avenue) (3)

This drainage feature is a downstream portion of drainage feature 2. However, drainage feature 3 differs in that other drainage features feed into 3. It likely fits the description as 'heavily altered' drainage feature containing a 'tolerant warmwater fishery'. According to the Dingman Creek Subwatershed Monitoring – 2019 Annual Report (2020) five to 10 species of fish have been found here.

4.5 Breeding Amphibians

During three amphibian surveys, Palmer observed only one species in one location: a Wood Frog (*Lithobates sylvaticus)* chorus was heard in the swamp (SWD3-3) at the north end of the Subject Property on April 3, after which no other species were heard. Although not possible to determine numbers of frogs calling when there is a chorus, it sounded as if approximately 10 or so Wood Frogs were calling and not hundreds. Additionally, no amphibians were heard in the eastern portion of the adjacent woodland.

This SWD3-3 appeared to be the deepest swamp/vernal pool in the woodland (and thus the only one supporting breeding amphibians), and water was present on the following dates when Palmer was present: April 3, May 18, and July 5 (after significant recent rain) 2023, minimal water on June 21 2023, and none on September 28, and November 4, 2022 site visits'. Shallower water was present for shorter time periods, in a few other locations.

4.6 Incidental Wildlife

The following incidental wildlife was recorded during the September 28, and or November 4, 2022 field investigation, unless otherwise stated:

Birds

- Cedar Waxwing (*Bombycilla cedrorum*) – calls heard
- Black-capped Chickadee (*Parus atricapillus*) – calls heard
- Blue Jay (*Cyanocitta cristata*) – calls heard
- American Robin (*Turdus migratorius*) – observed in the hedgerow on the property
- Turkey Vulture (*Cathartes aura*) – a flock observed on the property in the fall

All of these common species, apart from the Turkey Vulture, likely breed on the property. On July 5, 2023 the following bird species were observed. They are all common species and expected to be breeding species:

- Downy Woodpecker (*Picoides pubescens*)
- American Crow (*Corvus brachyrhynchos*)
- White-breasted Nuthatch (*Sitta carolinensis*)
- Eastern Wood-pewee (*Contopus virens*)
- Red-eyed Vireo (*Vireo olivaceus*)
  Indigo Bunting (*Passerina cyanea*)

Other Wildlife

- Spring Peeper (*Pseudacris crucifer*) – a few calling on a warm fall day (not associated with any particular potential wetland area); likely associated with an off-site wetland pond east of the property where this species was heard in the spring of 2023
- Red-backed Salamander (*Plethodon cinereus*) – one under a log
- Crayfish chimneys – along edge of woodland in agricultural area (spring 2023)
- Gray Squirrel (*Sciurus carolinensis*) – observed on the property
- Striped Skunk (*Mephitis mephitis*)
- White-tailed Deer (*Odocoileus virginianus*) – observed on the edge of the property

5. Assessment of Significance

There are no ANSIs, valleylands or other significant features on or adjacent to the subject property, other than those described below.

5.1 Aquatic Habitat

Based on our experience and background information we believe that there is no significant watercourse on nor immediately adjacent to the subject property. Drainage Feature 3 is mentioned again in Section 7.2.2.

5.2 Wetlands

A provincially significant wetland (Meadowlily Woods PSW) has been mapped on the property and elsewhere in the surrounding area. A large part of this wetland is discontinuous with the on-site wetland and is situated along the Thames River. It is assumed that the part of the PSW that is on the subject property was mapped by MNRF using air photography and not with the aid of on-site field investigations.

Based on our investigations, Palmer has mapped the wetland to cover a much smaller area and has concluded that some of the areas shown as MNRF wetland are upland and that other parts are very small inclusions or are ephemeral pools or spring flow with minimal wetland flora (vernal pools are not generally considered wetlands). Thus, our ELC mapping as shown on **Figure 2**. See the ELC description for the FOD5-2, SWM3-3 and MAM2 for additional information. However, despite our disagreement regarding the wetland extent, we do not intend on requesting a change to the official PSW mapping. This is primarily because if the PSW was changed it would not change our recommendations regarding the buffers to the natural features. It may however affect how and where the wetland is monitored.

Conversely, there is no PSW mapped in the treed area on property immediately to the west, however there appears to be swamp in some or part of this woodland. Palmer was not able to acquire any ELC or wetland mapping of this property from either the landowner or the City, thus we have based our understanding on observations from the edge of the property. Current or historical air photography does not provide any clear insights into the presence of wetlands on the eastern half of that property.

5.3 Woodlands

The woodland (both upland and wetland) on the subject property as well as the woodland to the immediate west of the subject property are mapped as Significant by the City of London. Palmer agrees with this status.

5.4 Species at Risk

Based on a review of the NHIC database, field observations in 2022, 2023 and professional experience, a total of 23 SAR were identified as potentially occurring in the general region, and thus were included in (**Appendix C**). Of these, a shortlist of the following eleven SAR have been identified as having potential habitat or potentially occurring within the Property:

Birds

- Barn Swallow (*Hirundo rustica*) – Threatened
- Eastern Wood-Pewee (*Contopus virens*) – Special Concern
- Wood Thrush (*Hylocichla mustelina*) – Special Concern

Vascular Plants

- Butternut (*Juglans cinerea*) – Endangered
- Eastern Flowering Dogwood (*Cornus florida*) – Endangered
- Green Dragon (*Arisaema dracontium*) – Special Concern
- Wood-poppy (*Stylophorum diphyllum*) – Endangered

Mammals

- Tri-colored Bat (Eastern Pipistrelle) (*Perimyotis subflavus*) – Endangered
- Eastern Small-footed Myotis (*Myotis leibii*) – Endangered
- Little Brown Myotis (*Myotis lucifugus*) – Endangered
- Northern Myotis (*Myotis septentrionalis*) – Endangered

Bird surveys were not conducted with the agreement of the City, however Eastern Wood-pewee was heard on the property. It is not surprising that it was observed as this species, while declining, is still a very common species of deciduous and mixed woodland of many sizes.

None of the four listed vascular plants were observed while conducing botanical inventories. Bat presence is not possible to determine without multiple nights of acoustic surveying. Two individuals of an unknown species of bat were observed on May 18, 2023 at the forest edge.

Some further detail about potential occurrence and the need for mitigation is given in **Appendix C** and the Impacts and Mitigation section of this report. Wood-poppy has been included in this list because it is present in the London area including at Meadowlily Woods (https://www.ontario.ca/document/five-year-review-progress-towards-protection-and-recovery-ontarios-species-risk-2016/wood-poppy#section-8).

5.5 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. To help with site level assessments, the MNRF has developed the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (Ontario Ministry of Natural Resources and Forestry, 2015). With the exception of wintering deer yards, which could be, and often are, considered SWH, the detailed identification and designation of SWH has not been completed in London.

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 of Animals;
- Rare Vegetation Communities or Specialized Habitats for Wildlife;
- Habitats of Species of Conservation Concern; and

- Animal Movement Corridors.

Criteria for the identification of these features are also provided in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E. These criteria, in addition to our professional experience, were used to provide a screening of wildlife habitat within the Subject Property for potential SWH within and immediately adjacent to the proposed development footprint (**Appendix D**).

There are no confirmed SWH on the subject property. *Waterfowl Stopover and Staging Areas (Terrestrial*) was considered as a potential SWH, but no flooded fields were observed in the spring. *Amphibian Breeding Habitat (Woodland)* was also considered a potential SWH, but the numbers of species and individual frogs observed meant that the swamp where the frogs were heard is not SWH.

Three SWH habitats still have the potential to be present on the subject property. See the additional comments in Appendix D. These are:

1. Bat Maternity Colonies
2. Special Concern and Rare Wildlife Species
3. Terrestrial Crayfish

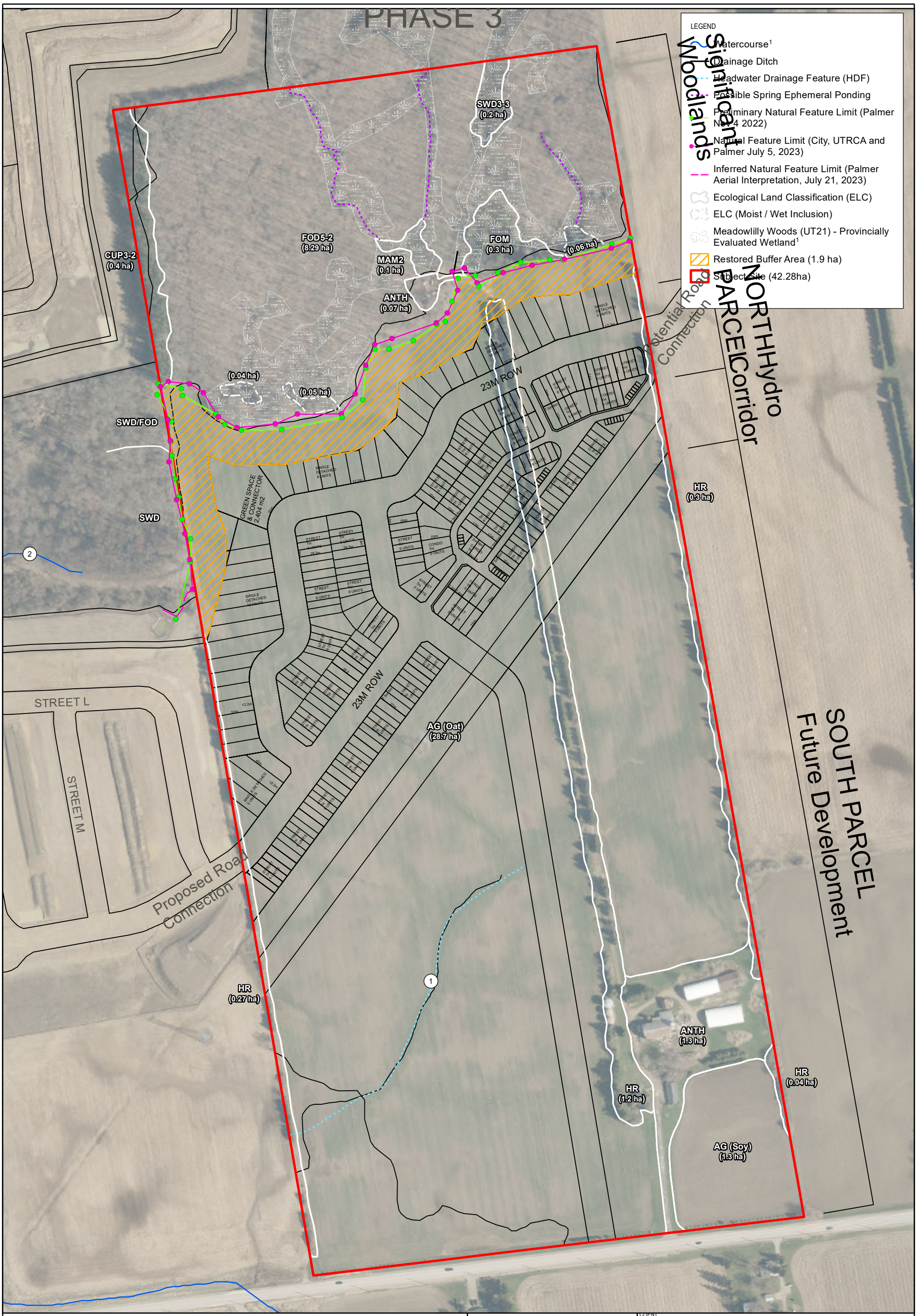
Bat Maternity Colonies may be present in the woodland/wetland however, since this area is not proposed for development, no surveys were planned to determine presence or absence. To date, there are no known *Special Concern or Rare* wildlife species on the subject property, apart from Eastern Wood-pewee which is Special Concern. The presence of one pewee does not warrant SWH status as it is currently a widespread and fairly common species. Chimney Crayfish chimneys were observed in the agricultural field close to the woodland/wetland in spring.

6. Proposed Development

The proposed development consists of 318 residential units with associated laneways in a 9.5 ha area (**Figure 3**). The residential units consist of single-family lots, townhouses and back-to-back townhouses. The overall shape of the proposed development is formed by the configuration of the property and a consideration for the natural features of the area, as well as the City of London plan which intends for residential housing in the north portion of the property only, north of the hydro corridor. A temporary secondary access from Bradley Avenue is proposed until such time as a secondary access can be built westward to the Parker Jackson development.

The shape and setbacks of the Significant Woodland and the associated provincially significant wetland have informed the northern limit of the development, as has the woodland to the west. A 30-metre buffer has been placed on these natural features (as further discussed in Section 7.2.2.). Due to the timing of the submission, the preliminary feature limit (Nov 4, 2022) was used to design the proposed development. Both the preliminary line and the feature line surveyed with the City and UTRCA have been shown on the Existing Conditions and Proposed Development figures (**Figure 2 and 3**). Elite can update the proposed development based on the surveyed line at a future date. It should be noted that currently, the preliminary line is for the most part further south than the surveyed line, thus resulting in marginally larger buffers. Also, in regards to the southern-most survey point, this was not placed on the dripline as the other points were, due to desire not to trespass. Thus, in this location, the 'green' preliminary line is thought to be more accurate in this case.

We have assumed to date that no grading will occur in the 30 m buffers. Stormwater will be addressed with a stormwater pond that is was recently built on the property to the west, and which was built on the understanding that development would occur on 1944 Bradley Ave. The Functional Servicing Report (Odan Detech May 2023) provides more information on stormwater and servicing.



ELC LEGEND

Cultural and Anthropogenic	*Forest*	*Wetland*
AG: Agriculture	FOD5-2: Dry-Fresh Sugar Maple- Beech Deciduous Forest	SWD3-3: Maple Deciduous Swamp
ANTH: Anthropogenic	FOD1-4: Dry-Fresh Mixed Oak Deciduous Forest	SWD: Deciduous Swamp
HE: Hedgerow	FOD: Deciduous Forest	MAM2: Mineral Meadow Marsh
CUP3-2: White Pine Coniferous Plantation	FOM: Mixed Forest	

1. LIO/MNRF

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METRE SCALE

North American Datum 1983
Universal Transverse Mercator Projection Zone 17

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Drawn: SM
Checked: RC
Date: Jul 24, 2023

NORTH

Source Notes:
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CLIENT: Elite M.D. Developments

PROJECT: 1944 Bradley

TITLE: **Proposed Development**

Palmer™

REF. NO. 2007712-3-3

Figure 3

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7. Impact Assessment and Mitigation

7.1 Impacts

Potential impacts of the proposed development of the property can be divided into two types: those primarily associated with the construction phase and those that are permanent.

Construction related impacts include:

- Potential for erosion and loss of soils; and
- Disturbance to wildlife including birds during vegetation removal.

Permanent potential or actual impacts include:

- Removal of natural vegetation and associated wildlife habitat;
- Impacts to water quality through for example soil erosion, removal of vegetation etc.; and
- Changes to wildlife behaviour due to the introduction of artificial light, noise and pets.

The anticipated removal of vegetation communities will consist of the removal only of agricultural lands or 'cultural' vegetation communities (i.e., hedgerows). No natural features on the Subject Property are proposed to be altered or removed.

Additional details and mitigation proposed for these impacts is discussed in the next section.

The headwater drainage feature (A) in the southern portion of the Subject Property does not require mitigation (according to CVC and TRCA 2014) unless there is groundwater recharge in this area.

7.2 Mitigation

7.2.1 Mitigation by Design

All of the identified features, including the Significant Woodlands, and provincially significant wetland, are retained and buffered with appropriate buffers (see next section) under the proposed plan.

7.2.2 Ecological Buffers

Natural features found on the Subject Property (plus the identifying agency), and their associated buffers (and associated agency driving it) are proposed for all features including:

- Significant Woodland (City of London) – 30 m (City of London)
- Provincially Significant Wetland (Ministry of Natural Resources and Forestry) – 30 m (UTRCA and City preferred)

The drainage feature 2 watercourse is at most a warmwater watercourse, although we suspect that this drainage feature may not support a fish habitat. Thus, a 15 m buffer is the maximum that would be required. Either way, this buffer lies within another buffer and thus has not been shown in our figures. Drainage

feature 3 would require a 15 m buffer however the outermost edge of the buffer is situated off the property, and additionally might not be applied as such given the presence of Bradley Avenue. Thus, we have not shown this buffer either.

Palmer has shown a smaller wetland area than has been mapped by MNRF. However, regardless of where the wetland is situated, the buffers are the same, as a buffer of the same width has been applied to the woodland.

All of these buffers are considered to be ecologically appropriate buffers which will protect the features that they surround. Buffers around wetlands in part ensure that pollutants are kept out of the wetlands and that habitat for wetland edge species is maintained. Woodland buffers protect the root zones of trees within the woodlands, among other functions.

7.2.3 Trail System

Elite is not proposing a trail system, however we understand that a trail system may be required by the City of London. Communication with the City of London suggests that trails may be expected in the outer section of the 30 m buffer as well as potentially through the narrow join of the two woodlands (Larry Mottram, City of London through Margot Ursic, Grounded Solutions for City of London in email communication to Rosalind Chaundy, Palmer dated October 28, 2022). A request for some discussion of a potential trail system was requested, thus this section, which compares different trail options, has been prepared

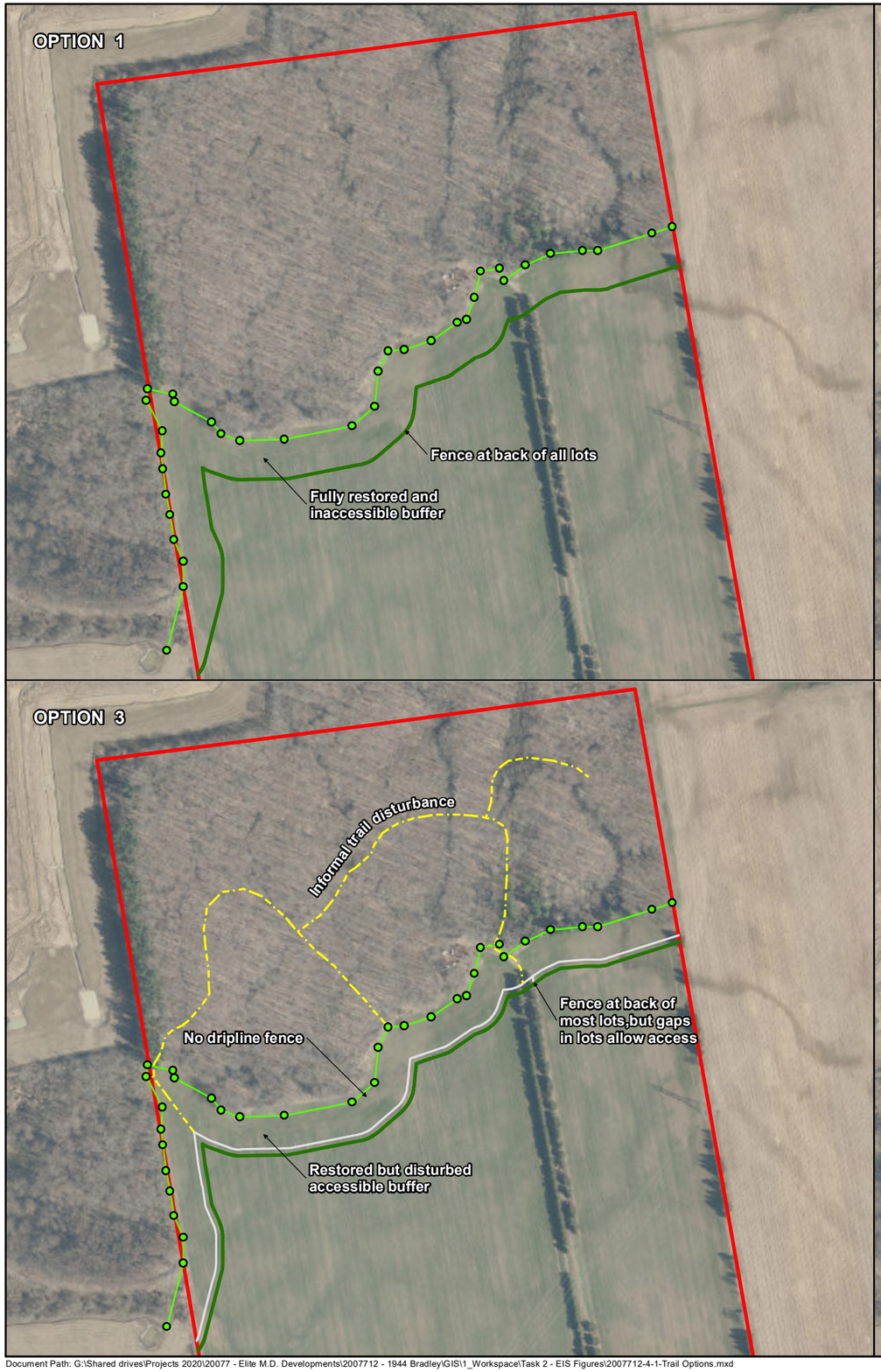
All options assume that the outside trail is multiuse and 3 m wide, but no assumptions have been made about materials. 'Outside' refers to outside the current woodland/wetland. For assumptions about internal trails see Option 4. All options would include similar plantings in the buffer (see Section 7.2.5). Where woodland dripline fencing is proposed, the location could be a) either right at the dripline, where some minor tree root damage may occur, or b) a few metres from the dripline where less roots would be disturbed and more woodland area is protected however the width of the area containing the main trail is slightly narrower. Finally, all options except Option 3 assumes that the woodland/wetland on 1944 Bradley is similarly protected form human access by fencing from other off-site locations.

We have suggested four options and have given positives and negatives for each. The options have been shown in schematic form in **Figure 4**.

Option 1. No Trails

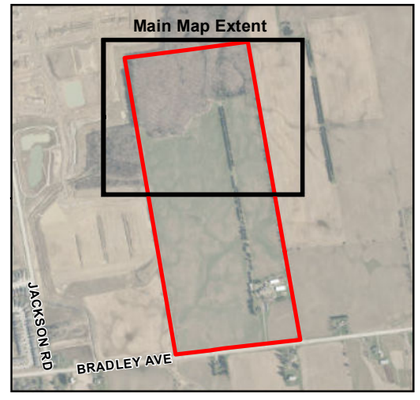
This option would entail placing no trails in the buffers. It assumes that chain-link fencing will be at the back of the residential lots and that people would have no access to the woodlands or the buffer area.

Natural Environment Protection – Best option. Fully protects the woodland/wetland from direct human disturbance. Buffer once restored, would add further undisturbed natural protected area to the existing woodland/wetland. Connection between the 1944 Bradley woodland and woodland on the property to the west is enhanced by buffers.



LEGEND

- Preliminary Natural Feature Limit (Palmer Nov 4 2022)
- Informal Trail
- Internal Diagonal Trail
- Internal Loop Trail
- Main Outer Trail
- Internal Fence
- Dripline Fence
- Main Fence
- Subject Site (42.28ha)



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CLIENT
Elite M.D. Developments

PROJECT
1944 Bradley

TITLE
Trail Options

Palmer

REF. NO. 2007712-4-1

Figure 4

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Human Recreation (*nature appreciation, exercise, access to neighbourhood)* – Worst option. No human access to the woodland/wetland provided.
City Maintenance – No maintenance required (easiest from maintenance perspective).

This option is the best for the environment and does not result in any maintenance requirements of the City, however it does not provide any public access to the natural area. We assume that this is not a preferred option by the City, given the lack of trails.

Option 2. Outer Trail with Conventional Fencing

This option would have a trail in the buffer, and not elsewhere. This scenario is common in new developments. It would include a high chain-link (or similar) fence at the dripline of the woodland, which would stop people from entering the woodland/wetland.

Natural Environment Protection – Good protection as no one could enter the woodland/wetland. Once the buffer is restored it would have some level of human disturbance and thus would not add as high a quality habitat as Option 1. Connection between two woodlands is improved, but not as well as in Option 1.
Human Recreation (nature appreciation, exercise, access to neighbourhood) – People have a recreational trail and can get close to nature.
City Maintenance – Maintenance of main outer trail and dripline fence needed.

Option 3. Outer Trail with no Fencing

This option would have a trail in the buffer, and not elsewhere. It would not have a fence around the dripline.

Natural Environment Protection – Worst option. Whenever natural areas are situated close to residential development without controls, informal trails and bike use (plus garbage deposition) is expected. It is likely that both the upland areas and woodland pools (assuming they are present in the spring) would incur damage through informal use.
Human Recreation (nature appreciation, exercise, access to neighbourhood) – People have good access to natural areas and other parts of the neighbourhood.
City Maintenance – Maintenance of main outer trail needed.

This option is not recommended. Although it provides full human access and requires only moderate City maintenance, the likely damage to the natural environment means that this option should not be used.

Option 4. Outer and Internal Trails with Conventional Fencing plus Internal Fencing

This option includes a main trail in the buffer as well as one or two internal trails. The woodland dripline would be fenced as in Option 2. Additionally, the internal trails would allow both greater pedestrian movement through neighbourhood, as well as greater access to the woodland for exercise and nature appreciation. Internal trails could include one or both of i) a loop trail in upland area of 1944 Bradley woodland or ii) diagonal connection to the development to west. In this option, the internal trails (unconventionally) must be fenced along the edge of the trail. Otherwise, the situation becomes the same as Option 3 and additional informal internal trails would be created causing significant disturbance to the woodland/wetland. Internal Fencing would be lighter and lower than standard chain-link, but still sturdy and

of a type that discourages people from climbing over. The materials of internal trails should be water permeable, and width should be minimal (maximum 1 m) and require no removal of trees. Placement of internal trails would be done with the aid of an ecologist.

Natural Environment Protection – Reasonably good protection as people cannot enter most parts of the woodland/wetland. Once the buffer is restored it would have some level of human disturbance and thus would be similar to Option 2 in not adding as high a quality habitat as Option 1. Connection between two woodlands may or may not be improved, depending on whether the diagonal internal trail is implemented. Some garbage may be deposited in the woodlands.
Human Recreation (nature appreciation, exercise, access to neighbourhood) – Best option for pedestrian access, exercise and nature appreciation. Likely only option for interpretive signage if desired (former sugar bush, amphibian breeding ponds, native woodland tree species etc.)
City Maintenance – Greatest level of maintenance associated with largest amount of recreational infrastructure (paths and fencing). This option should not be used if a suitable level of fence maintenance and ongoing monitoring of the internal trail use cannot be undertaken by the City.

It is considered feasible to have internal trails because our professional experience indicates that: minimal to no area-sensitive species or SAR species are present in the woodland; amphibian breeding habitat can be avoided; the woodland is not a very mature forest that would have complex structural diversity.

In Palmer's opinion, Options 1, 2 and 4 are all viable options which protect the natural environment sufficiently, although some are better than others as noted. Level of natural protection versus level of accessibility is a decision for agencies to make.

7.2.4 Tree Compensation Guidelines

The Subject Property includes several hedgerow communities that are currently proposed for removal. *Schedule A* of the City of London's Consolidated Tree Protection By-law (2021) provides the following tree replacement ratios and fees for off-site planting:

Calculation of Number of Distinctive Tree Replacement Trees & Calculation of Fees for Off-Site Tree Planting (insufficient space on Site to plant Replacement Trees)

1. *For the purposes of subsection 9.2(a) of this By-law with respect to a Distinctive Tree Permit, the City Engineer shall determine the number of living Replacement Trees that will be required based on the chart below. The diameter of the Tree to be Destroyed under a Distinctive Tree Permit, as set out in Column 1, shall correspond to the number of Replacement Trees required, as set out in Column 2.*
1. *For the purposes of subsection 9.2(b) of this By-law with respect to a Distinctive Tree Permit, where there is insufficient space on the same Site to plant all of the number of Replacement Trees as calculated for 9.2(a) of this By-law, the Permit Holder shall plant as many Replacement Trees as the site will allow as determined by the City Engineer, and with respect to the number of Replacement Trees that could not be planted due to insufficient space, the City Engineer shall calculate the amount of the fee by multiplying the number of Replacement Trees that could not be planted on site due to insufficient space by $350 per tree. The diameter of the Tree to be Destroyed*

under a Distinctive Tree Permit, as set out in Column 1, shall correspond to the number of Replacement Trees, as set out in Column 2.

Column 1: Trunk Diameter of Distinctive Tree Destroyed	*Column 2: Number of Replacement Trees Required*
50 cm	*1*
51-60 cm	*2*
61-70 cm	*3*
71-80 cm	*4*
81-90 cm	*5*
91-100 cm	*6*
101-110 cm	*7*
111-120 cm	*8*
121-130 cm	*9*
131-140 cm	*10*
>141 cm	*11*

**NOTE: does not apply to Dead Distinctive Tree Permit* (City of London, 2021)

7.2.5 Restoration Plantings and Potential Naturalization Areas

It is proposed that the 30 m buffer be naturally restored with native trees and shrubs. The exact configuration would depend on the trail option chosen. A cluster planting plan is in which clusters of native woody plants are planted could be implemented. In time, the whole buffer could become wooded, based on the spread of trees and shrubs from the existing woodlands and the planted trees. These plantings will lead to two ecological gains: a) in increase in the size of the woodlands and b) an improvement in the ecological connection between the two woodlands (on-site and off-site to the west).

Tree and shrub species recommended for planting include:

- White Pine (*Pinus strobus*)
- Sugar, Red or Silver Maple (*Acer saccharum*, *rubrum or saccahrinum*)
- Red, White or Bur Oak (*Quercus rubra, alba or macrocarpa*)
- American Beech (*Fagus grandifolia*)
- Bitternut or Shagbark Hickory (*Carya cordiformis* or *ovata*)
- Trembling Aspen (*Populus tremuloides*)
- Black Cherry (*Prunus serotina*)
- Witch-hazel (*Hamamelis virginiana*)
- Blue-beech (*Carpinus caroliniana*)
- Serviceberry (*Amelanchier* sp. Local to the area)
- Alternate-leaved Dogwood (*Cornus alternifolia*)
- Bladdernut (*Staphylea trifolia*)

The listed species are all native to the local area and most are already found in the woodland. Other species could be included but must be found in the region and be suitable for the existing soil and light conditions. Creating a buffer of similar composition is recommended since this creates a larger area of

similar deciduous woodland which is best for existing species and may encourage those wildlife species which require larger areas.

There is a 'potential naturalization area' shown on the City of London's Map 5 (Palmer **Map C** this report) to the southwest of the woodland on the subject property. The City of London's OP (page 370) defines potential naturalization areas as follows:

Potential naturalization areas are defined as areas where the opportunity exists to enhance, restore, or where appropriate, expand the Natural Heritage System. These areas may include lands suitable to create natural habitats such as wetland habitat, pollinator habitat, wildlife habitat, or to compensate for trees lost to development. Locations identified as being suitable for the application of a naturalization strategy are identified as potential naturalization areas on Map 5. Not all potential naturalization areas have been identified on Map 5.

It is Palmer's recommendation that the area of potential naturalization area be planted as part of the 30 m woodland buffer, as described above. This will work towards the City of London's efforts to enhance, restore, and expand upon the Natural Heritage System, and in particular will aid in connection between the two woodlands.

7.2.6 Erosion and Sediment Control

Erosion and Sediment Control (ESC) measures should be installed and maintained during construction. ESC measures are recommended to be installed at the limit of construction works. Best practices could follow those recommended in the *Erosion & Sediment Control Guidelines for Urban Construction per the Greater Golden Horseshoe Conservation Authorities* (GGHA CAs) (2006).

With respect to ESC measures, the contractor must:

- Retain existing vegetation and stabilize ground with native vegetation where possible;
- Limit the duration of soil exposure and/or phase construction;
- Delimit the perimeter of excavation area with light-duty silt fencing;
- Maintain overland sheet flow and avoid concentrating flow; and
- Assess ESC measures before and after significant rainfall and snowmelt events.

Also, all repairs required to ESC measures will be completed within 48 hours of notice unless otherwise agreed by the Region, the Contractor, the regulatory authority and the environmental inspector(s).

7.2.7 Vegetation Removal

In order to mitigate for the construction related impacts, the following general mitigation measures are necessary to protect the ecological features and functions:

- Removal of all vegetation (not only trees) should be completed outside of the breeding bird season (April 1 – August 31) to ensure compliance with the Migratory Birds Convention Act (MBCA) and provincial Fish and Wildlife Act. If vegetation removal during this period cannot be avoided, active

nest searches may be conducted by a qualified biologist immediately prior to removal to ensure that no active nests of breeding birds are present. No additional vegetation-clearing window is required for bats as, to-date, no bat habitat has been found (to be confirmed with MECP).

7.3 Net Effects

The following table indicates whether any net effects are expected to occur to natural features post-development after mitigation has been applied.

Natural Feature	Impacts	Mitigation	Net Effect and Comments
Significant Woodlands	None anticipated; However, for potential trail impacts, see discussion in Section 7.2.3	None needed.	Positive effect generally due to: - size and connectivity increase due to planting and restoration of buffers with native plants. - cessation of sugar bush But countered by possibly more human presence
Wetland (PSW)	None anticipated	None needed	None
Warmwater Watercourse southwest of property	None	None needed	None
Potential Significant Wildlife Habitat (see Section 5.5)	No SWH confirmed.	None needed (if present associated with woodland/wetland and this area is protected)	None
Species at Risk (see Section 5.4)	No SAR species found to date.	Not needed to date.	None
Common Wildlife	Some disturbance during construction. Some potential long-term effects through roaming cats (killing wildlife), greater use of artificial lights (unnaturally attracting insects, bats etc.), and residential noise (potential wildlife disturbance)	Apply MBCA. None feasible.	Negative: Permanent removal of part of hedgerow. Some potential permanent long-term effects of roaming cats, artificial light, and residential noise.

7.4 Environmental Management Recommendations

The environmental management recommendations for this development involve several aspects:

- Wetland Monitoring
- Restoration Plantings Tending and Monitoring
- Trail and Fence Maintenance

7.4.1 Wetland Monitoring

To date, it is known that the wetland had no standing water in the fall of 2022, but did in the spring of 2023 and that soils are low permeability and are mainly clayey silt till (EXP 2022b)

Monitoring methods is expected to consist of:

- Measuring water depths in the two wetland units (SWD3-3, MAM2 as shown on Palmer **Figure 2**), on the assumption that standing water is present in the spring;
- Recording the wetland plants present in the wetlands and approximate level of cover and document any changes over time;
- Identify changes to the wetland boundaries during seasonal high and low conditions each year;
- Recording amphibian presence twice per year (early and mid-season).

Since variation in rainfall and snowmelt is expected to lead to annual differences in water depth, some natural variation in the above factors would be expected. This should be considered in assessing any results.

Ecology wetland monitoring is anticipated to consist of two to three visits per year through the spring for: a) two years pre-construction, b) the year(s) of construction. Visits would occur in at a minimum of early spring and mid spring.

It is anticipated that ecological monitoring of the wetland will coincide with components of the hydrogeological monitoring program. Although both reports are preliminary at this time, it is anticipated that the hydrogeological wetland monitoring program will also include monitoring throughout the pre-construction and construction periods. The established monitoring stations within the wetland feature will be utilized throughout the program. Details regarding specific requirements of the monitoring program will need to be discussed with the regulatory authorities during the review process. Typically monitoring of a wetland feature will include multiple visits a year to collect water levels, water quality and photo documentation. Data will be compared to baseline conditions and annual reports are typically required by regulatory authorities for review.

7.4.2 Restoration Plantings Tending and Monitoring

A detailed planting plan outlining species, locations, size of planted stock, planting and tending specifications will be created if the development proposal proceeds and once a trail option is chosen. It is recommended that the most intense tending and monitoring occur during the first year of planting, with lesser amounts in the following year, for a total of two years of monitoring. The year after planting it is

recommended that a survivorship percentage be calculated and that if less than 90% of planted species have not survived, replacement plantings should occur.

7.4.3 Trail and Fence Maintenance

It is assumed that long-term maintenance of any trails and fences that are required because of trail placement, will be monitored and taken care of by the City of London. See discussion of trail options presented in Section 7.23. Should Trail Option 4 be chosen by the City, Palmer can assist in trail placement and signage if desired.

7.4.4 Other Items

Palmer has assumed that the Sugar Bush operation will cease because access will no longer be possible, even though farm in the south portion of the property will continue as is in the near future. Tapping materials within the woodland should be removed. The building at the south edge of the woodland could remain as it may provide shelter for small wildlife, as long as it is inaccessible to people. The building should remain if Barn Swallow are using it for nesting, since compensation structures for this SAR species are not often successful. The older Sugar Shack in the northeastern part of the property should probably be fully collapsed so that it is not a safety hazard, however the materials and boards, can be left in place as they too may be used by wildlife. Before this occurs, a check for Barn Swallow should occur. Again, if present, the building should be left as it.

8. Policy Conformity

A summary of applicable natural heritage policies and the manner in which the proposed development plan meets their requirements is provided in **Table 2**. With the implementation of the aforementioned mitigation, there are negligible predicted negative impacts to the natural heritage features of the property.

Table 2. Policy Conformity for the Proposed Development

Policy Document	Intent/Objective	Implications and Policy Conformity
Provincial Policy Statement	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 proposed development will be situated outside of the adjacent natural heritage features (Significant Woodland, Provincially Significant Wetland), and the application of development setbacks additionally protects of these features.
City of London Official Plan	Identify, protect, conserve, enhance, and manage the City's natural heritage system and natural resources.	The woodlands on the Subject Property meet the criteria for Significance. A 30 m buffer is proposed between the proposed development and natural features on the site.
Upper Thames River Conservation Authority	UTRCA regulates activities in wetlands, valleylands, watercourses, and hazardous areas.	The Subject Property is partially within the UTRCA regulated area. A permit will likely be required for the proposed development works (pending Bill 23). A 30 m buffer from the Provincially Significant Wetland on site is proposed.
Migratory Birds Convention Act	Protect most species of migratory birds and their nests and eggs anywhere they are found in Canada.	Vegetation removal should be completed between September 1 and March 31. If removal cannot occur within this time window, a qualified biologist is to determine presence of nesting birds prior to the proposed works.
Endangered Species Act	Species at risk designated as Threatened or Endangered are afforded legal protection.	No confirmed Threatened or Endangered were observed or confirmed on the Subject Property to date. Additionally, no potential species at risk habitat is expected to be impacted.

9. Conclusion

The findings of our study are the result of a background review, initial field investigations and an analysis of data using a scientific understanding of the ecology of the area, as well as the current natural heritage policy requirements. Field investigations are planned to survey amphibians, flora and headwater drainage feature in 2023. We have evaluated the environmental sensitivities, constraints and development opportunities of the Property, which are described in this report. There are Provincially Significant Wetlands, Significant Woodlands on and adjacent to the property, which are retained and protected with appropriate buffers. Potential for SAR and SWH have been assessed.

Pending the results of the field investigations, based on the results of the EIS it is our professional opinion that the proposed Draft Plan of Subdivision is environmentally feasible and would result in negligible negative impacts to the natural heritage features provided that the recommended mitigation measures described in this report are implemented. Some discussion and options for trail placement is included.

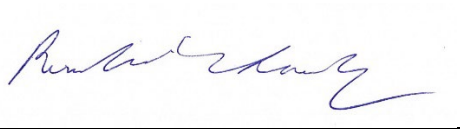
10. Certification

This report was prepared and reviewed by the undersigned:

Prepared By:

Karisa Tyler, M.Sc.
Ecologist

Prepared and Reviewed By:



Rosalind Chaundy, M.Sc. F
Senior Ecologist

11. Statement of Limitation

The information contained in this report has been produced by Palmer Environmental (PECG) using various sources of information, including the Ministry of Natural Resources and Forestry Biodiversity Explorer, provincial, regional and local official plan environmental policy, and a reconnaissance level site survey. Although PECG has endeavoured to present you with information that is accurate, PECG disclaims, except as set out below, any and all liability for any errors, omissions, or inaccuracies in such information and data, whether attributable to inadvertence or otherwise, and for any consequences arising therefrom. Liability on the part of PECG is limited to the monetary value paid for this report. The report applies only to the address specified on the cover of this report, and any alterations or deviation from this description will require a new report. This report and the data contained herein does not purport to be and does not constitute a guarantee of the accuracy of the information contained herein and does not constitute a legal opinion. This report is solely intended to be used to focus further investigation and is not intended to replace a full site investigation or EIS.

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Appendix A

Environmental Study Scoping Checklist

APPENDIX B - Environmental Study Scoping Checklist

Application/Project Name: 1944 Bradley

Proponent: Elite Developments **Date:** Oct 25 2022

Proposed Project Works: Residential - primarily townhouse; also single-family

Study Type: EIS

Lead Consultant: Weston for Planning/Palmer for Ecology

Key Contact: Rosalind Chaundy, Palmer

Subconsultants:

Technical Review Team:

☐ Ecologist Planner: Margot Ursic ☐ Province – Species at Risk:

☐ Planner for the File: Larry Mottram ☐ Province - Other:

☐ Conservation Authority: UTRCA Contact: Christine Creighton

☐ EEPAC: Sandy Levin ☐ Other:

☐ Project Manager, Environmental Assessment:

☐ First Nation(s):

Subject Lands and Study Area:

Location/Address and Size (ha) of Subject Lands:
1944 Bradley Ave. City of London

Study Area Size (approximate ha): 43 ■ Map (attached):

Position of Site in Subwatershed: Dingman Creek

Tributary Fact Sheet:

Is the proposed location within the vicinity of the Thames River (<120 m)? ☐ Yes ☐ No

If Yes, initiate engagement with local First Nation communities. Consultation activity to be provided at Application Review stage.

Policy:

☐ Study must demonstrate how it conforms to the Provincial Policy Statement

☐ Study must demonstrate how it conforms to *The London Plan*

Map 1 Place Types:

☑ Green Space ☐ Environmental Review

Other Place Types: _____

Map 4 Active Mobility Network:

☑ Pathway placement and future trail accesses shall be considered as part of this study.

Map 5 Natural Heritage System:

(Subject Lands and Study Area delineated on current aerial photographs)

☑ Provincially Significant Wetland — Name: Meadlowlilly Woods PSW
☐ Wetlands — ☐ Unevaluated Wetlands*
☐ Area of Natural & Scientific Interest — Name: _____
☐ Environmentally Significant Area — Name: _____
☐ Potential ESAs — ☐ Upland Corridors
☑ Significant Woodlands — ☐ Woodlands
☐ Significant Valleylands — ☐ Valleylands
☐ Unevaluated Vegetation Patches — ☑ Potential Naturalization Areas

Patch No. _____

** ELC (air photo interpretation and / or previous studies) may identify potential wetlands or other potential features not captured on Map 5.*

Map 6 Hazards and Natural Resources:

☐ Maximum Hazard Line ☑ Conservation Authority Regulation Limit (and text based regulatory limit) – Project falls under *Conservation Authority Act* Section 28

Required Field Investigations:

Aquatic:

☑ Aquatic Habitat Assessment: HWDFA for 1 feat. if south half proposed for development
☐ Fish Community (Collection): _____
☐ Spawning Surveys: _____
☐ Benthic Invertebrate Survey: _____
☐ Mussels: _____
☐ Other: _____

Wetlands:

☑ Wetland Delineation: Use Palmer mapping and LIO mapping (but see below)
☐ Wetland Evaluation (OWES): _____
☐ Other: _____

Terrestrial (Wetland, Upland and Lowland):

☑ Vegetation Communities (ELC): _____

☐ Botanical Inventories ☐ Winter ☑ Spring ☑ Summer ☐ Fall

☐ Breeding Bird Surveys (type & frequency): None since Focussed EIS Scoping

☐ Raptor Surveys: _____ ☐ Shoreline Birds: _____

☐ Crepuscular Surveys: _____ ☐ Grassland Surveys: _____

☑ Amphibian Surveys (type & frequency): Up to three* see notes

☐ Reptile Surveys:

- ☐ Turtle (type & frequency): _____
- ☐ Snake (type & frequency): _____
- ☐ Other (type & frequency): _____

☐ Bat Habitat, Cavity & Acoustic Surveys: _____

☐ Mammal Surveys: _____

- ☐ Winter Wildlife Surveys: _____

☐ Butterflies (Lepidoptera): _____

☐ Dragonflies / Damselflies (Odonata): _____

☑ Species at Risk Specific Surveys: Assessm. thro' other surveys (not species-specific)

☐ Species of Conservation Concern Surveys: _____

☑ Significant Wildlife Habitat Surveys: Through other surveys (not category-specific)

☑ Other field investigations: Survey natural feature edge with City & UTRCA

Supporting Concurrent Studies/Investigations:

☐ Hydrogeological/Groundwater: EXP

☐ Surface Water/Hydrology: _____

☐ Water Balance: EXP

☐ Fluvial Geomorphological: _____

☐ Geotechnical: EXP

☐ Tree Inventory: TBD

☐ Other: FSR Odan Detech

Evaluation of Significance:

Federal:

☐ Fish Habitat ☐ Other Federal: _____

☐ Species at Risk (*SARA*)

Provincial:

☐ Provincially Significant Wetlands ☐ Significant Woodlands
☐ Significant Valleylands ☐ Significant Wildlife Habitat Ecoregion 7E
☐ Areas of Natural & Scientific Interest ☐ Fish Habitat
☐ Water Resource Systems
☑ Species at Risk (*ESA*): _____

Municipal/London:

☐ Environmentally Significant Areas (ESAs), Potential ESAs
☐ Significant Woodlands, Woodlands
☐ Significant Valleylands, Valleylands
☐ Wetlands, Unevaluated Wetlands
☐ Significant Wildlife Habitat
☐ Unevaluated Vegetation Patches
☐ Other Vegetation Patches >0.5 ha
☑ Potential Naturalization Area
☐ Other: _____

Impact Assessment:

☑ Impact Assessment Required
☑ Net Effects Table Required

Environmental Management Recommendations:

☑ Environmental Management Plan: Yes, Details TBD (to include trail impacts if present)
☑ Specifications & Conditions of Approval: _____
☐ Other: _____

Environmental Monitoring:

☑ Baseline Monitoring: Yes, Details TBD
☑ Construction Monitoring: "
☑ Post-Construction Monitoring: "

Additional Requirements and Notes:

No significance assessment for wetlands nor woodland since both already deemed significant.

Feature staking with City and UTRCA will occur in 2023. Palmer will propose tentative feature limit in 2022 assuming an EIS is submitted before spring 2023.

'Focussed EIS' scoping since 30 m buffer will be applied to on-site and adjacent feature.

* Re amphibian surveys: up to three, unless no suitable habitat confirmed after first and/or second

Appendix B

Flora Checklist

Appendix B: Flora Checklist

Scientific Name	Common Name	Native/Exotic /Unranked	S Rank	Coefficient of Conservatism	Coefficient of Wetness
Acer negundo	Manitoba Maple	N	S5	0	0
Acer rubrum	Red Maple	N	S5	4	0
Acer saccharinum	Silver Maple	N	S5	5	-3
Acer saccharum	Sugar Maple	N	S5	4	3
Allium tricoccum	Wild Leek	N	S4	7	3
Anemone sp.	Anemone Species				
Arctium minus	Common Burdock	E	SNA		3
Aster sp.	Aster Species				
Carex pedunculata	Long-stalked Sedge	N	S5	5	3
Carex plantaginea	Plantain-leaved Sedge	N	S5	7	5
Carex vulpinoidea	Fox Sedge	N	S5	3	-5
Carya cordiformis	Bitternut Hickory	N	S5	6	0
Chenopodium album	Common Lamb's-quarters	E	SNA		3
Cirsium sp.	Thistle Species				
Cornus racemosa	Grey Dogwood	N	S5	2	0
Echinochloa sp.	Barnyard Grass Species				
Epipactis helleborine	Broad-leaved Helleborine	E	SNA		3
Erigeron canadensis	Canada Horseweed	N	S5	0	3
Euonymus obovatus	Running Strawberry-bush	N	S4	6	5
Fagus grandifolia	American Beech	N	S4	6	3
Fragaria vesca	Woodland Strawberry	N	S5	4	3
Frangula alnus	Glossy Buckthorn	E	SNA		0
Fraxinus pennsylvanica	Red Ash	N	S4	3	-3
Glyceria striata	Fowl Mannagrass	N	S5	3	-5
Juglans nigra	Black Walnut	N	S4?	5	3
Lamiastrum galeobdolon	Yellow Archangel	E	SNA		
Larix laricina	Tamarack	N	S5	7	-3
Maianthemum sp.	Solomon's Seal Species				
Onoclea sensibilis	Sensitive Fern	N	S5	4	-3
Ostrya virginiana	Eastern Hop-hornbeam	N	S5	4	3
Panicum sp.	Panic Grass Species				
Parthenocissus quinquefolia	Virginia Creeper	N	S4?	6	3
Phleum pratense	Common Timothy	E	SNA		3
Phragmites australis	Common Reed	N	S4?	0	-3
Picea abies	Norway Spruce	E	SNA		5
Picea glauca	White Spruce	N	S5	6	3
Picea pungens	Blue Spruce	E	SNA		3
Pinus strobus	Eastern White Pine	N	S5	4	3
Plantago major	Common Plantain	E	SNA		3
Populus deltoides	Eastern Cottonwood	N	S5	4	0
Populus tremuloides	Trembling Aspen	N	S5	2	0
Prunus serotina	Black Cherry	N	S5	3	3
Quercus rubra	Northern Red Oak	N	S5	6	3
Rhamnus cathartica	European Buckthorn	E	SNA		0
Rubus idaeus	Red Raspberry	N	S5	2	3
Salix sp.	Willow Species				
Solidago altissima	Tall Goldenrod	N	S5	1	3
Solidago canadensis	Canada Goldenrod	N	S5	1	3
Solidago flexicaulis	Zigzag Goldenrod	N	S5	6	3
Staphylea trifolia	American Bladdernut	N	S4	7	0
Symphyotrichum lanceolatum	Panicled Aster	N	S5	3	-3
Taraxacum officinale	Common Dandelion	E	SNA		3
Thuja occidentalis	Eastern White Cedar	N	S5	4	-3
Tilia americana	Basswood	N	S5	4	3
Toxicodendron radicans	Poison Ivy	N	S5	2	0
Tussilago farfara	Coltsfoot	E	SNA		3
Ulmus americana	White Elm	N	S5	3	-3
Vitis riparia	Riverbank Grape	N	S5	0	0

Appendix C

Species at Risk Screening

Appendix C: Species at Risk Screening

NAME	SARO	COSEWIC	S RANK	HABITAT REQUIREMENTS	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
AVIFAUNA							
□arn S□a□o□ *□Hirundo rustica □*	THR	THR	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).	Y	Suitable habitat is present associated with buildings	There is no intent to remove the farm buildings. The sugar shack building will be checked for Barn Swallow in 2023. General Habitat protection applies (description on MNR website).
Bobolink (*Dolichonyx oryzivorus*)	THR	THR	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).	N	Agricultural fields on the property are actively farmed.	
Canada Warbler (*Cardellina canadensis*)	SC	THR	S4B	The Canada Warbler is found in a variety of forest types, but is most abundant in moist, mixed forests with a well-developed, dense shrub layer. This species can also be locally abundant in regenerating forests following natural or anthropogenic disturbances. Nests are usually located on or near the ground on mossy logs, and along stream banks. In Canada, habitat loss due to conversion of swamp forests, agricultural activities and road development have contributed to the species' significant long-term decline, and its special concern designation. A reduction in forests with a well-developed shrub-layer has also likely impacted Canada warblers throughout their breeding range in Ontario (Committee on the Status of Endangered Wildlife in Canada, 2008).	N	Suitable habitat is not present within the Subject Property	
Chimney Swift (*Chaetura pelagica*)	THR	THR	S4B,S4N	The Chimney Swift is a threatened species which breeds in Ontario and winters in northwestern South America. It is found mostly near urban areas where the presence of chimneys or other manmade structures provide nesting and roosting habitat. Prior to settlement, the Chimney Swift would mainly nest in cave walls and hollow tress. The Chimney Swift initially benefitted from human settlement; however, recent declines in flying insects and the modernization of chimneys are factors attributed to their current population declines. As a threatened species, the Chimney Swift receives protection for both species and habitat under the ESA (Ministry of Natural Resources and Forestry, 2014).	N	Residential chimneys either too small or capped.	
Eastern Meadowlark (*Sturnella magna*)	THR	THR	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).	N	Agricultural fields on the property are actively farmed.	

Eastern Wood-Pewee (*Contopus virens*)	SC	SC	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).	Y	Suitable habitat is present on the Subject Property.	Any suitable habitat is outside of proposed development (also habitat protection does not apply to Special Concern Species)
Peregrine Falcon (*Falco peregrinus*)	SC	Not at Risk	S3B	The Peregrine Falcon is a species of Special Concern in Ontario because of habitat loss and destruction, disturbance and persecution by people, and environmental contaminants. Peregrine falcons are medium sized birds of prey, with a blue back, cream-coloured chest covered in dark markings and bright yellow legs and feet. It can be found nesting on tall, steep cliff ledges close to large bodies of water. The majority of Ontario's breeding population is found around Lake Superior in northwestern Ontario (Ministry of Natural Resources and Forestry, 2014).	N	Suitable habitat is not present on the Subject Property.	
Wood Thrush (*Hylocichla mustelina*)	SC	THR	S4B	The Wood Thrush is a species of Special Concern because of habitat degradation or destruction by anthropogenic development. The Wood Thrush is a medium-sized songbird, generally rusty-brown on the upper parts with white under parts and large blackish spots on the breast and sides, and about 20 cm long. The Wood Thrush forages for food in leaf litter or on semi-bare ground, including larval and adult insects as well as plant material. They seek moist stands of trees with well-developed undergrowth in large mature deciduous and mixed (conifer-deciduous) forests. The Wood Thrush flies south to Mexico and Central America for the winter (Ministry of Natural Resources and Forestry, 2014).	Y	Suitable habitat is present on the Subect Property.	Any suitable habitat is outside of proposed development (also habitat protection does not apply to Special Concern Species)
HERPTILES							
□anding□s Turt□ □*Emydoidea blandingii* □	THR	END	S3	Blanding's turtles are threatened in Ontario primarily as a result of habitat loss and fragmentation. Blanding's turtles spend the majority of their life cycle in the aquatic environment, using terrestrial sites for travel between habitat patches and to lay clutches of eggs. These turtles prefer shallow nutrient rich water with organic sediment and dense vegetation. Blanding's turtles nest in dry coniferous and mixed forest habitats, as well as fields and roadsides (Government of Canada, 2015).	N	Permanent water bodies are not present on, or adjacent to, the Subject Property.	
Northern Map Turtle (*Graptemys geographica*)	SC	SC	S3	The northern map turtle is a medium sized turtle with a carapace marked by concentric rings that resemble contour lines on a map. The range of this turtle includes larger lakes and rivers that contain an abundance of their primary prey species; molluscs. Shoreline development, water pollution and the spread of the zebra mussel are notable reasons for the decline in populations of this species (Ministry of Natural Resources and Forestry, 2014).	N	Permanent water bodies are not present on, or adjacent to, the Subject Property.	
Snapping Turtle (*Chelydra serpentina*)	SC	SC	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).	N	Permanent water bodies are not present on, or adjacent to, the Subject Property.	
Western Chorus Frog (*Pseudacris triseriata*)	-	THR	S3	The Great Lakes/St. Lawrence – Canadian Shield population of the western chorus frog is federally listed as threatened by COSEWIC. This small frog is primarily a lowland terrestrial species that requires access to terrestrial and aquatic habitats in close proximity to one another. Relying on marshes and wooded wetlands adjacent to forested habitats, this species also requires isolated, predator free pools for breeding. Temporary pools, such as vernal pools in wooded areas, are preferred. This species hibernates terrestrially in a variety of environs, including leaf litter, wood debris, and vacant animal burrows (Government of Canada, 2016)	N	Permanent water bodies are not present on, or adjacent to, the Subject Property.	
VASCULAR PLANTS							

Butternut (*Juglans cinerea*)	END	END	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 Resource and Forestry, 2014).	Y	Not observed on site	
Eastern Flowering Dogwood (*Cornus florida*)	END	END	S2	The Eastern Flowering Dogwood generally grows in the understory or on the edges of mid-age to mature, deciduous or mixed forests. This species is generally found in the drier areas of its habitat, although it is occasionally found in slightly moist environments. The Eastern Flowering Dogwood grows in sandy soil, more or less clayey. The species typically occurs in clusters within larger parcels of apparently suitable, though unoccupied, habitat. Historically, the Eastern Flowering Dogwood occupied a significant portion of the Carolinian forest in southern Ontario. However, large portions of the forest have been cleared to make way for agricultural activities, residential areas, and industrial facilities. This profound transformation resulted in a significant reduction and fragmentation of forest cover and suitable habitat.	Y	Potentially suitable habitat is present on the Subect Property.	Habitat Regulation as of July 1, 2011.
Green Dragon (*Arisaema dracontium*)	SC	SC	S3	Green Dragon grows in somewhat wet deciduous forests along rivers, creeks, and clay floodplains, particularly maple forest and forest dominated by Red Ash and White Elm trees. It prefers shaded or partly shaded seasonally flooded locations. This species is threatened by habitat loss and habitat degradation.	Y	Potentially suitable habitat is present on the Subect Property.	If present, the species is with a retained area. Specific protection can be applied within the woodland if found to be present. General habitat protection as of June 30, 2008.
Wood-poppy (*Stylophorum diphyllum*)	END	END	S1	Wood-poppy is a perennial herb with long-stalked leaves and can reach up to 40 cm in height. The Wood-poppy flowers are four-petaled, bright yellow, and bloom in May to early June. It can be found in rich mixed deciduous forests, ravines and slopes, and along wooded streams. Wood-poppy grows in full shade and are often associated with Sugar Maple, White Ash, American Beech, Black Cherry, and Hackberry (Government of Ontario, 2021).	Y	Records of Wood-poppy have been found nearby in Meadowlily Woods (closer to Thames River)	If present, the species is with a retained area. Specific protection can be applied within the woodland if found to be present. General habitat protection as of June 30, 2008.
Blue Ash (*Fraxinus quadrangulata*)	THR	THR	S2?	Blue Ash is a medium-sized tree, with light-coloured, scaly bark and compound leaves. The inner bark contains a sticky substance that turns blue when exposed to air. Blue Ash can grow in a variety of habitats but is primarily found within the floodplains and river valleys of Ontario; shallow soils on alvar and limestone on Lake Erie islands; and stablizied beaches at Point Pelee National Park and Fish Point on Pelee Island.	N	Subject property is not on the floodplain of the Thames River	
MAMMALS							
Tri-colored Bat (Eastern Pipistrelle) (*Perimyotis subflavus*)	END	END	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).	Y	Potentially suitable habitat is present on the Subect Property.	No mitigation required
Eastern Small-footed Myotis (*Myotis leibii*)	END	No Status	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).	Y	Potentially suitable habitat is present on the Subect Property.	No mitigation required

Little Brown Myotis (*Myotis lucifugus*)	END	END	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).	Y	Potentially suitable habitat is present on the Subect Property.	No mitigation required
Northern Myotis (*Myotis septentrionalis*)	END	END	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).	Y	Potentially suitable habitat is present on the Subect Property.	No mitigation required
OTHER							
Monarch Butterfly (*Danaus plexippus*)	SC	END	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).	□	□de□uate ha□itat is not □resent□	Habitat protection does not apply to Special Concern Species.
West Virginia White (*Pieris virginiensis*)	SC	No Status	S3	The west Viginia white is a small – three to four centimeter wingspan- dingy white butterfly. This species is found in moist deciduous woods, and requires a supply of toothwort, a small, spring-blooming plant, which provides the only source of food for its larvae (Ministry of Natural Resources, 2015). The west Virginia white is found mostly in the central and southern parts of Ontario, but its range extends north to Manitoulin and St. Joseph islands. The largest populations are in the western Lake Ontario Region. Although the west Virginia white was never really common in southern Ontario, habitat fragmentation and the spread of invasive species (i.e. garlic mustard) are notable reasons for the decline in populations of this species.	□	□o re□ords fro□ this side of □o□ don□ forest is not suffi□ient□ ä□ge and regiona□forest □o□er too ö□ for this s□e□ies□	

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Appendix D

Significant Wildlife Habitat Assessment

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N/P)*	Additional Notes and Species Observations
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial)	Duck-like species, Tundra Swan	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May. Specific areas for Tundra Swan	P	Unknown, potential for suitable field habitat. Flooding can be looked for in the spring of 2023.
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, bays, coastal inlets, watercourse used in migration, Swamps, Shallow Water Ecosites	Sewage & SWM ponds **not** SWH. Reservoir managed as a large wetland or pond/lake qualifies. Abundant food supply (inverts, shallow water veg)	N	Suitable waterbody and/or wetland habitat not present.
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Great Lakes Shores, including rocky ones. Sewage treatment ponds and storm water ponds **not** SWH.	N	No shorelines present.
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.	N	No meadow habitat
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites **not** SWH.	N	No suitable habitat present.
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Decidious or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	P	Potential suitable habitat is present in the woodlands found on site.
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. Man-made is not SWH.	N	No suitable habitat present.
Reptile Hibernaculum	Snakes	**Snakes:** Any ecosite (esp. w/ rocky areas), other than very wet ones. Talus, Rock Barren, Crevice, Cave, Alvar esp.	**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.	N	No suitable habitat present.
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).	N	No suitable habitat present.
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.	N	No nests present in leaf-off season.
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. **Brewers Blackbird colonies:** on the ground in low bushes close to streams and irrigation ditches.	N	No suitable habitat present.
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.	N	> 5 km from Lake Ontario.
Landbird Migratory Stopover Areas	All migratory songbirds. All migrant raptor species.	Forest (FO) and Swamp (SW) ecosites	Woodlots >5 ha within 5 km of L. Ontario & L. Erie (2-5 ha if rare in area). If multiple woodlands are along the shoreline, those <2 km from L. Ontario are more significant.	N	> 5 km from Lake Ontario.
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	None confirmed by MNRF.
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	N	No suitable habitat present.
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.	N	No suitable habitat present.
Alvar	*Carex crawei, Panicum philadelphicum, Eleocharis compressa, Scutellaria parvula, Trichostema brachiatum*	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Alvar >0.5 ha. **Need 4 of the 5 Alvar Inidcator Spp**. <50% vegetation cover are exotic species.	N	No suitable habitat present.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/N/P)*	Additional Notes and Species Observations
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 0.5 ha. No evidence of logging.	N	Trees too young
Savannah	Prairie Grasses w/ trees	TPS1, TPS2, TPW1, TPW2, CUS2	No min. size. A Savannah is a tallgrass prairie habitat that has tree cover of 25 – 60%. <50% cover of exotic species.	N	No suitable habitat present.
Tallgrass Prairie	Prairies Grasses dominate	TPO1, TPO2	No min. size. An open Tallgrass Prairie habitat has < 25% tree cover. Less than 50% cover of exotic species.	N	No suitable habitat present.
Other Rare Vegetation Communities		Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	N	No rare habitats observed
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).	N	No suitable habitat present.
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. Not man-made structures.	N	No waterbodies present.
Woodland Raptor Nesting Habitat	Barred Owl. **Hawks:** N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations (CUP3)	>30 ha with > 4 ha interior habitat (200 m buffer)	N	Size criteria not met; no large stick nests observed in leaf-off season
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, FEO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	N	No suitable habitat present.
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).**	N	No suitable habitat present.
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders, E. Newt	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.	P	No permanent ponds observed on site; to be determined if woodland pools are present in the spring
Amphibian Breeding Habitat (Wetlands)	Toads, Frogs, and Salamanders, E. Newt	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.	N	No permanent waterbodies nor open water wetlands.
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.	N	Size criteria not met; unlikely that many area-sensitive forest birds are present based on professional experience.
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.	N	No shallow water present.
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.	N	Subject Property is actively used for farming.
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.	N	Subject Property is actively used for farming.
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).	N	No suitable habitat present.
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.	P	No known rare of Special Concern species to date.