NATURAL ENVIRONMENT REPORT

Aggregate Resources Act Application

Trafalgar Pit Extension, Municipality of Thames Centre

9 March 2026

TERRASTORY
environmental consulting inc.

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1 INTRODUCTION

1.1 Study Background

Terrastory Environmental Consulting Inc. ("Terrastory") was retained by D & J Paton Bros. Ltd. ("Applicant") to prepare this Natural Environment Report (NER) as part of the supporting documentation for a licence to extract aggregate under the *Aggregate Resources Act* (ARA) in the Municipality of Thames Centre ("Municipality"). The lands proposed to be licenced consist of a parcel municipally known as 6545 Trafalgar Street which is legally described as Part of Lot 17, Concession 2 NTR, in the former Geographic Township of North Dorchester, occurring on the south side of Trafalgar Street to the west of Hunt Road. The area proposed to be licensed is predominantly farmed and consisted of row crops (corn) in 2025.

The majority of the Subject Property is designated Agricultural Area per Schedule A (Land Use) of the County of Middlesex ("County") OP while a wooded area within the southwestern corner of the Subject Property is contained within the County Natural Heritage System (NHS) per Schedule C (Natural Heritage System). Similarly, much of the Subject Property is designated Agricultural while the southwestern wooded area contains two separate natural feature designations (Natural Area and Protection Area) per Schedule A (Land Use Plan) of the Municipality's OP. Provincially Significant Wetland (North Dorchester Swamp UT 24) and Significant Woodland are known from within and adjacent to the Subject Property per Appendix 1 (Part A; Natural Heritage Features) of the Municipality's OP. Much of the Subject Property is currently zoned Agricultural while the southwestern wooded area is zoned Environmental Protection per the Municipality's Zoning By-law No. 75-2006.

The Subject Property overlaps with a designated Aggregate Resource Area per Schedule E (Aggregate Resources) of the County's OP and Appendix 3 (Aggregate Resources) of the Municipality's OP.

The ARA licence application considered herein represents an eastward extension of the existing Trafalgar Pit situated immediately west of the Subject Property. The licence application must be supported a Zoning By-law Amendment (ZBA) application to facilitate aggregate extractive uses within the proposed area to be licensed.

The following terminology is employed throughout this NER to describe certain noteworthy areas and features which are shown spatially on **Figure 1**:

- **Subject Property** – parcel in which the proposed area to be licensed is situated.
- **Site** – area encompassing the proposed area to be licensed.
- **Adjacent Lands** – areas within 120 metres (m) of the Site (as defined above).
- **Study Area** – Site and Adjacent Lands collectively.

The locations of the Subject Property, Site, and Adjacent Lands within their broader landscape setting are shown in **Figure 1**.

1.2 Study Purpose

This NER has been prepared to address the requirements of the ARA and its associated regulation (O. Reg. 244/97) and policy standards. ARA licence applications must be made in accordance with

the Provincial Standards – the *Aggregate Resources of Ontario Standards: A compilation of the four standards adopted by Ontario Regulation 244/97 under the Aggregate Resources Act* (MNRF 2020) – per subsection 0.2(2) of O. Reg. 244/97. Section 2.2 of the compiled Standards triggers the need for an NER in support of ARA applications involving Class A (removal of more than 20,000 tonnes of aggregate annually) or Class B (removal of less than 20,000 tonnes of aggregate annually) licences. The NER must identify the following natural heritage features and areas existing on the Site and within 120 m of the Site:

a) Significant wetlands;
b) Other coastal wetlands in Ecoregions 5E, 6E, and 7E;
c) Fish habitat;
d) Significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
e) Habitat of endangered species and threatened species;
f) Significant wildlife habitat;
g) Significant areas of natural and scientific interest; and
h) Within the area of one or more provincial plan(s), any key natural heritage features not included in (a) through (g).

"Site" is defined per subsection 1(1) of the ARA as "*the land or land under water to which a licence or permit or an application therefor relates*". The compiled Standards further clarify scoping of the NER (p. 28/29) as follows:

> *Where any of the above features or areas have been identified, the report must identify and evaluate any negative impacts on the natural features or areas, including their ecological functions, and identify any proposed preventative, mitigative or remedial measures. The report must also identify if the site or any of the features, included in (a) through (g), are located within a natural heritage system that has been identified by a municipality in ecoregions 6E and 7E or by the province as part of a provincial plan.*

In addition to satisfying ARA requirements, this NER is also submitted as part of the supporting documentation for a ZBA application to the Municipality to facilitate aggregate extraction. The overall scope of this NER is consistent with the general requirements for the preparation of Environmental Impact Study (EIS) reports within the Municipality (i.e., Section 3.2.3.1 of the Municipality's OP) and Development Assessment Reports (DAR) in Middlesex County (i.e., Section 2.2.1.2 of the County's OP). This NER further considers and assesses consistency of the ARA licence application with other applicable legislative standards pertaining to wildlife including the provincial *Endangered Species Act*, federal *Fisheries Act*, and federal *Migratory Birds Convention Act*. It is understood that this report will form part of the application package to be submitted for consideration by the Ministry of Natural Resources (MNR), the Municipality, First Nations, and relevant commenting agencies.

Curriculum vitae for the report authors (T. Knight, Senior Ecologist / Arborist; J. Consiglio, Intermediate Ecologist / Arborist) are provided in **Appendix 1**.

2 APPROACH AND METHODS

This study is composed of five (5) discrete components which are bulleted below and further described in the following sections.

- **Acquire background biophysical information and mapping** available for the Study Area and local landscape (see **Section 2.1**).
- **Conduct site assessments and ecological surveys** to field-verify the accuracy of the acquired background biophysical information and collect additional biophysical information as necessary (see **Section 2.2**).
- **Assess the significance** of the biophysical information collected and natural features identified within the context of applicable natural heritage and environmental policies (see **Section 2.3**).
- **Predict the effects** of the application on the identified significant natural features and natural environment, particularly the net effects once mitigation measures and technical recommendations are implemented (see **Section 2.4**).
- **Determine whether the proposed application addresses applicable natural heritage and environmental policies** at municipal, provincial, and federal levels (see **Section 2.5**).

2.1 Background Biophysical Information Assessment

This study is supported by background biophysical information and mapping acquired and reviewed from a variety of sources which are listed below in **Table 1**.

Table 1. Background Biophysical Information Acquired and Reviewed.

Type of Information Acquired	Description
Ortho-rectified Aerial Photographs	• 1954, 1985, 2006, 2009, 2012 to 2013, 2015 to 2018, 2020, and 2025.
Natural Feature Mapping	• Municipality of Thames Centre Official Plan (November 2022 office consolidation) including Schedule A (Land Use Plan), Appendix 1 (Natural Heritage Features Parts A & B), and Appendix 3 (Aggregate Resources). • Middlesex County Official Plan (07 July 2023) including Schedule A (Land Use), Schedule C (Natural Heritage System), Schedule D (Natural Hazard Areas), and Schedule E (Aggregate Resources). • Land Information Ontario (LIO) accessed via MNRF's "Make a Map" web-based platform (accessed 28 November 2025). • Upper Thames River Conservation Authority (UTRCA) regulation mapping (accessed 28 November 2025).
Physiographic Resource Mapping and Datasets	• Provincial Digital Elevation Model. • Ontario Well Records (publicly-available). • The Soils of Middlesex County (Hagerty and Kingston 1992). • Agricultural Information Atlas (accessed 28 November 2025). • Paleozoic Geology of Southern Ontario (Armstrong and Dodge 2007). • Surficial Geology of Southern Ontario (Ontario Geological Survey 2010). • Physiography of Southern Ontario (Chapman and Putnam 1984).
Ecological Resource Mapping and Datasets	• Natural Heritage Information Centre (NHIC) database accessed via MNRF's "Make a Map" web-based platform (squares: 17MH9664, 17MH9764, 17MH9864, 17MH9663, 17MH9763, 17MH9665, 17MH9765, 17MH9865; accessed 28 November 2025). • iNaturalist "(NHIC) Rare species of Ontario" project (accessed 28 November 2025). • iNaturalist "Herps of Ontario" project (accessed 28 November 2025).

Type of Information Acquired	Description
	• Ontario Reptile & Amphibian Atlas (square: 17MH84; accessed 28 November 2025). • Ontario Breeding Bird Atlas (OBBA) database and the Atlas of the Breeding Birds of Ontario, 2001–2005 (Cadman et al. 2007) (square: 17MH84). • Ontario Butterfly Atlas database (square: 17MH84; accessed 28 November 2025). • Aquatic Species at Risk Maps by Fisheries and Oceans Canada (accessed 28 November 2025). • Critical Habitat for Species at Risk National Dataset by Government of Canada (accessed 28 November 2025). • Atlas of the Mammals of Ontario (Dobbyn 2005).
Other Natural Heritage Studies	• Dorchester Watershed Report Card (UTRCA 2022). • Trafalgar Road Pit: NETR by AWS Environmental Consulting Inc. (2017).

2.2 Site Assessments and Surveys

The acquired background information per **Table 1** helped direct several site assessments and surveys carried out by Terrastory staff. **Table 2** below indicates the primary assessments/surveys performed during each site visit, weather conditions, and time on-site.

Table 2. Site Assessments and Ecological Surveys performed within the Subject Property.

Date	Assessments/Surveys Performed	Terrastory Staff	Weather Conditions	Time On-site
22 April 2025	Site reconnaissance, incidental wildlife observations.	T. Knight	Air temperature 13°C; Beaufort Wind Scale 3; cloud cover 0 to 25%; no precipitation.	16:25 to 20:00
22 April 2025	Anuran Calling Survey (Round 1), incidental wildlife observations.	T. Knight, J. Consiglio	Air temperature 11°C; Beaufort Wind Scale 1; cloud cover 0 to 25%; no precipitation.	20:18 to 21:15
27 May 2025	Breeding Bird Survey (Round 1), Spring Vascular Plant Survey, incidental wildlife observations.	T. Knight	Air temperature 10°C; Beaufort Wind Scale 1; cloud cover 25 to 50%; no precipitation.	07:10 to 09:00
29 May 2025	Anuran Calling Survey (Round 2), incidental wildlife observations.	J. Consiglio	Air temperature 13 to 14°C; Beaufort Wind Scale 0 to 1; cloud cover 25-50%; no precipitation.	21:25 to 22:05
21 June 2025	Breeding Bird Survey (Round 2), incidental wildlife observations.	T. Knight	Air temperature 19 to 21°C; Beaufort Wind Scale 1 to 2; cloud cover 0-25%; no precipitation.	07:10 to 09:00
25 June 2025	Anuran Calling Survey (Round 3), incidental wildlife observations.	J. Consiglio	Air temperature 24 to 27°C; Beaufort Wind Scale 0; cloud cover 75-100%; no precipitation.	21:35 to 22:10
27 June 2025	Summer Vascular Plant Survey, Vegetation Community Mapping (ELC), incidental wildlife observations.	J. Consiglio	Air temperature 23 to 33°C; Beaufort Wind Scale 2-3; cloud cover 0-25%; no precipitation.	11:05 to 14:40

Date	Assessments/Surveys Performed	Terrastory Staff	Weather Conditions	Time On-site
29 September 2025	Fall Vascular Plant Survey, Vegetation Community Mapping, incidental wildlife observations.	J. Consiglio	Air temperature 20 to 28°C; Beaufort Wind Scale 2-3; cloud cover 0-25%; no precipitation.	12:15 to 15:00

The site assessments and surveys centred on characterizing the land use (e.g., historical development patterns, existing built features, land maintenance, etc.), physiographic (e.g., topography, drainage, surface water features, etc.), and ecological (e.g., vegetation, wildlife, habitats, etc.) conditions and features of the Study Area. All land-use, physiographic, and ecological information described for Adjacent Lands was collected from either current aerial photographs or observations from inside the Subject Property and/or publicly accessible areas (e.g., rights-of-way, roadsides, etc.). The locations and boundaries of significant natural features and/or habitats were recorded on-site with a GPS and supported by representative photographs.

In addition to collecting general biophysical information, the following targeted assessments (i.e., feature- or species-specific surveys) were undertaken:

- **Vegetation Mapping according to Ecological Land Classification (ELC):** Vegetation communities on the Subject Property were characterized and mapped according to Ecological Land Classification (Lee et al. 1998) and the 2008 update to the Vegetation Type List (Lee 2008). Vegetation communities were initially identified based on current aerial photographs and then verified and refined (as necessary) on-site. ELC mapping was scaled to the finest level of resolution deemed appropriate (i.e., either Ecosite or Vegetation Type). Vegetation communities mapped on Adjacent Lands were delineated predominantly via aerial photograph interpretation.
- **Wetland Boundaries:** Where wetlands were identified via ELC, their boundaries were delineated consistent with the "50% wetland vegetation rule" and presence of hydric soils per procedures contained in the Ontario Wetland Evaluation System (OWES; MNRF 2022). All wetlands mapped on Adjacent Lands were delineated via aerial photograph interpretation unless access was formally granted.
- **Woodland Boundaries:** Where Significant Woodlands were identified, their boundaries were delineated based on the outer limit of the crown dripline. All woodlands mapped on Adjacent Lands were delineated via aerial photograph interpretation unless access was formally granted.
- **Vascular Plant Survey:** Vascular plants were recorded based on a comprehensive area search ("wandering transects") within naturally occurring (i.e., non-planted) or naturalizing areas of vegetation. Effort was paid to areas with the greatest potential to support significant vascular plants (i.e., designated Species at Risk, provincially rare, etc.) and areas with the greatest potential for impact based on the proposed development plan. Nomenclature and common names for the recorded vascular plant species are generally consistent with the Southern Ontario Vascular Plant Species List (Bradley 2013) except where a name change has more recently been adopted by NHIC.
- **Anuran Calling Surveys according to the Marsh Monitoring Protocol:** Three (3) rounds of Anuran calling surveys were conducted in accordance with the Marsh Monitoring Protocol (Bird Studies Canada et al. 2008). Surveys occurred within the appropriate season (April to June), time of day (between 30 minutes after sunset and 12:00am), and weather conditions (minimal to no rain, wind speed ≤3 on the Beaufort Wind Scale).

- **Breeding Bird Surveys according to the Ontario Breeding Bird Atlas Protocol:** Two (2) rounds of breeding bird surveys were conducted in accordance with the Ontario Breeding Bird Atlas (OBBA) protocol (Bird Studies Canada et al. 2001). Surveys occurred within the appropriate season (May 24–July 10), time of day (between dawn and approximately 5 hours after dawn), and weather conditions (no rain, wind speed ≤3 on the Beaufort Wind Scale). While the OBBA protocol recommends that stations be situated at least 300 m apart (to avoid double counting), the stations established herein were often closer together to ensure more comprehensive survey coverage. Surveys occurred for a minimum duration of 10 minutes at each station.

2.3 Significance Assessment

2.3.1 Definitions and Criteria

"Significant natural features" as described herein represent natural features and habitats that have recognized status (and therefore policy significance) within the planning jurisdiction in which an application is proposed.

Significant natural features are defined herein to include all Natural Heritage Features and Areas referenced in Section 4.1 of the 2024 Provincial Planning Statement (PPS), namely:

- Significant Wetlands;
- Significant Coastal Wetlands;
- Other Coastal Wetlands in Ecoregions 5E, 6E, and 7E;
- Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River);
- Significant Wildlife Habitat (SWH);
- Significant Areas of Natural and Scientific Interest (ANSIs);
- Habitat of Endangered and Threatened Species; and
- Fish Habitat.

The same PPS Natural Heritage Features and Areas must also be considered pursuant to the compiled Standards (MNRF 2020):

a) Significant wetlands;
b) Other coastal wetlands in Ecoregions 5E, 6E and 7E;
c) Fish habitat;
d) Significant woodlands and significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
e) Habitat of endangered species and threatened species;
f) Significant wildlife habitat;
g) Significant areas of natural and scientific interest; and

h) Within the area of one or more provincial plan(s), any key natural heritage features not included in (a) through (g).

Section 2.2.1 of the County's OP identifies the following natural heritage features as forming part of the County NHS, as shown on Schedule C:

- Woodlands;
- Thickets;
- Meadows;
- Wetlands;
- Watercourses and waterbodies;
- Connected vegetation features;
- Significant Wildlife Habitat
- Significant Valleylands
- Aquatic ecosystems including fish habitat
- Habitat supporting Species at Risk
- Areas of Natural and Scientific Interest

While some of these natural heritage features are already considered through the PPS and ARA licensing process, the presence or absence of other components of the County's NHS will be considered (where mapped under Schedule C) as part of this study.

The Municipality has also established a separate framework for natural heritage protection through its Green-Space System which relies on different "groups" of significant natural heritage features:

- **Group A Features (Natural Area Designation):**
    - Provincially significant wetlands
    - Habitats for endangered and threatened species
    - Fish habitat
- **Group B Features (Protection Designation):**
    - Regionally significant wetlands
    - Significant woodlands and woodland patches identified by the Middlesex Natural Heritage Study
    - Significant valley lands
    - Significant wildlife habitat
    - Provincially significant areas of natural and scientific interest (ANSIs)
    - Regionally significant ANSIs & environmentally significant areas (ESAs)

- **Group C Features (Environmental Area Designation):**
    - Stream-bank corridors and flood plains along creeks and tributaries
    - Natural hazard lands, including flood plains and flood prone areas, areas within the 100 Year Erosion Limit, and areas susceptible to erosion

The presence or absence of all PPS/ARA Natural Heritage Features and Areas, and other components of the County NHS and Municipality's Green-Space System, are considered through the course of this study. Criteria used to determine the presence or absence of the above significant natural features within the Study Area were considered from a variety of sources including the Municipality and County OPs, Natural Heritage Reference Manual (NHRM; MNR 2010), Significant Wildlife Habitat (SWH) Technical Guide (MNR 2000), and SWH Criteria Schedules for Ecoregion 7E (MNRF 2015).

Like significant natural features, "significant species" represent individuals of wild species which have recognized status (and therefore policy significance) within the planning jurisdiction in which an application is proposed. Significant species are defined herein to include:

- Species designated Endangered, Threatened, or Special Concern under O. Reg. 230/08 pursuant to the provincial *Endangered Species Act, 2007*.
- Species designated Provincially Rare (i.e., S1, S2, or S3) by NHIC.
- Species considered Regionally Rare in Middlesex County pursuant to the *List of the Vascular Plants of Ontario's Carolinian Zone* (Oldham 2017).

2.3.2 Determination

After collecting the background biophysical information and conducting the site assessments the data was interpreted to determine whether any significant natural features and/or significant species occur within the Study Area. If a natural feature or species met the significance criteria, it is considered "confirmed". If a natural feature or species may be present within the Subject Property and/or Adjacent Lands given the prevailing biophysical or habitat conditions but was not confirmed based on either background or site-specific biophysical data, it is considered potential or "candidate". Candidate significant natural features and species are treated as confirmed where no additional information is available.

2.4 Effects Assessment and Mitigation

The potential ecological effects of an application can be understood spatially as zones that radiate outward from the direct project footprint (building envelope, etc.) and associated areas of site alteration (grading, etc.). While the greatest potential for effects typically occurs within areas directly subject to development or disturbance, surrounding areas may also be affected indirectly. Such indirect effects can include light or noise pollution that affects wildlife communities on Adjacent Lands, or degradation of water quality within a downstream receptor resulting from sediment runoff during extraction.

The following five-pronged approach is employed herein to assess the effects of an application on significant natural features and species and (where warranted) the natural environment in general:

1. **Scope** the effects assessment to environmental components that warrant consideration. The effects assessment herein centres principally on significant natural features and species (i.e., those that have policy significance within the planning jurisdiction, as defined in **Section 2.3**) but may also consider general environmental effects where warranted.
2. **Identify the predicted direct and indirect effects** of the application on each significant natural feature or species during all project stages (i.e., pre- to -post-development) in the absence of mitigation. Direct effects are those where there is a cause-effect relationship between a proposed activity and an effect on a natural feature or species (e.g., tree clearance within a building footprint, etc.). Indirect effects result when an activity is linked to a direct effect through a chain of foreseeable interactions or steps.
3. **Evaluate the significance** of the predicted effects for each environmental component based on their attributes (i.e., spatial extent, magnitude, timing, frequency, and duration) and likelihood (i.e., high, medium, low).
4. Where the potential for negative effects are anticipated, **recommend ecologically meaningful mitigation measures** to avoid such impacts first (where possible), and where impacts cannot be avoided to minimize, compensate, and/or enhance as appropriate.
5. **Identify the predicted residual or net effect**s of the application assuming implementation of all recommended mitigation measures.

Per step 4, mitigation measures are offered where the potential for negative effects are anticipated to a degree that cannot be supported given the prevailing policy context. Whenever possible, Terrastory works iteratively with the project team to identify extraction options that avoid negative effects first; options that would minimize or mitigate such negative effects are less preferred and considered secondarily. In general, avoidance measures that have already been incorporated into the application or project design are not duplicated as technical recommendations herein. The Site Plan is described in **Section 5** while the effects assessment and recommended mitigation measures are provided in **Section 6**.

2.5 Natural Heritage Policy Context

There is an overlapping municipal, provincial, and federal policy framework respecting the protection of natural heritage features and areas across southern Ontario. These requirements include objectives, policies, and directives which are principally contained in federal and provincial statutes, regulations, policy statements, Official Plans, and guidance documents. The overarching natural heritage policy framework directing development activities within the Subject Property is outlined below in **Table 3**. A determination of whether the applications considered herein address such policies is provided in **Section 7**.

Table 3. Applicable Natural Heritage Policies.

Level of Government	Natural Heritage or Environmental Policy Requirements
Municipal	Municipality of Thames Centre Official Plan (November 2022 office consolidation). County of Middlesex Official Plan (07 July 2023).

Level of Government	Natural Heritage or Environmental Policy Requirements
Provincial	*Aggregate Resources Act* (ARA), R.S.O. 1990, c. A.8, including: • Ontario Regulation 244/97 – General • Aggregate Resources of Ontario Standards Provincial Planning Statement 2024, pursuant to the *Planning Act*, R.S.O. 1990, c. P.13, including: • Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005 (MNR 2010). • Significant Wildlife Habitat Technical Guide (MNR 2000). • Significant Wildlife Habitat Criteria Schedules for Ecoregion 7E (MNRF 2015). • Significant Wildlife Habitat Mitigation Support Tool (MNRF 2014). *Endangered Species Act* (ESA), S.O. 2007, c. 6, including: • Ontario Regulation 230/08 – Species at Risk in Ontario List • Ontario Regulation 242/08 – General • Ontario Regulation 832/21 – Habitat *Fish and Wildlife Conservation Act*, S.O. 1997, c. 41.
Federal	*Species at Risk Act*, S.C. 2002, C. 29. *Fisheries Act*, R.S.C. 1985, c. F-14, including: • Fish and Fish Habitat Protection Policy Statement (DFO 2019). • Pathways of Effects (DFO 2024). *Migratory Birds Convention Act*, S.C. 1994, c. 22, including: • Migratory Birds Regulations, C.R.C., c. 1035.

3 EXISTING BIOPHYSICAL CONDITIONS

The following is a description of the biophysical features and conditions of the Site which are shown spatially on **Figure 2**. Representative photographs are provided in **Appendix 2**.

3.1 Land-use and Landscape Setting

The Site is situated in a rural landscape southwest of the community of Thamesford (Township of Zorra). Nearby parcels contain a mixture of croplands and natural areas, while several former and active aggregate pits are present in the local landscape.

3.2 Physical Setting

3.2.1 Bedrock Geology

The bedrock underlying the Study Area is characterized as Devonian-aged (i.e., 458 to 470 million-year-old) fossiliferous limestone and minor dolostone associated with the Dundee Formation (Armstrong and Dodge 2007). In Ontario, the Dundee Formation subcrops (i.e., acts as the stratigraphic unit closest to the ground surface) from Long Point to the shoreline of Lake Huron.

3.2.2 Surficial Geology and Groundwater Resources

The Site lies within the Oxford Till Plain physiographic region which occupies much of Oxford County and extends westward into Middlesex County (Chapman and Putnam 1984). This

Physiographic Region is characterized by three valley systems cut by meltwaters, and the presence of drumlins arranged in a northwesterly orientation (Chapman and Putnam 1984). Broadly, soils within the Oxford Till Plain are loamy, producing gentle slopes and good drainage (Chapman and Putnam 1984).

The northeastern corner of the Study Area is mapped as Bryanston silt loam and loam glacial till while the southwestern corner of the Study Area is mapped as Burford gravelly or cobbly glaciofluvial outwash (Hagerty and Kingston 1992). Predominant soils mapped within the central portion of the Study Area include Caledon sandy loam and/or loamy sand (occurring at depths of 40 to 100 cm) overlying gravelly or cobbly glaciofluvial outwash (Hagerty and Kingston 1992). Drainage conditions are typically reported as rapid to imperfect (Hagerty and Kingston 1992).

A total of three (3) boreholes (MW4, MW5, and MW6) were advanced in November 2024 as part of the Hydrogeological Assessment by Groundwater Science Corp. Regular (generally monthly) water level measurements at MW4, MW5 and MW6 began in November 2024 and are ongoing. Additional hydrogeological monitoring results obtained from the existing Trafalgar Pit (MW1, MW2, and MW3) were also considered as part of the Hydrogeological Assessment and date back to 2016.

The hydrogeological setting is such that the Site primarily overlaps with a sandy/gravelly ridge deposit several metres in depth, which sits atop the regional till plain comprised of silt to sandy silt. Total observed seasonal to annual water table fluctuations were found to be between 0.7 m (at MW1) and 0.8 m (at MW3 and MW4), which is considered within the typical range for the local landscape. The maximum predicted water table elevation varies across the Site from approximately 282.2 masl (at MW6) to 283.4 mASL (at MW4).

3.2.3 Topography, Drainage, and Surface Water Features

Topographic conditions are gently sloping to near level within the broader landscape (Hagerty and Kingston 1992). The Study Area sits between approximately 279 to 296 metres above sea level (masl). Overland runoff is predominantly directed towards wetlands bordering the Site to the southwest and east. Topographic contours are shown on **Figure 2**.

There is an absence of watercourses, channels, or other discrete drainage features within the Site, indicating that precipitation events and stormwater runoff likely tends to sheet flow to topographic lows or is absorbed into the surficial soils.

3.3 Ecological Setting

3.3.1 Vegetation Communities

Much of the Site is currently utilized as active agriculture (AG) for corn production (as observed during the 2025 fieldwork program), with a small area of rural residential lands (CVR_4) on Adjacent Lands to the north. Vegetation communities within the Study Area are described below and mapped in **Figure 2**.

Deciduous hedgerow (HE1) bounds the Site at the western and southern edges. The western hedgerow is characterized by Black Walnut (*Juglans nigra*), Black Locust (*Robinia pseudoacacia*), and Basswood (*Tilia americana*) throughout the canopy, subcanopy, and understory. Smooth Brome (*Bromus inermis*), Riverbank Grape (*Vitis riparia*), and Thicket Creeper (*Parthenocissus vitacea*) comprise

the ground layer. An isolated maple-dominated swamp (SWDM3) occurs to the west of the hedgerow on Adjacent Lands.

The southern deciduous hedgerow represents remnant natural vegetation and is similar in composition to the adjacent forests. Mature Sugar Maple (*Acer saccharum*), Bitternut Hickory (*Carya cordiformis*), Black Locust, and Black Cherry (*Prunus serotina*) comprise the canopy and subcanopy. The hedgerow understory consists of blackberry species (*Rubus allegheniensis*, *R. occidentalis*), while the herbaceous ground cover is comprised of Thicket Creeper, Smooth Brome, Riverbank Grape, and Common Motherwort (*Leonurus cardiaca*).

Sugar Maple – Black Cherry dominated forest (FODM5-7) occurs in the southwestern corner of the Study Area forming part of the broader woodland/swamp complex, bordered at two corners by hedgerow. The forest canopy is predominantly comprised of Sugar Maple, with a small Black Cherry component throughout. Pockets of American Beech (*Fagus grandifolia*) occur within the forest in various stages of decline and succumbing to Beech Leaf Disease (causing foliage deformities) and Beech Bark Disease (with the canker fungus causing tree decline). The subcanopy and understory are generally comprised of young Sugar Maple with small areas of American Beech regeneration, while the rich ground layer consists of various conservative sedges (*Carex communis*, *C. gracillima*, *C. pedunculata*, *C. rosea*, *C. woodii*), trilliums (*Trillium erectum*, *T. grandiflorum*), Bloodroot (*Sanguinaria canadensis*), False Solomon's Seal (*Maianthemum racemosum*), and Wild Leek (*Allium tricoccum* var. *tricoccum*). Anthropogenic disturbance is minimal within the deciduous forest (FODM5-7) apart from sparse trails near its eastern and northern edges and occasional harvested trees.

Organic deciduous swamp (SWDO3-2) borders the Sugar Maple – Black Cherry dominated forest (FODM5-7). The swamp canopy is characterized by mature Yellow Birch (*Betula allegheniensis*) and Red Maple (*Acer rubrum*), while the subcanopy is comprised of mature Spicebush (*Lindera benzoin*) and young Red Maple, with pockets of Eastern White Cedar (*Thuja occidentalis*) occurring along the western and southern edges of the community. The understory consists predominantly of Spicebush, while Skunk Cabbage (*Symplocarpus foetidus*), Spotted Jewelweed (*Impatiens capensis*), Wood Nettle (*Laportea canadensis*), and White Avens (*Geum canadense*) are present throughout the ground layer. Vegetation composition within the mixed swamp (e.g., extensive presence of Skunk Cabbage and to a lesser extent Wood Nettle) is suggestive of groundwater influence. Mixed swamp (SWMM1-1) with greater proportions of Eastern White Cedar through the canopy and subcanopy borders the organic mixed swamp (SWDO3-2) on the adjacent property to the south.

The eastern edge of the Study Area predominantly consists of Sugar Maple dominated forest (FODM5-1). Sugar Maple comprises the canopy, with Black Cherry, American Beech, and Bitternut Hickory also present at lower densities. Young Sugar Maple, White Ash (*Fraxinus americana*), and Alternate-leaved Dogwood (*Cornus alternifolia*) characterize the subcanopy and understory. The ground layer consists of native upland sedges (*C. albursina*, *C. arctata*, *C. cephaloidea*, *C. hirtifolia*, *C. hitchcockiana*, *C. pennsylvanica*, *C. rosea*), Jack-in-the-Pulpit (*Arisaema triphyllum*), Canada Enchanter's Nightshade (*Circaea canadensis* ssp. *canadensis*), and Running Strawberry-bush (*Euonymus obovatus*).

Two isolated wetland pockets containing standing water occur within the southern portion of the forest. The larger marsh (MASM1-14) is dominated by Reed Canarygrass, with smaller proportions of Skunk Cabbage, Bittersweet Nightshade (*Solanum dulcamara*), and Lesser Duckweed (*Lemna minor*). The smaller isolated marsh (MAMM3-1) is sparsely vegetated with patches of Hop Sedge (*C.*

lupulina), Panicled Aster (*Symphyotrichum lanceolatum*), and Sensitive Fern (*Onoclea sensibilis*), ringed by mature Spicebush.

A large maple dominated swamp community (SWDM3-2) occurs within the northeastern corner of the Study Area. Silver Maple (*Acer saccharinum*) comprises the mature canopy, with young Silver Maple and Green Ash (*Fraxinus pennsylvanica*) throughout the understory. Eastern Buttonbush (*Cephalanthus occidentalis*), Winterberry (*Ilex verticillata*), and regenerating Green Ash characterise the understory. Sedges (*C. hystericina*, *C. lupulina*, *C. stipata*), Sensitive Fern, Skunk Cabbage, and Spotted Jewelweed comprise the patchy ground layer. The centre of the swamp consists of a shallow water marsh (MASM1-1) dominated by Broad-leaved Cattail (*Typha latifolia*) forming a ring around a floating aquatic community (SAF1-3). Star Duckweed (*Lemna trisulca*) and Lesser Duckweed characterize the community.

All wetlands within the Study Area form part of the Provincially Significant North Dorchester Swamp UT 24 ("PSW"). Terrastory's 2025 fieldwork confirmed that wetlands within the eastern portion of the Study Area are not contiguous with portions of the PSW which occur to the south on adjacent properties (as shown in the provincial wetland mapping) and that the existing PSW mapping in the eastern portion of the Study Area exaggerates the true extent of wetland that is present. Terrastory's corrected wetland boundaries are indicated in **Figure 2** and **Figure 3**; however, such boundaries have not at this time been submitted to MNR for update in the provincial wetland database.

3.3.2 Vascular Plants

A total of 247 vascular plant species were recorded within the Site (see **Appendix 3**).

Locally rare species (per Oldham 2017) documented within the Study Area include: (1) Poke Milkweed (*Asclepias exaltata*) and (2) Lesser Clearweed (*Pilea fontana*) which were recorded within the Sugar Maple dominated forest (FODM5-1) and western corner of the southernmost hedgerow (HE1), respectively.

Provincially rare species (per NHIC) documented within the Study Area include (and shown on **Figure 3**) include Carey's Sedge (*Carex careyana*; S2).

3.3.3 Anuran Calling Surveys

Anuran calling surveys were undertaken at four (4) stations on 22 April 2025, 29 May 2025, and 25 June 2025. The locations of each survey station are shown on **Figure 2** while the full survey results are provided in **Appendix 4**. A total of five (5) Anuran species were documented during the calling surveys. A general description of the Anuran communities present within the Study Area is provided below. All surveys were undertaken from within the Subject Property.

Survey station A-1 targeted the mixed organic swamp (SWDO3-2) located within the southwestern corner of the Study Area. No amphibians were recorded calling from the mixed swamp (SWDO3-2), although American Toad (*Anaxyrus americanus*) and Spring Peeper (*Pseudacris crucifer*) were recorded calling from adjacent properties to the southwest during the first survey.

Survey station A-2 focused on two woodland pools encompassing mixed marsh (MAMM3-1) and Reed-canary Grass Shallow Marsh (MASM1-14) vegetation assemblages located within the large deciduous forest along the eastern edge of the Study Area. No amphibians were recorded calling

from the smaller (MAMM3-1) pool. High densities (i.e., a full chorus) of Spring Peeper (*Pseudacris crucifer*) were recorded within the larger wetland.

Survey station A-3 targeted the large Silver Maple dominated swamp (SWDM3-2), as well as the two wetland communities located within the swamp (MASM1-1, SAF1-3). Full choruses of Spring Peeper and Gray Treefrog (*Dryophytes versicolor*) were documented calling from these wetlands. The presence of standing water observed late in the season (September) suggests that these features (or at a minimum, the marsh and floating water community) hold water year-round and are capable of supporting successful amphibian breeding. The presence of full choruses (i.e., Call Code 3) of Gray Treefrog and Spring Peeper indicates that these wetlands contain significant amphibian breeding habitat. Green Frog (*Lithobates clamitans*) and Wood Frog (*Lithobates sylvaticus*) were also documented vocalizing at this station but at somewhat lower densities compared to the other species recorded.

Surveys at station A-4 focused on the maple dominated swamp (SWDM3) on Adjacent Lands to the west of the Study Area. Full choruses of Spring Peeper and Gray Treefrog were documented calling from the maple swamp. The presence of full choruses (i.e., Call Code 3) of Gray Treefrog and Spring Peeper indicates that these wetlands contain significant amphibian breeding habitat. American Toad and Wood Frog were also documented vocalizing at this station but at somewhat lower densities compared to the other species recorded.

3.3.4 Breeding Bird Surveys

Breeding bird surveys were conducted at six (6) stations on 27 May 2025 and 21 June 2025. A total of thirty-five (35) bird species were detected (with three additional bird species recorded incidentally during the course of other field activities). The assemblage and abundance of birds recorded generally reflects the prevailing structure and composition of on-site vegetation communities and variable habitats of the Study Area (e.g., forest, treed swamp, and areas under active agriculture).

The locations of each survey station are shown on **Figure 2** while the full survey results indicating each species' breeding status by survey station can be found in **Appendix 5**. The locations of significant bird species recorded are shown on **Figure 3**. A general summary of the breeding bird communities present within the Study Area is provided below.

Areas of active agriculture (including areas where barns are located) and rural residential dwellings were surveyed from stations B-1 and B-6. Species commonly recorded as "possible" or "probable" breeders within these areas include American Robin (*Turdus migratorius*), Baltimore Oriole (*Icterus galbula*), Barn Swallow (*Hirundo rustica*), Brown-headed Cowbird (*Molothrus ater*), Chipping Sparrow (*Spizella passerina)*, Common Grackle (*Quiscalus quiscula*), European Starling (*Sturnus vulgaris*), Horned Lark (*Ereophila alpestris*), Killdeer (*Charadrius vociferus*), Red-winged Blackbird (*Agelaius phoeniceus*), Savannah Sparrow (*Passerculus sandwichensis*), Song Sparrow (*Melospiza melodia*), and Vesper Sparrow (*Pooecetes gramineus*).

The eastern maple swamp (SWDM3-2), including the associated shallow marsh (MASM1-1) and aquatic community (SAF1-3), were surveyed from station B-2. Species commonly recorded as "possible" or "probable" breeders here include American Goldfinch (*Spinus tristis*), Baltimore Oriole, Common Grackle, Downy Woodpecker (*Dryobates pubescens*), Eastern Wood-pewee (*Contopus virens*), Great Crested Flycatcher (*Myrarchus crinitus*), Indigo Bunting (*Passerina cyanea*), Killdeer, Mallard (*Anas platyrhynos*), Sandhill Crane (*Grus canadensis*), Song Sparrow, Red-eyed Vireo (*Vireo olivaceus*), Red-winged Blackbird, Rose-breasted Grosbeak (*Pheucticus ludovicianus*), and Wood Duck (*Aix sponsa*).

Survey stations situated within or adjacent to the Sugar Maple dominated forest (FODM5-1) include B-2, B-3, and B-4. Species considered "possible" or "probable" breeders recorded within the forest include American Crow (*Corvus brachyrhynchos*), American Goldfinch, Baltimore Oriole, Common Grackle, Downy Woodpecker, Eastern Wood-pewee, Killdeer, Indigo Bunting, Pileated Woodpecker (*Dryocopus pileatus*), Red-eyed Vireo, Red-winged Blackbird, Rose-breasted Grosbeak, Warbling Vireo (*Vireo gilvis*), White-breasted Nuthatch (*Sitta carolinensis*), and Yellow-throated Vireo (*Vireo flavifrons*).

The organic swamp (SWDO3-2) and Sugar Maple – Black Cherry dominated forest (FODM5-7) were surveyed from station B-5. Species considered "possible" or "probable" breeders recorded within the forest include Chipping Sparrow, Common Yellowthroat (*Geothlypis trichas*), Downy Woodpecker, Eastern Wood-pewee, Great Crested Flycatcher, Indigo Bunting, Red-eyed Vireo, Song Sparrow, and White-breasted Nuthatch. Great Crested Flycatcher was recorded as a possible breeder within the swamp.

Of the 35 species identified during breeding bird surveys, three Species at Risk (SAR) were detected: (1) Bank Swallow, (2) Barn Swallow, and (3) Eastern Wood-pewee. More information pertaining to observations of these species is provided in **Section 4.3** and **Section 4.4** below.

3.3.5 Incidental Wildlife

A variety of wildlife species were recorded incidentally during the 2025 fieldwork program. This includes:

- Five (5) **lepidopterans**: Azure species (*Celastrina* sp.), Cabbage White (*Pieris rapae*), Locust Underwing (*Euparthenos nubilis*), Spring Moth (*Heliomata cyclidata*), and Eastern Tiger Swallowtail (*Papilio glaucus*).
- One (1) **bumble bee** species: Brown-belted Bumble Bee (*Bombus griseocollis*).
- Four (4) **mammal** species, including signs of mammals: Eastern Chipmunk (*Tamias striatus*), Eastern Grey Squirrel (*Sciurus carolinensis*), Raccoon (*Procyon lotor*), and White-tailed Deer (*Odocoileus virginianus*).
- One (1) **snake** species: Eastern Gartersnake (*Thamnophis sirtalis sirtalis*).
- Three (3) additional **bird** species (recorded outside of the formal breeding bird surveys): Black-billed Cuckoo (*Coccyzus erythropthalmus*), Hermit Thrush (*Catharus guttatus*), and Turkey Vulture (*Cathartes aura*).
- Evidence of a **Terrestrial Crayfish** species (Cambaridae) (burrows).

4 SIGNIFICANCE ASSESSMENT

Based on the biophysical information collected during background information gathering (per **Table 1**) and the results of the site assessments and surveys (per **Sections 2.2** and **3**), **Table 4** below provides a determination of the presence (or potential presence) of each significant natural feature considered herein. Shaded rows denote features which were confirmed or may be present within the Site or Adjacent Lands and are considered further as part of the effects assessment in **Section 5**. Significant natural feature mapping is provided in **Figure 3**.

Table 4. Summary of the Assessment of Significant Natural Features within the Site and Adjacent Lands.

Significant Natural Feature	Status within the Site	Status on Adjacent Lands (i.e., ≤ 120 m from the Site)
Significant Natural Features per PPS and ARA Provincial Standards		
Significant Wetlands	**Absent.** See **Section 4.1.**	**Confirmed.** See **Section 4.1.**
Significant Woodlands	**Confirmed.** See **Section 4.2.**	**Confirmed.** See **Section 4.2.**
Significant Valleylands	**Absent.**	**Absent.**
Significant Wildlife Habitat	**Candidate/Confirmed.** See **Section 4.3.**	**Candidate/Confirmed.** See **Section 4.3.**
Significant Areas of Natural and Scientific Interest	**Absent.**	**Absent.**
Habitat of Endangered and Threatened Species (per ESA)	**Potential/Confirmed.** See **Section 4.4.**	**Potential/Confirmed.** See **Section 4.4.**
Fish Habitat (per *Fisheries Act*)	**Absent.**	**Absent.**
County Natural Heritage System (per Schedule C of County OP)		
County Natural Heritage System	**Confirmed.** See **Section 4.5.**	**Confirmed.** See **Section 4.5.**
Municipality's Green-Space System		
Group A Features (Natural Area Designation)	**Confirmed.** See **Section 4.6.**	**Confirmed.** See **Section 4.6.**
Group B Features (Protection Area Designation)	**Confirmed.** See **Section 4.6.**	**Confirmed.** See **Section 4.6.**
Group C Features (Environmental Area Designation)	**Absent.**	**Absent.**

4.1 Significant Wetlands

PSW is absent from the Site but present on Adjacent Lands to the east, south, and west. All wetland communities mapped by Terrastory within the Study Area form part of the PSW including the eastern maple swamp (SWDM3-2), shallow marsh (MASM1-1), floating aquatic (SAF1-3), mixed meadow marsh (MAMM3-1), and Reed-canary Grass shallow marsh (MASM1-14) to the east of the Site. South of the Site, the organic deciduous swamp (SWDO3-2) and mixed swamp (SWMM1-1) form part of the PSW, as does the isolated maple dominated swamp (SWDM3) to the west of the Site (north of the existing Trafalgar Pit).

The existing PSW mapping to the east of the Site exaggerates the true extent of wetland present. Through the course of this study, and based on other Terrastory fieldwork in the local area since 2024, it has been found that much of woodland is comprised of mature deciduous forest, with smaller pockets of swamp and marsh (see **Figure 3**).

An assessment of potential effects to the PSW stemming from the proposed extractive uses is provided in **Section 6.1**.

4.2 Significant Woodlands

Relevant ARA standards do not provide criteria and/or direction to assist with determining the presence or absence of "Significant Woodlands" through the aggregate licensing process.

Table 1 of the Municipality's OP indicates that significant woodland boundaries are defined as: "*The natural edge of all woodlands 4 hectares or greater in area and/or all woodlands of any size adjacent to or straddling any watercourse or municipal drain, and/or all woodland patches meeting one or more landscape criteria as identified by the Middlesex Natural Heritage Study*". The Sugar Maple dominated forest (FODM5-1) along the eastern boundary of the Site (predominantly occurring on Adjacent Lands) is considerably larger than 4 ha based on aerial imagery interpretation; thus, this forest (FODM5-1) is considered Significant Woodland based on area alone. Similarly, the forest situated within the southwestern corner of the Site (extending onto Adjacent Lands) also appears considerably larger than 4 ha based on aerial imagery interpretation; thus, the Sugar Maple – Black Cherry dominated forest (FODM5-7) is also considered Significant Woodland based on area alone. The Significant Woodland driplines (as delineated in the field by Terrastory) are shown on **Figure 3**.

An assessment of potential effects to the Significant Woodlands stemming from the proposed extractive uses is provided in **Section 6.2**.

4.3 Significant Wildlife Habitat

An assessment of the likelihood that any candidate or confirmed SWH types or areas occur within or adjacent to the Site is provided in **Appendix 7**. Based on the results of this assessment, five (5) SWH types are considered further through this study:

- Seasonal Concentration Areas of Animals
    1. Bat Maternity Colonies (**candidate**)
- Rare Vegetation Communities or Specialized Habitats for Wildlife
    2. Amphibian Breeding Habitat (Woodland) (**confirmed**)
- Habitat of Species of Conservation Concern
    3. Terrestrial Crayfish (**confirmed**)
    4. Special Concern and Rare Wildlife Species (**confirmed**)
- Animal Movement Corridors
    5. Amphibian Movement Corridors (**confirmed**)

Also based on this assessment, a total of five (5) Special Concern or provincially rare species are considered to have at least a possible likelihood of occurrence within the Study Area given their habitat associations and current distribution in southern Ontario (or were confirmed during the fieldwork program):

1) Barn Swallow (*Hirundo rustica*) (**confirmed**)
2) Eastern Wood-pewee (*Contopus virens*) (**confirmed**)
3) Black Dash (*Euphyes conspicua*) (**possible**)
4) Monarch (*Danaus plexippus*) (**possible**)
5) Carey's Sedge (*Carex careyana*) (**confirmed**)

A general description of each SWH type and Special Concern/provincially rare species and their habitat within the Study Area is offered below. An assessment of potential effects to the

candidate/confirmed SWH features and Special Concern/provincially rare species is provided in **Section 6.3**.

4.3.1 Bat Maternity Colonies

Big Brown Bat (*Eptesicus fuscus*) and Silver-haired Bat (*Lasionycteris noctivagans*) form maternity colonies that roost with pups in various features, particularly cracks, cavities, or loose bark associated with large-diameter trees (≥25 cm diameter at breast height), snags, and buildings. Snags/cavity trees in earlier stages of decay (i.e., decay classes 1-3) may be preferred.

No targeted potential tree roost (i.e., "snag") surveys were undertaken as part of this study, as woodland encroachment is avoided and tree removal is limited; however, the Significant Woodlands contain larger-diameter snags and cavity trees and are assumed to provide candidate significant habitat for bat maternity colonies. The Significant Woodlands will be protected from extraction by an ecologically appropriate setback (see **Section 6** below).

4.3.2 Amphibian Breeding Habitat

Anuran calling surveys undertaken as part of this study confirmed significant woodland amphibian breeding in four (4) vegetation communities within the Study Area; the Silver Maple dominated swamp (SWDM3-2), two wetland communities within the Silver Maple dominated swamp (MASM1-1, SAF1-3), and the isolated maple dominated swamp (SWDM3) located on Adjacent Lands to the west. Confirmed significant amphibian breeding areas are indicated on **Figure 3**. Woodlands surrounding the significant breeding areas would support overwintering by Spring Peeper, Wood Frog, and Gray Treefrog.

4.3.3 Terrestrial Crayfish

Historically, terrestrial (or "burrowing") crayfish in Ontario have included two species: Digger Crayfish (*Creaserinus fodiens*) and Devil Crayfish (*Lacunicambarus diogenes*). These species are considered primary burrowers and spend most of their lives underground. A third species – Calico Crayfish (*Faxonius immunis*) – is a secondary burrower which may only dig burrows to escape drying waterbodies. A fourth species – Paintedhand Mudbug (*Lacunicambarus polychromatus*) – was recently documented at three (3) sites in the Windsor area (Jones and Glon 2019). Terrestrial crayfish are known to occupy wet meadows, the edges of shallow marshes, and other depressional areas with groundwater near the surface in Ontario.

Terrestrial crayfish burrows were documented within the Study Area as shown on **Figure 3**. Owing to an overlap in species ranges, it is not possible to determine which species of terrestrial crayfish is present from burrow observations alone.

4.3.4 Barn Swallow

Barn Swallow is designated Special Concern in Ontario per O. Reg. 230/08 pursuant to the *Endangered Species Act* (ESA) and is federally designated Special Concern under Schedule 1 of the *Species at Risk Act* (SARA). Barn Swallow is predominantly found in close association with human settlements, typically utilizing farmland, woodland clearings, parkland, and wetlands. Nesting sites for the species in Ontario are typically situated inside or outside constructed structures (e.g., bridges, buildings, culverts).

Barn Swallow was observed in the vicinity of a barn on Adjacent Lands to the north of the Site, as shown on **Figure 3**. There is an absence of breeding sites within the Site.

4.3.5 Eastern Wood-pewee

Eastern Wood-pewee is designated Special Concern in Ontario per O. Reg. 230/08 pursuant to the *Endangered Species Act* (ESA) and is federally designated Special Concern by COSEWIC. This species is most commonly associated with relatively open, deciduous and mixed forests of various sizes, as well as forest edges and other areas with relatively continuous canopy cover (e.g., parks, cemeteries, etc.). This species' preference for open forests and forest edges may be attributed to its aerial foraging behaviour (COSEWIC 2012). Territory sizes were shown to average approximately 1.75 ha (representing a circle with a radius of 75 m) in a study in southern Ontario (COSEWIC 2012).

Eastern Wood-pewee was documented as a "probable" breeder within the Study Area, as shown on **Figure 3**.

4.3.6 Monarch

Monarch is designated Special Concern in Ontario per O. Reg. 230/08 pursuant to the ESA and is federally designated Endangered by COSEWIC. Monarch is well-known to be host-specific and oviposits exclusively on species of milkweed (*Asclepias* spp.). This species is a generalist forager and may nectar in any area with wildflowers.

Monarch was not observed during the 2025 fieldwork program but are assumed to be present within the Study Area, owing to the presence of Milkweed (*Asclepias* spp.) recorded within the Study Area.

4.3.7 Carey's Sedge

Carey's Sedge is considered Provincially Rare (S2) in Ontario per NHIC. This species is known to occupy rich deciduous forests and treed valley slopes.

One patch of Carey's Sedge was documented during vascular plant surveys (as shown on **Figure 3**).

4.4 Habitat of Endangered and Threatened Species

An assessment of the likelihood that any Endangered and Threatened species or their habitats occur within the Study Area is provided in **Appendix 7**. A total of seven (7) Endangered or Threatened species are considered to have at least a possible likelihood of occurrence within the Study Area given their habitat associations and current distribution in southern Ontario (or were confirmed through the fieldwork program):

1) Bank Swallow (*Riparia riparia*) (**confirmed**)
2) Eastern Red Bat (*Lasiurus borealis*) (**possible**)
3) Hoary Bat (*Lasiurus cinereus*) (**possible**)
4) Little Brown Myotis (*Myotis lucifugus*) (**possible**)
5) Northern Myotis (*Myotis septentrionalis*) (**possible**)
6) Silver-haired Bat (*Lasionycteris noctivagans*) (**possible**)
7) Tri-colored Bat (*Perimyotis subflavus*) (**possible**)

A general description of each Endangered/Threatened species and their habitat is offered below. An assessment of potential effects to these Endangered/Threatened species is provided in **Section 6.4**.

4.4.1 Bank Swallow

Bank Swallow is designated Threatened in Ontario per O. Reg. 230/08 pursuant to the ESA and is federally designated Threatened under Schedule 1 of the *Species at Risk Act* (SARA). This species is a colonial breeder which nests in exposed, sandy substrates on vertical or steep surfaces, including cliff/bluff faces, river-banks, and construction stockpiles. Foraging habitat includes a variety of open areas including agricultural lands, meadows, prairies, woodland clearings, marshes, and waterbodies.

Bank Swallow was documented flying and foraging over areas under active agriculture within the Site, as well as above the existing Trafalgar Pit undergoing active extraction on Adjacent Lands to the west. The species is presumed to be nesting on Adjacent Lands to the west within the active pit, although no nests were visible from the Subject Property.

4.4.2 Endangered Bats

Per the assessment in **Appendix 8**, Little Brown Myotis, Northern Myotis, and Tri-colored Bat have the potential to roost and forage within the Study Area. Each of these bat species is designated Endangered in Ontario per O. Reg. 230/08 pursuant to the ESA and are federally designated Endangered by COSEWIC. Little Brown Myotis and Northern Myotis form maternity colonies that roost in large-diameter trees with cracks, crevices, and/or exfoliating bark; Little Brown Myotis will also frequently roost in buildings (e.g., attics, barns, etc.). Roosting sites for Tri-colored Bat maternity colonies are less understood but have been documented in dead or dying leaf clusters of oaks (*Quercus* spp.) and maples (*Acer* spp.), along with live foliage and buildings (Humphrey and Fotherby 2019). Individuals (i.e., non-reproductive females and males) of all three bat species may roost in smaller diameter trees and other spaces (e.g., beneath house siding, etc.) which are not occupied by maternity colonies. Overwintering habitat includes caves and mines that maintain temperatures above 0°C. White Nose Syndrome (a fungal disease caused by an introduced pathogen) has devastated populations of each species across their ranges. The fungus causes hibernating individuals to become dehydrated, leading to excessive arousal, depleted fat reserves, and ultimately emaciation and/or death.

Per the assessment in **Appendix 8**, migratory bats (Eastern Red Bat, Hoary Bat, and Silver-haired Bat) also have the potential to roost and forage within the Study Area. Each of these bat species are designated Endangered in Ontario per O. Reg. 230/08 pursuant to the ESA and have been assessed as Endangered by COSEWIC but are not listed on Schedule 1 of the federal SARA. These migratory species are primarily found in Ontario during the summer months, and their summer habitat is generally comprised of foraging, drinking, and roosting sites (COSEWIC 2023).

Eastern Red Bat and Hoary Bat typically roost with dependent young (i.e., pups) in deciduous or coniferous forests of all age classes, with a preference for roosting in tall, large diameter trees, and at sufficient heights to deter predators (i.e., at a height greater than five metres; COSEWIC 2023). Occurrences of Eastern Red Bat and Hoary Bat roosting in anthropogenic structures are rare. Silver-haired Bat reproductive females typically roost in decaying, large diameter deciduous or coniferous trees with heart-rot or exfoliating bark, and are known to occasionally roost on or in buildings (COSEWIC 2023). Roost switching is common among all three migratory species. All three migratory bats species undergo seasonal migrations during the fall and spring which expose them to numerous threats, including fatalities associated with wind energy facilities. Other threats to these species include declines in prey abundance, and losses of forested roosting habitat and foraging habitat.

Wooded areas/Significant Woodland in the eastern (FODM5-1/SWDM3-2) and southwestern (FODM5-7/SWDO3-2) portions of the Study Area could provide suitable roosting and foraging habitat for the above bat species, while the woodland edges may also be used for foraging.

4.5 County of Middlesex Natural Heritage System

The County's NHS occupies the southwestern and eastern edges of the Site per Schedule C of the County's OP. Components of the NHS which occur in these areas include Significant Woodland and PSW, along with candidate/confirmed SWH and candidate/confirmed habitat of Endangered/Threatened species.

4.6 Municipality of Thame Centre Green-Space System

The following components of the Municipality's Green-Space System were documented within the Study Area:

- **Group A Features (Natural Area Designation):**
  - Provincially significant wetlands
  - Habitats for endangered and threatened species
- **Group B Features (Protection Designation):**
  - Significant woodlands and woodland patches identified by the Middlesex Natural Heritage Study
  - Significant wildlife habitat

5 PHASING, OPERATIONS, AND REHABILITATION PLANS

The Applicant is submitting an ARA licence application to facilitate aggregate extraction within the Site. The proposed ARA site plans are provided in **Appendix 8**. The total area to be licensed and extracted is as follows:

- Total area to be licensed: 11.0 hectares
- Total area to be extracted: 9.4 hectares
- Total area to be rehabilitated: 9.4 hectares

The proposed ARA site plans (see **Appendix 8**) show extraction advancing in an easterly direction from the existing Trafalgar Pit. The proposed extraction envelope is segregated into two discrete "Areas", with Area 1 being westward (contiguous with the existing Trafalgar Pit) and Area 2 being eastward. Above water extraction will commence in Area 1 first (Phase A) proceeding eastward to Area 2 (Phase B), while below-water extraction will commence following the completion of above-water extraction in Area 2 (Phase C) and then move westward to Area 1 (Phase D). Progressive rehabilitation will commence following the completion of above-water extraction but prior to below-water extraction (i.e., during Phase C).

6 EFFECTS ASSESSMENT AND MITIGATION

The purpose of this NER is to present a biophysical characterization of the Study Area to identify the potential for adverse effects on the natural environment and natural heritage features stemming

from the proposed pit extraction activities and associated change in land use to extractive uses. Several significant natural features and species were documented (or may occur) within the Study Area pursuant to the assessments in **Section 4**. The following effects assessment provides an evaluation of the potential for the proposed pit operations to result in negative effects to such environmental components and offers technical recommendations to mitigate such effects where warranted. Certain technical recommendations offered herein apply to several natural features and/or species simultaneously; as such, all technical recommendations should be read and considered in their entirety. The baseline or existing conditions against which the application is assessed are treated as the state of the Site at the time of the site assessments. The effects assessment herein is based on the Site Plans provided in **Appendix 8**.

All pits and quarries in Ontario are subject to a set of standards and conditions which are outlined in both O. Reg. 244/97 and the Site Plan Standards (August 2020) per the compiled Aggregate Resources of Ontario Standards (MNRF 2020). The effects assessment herein assumes that all pit operations within the Site will be undertaken consistent with these requirements, which pertain to both Class A and Class B licences. Such conditions and standards that have bearing on protection of the natural environment are not duplicated as technical recommendations herein as they already represent licence requirements. Relevant standards per subsections 0.12 and 0.13 of O. Reg. 244/97 include the following:

- Dust will be mitigated, and the use of dust suppressants will be applied to internal haul roads and processing areas as required.
- A Spills Contingency Program will be developed prior to site operations and followed during operations.
- Fuel storage tanks will be installed and maintained according to the *Technical Standards and Safety Act*.
- If required, an Environmental Compliance Approval will be secured to carry out operations.
- If required, a Permit to Take Water will be secured.
- Topsoil will be stripped sequentially prior to aggregate extraction.
- Topsoil and overburden stripped during the operation will be stored separately with vegetated slopes to promote stability and control erosion.
- Adequate vegetation will be established and maintained to control erosion of any berm or stockpile.
- Scrap may only be stored temporarily and cannot be located within 30 m of any body of water or 30 metres from the boundary of the Site.
- Excavation is to be set back 15 metres from the boundaries of the Site and 30 metres from any body of water that is not the result of excavation below the water table.
- All excavation faces are to be stabilized to prevent erosion.
- All stripped topsoil or overburden will be used in the rehabilitation of the Site.
- Adequate vegetation is established and maintained to control erosion of any topsoil or overburden replaced for rehabilitation purposes.
- Rehabilitation will ensure adequate drainage and vegetation is provided and any compaction is alleviated.

Technical recommendations above and beyond the aforementioned conditions and standards are offered in **Section 6** to avoid and/or minimize the potential for impacts to the significant natural

features identified. Certain technical recommendations apply to several natural features and/or species simultaneously; as such, all technical recommendations should be read and considered in their entirety. All technical recommendations offered herein are incorporated into the ARA Site Plans provided in **Appendix 8** while the recommended feature and habitat setbacks are also shown on **Figure 3**.

6.1 Significant Wetlands

Where development and/or site alteration activities are proposed within or adjacent to wetlands, adverse effects may occur via the following pathways:

- Alterations to surface water and/or groundwater contributions to the wetland from construction (e.g., dewatering, etc.), grading that modifies the existing topography or drainage, and/or increased coverage of impervious surfaces (e.g., roads, roofs, etc.);
- Increased sediment loadings and/or nutrient enrichment within the wetland via runoff exiting from development areas during and post construction. This may alter wetland water quality and vegetation communities via increased turbidity, eutrophication, contamination by toxic substances, changes in pH, etc.
- Noise and/or light pollution that may adversely affect the ability of wetland wildlife to successfully carry out their life processes (e.g., breeding, feeding, etc.); and
- Increased potential for introducing invasive species including both animals and plants during and post construction.

Technical recommendations to protect the Provincially Significant North Dorchester Swamp UT 24 are offered as follows, and have also been incorporated onto the Site Plan as technical notes:

- **Activities and other disturbances associated with pit operations are prohibited within 30 m of the Significant Wetland.**
- **Any necessary lighting to support pit operations will be directed away from the Significant Wetland (i.e., northward) to the extent practicable.**

As the 30 m PSW setback does not extend into the Site, no additional recommendations related to ground-truthing the PSW setback or naturalizing the buffer zone are considered necessary (though see recommendations related to buffering the Significant Woodlands below in **Section 6.2**).

6.2 Significant Woodlands

Where development and/or site alteration activities are proposed adjacent to forests or woodlands, adverse effects may occur via the following pathways:

- Mechanical injury to the trunk, roots, branches, and/or foliage of retained woody vegetation.
- Soil compaction from the use of heavy machinery.
- Smothering or exposure of roots due to changes in grade.
- Noise and/or light pollution that may adversely affect the ability of woodland wildlife to successfully carry out their life processes (e.g., breeding, feeding, etc.).
- Increased human activity (i.e., encroachment) within or adjacent to the woodland which may result in soil compaction, dumping, etc.

Loss or deterioration of woodland functions that support the quality and integrity of other overlapping natural features or habitats (e.g., linkages/corridors) may also occur as a result of the aforementioned pathways.

All woodlands/forests within the Study Area are deemed to represent Significant Woodlands and overlap with the County NHS and Municipality's Green-Space System. The driplines of the Significant Woodlands as delineated by Terrastory on-site are shown on **Figure 3**.

Technical recommendations to protect the Significant Woodlands as part of the proposed extractive uses are offered as follows, and have also been incorporated onto the ARA Site Plans:

- **Activities and other disturbances associated with pit operations are prohibited within 15 m of the driplines of the Significant Woodlands.**
- **The 15 m setbacks from the driplines of the Significant Woodlands will be well-marked (i.e., staked) under the direction of a qualified Ecologist.**
- **The 15 m setbacks from the driplines of the Significant Woodlands will remain or become in natural, self-sustaining vegetation.**
- **The 15 m setbacks from the dripline of the Significant Woodlands will act as a Buffer Enhancement Area and be subject to native plantings consisting of a variety of trees and shrubs.**
- **Any necessary lighting to support pit operations will be directed away from the Significant Woodlands to the extent practicable.**

6.3 Significant Wildlife Habitat

Per the assessment in **Section 4.3**, a total of five (5) SWH types were considered further through this study:

- Seasonal Concentration Areas of Animals
    1. Bat Maternity Colonies (**candidate**)
- Rare Vegetation Communities or Specialized Habitats for Wildlife
    2. Amphibian Breeding Habitat (Woodlands) (**confirmed**)
- Habitat of Species of Conservation Concern
    3. Terrestrial Crayfish (**confirmed**)
    4. Special Concern and Rare Wildlife Species (**confirmed**)
- Animal Movement Corridors
    5. Amphibian Movement Corridor (**confirmed**)

Also based on this assessment, a total of five (5) Special Concern or Provincially Rare species are considered to have a possible likelihood of occurrence within the Study Area given their habitat associations and current distribution in southern Ontario (or were confirmed during the fieldwork program):

1) Barn Swallow (*Hirundo rustica*) (**confirmed**)
2) Eastern Wood-pewee (*Contopus virens*) (**confirmed**)
3) Black Dash (*Euphyes conspicua*) (**candidate**)

4) Monarch (*Danaus plexippus*) (**candidate**)
5) Carey's Sedge (*Carex careyana*) (**confirmed**)

Candidate and/or confirmed SWH types overlapping with the PSW (e.g., habitat for Black Dash, amphibian breeding habitat) will be protected via the technical recommendations offered in **Section 6.1**.

Candidate and/or confirmed SWH types overlapping with the Significant Woodlands (e.g., significant habitat for bat maternity colonies, amphibian breeding habitat, habitat for Eastern Wood-pewee, habitat for Carey's Sedge) will be protected via the technical recommendations offered in **Section 6.2**.

Development and site alteration activities are restricted from existing structures suitable for Barn Swallow nesting within the Study Area (e.g., residences, barns). Proposed pit operations are > 100 m from the barn in which Barn Swallow may be nesting, and even further from the limit of extraction. Suitable feeding habitat for Barn Swallow will remain in the vicinity of the barn during extraction.

No specific recommendations are offered herein to minimize impacts to potential foraging for Monarch, as this species is a habitat generalist and abundant nectaring habitat exists within the wider landscape surrounding the Study Area. Oviposition sites for Monarch (e.g., Common Milkweed, Swamp Milkweed) and general nectaring habitat for both species is present within the wider local landscape.

The following sections provide an assessment of SWH types which do not otherwise overlap with the PSW (see **Section 6.1**) or Significant Woodland (see **Section 6.2**). Refer also to the assessment of potential groundwater effects outlined in **Section 6.5**.

6.3.1 Terrestrial Crayfish

Wetlands to the northeast of the Site (SWDM3-2) and directly adjacent moist agricultural areas which support terrestrial crayfish habitat are well beyond the proposed area to be licensed. Notwithstanding this, the following measures are recommended to protect the habitat of Terrestrial Crayfish:

- **Should any Terrestrial Crayfish or associated chimneys be identified within 30 m of any pit operations, or otherwise in an area that could be impacted by pit operations, they will be safely relocated to appropriate habitat in accordance with a Terrestrial Crayfish Relocation Plan.**

6.3.2 Amphibian Movement Corridor

Owing to the presence of confirmed significant woodland amphibian breeding within the eastern and western portions of the Study Area, amphibian movement may be occurring between these features.

The existing Trafalgar Pit (to the west) was afforded a 15 m setback along the eastern licence boundary to permit anuran movements from an isolated wetland (forming part of the PSW) with additional wetlands and natural areas to the south. It is unknown whether significant amphibian movements occur through this identified corridor, though this is considered unlikely given that the

deciduous swamp in the southwest corner of the Subject Property does not contain even marginal amphibian breeding habitat.

The previously identified amphibian movement corridor (forming part of the existing Trafalgar Pit licence) will be eliminated to facilitate aggregate extraction eastward from Trafalgar Pit to the extension lands (considered herein). Accessing the proposed pit via the existing Trafalgar Pit will avoid the need for an additional entrance off of Trafalgar Street. The following recommendations are offered to maintain/relocate the previously-identified amphibian movement corridor:

- **An Amphibian Movement Corridor will be established along the northern boundary of the Site to consist of natural, self-sustaining vegetation.**
- **Extractive uses and/other disturbances associated with pit operations are prohibited within the Amphibian Movement Corridor.**
- **The Amphibian Movement Corridor is to be seeded with the Ontario Seed Company's Rural Ontario Roadside Native Seed Mixture 8145 and will be planted with scattered, native trees and shrubs to provide cover for dispersing amphibians.**

6.4 Habitat of Endangered and Threatened Species

Per the assessment in **Appendix 7**, a total of seven (7) Endangered or Threatened species are considered to have at least a possible likelihood of occurrence within the Study Area given their habitat associations and current distribution in southern Ontario (or were confirmed through the fieldwork program):

1) Bank Swallow (*Riparia riparia*) (**confirmed**)
2) Little Brown Myotis (*Myotis lucifugus*) (**possible**)
3) Northern Myotis (*Myotis septentrionalis*) (**possible**)
4) Tri-colored Bat (*Perimyotis subflavus*) (**possible**)
5) Eastern Red Bat (*Lasiurus borealis*) (**possible**)
6) Hoary Bat (*Lasiurus cinereus*) (**possible**)
7) Silver-haired Bat (*Lasionycteris noctivagans*) (**possible**)

Bank Swallow nesting is presumed to occur on Adjacent Lands to the west within the existing Trafalgar Pit, which is currently under active extraction. This species frequently nests in vertical or near-vertical (i.e., above 75°) aggregate stockpiles and pit faces containing sandy overburden.

The following measure is recommended should Bank Swallow begin occupying future aggregate stockpiles or pit walls within the Site:

- **All aggregate operations within the Site will be undertaken consistent with the document titled "Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario" (OMNRF 2017).**

Suitable roosting habitat for Endangered bats (including both individuals and maternity colonies) is present within vegetation communities within the Significant Woodlands, which will be protected by

a 15 m dripline setback. It is possible that minor woody vegetation removal could be required (outside of the Significant Woodland) at some point during pit operations. As such, a timing restriction on vegetation removal is advised. To simplify the site plan requirements, the tree removal timing window recommended below combines both the principal bat activity period and bird nesting period (in Ecoregion 7E) to address requirements of the *Migratory Birds Convention Act*. To avoid impacts to roosting bats (and nesting birds), the following recommendation is offered:

- **Any necessary removal of natural vegetation to support pit operations will be completed outside the primary bird nesting and bat activity periods (i.e., to be completed between December 1 and March 31).**

6.5 Groundwater Effects

A detailed assessment of potential impacts to the shallow groundwater aquifer stemming from below-water pit extraction within the Site was undertaken through the Hydrological Assessment (Groundwater Science Corp.). The following potential impacts were identified which may pertain to the natural environment, which are typical of aggregate applications which propose below-water table extraction:

- **Site Water Balance:** Changes in the water budget of the Site may result from either 1) increases in evaporation from the pit pond (deficit) and/or 2) increased surface runoff into the pond (surplus).
- **Temporary Water Table Effects:** The removal of sand/gravel during below-water pit extraction may have short-duration localized effects on the groundwater elevation along the pond perimeter.
- **Long-term Water Table Effects:** Permanent changes may result from an overall flattening of the groundwater elevation in the pit pond, which will stabilize at the central range of groundwater elevations (±282.75 masl) present under existing conditions.
- **Natural Heritage Feature Effects:** Increases in groundwater temperature would be anticipated adjacent to the pond edge given exposure of the groundwater surface as a pit pond.

The final maximum pond level elevation per the Hydrogeological Assessment is projected to be an average between the upgradient and downgradient water table contours, at approximately 282.75 masl.

The Hydrogeological Assessment includes the following analysis in relation to the adjacent wetlands:

- PSW units on Adjacent Lands to the west (i.e., "Wetland Area #1", at existing Trafalgar Pit) and east (i.e., "Wetland Area #3", at existing Hunt Road Pit) are considered "cross-gradient" in the context of groundwater flow paths (i.e., are situated along the pond hinge-line) and therefore long-term water level effects are not expected at these features.
- A separate PSW unit immediately north/northeast of the Site (i.e., "Wetland Area #2", at existing Hunt Road Pit) is in a "perched" condition relative to groundwater within the Site, with the underlying silt aquifer base rising eastward from the Trafalgar Pit Extension site to the Hunt Road Pit site. This condition, in addition to recharge that occurs east of Wetland Area #1, is the primary control on east-west groundwater flow in this area. Based on the

relative position and expected continued seasonal groundwater inputs to the wetland, no significant change in water availability or water levels are expected at Wetland Area #2.

- PSW unit to the south (i.e., Wetland Area #4, south of the Site) is located downgradient of the proposed below water extraction. Based on the expected pond equilibration and water balance results, both water levels and water input volumes are expected to be maintained in the long-term.

The Hydrogeological Assessment concludes that groundwater recharge volume and availability at, and near, the Site is not expected to be significantly affected by this proposal. The Hydrogeological Assessment further concludes that temporary drawdown influences and/or long-term water level changes are not expected to extend to local natural environment features (upgradient or downgradient). On this basis, the recommendations contained in **Section 6** to protect the PSW (and other overlapping significant habitats therein) are deemed sufficient.

6.6 Summary of Technical Recommendations

All technical recommendations provided in **Section 6** are reiterated in **Appendix 9**.

7 APPLICABLE NATURAL HERITAGE AND ENVIRONMENTAL POLICIES

The following sections summarize the various municipal, provincial, and federal environmental policies that apply to the proposed ZBA and ARA application, and describe how the recommendations provided in this study will address these policies (where applicable). The overall intent of the NER is to satisfy applicable natural heritage policies.

7.1 Municipality of Thames Centre Official Plan (November 2022)

The Municipality's OP is a legal document prepared as required under section 14.7(3) of the *Planning Act*. An OP sets out goals, objectives, and policies that direct and manage land-use and future development activities and their effects on the social and natural environment of a municipality. Provincial plans that offer direction on matters of provincial interest are implemented principally through the Municipality's OP. Provided herein is a description of relevant environmental and natural heritage policies contained within the Municipality's OP and an assessment of whether the applications address such policies.

The majority of the Subject Property is designated Agricultural while the southwestern wooded area contains two separate natural feature designations (Natural Area and Protection Area) per Schedule A (Land Use Plan) of the Municipality's OP. Provincially Significant Wetland (North Dorchester Swamp UT 24) and Significant Woodland are known from within and adjacent to the Subject Property per Appendix 1 (Part A; Natural Heritage Features) of the Municipality's OP.

Section 3.2 of the Municipality's OP outlines the primary Natural Heritage Feature and Natural Hazard Area policies applicable to this application. A summarized and condensed list of key natural heritage provisions of the Municipality's OP that pertain to the applications considered herein is provided below.

- **Section 3.2.1** outlines the components of the Thames Centre Green-Space System, which includes:

  - **Group A Features** – Provincially Significant Wetlands, Habitat for Endangered and Threatened Species, and Fish Habitat.
    - Development or site alteration is generally prohibited in Group A Features.
  - **Group B Features** – Regionally Significant Woodlands, Significant Woodlands and woodland patches identified by the Middlesex Natural Heritage Study, Significant Valleylands, Significant Wildlife Habitat, Provincially Significant ANSIs, Regionally Significant ANSIs, and ESAs.
    - Development and site alteration may be permitted in Group B Features provided no negative impacts to the features or their associated functions.
  - **Group C Features** – Stream Corridors and Floodplains, natural hazard lands.
    - Development and site alteration may be permitted where compliance with the natural heritage and hazard policies of the OP can be demonstrated and Conservation Authority requirements are addressed.
- **Section 3.2.1** further clarifies that the "three groups" of Green-Space System land use designations should be interpreted as follows:
  - The Natural Area designation includes Group A Features
  - The Protection Area designation includes Group B Features
  - The Environmental Area designation includes Group C Features
- **Section 3.2.2** offers the goals of the Natural Heritage "Green-Space" System, including (amongst others) 1) the identification, protection, and enhancement of natural and environmental features and functions, and 2) recognition that natural heritage and environmental features relate to one another and are best protected through a landscape approach.
- **Section 3.2.3.1** requires the submission of an Environmental Impact Study (EIS) in support of proposals for new development or site alteration where such applications are near or within the general locations of all Group A, B, or C Features.

The results of this study have confirmed the presence of the following Green-Space System components:

- Provincially Significant Wetland (Group A Feature).
- Candidate habitat for Bank Swallow in the existing Trafalgar Pit and candidate habitat for Endangered bats in the Significant Woodland (Group A Feature).
- Significant Woodland (Group B Feature).
- Candidate/confirmed Significant Wildlife Habitat (Group B Feature).

Terrastory reviewed potential impacts to the identified components of the Municipality's Green-space System – including the PSW, candidate/confirmed SWH, and potential habitat of Endangered and Threatened species – in **Section 6** of this NER. The Site Plan provides a 15 m setback (extraction and site alteration) from the dripline of the Significant Woodlands, and no extraction or site alteration activities are proposed within 50 m of any wetland. Extraction and site alteration will be restricted from all Group A and Group B Features (Group C Features are absent), along with appropriate setbacks. A Buffer Enhancement Area will be established for the 15 m Significant Woodland setback which will serve to convert tilled agricultural land to natural cover. Provided that Terrastory's recommended mitigation measures (summarized in **Appendix 9**) are carried out in full, no negative impacts are anticipated to any natural feature that forms part of the Municipality's Green-Space System. Based on the preceding discussion, Terrastory can conclude that the

applications appropriately address the natural heritage protection provisions of the Municipality's OP.

7.2 County of Middlesex Official Plan (July 2023)

The majority of the Subject Property is designated Agricultural Area per Schedule A (Land Use) of the County's OP, while the wooded area within the southwestern corner of the Subject Property is contained within the County NHS per Schedule C (Natural Heritage System).

Sections 2.2.1 and 2.3.10 of the County's OP outlines the primary natural heritage policies applicable to this application. A list of key provisions from the County's OP that pertain to the protection of natural heritage features and areas are provided below.

- **Section 2.2.1** identifies the components of the Country's Natural Environment including the following:
    a) Natural Hazards (e.g., steep slope hazards, unstable soils, fill regulated areas, flood regulated watercourses and associated floodplains);
    b) Natural Heritage System (e.g., woodlands, thickets, meadows, wetlands, watercourses and water bodies, connected vegetation features, significant wildlife habitat, significant valleylands, aquatic ecosystems including fish habitat, habitat supporting Species at Risk, and ANSI's); and
    c) Groundwater Features (e.g., significant groundwater recharge areas, highly vulnerable aquifers, well head protection areas).
- **Section 2.2.1.2** provides general policies for the County's Natural Environment, including the need to direct new development away from the Natural Environment (where possible) and the need to prepare a Development Assessment Report (DAR) which summarizes the proposed development, on-site natural features, potential impacts, and recommended mitigation measures.
- **Section 2.2.1.3** provides more specific policies for the County's Natural Heritage System, including:
    a) The need for a DAR to determine the significance and protection needs of needs of the following where present:
        - Natural heritage features not currently included in the Natural Heritage System are considered candidates for significance until a DAR is completed to assess their significance.
        - Fish habitat as identified by the DFO and require the completion of appropriate studies to ensure compliance with the *Fisheries Act*.
        - Significant habitat of Endangered and Threatened species as identified by the Province, in accordance with the *Endangered Species Act*, 2007.
        - Significant Wildlife Habitat identified and evaluated in consultation with the MNRF.
    b) That the County's Natural Heritage System is to be designated in local municipalities Official Plans and permitted uses should generally be restricted to:
        - Existing uses, including limited expansions where it has been demonstrated that such expansion will have no negative impact upon the natural features or their ecological functioning;
        - Agricultural uses and normal farm practices;
        - Conservation;

  - Forestry, fisheries and wildlife management;
  - Passive recreation'
  - Public parks and trails, and;
  - Horticulture.
- **Section 2.2.3.2** states that consideration of the expansion of existing aggregate operations and of new aggregate extraction areas shall include an evaluation on the impact on the Natural Heritage System including ground and surface waters.
- **Section 2.2.3.3** identifies that prior to making a decision on an amendment to a local official plan or zoning by-law to permit a new extractive use, or to allow the expansion of an existing extractive use, the local municipality shall consult with the County, the Conservation Authority, and the Province to ensure the effects on any Natural Heritage System are property considered.
- **Section 2.3.10** identifies natural heritage features which comprise the County NHS.
- **Section 2.3.10** further prohibits development and site alteration within PSWs, fish habitat, and Endangered/Threatened species habitat (except in accordance with provincial and federal requirements).
- **Section 2.3.10** only permits development or site alteration in Significant Woodlands, Significant Valleylands, Significant ANSIs, and Significant Vegetation Groups/Vegetation Patches (per the MNHSS) where it has been demonstrated that there will be no negative impacts on the NHS features or their ecological functions.
- **Section 2.3.10** only permits development or site alteration on Adjacent Lands (i.e., within 120 m of the NHS) where such activities avoid any of the following:
  a) a loss of ecological functions;
  b) subsequent demand for future development which will negatively impact on existing ecological functions of the NHS;
  c) conflict with existing site specific NHS management practices; or
  d) negatively impact ecological linkage functions which exist within adjacent lands.

The County's natural heritage policies are overall consistent with the Municipality's policies as described in **Section 7.1** above. Provided that Terrastory's technical recommendations (summarized in **Appendix 9**) are implemented in full, no impacts to any significant natural heritage feature protected by the County's OP are anticipated. As such, the rezoning application is deemed appropriate in the context of County natural heritage policies.

7.3 *Aggregate Resources Act*, R.S. O. 1990, c. A.8

The information and recommendations provided in this report satisfy the requirements for completion of a Natural Environment Report pursuant to Section 2.2 of the compiled Aggregate Resources of Ontario Standards. The following significant natural features per ARA policies were identified within the Study Area:

- Significant Woodland
- Significant Wildlife Habitat, including:
  - Bat Maternity Colonies (**candidate**)
  - Amphibian Breeding Habitat – Woodland (**confirmed**)
  - Terrestrial Crayfish Habitat (**confirmed**)
  - Habitats for Species of Conservation Concern:

        - Barn Swallow (**confirmed**)
        - Eastern Wood-pewee (**confirmed**)
        - Black Dash (**candidate**)
        - Monarch (**candidate**)
        - Carey's Sedge (**confirmed**)
    - Amphibian Movement Corridor (**confirmed**)
- Candidate or Confirmed Habitat of Endangered and Threatened Species, including:
    - Bank Swallow (**confirmed**)
    - Eastern Red Bat (**candidate**)
    - Hoary Bat (**candidate**)
    - Little Brown Myotis (**candidate**)
    - Northern Myotis (**candidate**)
    - Silver-haired Bat (**candidate**)
    - Tri-colored Bat (**candidate**)

Terrastory reviewed potential impacts to the documented natural heritage features components in **Section 6** of this NER. The Site Plan (see **Appendix 8**) incorporates a minimum 15 m setback from the Significant Woodland, while no extraction or site alteration activities are proposed within 50 m of the PSW. A Buffer Enhancement Area will be established within the 15 m Significant Woodland setback which will serve to convert tilled agricultural land to natural cover. These setbacks also encompass the above species' habitats and features (as they are restricted to the woodland and wetlands contained therein). A comprehensive mitigation and enhancement framework is also provided per the technical recommendations in **Appendix 9** (which have been incorporated directly onto the Site Plan), which also includes a timing restriction on vegetation removal.

Implementation of the technical recommendations allow for appropriate protection of all significant natural features consistent with relevant ARA standards.

7.4 Provincial *Endangered Species Act*, S.O. 2007, c. 6

The *Endangered Species Act* (ESA) is administered by MECP and protects designated Endangered and Threatened species in Ontario from being "killed" or "harmed" (Section 9) or having their habitat "damaged" or "destroyed" (Section 10). "Habitat" is defined in Subsection 2(1) as a "dwelling-place" (and immediately surrounding area) for animals, the "critical root zone" for vascular plants, and for other species (e.g., bryophytes, lichens) "an area on which any member of a species directly depends in order to carry on its life processes". Activities that constitute habitat damage and/or destruction can only proceed subject to the requirements of Section 17 or (in limited circumstances) an activity registration under O. Reg. 242/08.

The ESA will be replaced by the recently enacted *Species Conservation Act* (SCA) once proclaimed into force at a later date. Until that time, the statutory requirements of the ESA (as described above) remain in effect.

A detailed assessment of confirmed and potential Endangered and Threatened habitats within the Study Area is provided in **Appendix 7**. Per this assessment, and provided that relevant technical recommendations outlined in **Section 6** are implemented in full, impacts to Bank Swallow and Endangered bats (or their habitat) will be avoided.

7.5 Federal *Species at Risk Act*, S.C. 2002, C. 29

The *Species at Risk Act* (SARA) was enacted to prevent wildlife and plant species in Canada from disappearing, and to enable legislative provisions intended to recover and/or manage listed species. Section 32 of SARA protects extirpated, endangered, or threatened species listed on Schedule 1 from being killed, harmed, harassed, captured, or taken, while section 33 prohibits damage or destruction of their "residence" (where applicable). Subsection 58(1) prohibits the destruction of "Critical Habitat" as described in the relevant recovery strategy or action plan.

While COSEWIC is the independent, scientific body responsible for assessing a species' status in Canada, the decision to proceed with listing such species under Schedule 1 of SARA is made by the Governor in Council per subsection 27(1.1); the species listing process is therefore discretionary. Further, protection of a species' Critical Habitat only occurs once the federal Recovery Strategy has been finalized and a Critical Habitat Order is issued. Finally, protections afforded to listed species (s. 32), their Residence (s. 33), and their Critical Habitat (s. 58) generally only apply to federal lands, excepting aquatic species and migratory birds (or where a Ministerial Order has been issued).

As the Study Area represents privately-owned land, only those Endangered or Threatened species listed under Schedule 1 of SARA which are aquatic or migratory bird species are afforded protection. In the context of the proposed development considered herein, this includes:

- Bank Swallow (federally Threatened); and
- Barn Swallow (federally Threatened).

Barn Swallow has been afforded a formal residence description by Environment and Climate Change Canada (ECCC), which includes all nests (whether actively occupied or not). No buildings or structures which may contain Barn Swallow nests will be removed as part of the proposed pit operations. No Critical Habitat Order has been published for Barn Swallow under SARA, and thus there is no Critical Habitat (as defined) protection for this species within the Study Area.

Bank Swallow is listed as "Threatened" under Schedule 1 of SARA. As a migratory bird species under federal jurisdiction, Bank Swallow "Residences" are protected under Section 33 of SARA on both federal and non-federal land. ECCC has published a formal Residence Description for Bank Swallow (Government of Canada 2019a), which defines a "residence" as an occupied burrow. The occupied burrow is protected under SARA as a residence from the date when adults are first seen entering or leaving the burrow to the date when a bird is last seen at the burrow. The Site currently lacks suitable nesting habitat for this species, which may be nesting in the active Trafalgar Pit to the west. The Study Area falls outside of any Critical Habitat as defined in the Recovery Strategy (Environment and Climate Change Canada 2022), and thus there are no permitting requirements under SARA for Bank Swallow related to Critical Habitat.

7.1 Federal *Fisheries Act*, R.S.C. 1985, c. F-14

The amended federal *Fisheries Act* (Bill C-68) received Royal Assent in June 2019 while the updated fish and fish habitat protection provisions came into force in August 2019. Subsection 34.4(1) of the amended *Fisheries Act* prohibits all work, undertaking, or activity from causing the death of fish (other than fishing). Subsection 35(1) requires that project activities not result in the "*harmful alteration, disruption or destruction of fish habitat*" (HADD) unless undertaken in accordance with the requirements of a statutory exemption per subsection 35(2). Based on the Fish and Fish Habitat

Protection Policy Statement (August 2019), HADD is interpreted by DFO to include "*any temporary or permanent change to fish habitat that directly or indirectly impairs the habitat's capacity to support one or more life processes of fish*".

No in-water works or fill placement below the high-water mark of a surface water feature containing fish habitat is proposed through this application. Consistent with the assessment carried out in **Section 6**, it has been determined that the proposed development plan is consistent with the fish and fish habitat protection provisions outlined in the *Fisheries Act*.

7.2 Federal *Migratory Birds Convention Act*, S.C. 1994, c. 22

Subsection 5(1) of the Migratory Birds Regulations under the *Migratory Birds Convention Act, 1994* (MBCA) prohibits the disturbance or destruction of nests, eggs, or nest shelters of a migratory bird without authorization. Subsection 5(2) of the Migratory Birds Regulations allows for damage or destruction of nests which lack a live bird or viable egg with the exception of inactive nests associated with species listed under Schedule 1. In Ontario, the nests of Schedule 1 species are afforded year-round protection (i.e., regardless of the presence or absence of a live bird or viable egg), inclusive of the following species:

- Black-crowned Night Heron (*Nycticorax nycticorax*)
- Cattle Egret (*Bubulcus ibis*)
- Great Blue Heron (*Ardea herodias*)
- Great Egret (*Ardea alba)*
- Green Heron (*Butorides virescens*)
- Pileated Woodpecker (*Dryocopus pileatus*)
- Snowy Egret (*Egretta thula*)

The provincial *Fish and Wildlife Conservation Act, 1997* (FWCA) extends the protection of bird nests and eggs to certain non-migratory species not listed under the Migratory Birds Regulations (e.g., Corvids, Strigids, Accipitrids). Section 7(1) of the FWCA prohibits a person from destroying, taking, or possessing the nest or eggs of a bird that belongs to a species that is wild by nature. Section 7(3) identifies that section 7(1) of the FWCA does not apply to a person who destroys, takes, or possesses the nest or eggs of a bird described in subsection (a) in accordance with the authorization of the Minister, or subsection (b) in the circumstances prescribed by the regulations. The nests of certain non-migratory bird species are not protected under the FWCA (e.g., Red-winged Blackbird).

Provided that the recommendations outlined in **Section 6** are implemented in full (i.e., prohibition on vegetation removal during the bird breeding season), no impacts to breeding birds or bird nests protected by the MBCA or FWCA are anticipated.

8 CONCLUSIONS

In accordance with applicable standards for aggregate license applications pursuant to the *Aggregate Resources Act*, the preceding Natural Environment Report provides a detailed characterization of the natural environment occurring within and adjacent to the proposed eastward extension of Trafalgar Pit.

This NER has been prepared in support of aggregate licence application (for consideration by MNR and relevant commenting agencies) and Zoning By-law Amendment application (for consideration

by the Municipality and relevant commenting agencies). Included herein is a comprehensive approach to identifying the presence or absence of several significant natural features afforded varying degrees of protection by applicable environmental policies, particularly the ARA Provincial Standards, *Endangered Species Act*, and *Migratory Birds Convention Act*. The potential for negative effects to the documented significant natural features are described with mitigation measures and technical recommendations offered to avoid or minimize such impacts and/or offer enhancements as appropriate.

Based on the findings presented in this report, the following natural features with ecological and/or policy significance have been identified within the Study Area:

- **Significant Woodlands** occur along the eastern edge and southwestern corner of the Site.
- The Significant Woodland contains overlapping **Significant Wildlife Habitat** which further overlaps with **Provincially Significant Wetland (North Dorchester Swamp UT 24)**, particularly significant amphibian breeding habitat, habitat of Terrestrial Crayfish, and habitats for species of conservation interest (e.g., Eastern Wood-pewee, Carey's Sedge).
- The Significant Woodlands also contains potential habitat for **Endangered Bats**.
- The **Threatened Bank Swallow** may be nesting on Adjacent Lands to the west of the Site (i.e., within the existing Trafalgar Pit).
- An **Amphibian Movement Corridor** identified through a previous licence application will be relocated to the northern limit of the Site.

The Site Plan incorporates a 15 m setback from the Significant Woodland. This setback encompasses all candidate/confirmed Significant Wildlife Habitat types as well as habitat for Endangered Bats. A Buffer Enhancement Area will be established within the 15 m Significant Woodland setback which will serve to convert tilled agricultural land to natural cover. Additional technical recommendations (e.g., timing restriction on vegetation removal) are further offered herein.

Overall, it has been determined that no negative impacts to the above-noted significant natural features will occur provided that all technical recommendations offered in **Section 6** are implemented in full. The ARA Site Plan that directs and constrains pit operations (**Appendix 8**) incorporates all technical recommendations made herein.

9 REFERENCES

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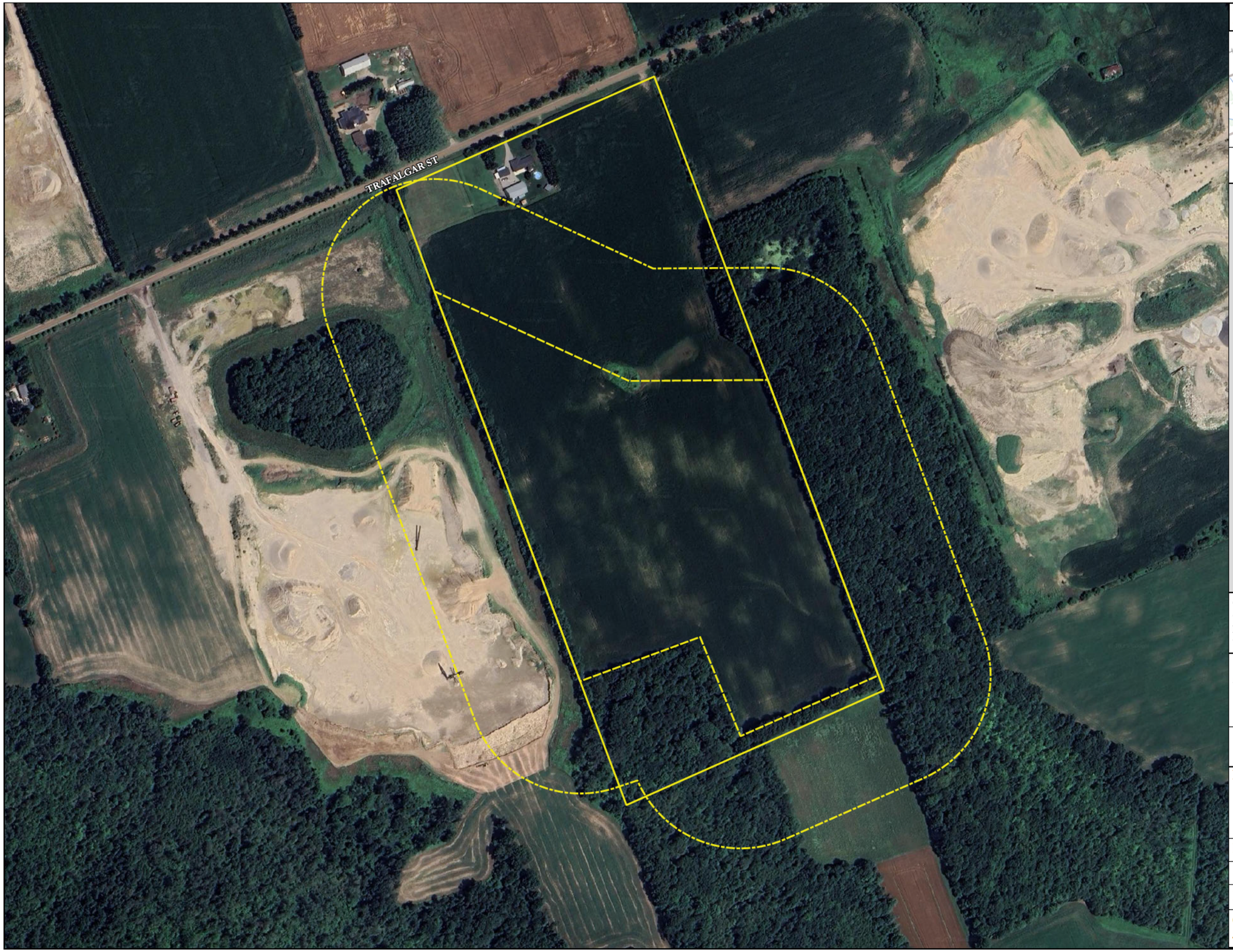
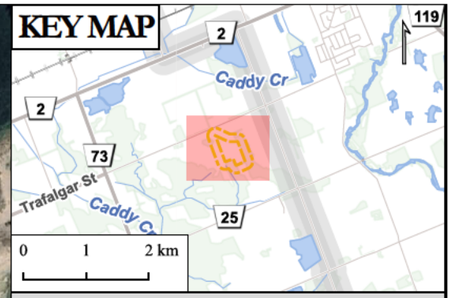


KEY MAP



Legend

Area of Assessment
- Subject Property
- Site (Proposed Area to be Licensed)
- Adjacent Lands (120 m from the Site)

GENERAL NOTES:
-Features depicted herein should not be used in place of a professional survey.
-Numeric scale is for a 11x17 inch print.

TERRASTORY
environmental consulting inc.
info@terrastoryenviro.com 289.309.7040

N | 1:4,000 | 0 50 100 150 m

Location:
Trafalgar Pit Extension,
Municipality of Thames Centre

Project No.: 24200
Date: 2025-12-16
By: JC **Checked:** TK
Orthophotograph Date: June 2025 (Google Earth)

Figure #1:
Location of the Site and Study Area

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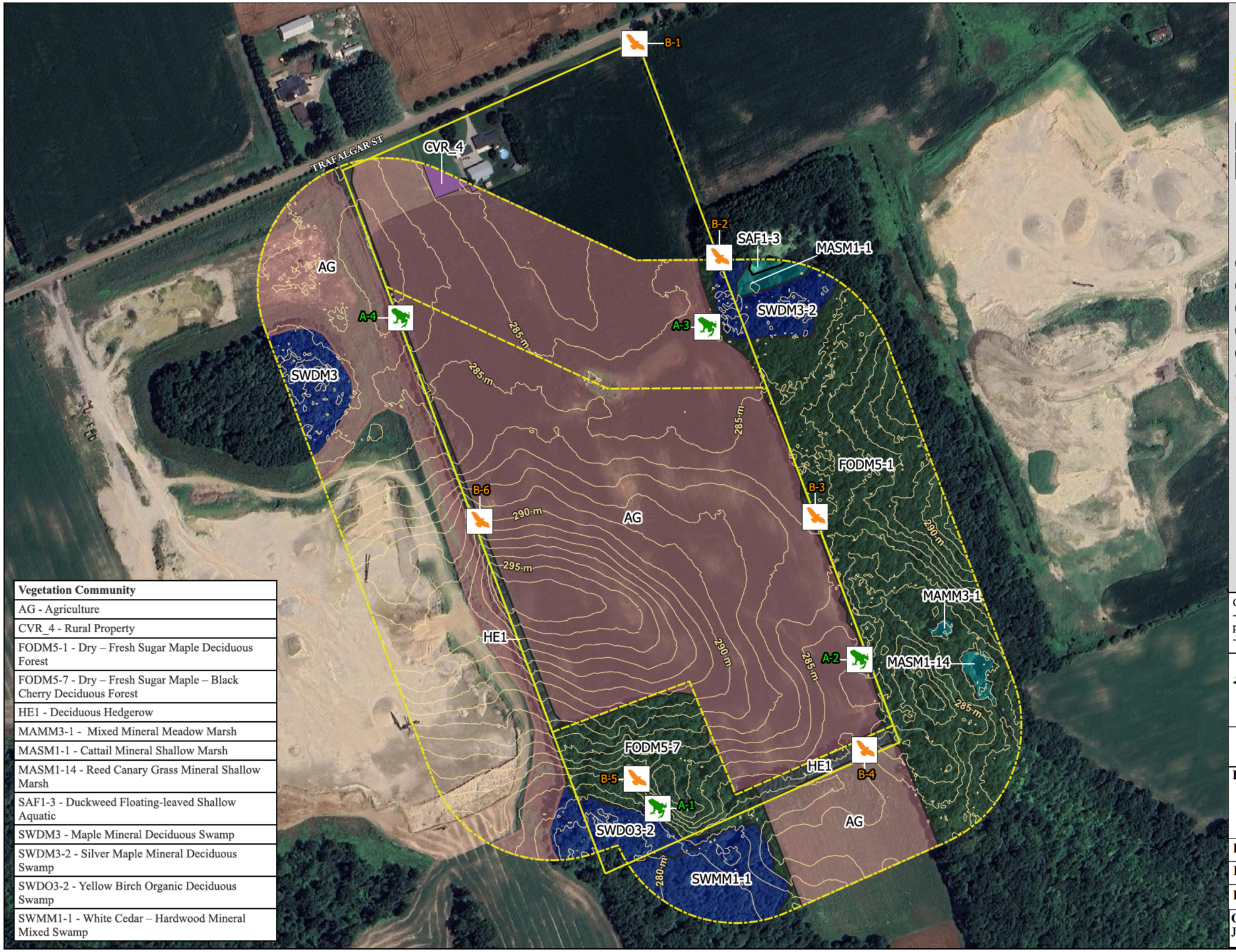

Vegetation Community
AG - Agriculture
CVR_4 - Rural Property
FODM5-1 - Dry – Fresh Sugar Maple Deciduous Forest
FODM5-7 - Dry – Fresh Sugar Maple – Black Cherry Deciduous Forest
HE1 - Deciduous Hedgerow
MAMM3-1 - Mixed Mineral Meadow Marsh
MASM1-1 - Cattail Mineral Shallow Marsh
MASM1-14 - Reed Canary Grass Mineral Shallow Marsh
SAF1-3 - Duckweed Floating-leaved Shallow Aquatic
SWDM3 - Maple Mineral Deciduous Swamp
SWDM3-2 - Silver Maple Mineral Deciduous Swamp
SWDO3-2 - Yellow Birch Organic Deciduous Swamp
SWMM1-1 - White Cedar – Hardwood Mineral Mixed Swamp

Legend

Area of Assessment
- Subject Property
- Site (Proposed Area to be Licensed)
- Adjacent Lands (120 m from the Site)

Survey Stations
- Anuran Calling Stations
- Breeding Bird Survey Stations

Biophysical Features and Conditions

Terrain
- Topographic Contours (SWOOP DTM)

Vegetation Communities
- Forest
- Hedgerow
- Swamp
- Marsh
- Shallow Water
- Constructed
- Agriculture

GENERAL NOTES:
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-Numeric scale is for a 11x17 inch print.

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N | 1:3,500 | 0 25 50 75 100 125 m

Location:
Trafalgar Pit Extension,
Municipality of Thames Centre

Project No.: 24200
Date: 2025-12-16
By: JC **Checked:** TK
Orthophotograph Date: June 2025 (Google Earth)

Figure #2:
Biophysical Features and Conditions

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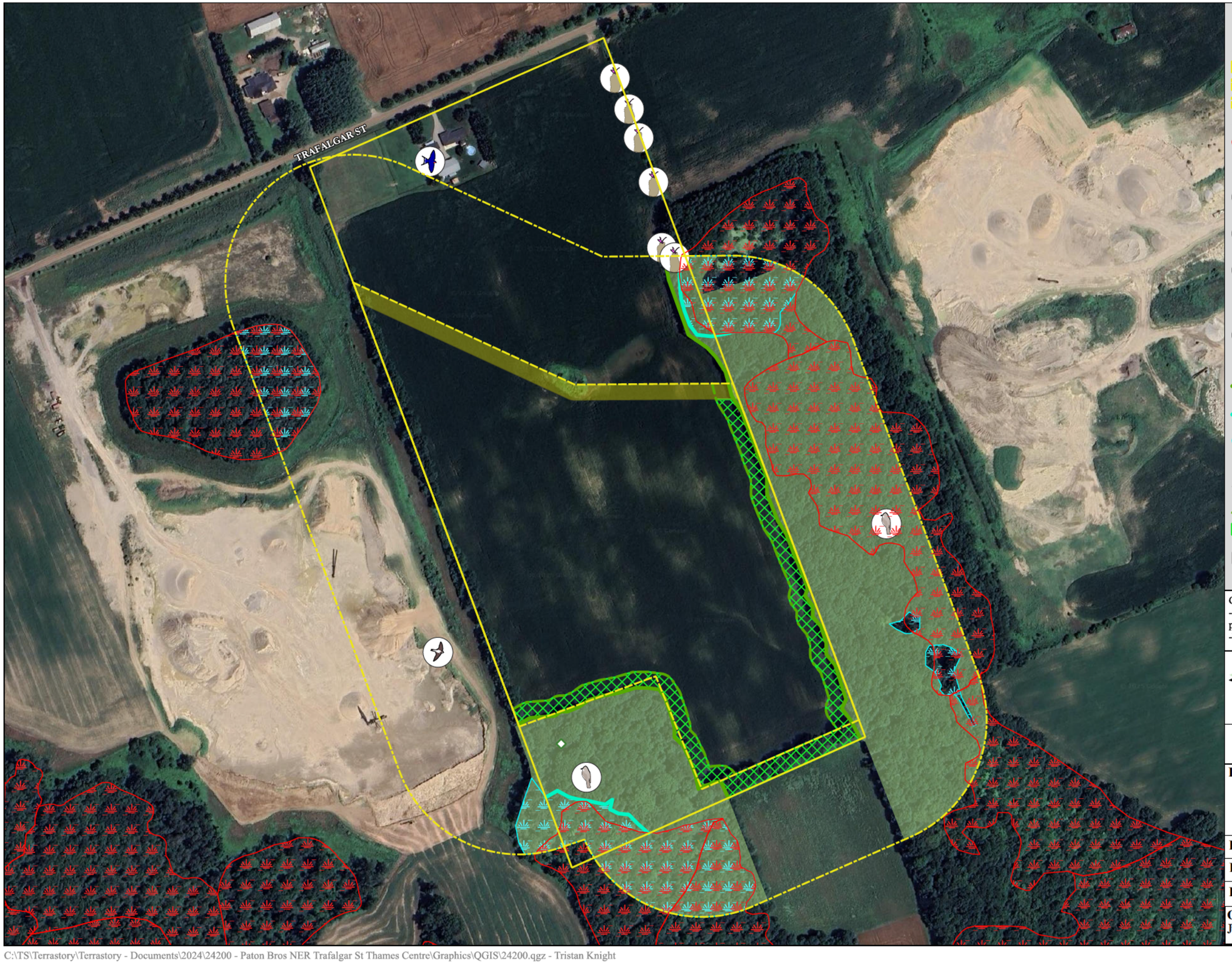

Legend

Area of Assessment

- Subject Property
- Site (Proposed Area to be Licensed)
- Adjacent Lands (120 m from the Site)

Significant Natural Features - Agency Identified

- Provincially Significant North Dorchester Swamp UT 24

Significant Species - Terrastory

- Bank Swallow (Riparia riparia) Threatened
- Barn Swallow (Hirundo rustica) Special Concern
- Eastern Wood-pewee (Contopus virens) Special Concern
- Carey's Sedge (Carex careyana) Provincially Rare (S2)
- Terrestrial Crayfish Chimney

Significant Natural Feature Boundaries

- Dripline of Significant Woodland (delineated by Terrastory on-site)
- Wetland Boundary per OWES (delineated by Terrastory on-site)
- Wetlands Mapped by Terrastory
- Significant Woodland Mapped by Terrastory

Natural Environment Recommendations

- Dripline of Significant Woodland + 15 m
- Buffer Enhancement Area (to remain or become Natural Self-sustaining Vegetation)
- Relocated Amphibian Movement Corridor (to be Seeded and become Natural Self-sustaining Vegetation)

GENERAL NOTES:
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N | 1:3,500 | 0 25 50 75 100 125 m

Location:
Trafalgar Pit Extension,
Municipality of Thames Centre

Project No.: 24200
Date: 2025-12-17
By: JC **Checked:** TK
Orthophotograph Date: June 2025 (Google Earth)

Figure #3:
Significant Natural Features With Technical Recommendations

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Appendix 1. Curriculum Vitae

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Tristan L. Knight, M.E.S., M.Sc., I.S.A., C.E.R.P.
Senior Ecologist / President
Curriculum Vitae

CAREER HISTORY AND EDUCATION

2018–Present	**Senior Ecologist / President, Terrastory Environmental Consulting Inc.**
2014 – 2018	Ecologist / Botanist, RiverStone Environmental Solutions Inc.
2013–2014	Watershed Restoration Technician, Credit Valley Conservation Authority
2012–2013	Terrestrial Ecologist, Aquafor Beech Ltd.
2011–2012	Wetland Biologist / Asst. SAR Biologist, Ontario Ministry of Natural Resources
2009–2011	Master of Science, SUNY College of Environmental Science and Forestry, Syracuse, NY, USA
2007–2009	Master of Environmental Studies, York University, Toronto, ON
2003–2007	Hons. Bachelor of Arts, University of Western Ontario, London, ON

RELEVANT CERTIFICATIONS AND TRAINING

2024	Headwater Drainage Features Certification
2024	Ontario Building Code Part 8 Sewage System Course
2023	Certified Ecological Restoration Practitioner (CERP)
2023	DFO Ontario Freshwater Mussel Identification Workshop
2021	ISA Tree Risk Assessment Qualification (TRAQ) Renewal
2019	Butternut Health Assessor (#268) Renewal
2016	Managed Forest Plan Approver (#421)
2015	Vegetation Sampling Protocol
2014	Ontario Stream Assessment Protocol (OSAP)
2014	Fish Identification "Level 2"
2014	Electrofishing "Class 2"
2013	ISA Certified Arborist #ON-1663A
2012	Ontario Benthos Biomonitoring Network (OBBN)
2012	Ontario Wetland Evaluation System (OWES) Instructor
2011	Family-level Benthic Invertebrate ID Workshop
2011	Ontario Wetland Evaluation System (OWES)
2011	Ecological Land Classification (ELC)

PROFESSIONAL EXPERIENCE

Tristan has over thirteen years of experience as an environmental professional acting in diverse private- and public-sector roles. He applies intimate knowledge of the environmental policy context guiding development in Ontario to projects large and small. Tristan's regular client base spans the entire development industry and includes land developers, aggregate producers, municipal infrastructure, and green energy. Tristan is also a highly accomplished field ecologist with professional training in innumerable provincial collection protocols including Ecological Land Classification, Ontario Wetland Evaluation System, Ontario Stream Assessment Protocol, Ontario Benthos Biomonitoring Network, and Vegetation Sampling Protocol. He is an ISA-certified Arborist, ISA-qualified Tree Risk Assessor, Butternut Health Assessor, and Managed Forest Plan approver. He is also a former instructor of the Ontario Wetland Evaluation System certification course and a current instructor with the Ontario Master Naturalist Program (Lakehead University, Orillia Campus) and Ontario Natural Certification Course (Kortright Centre).

Drawing on a diverse mixture of project management and field expertise, he is single-mindedly focused on generating high-quality deliverables that exceed expectations. Above all, Tristan undertakes his work with utmost integrity, objectiveness, and concern for detail.

The following is a selected list of Tristan's consulting project experience since founding Terrastory in February 2018.

Environmental Impact Studies for Land Development (Large Applications)

2018-present **Environmental Impact Statement** in the Township of Severn in support of an estate residential subdivision.

- Three-season ecological surveys and assessments (amphibians, vascular plants, vegetation mapping, bats, etc.).
- Graphics, reporting, policy conformity assessments.

2019-present **Environmental Impact Statement** in the City of Welland for an 870 unit residential and mixed-use subdivision.

- Three-season ecological surveys and assessments (amphibians, breeding birds, bat acoustic monitoring, vascular plants, vegetation mapping, etc.).
- Wetland and woodland enhancement/compensation plans.
- Rare species relocation plans and implementation.
- Graphics, reporting, policy conformity assessments.

2019 **Environmental Impact Statement** in the City of Orillia in support of a waterfront community.

- Three-season ecological surveys and assessments (e.g., breeding birds, vascular plants, vegetation mapping, bat habitat, aquatic habitat, etc.).
- Graphics, reporting, policy conformity assessments.

2020 **Environmental Impact Statement** in the City of Orillia in support of a waterfront community.

- Three-season ecological surveys and assessments (e.g., breeding birds, vascular plants, vegetation mapping, bat habitat, aquatic habitat, etc.).
- Butternut Health Assessment.
- Graphics, reporting, policy conformity assessments.

2020-present **Environmental Impact Statement** in the Township of Wainfleet in support of an estate residential community.

- Ecological assessments and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2020-present **Subwatershed Impact Study** in the Town of Halton Hills in support of a multi-phase warehouse distribution centre.

- Three-season ecological surveys and assessments (amphibians, breeding birds, owls, vascular plants, hawthorns, vegetation mapping, headwater drainage features, odonates, butterflies, etc.).
- Arborist Report and Tree Protection Plan.
- Graphics, reporting, policy conformity assessments.
- Review and integration of other technical disciplines including fluvial geomorphology, hydrogeology, hydrology and hydraulics, stormwater management, landscape architecture.

Environmental Impact Studies for Land Development (Small Applications)

2018 **Environmental Impact Statement** in the City of Kawartha Lakes in support of a site plan and Kawartha Conservation permit application.

- Ecological and species at risk surveys.
- Wetland delineation.
- Graphics, reporting, policy conformity assessments.

2018 **Environmental Impact Statement** in the Township of Ramara in support of a severance application.

- Ecological and species at risk surveys.
- Wetland staking.
- Graphics, reporting, policy conformity assessments.

2018 **Environmental Impact Statement** in the City of Orillia in support of a site plan application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2018-2019 **Natural Heritage Evaluation** in the City of Burlington in support of a severance application and Niagara Escarpment development permit.

- Ecological and species at risk surveys.
- Woodland dripline staking with agency staff.
- Graphics, reporting, policy conformity assessments.

2019 **Environmental Impact Statement** in the Town of Gravenhurst in support of a site plan application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2019 **Environmental Impact Statement** in the Township of Severn in support of a site plan application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2019 **Natural Heritage Evaluation** in the Town of Caledon in support of a site plan application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2019 **Natural Heritage Evaluation** in the Town of Whitchurch-Stouffville in support of a site plan and TRCA permit application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2019 **Environmental Impact Statement** in the Township of Wainfleet in support of a site plan application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2019 **Environmental Impact Statement** in the Township of Chatsworth in support of a site plan application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2020 **Environmental Impact Statement** in the City of Kawartha Lakes in support of a site plan application.

- Ecological and species at risk surveys.
- Wetland compensation plan.
- Graphics, reporting, policy conformity assessments.

2021-present **Environmental Impact Statement** in the Town of Whitby in support of a site plan application and Conservation Authority permit.

- Three-season biophysical assessments and surveys.
- Graphics, reporting, policy conformity assessments.

Environmental Impact Studies for Land Development (Other)

2018-2019 **Environmental Impact Statement** in the Township of Woolwich in support of a site plan application and GRCA permit application to construct a boardwalk trail.

- Three-season ecological surveys and assessments (e.g., breeding birds, vascular plants, wetland delineation, vegetation mapping, etc.).
- Wetland delineation with GRCA staff.

- Graphics, reporting, policy conformity assessments.

2018-2019 **Environmental Impact Statement** in the Town of Whitchurch-Stouffville in support of a site plan application to expand an existing cemetery.

- Tree inventory, terrestrial/wetland/aquatic surveys, Butternut Health Assessment.
- Graphics, reporting, policy conformity assessments.

2018 **Environmental Impact Statement** in the City of Welland in support of a site plan application to construct a storage facility.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

Natural Environment Reports for Aggregate Applications

2019-2020 **Natural Environment Report** in the Municipality of Thames Centre in support of an *Aggregate Resources Act* application and related *Planning Act* applications.

- Ecological and species at risk surveys (e.g., breeding birds, vegetation mapping, vascular plants, etc.).
- Graphics, reporting, policy conformity assessments.

2019-2020 **Natural Environment Report** in the Township of Huron East in support of an *Aggregate Resources Act* application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2019 **Natural Environment Report** in the County of Haldimand (Hagersville) in support of an *Aggregate Resources Act* application.

- Ecological and species at risk surveys.
- Graphics, reporting, policy conformity assessments.

2020 **Natural Environment Report** in the Municipality of Thames Centre (Thorndale) in support of an *Aggregate Resources Act* application and related *Planning Act* applications.

- Ecological and species at risk surveys (e.g., breeding birds, vegetation mapping, vascular plants, etc.).
- Graphics, reporting, policy conformity assessments.

Arborist Report and Tree Preservation Plans

2018 **Arborist Report and Tree Preservation Plan** in the Town of Whitchurch-Stouffville in support of a cemetery expansion.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2018 **Arborist Report and Tree Preservation Plan** in the City of Hamilton in support of a condominium development.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2018 **Arborist Report and Tree Preservation Plan** in the City of Toronto in support of a cemetery expansion.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2018 **Arborist Report and Tree Preservation Plan** in the Town of Milton in support of a new school and block development plan.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2019 **Arborist Report and Tree Preservation Plan** in the Town of Caledon in support of a site plan application.

- Tree inventory, health assessment, structural assessment.

- Graphics, reporting, policy conformity assessments.

2019 **Tree Saving Plan** in the City of Thorold in support of a residential subdivision.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2019 **Arborist Report and Tree Preservation Plan** in the Town of Ajax in support of a condominium development.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2019 **Arborist Report and Tree Preservation Plan** in the City of Toronto in support of a condominium development.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2019 **Arborist Report and Tree Preservation Plan** in the City of Hamilton in support of an Enbridge gas pipeline expansion.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2020 **Arborist Report and Tree Preservation Plan** in the City of Kitchener in support of a church conversion to residential purposes.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2020 **Arborist Report and Tree Preservation Plan** in the City of Toronto in support of a large distribution centre.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2020 **Arborist Report and Tree Preservation Plan** in the City of Burlington in support of a residential apartment building.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2020 **Arborist Report and Tree Preservation Plan** in the Town of Oakville in support of a school construction.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

2020 **Tree Management Plan** in the Town of Oakville in support of a school construction.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy conformity assessments.

Municipal Class Environmental Assessments

2020-ongoing **Municipal Class Environmental Assessment (Schedule A)** in the Township of Severn in support of a culvert replacement.
- Ecological and species at risk surveys (e.g., fish habitat assessment, vegetation surveys, etc.).
- Ecological input to alternatives assessment.
- Graphics, reporting, policy conformity assessments.

2020 **Natural Heritage Review** in support of an Environmental Assessment of a proposed new Forcemain to an existing Wastewater Treatment plan in the City of Port Colborne.
- Ecological and species at risk surveys (e.g., fish habitat assessment, vegetation surveys, etc.).
- Ecological input to alternatives assessment.
- Graphics, reporting, policy conformity assessments.

Natural Heritage Constraints Analyses

2018 **Natural Heritage Constraints Analysis** in the Town of Bracebridge to assess development

potential.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

2018 **Natural Heritage Constraints Analysis** in the Township of Puslinch to assess development potential.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

2018 **Natural Heritage Constraints Analysis** in the Town of East Gwillimbury to assess development potential.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

2018 **Natural Heritage Constraints Analysis** in the County of Brant to assess potential to construct a wind turbine and secure a future Renewable Energy Approval.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

2018 **Natural Heritage Constraints Analysis** in the City of Hamilton to assess development potential.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

2019 **Natural Heritage Constraints Analysis** in the City of Kawartha Lakes to assess development potential to expand an existing aggregate quarry.

- Terrestrial/wetland/aquatic surveys, species at risk surveys.
- Graphics, reporting, policy assessments.

2019 **Natural Heritage Constraints Analysis** in the Town of Oakville to assess development potential.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

2019 **Natural Heritage Constraints Analysis** in the City of Welland to assess development potential for a large-scale residential condominium application.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

2019 **Natural Heritage Constraints Analysis** in the City of Kawartha Lakes to assess development potential for a large-scale residential subdivision.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

2019 **Natural Heritage Constraints Analysis** in the City of Welland to assess development potential on a brownfield for a large-scale residential subdivision.

- Site reconnaissance assessment.
- Graphics, reporting, policy assessments.

Species at Risk Surveys and Recovery

2018 **Kentucky Coffee-tree Assessment** in the Town of Niagara-on-the-Lake in support of a residential subdivision.

- Inventory for Kentucky Coffee-tree.
- Graphics, reporting.
- Submission of Information Gathering Form to MNRF.

2018 **Species at Risk Assessment** in the County of Haldimand in support of a severance application.

- Species at Risk surveys (e.g., vascular plants, habitat-based assessment for other taxa).
- Graphics, reporting.
- Correspondence with MNRF.

2018 **Butternut Health Assessment** in the Town of Whitchurch-Stouffville in support of a cemetery expansion.

- Butternut Health Assessment.
- Submission of relevant reporting and correspondence with MNRF.

2018 **Golden-eye Lichen (Great Lakes population) Recovery Strategy** for the Ministry of the Environment, Conservation, and Parks.

2019 **Chimney Swift Surveys** in the City of Hamilton in support of a redevelopment plan.

- Chimney Swift entrance surveys.
- Graphics, reporting.

2019 **Bat Habitat Assessment** in the City of Hamilton in support of a site plan application.

- Habitat-based surveys.
- Graphics, reporting.

2022 **Spoon-leaved Moss Recovery Strategy** for the Ministry of the Environment, Conservation, and Parks.

2022 **White-rimmed Shingle Lichen Recovery Strategy** for the Ministry of the Environment, Conservation, and Parks.

2023 **Lake Opeongo Lake Whitefish (large- and small-bodied populations) Recovery Strategy** for the Ministry of the Environment, Conservation, and Parks.

Fish Habitat Impact Assessments

2018 **Fish Habitat Impact Assessment** in the Township of Muskoka Lakes in support of a site plan application.

- Aquatic habitat assessment.
- Graphics, reporting, policy conformity assessment.

2019 **Fish Habitat Impact Assessment** in the Township of Georgian Bay in support of a site plan application.

- Aquatic habitat assessment.
- Graphics, reporting, policy conformity assessment.

2020 **Fish Habitat Impact Assessment** in the Town of Huntsville in support of a severance application.

- Aquatic habitat assessment and fish habitat mapping.
- Graphics, reporting, policy conformity assessment.

2021 **Fish Habitat Impact Assessment** in the Town of Huntsville in support of a severance application.

- Aquatic habitat assessment and fish habitat mapping.
- Graphics, reporting, policy conformity assessment.

Peer Review

2019 **Peer Review** in the Municipality of Clarington in reference to a subdivision application.

- Critical assessment of EIS in support of the subdivision.
- Presentation to Council (Oct. 2019).

2020 **Peer Review** in the Town of Huntsville in reference to an island-based development application.

- Critical assessment of EIS and Site Evaluation Report (SER) in support of a Zoning-Bylaw Amendment (ZBA) and Consent Application.
- Presentation of expert opinion to LPAT.

2023 **Peer Review** in the Town of New Tecumseth in reference to a subdivision application.

- Critical assessment of EIS in support of the subdivision.

Managed Forest Plans

2019 **Managed Forest Plan** in the City of Hamilton (Stoney Creek) for a private client.

2020 **Managed Forest Plan** in the City of Hamilton (Flamborough) for a private client.

2020 **Managed Forest Plan** in the Town of Erin for a private client.

Instruction

2018-ongoing	**Instructor** in Bryophyte Identification and Lichen Identification courses at the Master Naturalist Program at Lakehead University (Orillia campus).
2019-ongoing	**Instructor** in Bryophyte Identification at the Ontario Natural Certification Course in the Kortright Centre (City of Vaughan).
2021-ongoing	**Workshop Development** for Niagara Peninsula Conservation Authority staff to provide training in vascular plant identification in sensitive habitats (e.g., marshes, swamps, dunes).

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environmental consulting inc.

Jessica A. Consiglio, BLA, ER(PG), M.BEMA
Intermediate Ecologist | Arborist
Curriculum Vitae

CAREER HISTORY AND EDUCATION

2022–Present	**Intermediate Ecologist | Arborist, Terrastory Environmental Consulting Inc.**
2020–2021	Ecologist | Arborist, North-South Environmental
2020–2021	Research Assistant, Integrative Wildlife Conservation Lab, Trent University
2020–2021	Master of Bioenvironmental Monitoring and Assessment, Trent University, Peterborough, ON
2017-2020	Natural Heritage Inventory Technician, Credit Valley Conservation Authority
2016-2017	Natural Heritage Management Technician, Credit Valley Conservation Authority
2014-2015	Natural Heritage Assistant, Credit Valley Conservation Authority
2013-2014	Ecological Land Classification Technician, Hamilton Conservation Authority
2012-2013	Ecosystem Restoration Graduate Certificate, Niagara College Canada, Niagara-on-the-Lake, ON
2007-2011	Hons. Bachelor of Landscape Architecture, University of Guelph, Guelph, ON

RELEVANT CERTIFICATIONS AND TRAINING

2024	Butternut Health Expert Workshop, Forest Gene Conservation Association
2023	Ontario Stream Assessment Protocol (OSAP), Toronto and Region Conservation Authority
2023	Acoustic Identification of Eastern US/Canada Bats, Vesper Bat Detection Services
2022	ISA Tree Risk Assessment Qualification (TRAQ)
2020	Board-certified Master Herpetologist, The Amphibian Foundation
2019	Butternut Health Assessor (#699)
2018	Ontario Reptile and Amphibian Field Research Techniques Workshop, Toronto Zoo
2018	Field Technician (Level 2) Venomous Reptile Handling Certification, The Rattlesnake Conservancy
2018	Level 1 Venomous Reptile Handling Certification, The Rattlesnake Conservancy
2018	Kaleidoscope Pro In-depth Seminar for Bat and Non-Bat Research, Wildlife Acoustics
2016	Ontario Reptile and Amphibian Survey Course, Ministry of Natural Resources and Forestry
2017	Ontario Wetland Evaluation System
2015	Ecological Land Classification
2015	ISA Certified Arborist #ON-1949A (current to 2027), International Society of Arboriculture
2013	Class II Backpack Electrofishing
Current	First Aid and WHMIS

PROFESSIONAL EXPERIENCE

Jessica has twelve years of experience in ecology with expertise in natural heritage inventories gained from diverse public and private sector roles. She is certified in a range of provincially recognized data collection protocols including Ecological Land Classification (ELC) and the Ontario Wetland Evaluation System (OWES), and is an ISA-certified Arborist, ISA-qualified Tree Risk Assessor, and certified Butternut Health Assessor. Jessica has extensive experience conducting botanical inventories, wildlife surveys, vegetation community classification, wetland delineation and evaluation, tree inventories, and targeted Species at Risk habitat assessments. Jessica's experience with Species at Risk also extends to the development of several provincial recovery strategies. Having completed numerous field methodology training courses and certifications across Ontario and northeastern North America, she is also highly experienced at implementing standardized herpetofauna survey protocols including presence/absence surveys, mark-recapture surveys, and road ecology surveys. Jessica also has extensive expertise in conducting field surveys for bats, particularly in the collection and analysis of acoustic (i.e., ultrasonic) data, as well as designing and implementing site-specific studies and large-scale (e.g., watershed based) acoustic inventories.

The following is a selected list of Ms. Consiglio's project experience.

Environmental Reports for Land Development (Small Applications)

2025 **Environmental Impact Assessment** in support of a zoning by-law amendment application in the Town of LaSalle.

- Multi-season vascular plant surveys, and vegetation community classification.
- Targeted Species at Risk surveys in accordance with the Survey Protocol for Ontario's Snake Species at Risk (i.e., visual encounter surveys).
- Primary report author, graphics, policy conformity assessment.

2024 **Environmental Evaluation Report** in support of a consent and zoning by-law amendment application in the City of Windsor.

- Multi-season vascular plant surveys, and vegetation community classification.
- Targeted Species at Risk surveys in accordance with the Survey Protocol for Ontario's Snake Species at Risk (i.e., visual encounter surveys).
- Field verification of wetlands and woodlands.
- Primary report author, graphics, policy conformity assessment.

2024 **Scoped Natural Heritage Evaluation** in support of a zoning by-law amendment application in the Town of East Gwillimbury.

- Site reconnaissance and assessment.
- Butternut Health Evaluation.
- Report author, graphics, policy conformity statements.

2023 **Scoped Environmental Impact Study** in the Town of Lincoln to resolve a Notice of Violation.

- Site reconnaissance and assessment.
- Field verification of wetlands and woodlands.
- Buffer Enhancement Plan.
- Primary report author, graphics, policy conformity statements.

2023 **Natural Heritage Evaluation and Arborist Report** in the City of Richmond Hill in support of a development application.

- Site reconnaissance and assessment.
- Tree inventory, health assessment, structural assessment.
- Field verification of wetlands and woodlands.
- Graphics, policy conformity statements.

2023 **Natural Heritage Evaluation, Arborist Report, and Restoration Plan** in the Town of Caledon in support of a development application.

- Site reconnaissance and assessment.
- Tree inventory, health assessment, structural assessment.
- Field verification of wetlands and woodlands.
- Primary report author, graphics, policy conformity statements.

2022 **Natural Heritage Evaluation and Restoration Plan** in the City of Pickering in support of a Toronto and Region Conservation Authority (TRCA) permit application.

- Site reconnaissance and assessment.
- Graphics, reporting, policy conformity statements.

2022 **Natural Heritage Impact Study and Enhancement Planting Plan** in the City of Toronto in support of a consent application.

- Site reconnaissance and assessment.
- Graphics, reporting, policy conformity statements.

2022 **Natural Heritage Impact Study** in the City of Toronto in support of an infill development.

- Site reconnaissance and assessment.
- Graphics, reporting, policy conformity statements.

2022 **Natural Heritage Impact Study** in the City of Toronto in support of a zoning by-law amendment and site plan application.
- Site reconnaissance and assessment.
- Graphics, reporting, policy conformity statements.

2022 **Natural Heritage Impact Study** in the City of Toronto in support of a consent application.
- Site reconnaissance and assessment.
- Graphics, reporting, policy conformity statements.

2022 **Oak Ridges Moraine Conformity Statement and Planting Plan** in the Town of Caledon in support of a site plan application.
- Vascular plant surveys and vegetation community classification.
- Wildlife surveys, including Species at Risk surveys.
- Graphics, reporting, policy conformity statements.

Natural Heritage Studies

2024-2025 **Environmental Impact Study** in support of a site plan application in the City of Cambridge.
- Vascular plant surveys and vegetation community classification.
- Field verification of woodlands.
- Reporting, graphics, policy assessments.

2024-2025 **Natural Environment Report** in support of an *Aggregate Resources Act* application for an amendment to facilitate below water extraction in Thames Centre.
- Multi-season vascular plant surveys (including for Species at Risk), and vegetation community classification.
- Multi-taxa wildlife surveys, including for herpetofauna (i.e., Anuran calling surveys).
- Field verification of wetlands and woodlands.
- Reporting, graphics, policy assessments.

2024 **Natural Environment Report** in support of an *Aggregate Resources Act* application for an amendment to facilitate below water extraction in West Elgin.
- Multi-season vascular plant surveys, and vegetation community classification.
- Field verification of wetlands and woodlands.
- Reporting, graphics, policy assessments.

2024 **Environmental Impact Study** in support of an application by the Town of Tillsonburg to construct affordable housing.
- Field inventories, including tree inventories, and ultrasonic bat data identification/analysis.

2023-2025 **Natural Environment Report** in support of an *Aggregate Resources Act* application to facilitate an expansion of the existing license area in Huron County.
- Multi-season vascular plant surveys, and vegetation community classification.
- Multi-taxa wildlife surveys, including for herpetofauna (i.e., targeted Species at Risk visual encounter surveys, emergence surveys, and basking surveys), and bat habitat assessments, (including ultrasonic bat surveys and manual bat call identification).
- Field verification and mapping of wetlands and woodlands.

2023-2025 **Environmental Impact Study** in support of a site plan application in the City of Cambridge.
- Vascular plant survey and vegetation community classification.
- Field verification of woodlands.
- Tree inventory, health assessment, structural assessment.
- Reporting, graphics, policy assessments.

2023-2024 **Lyons Creek East Ecological Study** on behalf of the Niagara Peninsula Conservation Authority (NPCA).
- Vascular plant inventories, including aquatic plant surveys, and vegetation community classification.

- Multi-taxa wildlife surveys, including for herpetofauna (i.e., Anuran calling surveys, turtle basking surveys).
- Field verification of wetlands and woodlands.
- Ecological study report co-author, mapping, and participation in public meetings.

2023 **Natural Heritage Background Report** on behalf of the Regional Municipality of Niagara in support of the Bemis Park Elevated Tank Environmental Assessment.

- Reporting, graphics, policy assessments.

2023 **Scoped Environmental Impact Study and Arborist Report** in support of a site plan application in the City of Mississauga.

- Vascular plant survey and vegetation community classification.
- Field verification of wetlands and woodlands.
- Tree inventory, health assessment, structural assessment.
- Reporting, graphics, policy assessments.

2022-2023 **Environmental Impact Study** in support of the Sheridan College Fletcher's Creek Natural Heritage Strategy in the City of Brampton.

- Vascular plant surveys and vegetation community classification.
- Field verification of wetlands and woodlands.
- Reporting, graphics, policy assessments.

2023 **Natural Environment Report** in support of an *Aggregate Resources Act* application for an amendment to facilitate below water extraction in the City of London.

- Vascular plant surveys, vegetation community classification.
- Multi-taxa wildlife surveys, including those for herpetofauna (i.e., anuran calling surveys).
- Field verification of wetlands and woodlands.
- Reporting, graphics, policy assessments.

2022-2023 **Vegetation Assessments** in support of Sun Canadian Pipeline infrastructure maintenance.

- Leading vascular plant inventories and vegetation community mapping across 18 sites.
- Completing four (4) Butternut Health Assessments.
- Undertaking vascular plant Species at Risk relocation.
- Conducting targeted surveys for plant Species at Risk.

2022 **District of Muskoka Natural Capital Inventory** in support of the Integrated Watershed Management (IWM) Project.

- Vascular plant surveys and vegetation community classification.
- Multi-taxa wildlife surveys, including Species at Risk surveys (focusing on herpetofauna).
- Field verification of wetlands, vernal pools, streams, and Significant Wildlife Habitat.

2022 **Eagle Heights Existing Conditions Report** in the City of Burlington.

- Multi-taxa wildlife surveys, including for herpetofauna (i.e., salamander egg mass surveys, turtle basking surveys, and snake visual encounter surveys), bat habitat assessments, and bat ultrasonic monitoring, including manual call identification.

2022 **Environmental Impact Study** in support of a severance in the City of Cambridge.

- Vascular plant surveys and vegetation community classification.
- Multi-taxa wildlife surveys, including Species at Risk surveys.
- Field verification of wetlands, woodlands, vernal pools, Significant Wildlife Habitat.
- Agency liaison.

2022 **Natural Environment Report** in support of an *Aggregate Resources Act* application and related *Planning Act* applications in the Municipality of Thames Centre.

- Vascular plant surveys and vegetation community classification.
- Graphics, mapping, reporting.

2022 **Existing Vegetation Conditions Study** in support of a wastewater treatment plant expansion in Nanticoke on behalf of Haldimand County.

- Three-season vascular plant surveys and vegetation community classification.

- Field verification of wetlands and woodlands.
- Primary report author, mapping, graphics.

2022 **Natural Heritage Constraints Analysis** on behalf of the Regional Municipality of York.

- Site reconnaissance, including field verification of wetlands and woodlands.
- Graphics, reporting.

2022 **Environmental Impact Study** in support of a consent application in the City of Hamilton.

- Three-season vascular plant surveys and vegetation community classification.
- Field verification of wetlands and woodlands.
- Graphics, reporting.

2020 **Toronto Island Park Master Plan - Natural Heritage Background Report** in the City of Toronto in support of the Toronto Island Park Master Plan (while employed by North-South Environmental).

- Updates to existing vegetation community classification mapping within Environmentally Significant Areas.

2019 **City of Brampton Natural Areas Inventory Restoration Recommendations Report** (while employed by the Credit Valley Conservation Natural Heritage Inventory Program).

- Vascular plant surveys, wildlife surveys, and vegetation community classification.
- Field surveys to identify and map invasive species infestations.
- Field-based assessment of restoration opportunities.
- Primary report author, graphics.

Environmental Monitoring & Construction Supervision

2024-2025 **Sam Lawrence Park Bruce Trail Upgrades Construction Monitoring** in support of the revitalization of Sam Lawrence Park in the City of Hamilton

- Invasive species marking and verification inspections of invasive species removal work.
- Construction logbook entries.
- Client and contractor liaison, contractor education.

2022 **Construction Inspection (Wildlife Fencing)** in the City of Toronto in support of a watercourse realignment project for Toronto and Region Conservation Authority (TRCA).

- Inspection of wildlife exclusion fencing (targeting Blanding's Turtle exclusion) for deficiencies and completeness of installation.
- Delivery of contractor education session on Species at Risk (Blanding's Turtle).
- Construction logbook entries.
- Client and contractor liaison.

2022 **Construction Supervision (Arboriculture)** in the Town of Milton in support of an approved residential site plan.

- Inspection of tree protection measures.
- Provision of mitigation measures.
- Construction logbook entries.
- Client and contractor liaison.

2022 **Post-construction Planting Inspection** in the Town of Whitchurch-Stouffville in support of a site plan application.

- Site reconnaissance assessment.
- Construction logbook entries.

Species at Risk Surveys and Species Recovery

2025 **Dune Habitat Enhancement Plan and Targeted Surveys/Salvages** in support of a permit application under subsection 17 of the Endangered Species Act (2007) for Fowler's Toad in the Town of Fort Erie.

- Led restoration planting plan development and figure drafting.

- Restoration planting plan graphics.
- Conducted targeted surveys/salvages within the work area.

2024 **Shortjaw Cisco Recovery Strategy (in prep.)** for the Ministry of the Environment, Conservation, and Parks (MECP).

- Secondary report author.

2023-2025 **Spoon-leaved Moss Relocation and Monitoring Plan** in support of an "overall benefit permit" under the Endangered Species Act (2007) in the Town of Port Colborne.

- Assessment of potential relocation areas based on habitat suitability.
- Development of the relocation and monitoring plan methodologies.
- Implementation of the relocation and monitoring plan, including translocations.
- Primary author of the relocation and monitoring plan.
- Primary author of annual monitoring reports.

2023 **Lake Whitefish (Opeongo Lake) Recovery Strategy** for the Ministry of the Environment, Conservation, and Parks (MECP).

- Primary report author.

2023 **Queensnake Hibernacula Surveys** in support of an *Aggregate Resources Act* application to facilitate an expansion of the existing license area in Huron County.

- Habitat-based surveys.

2023 **Bat Habitat Assessment** in the City of Richmond Hill in support of a bridge demolition and reconstruction project.

- Habitat-based surveys.
- Primary report author, graphics.

2022 **Blanding's Turtle Habitat Assessment** in the City of Toronto in support of a watercourse realignment project the Toronto and Region Conservation Authority (TRCA).

- Pre-construction Blanding's Turtle visual encounter surveys.
- Identification and characterization of regulated habitat.
- Preparation and submission of an Information Gathering Form submitted to MECP.
- During-construction area search for Blanding's Turtle.
- Primary report author, habitat mapping, graphics.

2022 **White-Rimmed Shingle Lichen Recovery Strategy** for the Ministry of the Environment, Conservation, and Parks (MECP).

- Primary report author.

2022 **Targeted Surveys for Spoon-leaved Moss** in the City of Port Colbourne in support of a development application.

- Conducted targeted bryophyte Species at Risk surveys.

2022 **Species at Risk Assessment** in the Town of Newmarket in support of a subdivision application.

- Species at Risk survey (e.g., multi-taxa habitat-based assessment for plants and wildlife).
- Primary report author, graphics.

2022 **Species at Risk Assessment** in the Town of Whitby in support of an application to construct a detached garage.

- Species at Risk surveys (e.g., multi-taxa habitat-based assessment for plants and wildlife).
- Graphics, reporting.

2022 **Bat Habitat Assessment** in the Town of Whitby in support of erosion hazard mitigation.

- Habitat-based surveys.

2021 **Rare Plant Surveys** in the City of Windsor (Ojibway Prairie Complex) in support of taxonomic research (while volunteering for Wilfrid Laurier University).

- Species at Risk/species of conservation concern vascular plant surveys.
- Collection and preparation of herbarium specimens/genetic material.

2021 **Small-mouth Salamander (and Unisexual Ambystoma) surveys** on Pelee Island (while employed by the Trent University's Integrative Wildlife Conservation Lab).

- Installation and on-going maintenance of exclusion fencing and pitfall trap arrays across multiple sampling sites.
- Mark/capture surveys using Visible Implant Elastomer (VIE) tags.
- Surveys using dip-netting, pitfall traps, and artificial cover objects (ACO).
- Habitat characterization assessments.
- Collection of morphometric data and genetic material for genotyping (across hundreds of samples).

2016-2020 **Acoustic Bat Surveys, Call Identifications, and Habitat Assessments** throughout the Credit River Watershed (while employed by the Credit Valley Conservation [CVC] Natural Heritage Inventory Program and leading the Bat Inventory Project).

- Stationary surveys using recording units (SM2BAT+, SM4BAT).
- Surveys using modified North American Bat (NABat) driving transect protocols.
- Leading development of survey methodologies, sampling designs, and data processing standards/methodology documents.
- Call identifications/manual verifications.
- Maternal bat roosting snag suitability assessments.

2019 **Targeted Snake Species at Risk Surveys** in the Town of Lasalle and City of Windsor (while volunteering for the Wildlife Preservation Canada's Ojibway Reptile Recovery Team).

- Supporting visual encounter surveys for Eastern Foxsnake, Butler's Gartersnake, and Eastern Massasauga.

2014-2018 **Jefferson Salamander Surveys and Habitat Assessments** throughout the Credit River Watershed (while employed by Credit Valley Conservation's [CVC's] Natural Heritage Management Division).

- Multi-year road mortality (i.e., road ecology) surveys.
- Multi-year habitat characterization and assessment (including multi-year vernal pool egg mass surveys).
- Collection of genetic material for genotyping.

2016-2017 **Targeted Species at Risk Surveys** throughout the Credit River Watershed (while employed by Credit Valley Conservation's [CVC's] Natural Heritage Management Division).

- Multi-year targeted Species at Risk vascular plant surveys.
- Multi-year targeted Species at Risk aquatic vascular plant surveys.
- Multi-year targeted turtle basking and turtle nesting surveys.

2017 **Targeted Snake Species at Risk Surveys** throughout the northern Bruce Peninsula (while volunteering for Trent University's Integrative Wildlife Conservation Lab).

- Supported visual encounter surveys for Eastern Massasauga.

2015-2016 **Targeted Northern Ribbonsnake Surveys** throughout the Credit River Watershed (while employed by Credit Valley Conservation's [CVC's] Lands and Natural Heritage Department).

- Multi-year artificial cover object (ACO) surveys for Northern Ribbonsnake.

2014-2015 **Targeted Western Chorus Frog Surveys** throughout the Credit River Watershed (while employed by Credit Valley Conservation's [CVC's] Lands and Natural Heritage Department).

- Multi-year call surveys for Western Chorus Frog.

2014 **Targeted Turtle Species at Risk Surveys** in support of a coastal marsh restoration project (while employed by Credit Valley Conservation's [CVC's] Lands and Natural Heritage Department).

- Turtle hoop-net trapping, scute notching, and pre-construction relocation.

2013 **Chimney Swift Surveys** in the City of Hamilton (while employed by the Hamilton Conservation Authority's Watershed Planning Services [Natural Areas Inventory project]).

- Targeted surveys for Chimney Swift using the Ontario SwiftWatch Monitoring Protocol.

Restoration and Enhancement Plans and Invasive Species Management

2025 **Wetland Buffer Enhancement Plan** and **Rare Plant Relocation Plan (Missouri Ironweed [*Vernonia missurica*; S3?])** in support of a zoning by-law amendment application in the City of Windsor.

- Led vascular plant inventory and vegetation community mapping for baseline conditions.
- Led restoration planting plan development, monitoring action development, and figure drafting.
- Restoration planting plan graphics.

2025 **Rare Plant Relocation (Slender Paspalum [*Paspalum setaceum*]; S2)** in support of a consent and zoning by-law amendment application in the City of Windsor.

- Implemented the rare plant relocation work.

2025 **Dune Enhancement Plan** in support of a permit application under subsection 17 of the Endangered Species Act (2007) for Fowler's Toad in the Town of Fort Erie.

- Led vascular plant inventory and vegetation community mapping for baseline conditions.
- Led restoration planting plan development, monitoring action development, and figure drafting.
- Restoration planting plan graphics.

2023-2025 **Invasive Species Management Plan** in support of the revitalization of Sam Lawrence Park in the City of Hamilton.

- Led field surveys to identify and map invasive species infestations within the park.
- Developed a park-wide invasive species management plan for the City of Hamilton.
- Report co-author, mapping.

2022-2023 **Invasive Species Management Plan** in support of the Sheridan College Fletcher's Creek Natural Heritage Strategy in the City of Brampton.

- Invasive species mapping, infestation characterization and prioritization.
- Reporting, graphics.

2023 **Restoration and Planting Plan** in the Municipality of Tillsonburg to revegetate a slope post-remediation to address petroleum hydrocarbon contamination.

- Led restoration planting plan development, monitoring plan development, and figure drafting.
- Restoration planting plan graphics.

2023 **Wetland Restoration Plan** in the Municipality of Clarington to resolve a Warning of Violation issued by Central Lake Ontario Conservation Authority (CLOCA).

- Led vascular plant inventory and vegetation community mapping for baseline conditions.
- Led restoration planting plan development, monitoring plan development, and figure drafting.
- Restoration planting plan graphics.

2023 **Buffer Enhancement and Ecological Monitoring Plan** in the City of Welland in support of a condominium application.

- Site reconnaissance and assessment.
- Restoration planting plan, letter.
- Lead report author, graphics.

2023 **Watercourse Restoration and Enhancement Plan** in the City of Welland in support of a subdivision application.

- Site reconnaissance and assessment.
- Restoration planting plan.
- Lead report author, graphics.

Urban Forestry, Arborist Reports and Tree Preservation Plans

2025 **Tree Preservation Plan** in support of a site plan application in the City of Brampton.
- Tree inventory, health assessment, structural assessment.
- Graphics, policy assessments.
- Tree protection plan.

2024-2025 **Arborist Report and Tree Protection Plan** in support of a zoning by-law amendment application in the Town of East Gwillimbury.
- Tree inventory, health assessment, structural assessment.
- Primary report author, graphics, policy assessments.
- Tree protection plan.

2024-2025 **Arborist Report and Tree Protection Plan** in support of a site plan application in the Town of Richmond Hill.
- Tree inventory, health assessment, structural assessment.
- Primary report author, graphics, policy assessments.
- Tree protection plan.

2024 **Natural Features Inventory and Preservation Study** in the City of Windsor in support of a consent and zoning by-law amendment application.
- Tree inventory, health assessment, structural assessment.
- Primary report author, graphics, policy assessment.
- Tree protection plan.

2023-2024 **Regional Forest Advisory Team Recruitment Process** research and reporting for York Region.
- Led background literature review and multiple interviews with comparators.
- Report co-author.

2023 **Arborist Report and Tree Protection Plan** for the City of Hamilton Mountain Drive Park detailed design.
- Tree inventory, health assessment, structural assessment.
- Primary report author, graphics, policy assessments.
- Tree protection plan.

2023 **Tree Protection Plan** in support of erosion mitigation works in the City of Markham.
- Tree inventory, health assessment, structural assessment.
- Tree protection plan.

2023 **Arborist Report, Tree Protection Plan, and Restoration Plan** in the Town of Caledon in support of a development application.
- Tree inventory, health assessment, structural assessment.
- Primary report author, graphics, policy assessment.
- Tree protection and compensation plan.

2023 **Tree Condition Risk Assessment** in the Municipality of Central Elgin
- Tree risk assessment, including health assessment, structural assessment.
- Primary report author, graphics.

2023 **Arborist Report, Tree Protection Plan, and Restoration Plan** in the City of Toronto in support of a development application.
- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy assessment.
- Restoration planting plan.

2023 **Arborist Report and Tree Protection Plan** in the Town of Newmarket in support of a zoning by-law amendment.
- Tree inventory, health assessment, structural assessment.
- Primary report author, graphics, policy assessment.

2023 **Arborist Report and Tree Protection Plan** in Brant County in support of a minor variance application.

- Tree inventory, health assessment, structural assessment.
- Primary report author, graphics, policy assessment.

2022 **Arborist Report and Tree Preservation Plan** in the City of Burlington in support of a cemetery expansion.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy assessment.
- Vegetation protection plan.

2022 **Arborist Report and Tree Preservation Plan** in the City of Toronto in support of a zoning by-law amendment and site plan application.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy assessment.

2022 **Arborist Report and Tree Preservation Plan** for the City of Hamilton in support of the Sam Lawrence Park redevelopment project.

- Graphics, reporting, policy assessment.

2022 **Arborist Report and Tree Preservation Plan** in the City of Toronto in support of a consent application.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy assessment.

2022 **Arborist Report and Tree Preservation Plan** in the City of Toronto in support of a consent application.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy assessment.
- Enhancement planting plan.

2022 **Arborist Report and Tree Preservation Plan** in the City of Burlington in support of a development application.

- Tree inventory, health assessment, structural assessment.
- Graphics, reporting, policy assessment.

2021 **Arborist Report and Tree Preservation Plan** in the City of Guelph in support of a development application.

- Tree inventory, health assessment, structural assessment.

2021 **Arborist Report and Tree Preservation Plan** in the Town of Markham in support of a creek erosion control project.

- Tree inventory, health assessment, structural assessment.

2020 **Arborist Report and Tree Preservation Plan** in Prince Edward County in support of a development application.

- Tree inventory, health assessment, structural assessment.

2020 **Toronto Island Park Master Plan - Natural Heritage Background Report** in the City of Toronto in support of the Toronto Island Park Master Plan while employed by North-South Environmental.

- Tree inventory, health assessment, structural assessment, urban forest characterization.

PROFESSIONAL ASSOCIATIONS & PUBLICATIONS

Professional Associations

2022 – Present (**Director, past Communications Director**) Ontario Bat Network (OBN) Organizing Committee
2017 – Present (**Director, Secretary**) Field Botanists of Ontario (FBO)
2016 – Present (**General Member**) Canadian Herpetological Society (CHS)

Select Publications

Consiglio, J., T. Knight, and A. McCrum. 2024. Recovery Strategy for the Lake Whitefish (*Coregonus clupeaformis*) – Opeongo Lake large- and small-bodied populations in Ontario. Ontario Recovery Strategy Series. Prepared for the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. v + 54 pp.

Consiglio, J. and T. Knight. 2023. Recovery Strategy for the White-rimmed Shingle Lichen (*Fuscopannaria leucosticta*) in Ontario. Ontario Recovery Strategy Series. Prepared for the Ministry of the Environment, Conservation and Parks, Peterborough, Ontario. v + 52 pp.

Burt, C. W., **J. A. Consiglio**, and M. J. Oldham. 2020. First Record of the Invasive *Microstegium vimineum* (Poaceae) in Canada. *Great Lakes Botanist* 59: 221-228.

Consiglio, J. A., and M. J. Oldham. 2020. An Update to the Distribution of the Endangered False Hop Sedge, *Carex lupuliformis* Sartwell ex Dewey (Cyperaceae), in Ontario. *Canadian Field Naturalist* 134(2): 171-174.

Consiglio, J. A., and M. J. Oldham. 2018**.** Autumn Coralroot (*Corallorhiza odontorhiza*), an update on its distribution in Ontario. *Newsletter of the Field Botanists of Ontario* 30(4): 4-6.

Maloles, J. R., R. T. McMullin, **J. A. Consiglio,** C. J. Chapman. L. L. Riederer, and D. E. Renfrew. 2018. The Lichens and Allied Fungi of the Credit River Watershed, Ontario, Canada. *Rhodora* 120(983): 229-253.

Consiglio, J. A. 2013. Natural Areas Inventory Update – Pawpaw (*Asimina triloba*) in Hamilton. *The Wood Duck* 67(4): 81.

Appendix 2. Representative Photographs

Photo 1. Northern portion of the Subject Property, facing south along eastern property line (27 June 2025).

Photo 2. Area under active agriculture, facing west towards an existing residence (27 June 2025).

Photo 3. Sugar Maple – Black Cherry dominated forest (FODM5-7) (27 June 2025).

Photo 4. Yellow Birch dominated swamp (SWDO3-2) with extensive Skunk Cabbage (27 June 2025).

Photo 5. Sugar Maple – Black Cherry dominated forest (FODM5-7) (29 September 2025).

Photo 6. Sugar Maple – Black Cherry dominated forest (FODM5-7) (29 September 2025).

Photo 7. Sugar Maple dominated forest (FODM5-1) edge abutting area under active agriculture at the proposed eastern licence limit, facing south (29 September 2025).

Photo 8. Sugar Maple dominated forest (FODM5-1) edge abutting area under active agriculture at the proposed eastern licence limit, facing north (29 September 2025).

Appendix 3. Vascular Plant List

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Local Rank (per Oldham 2017)	Coefficient of Conservatism	Coefficient of Wetness
Abutilon theophrasti	Velvetleaf	Malvaceae	SNA	IC	n/a	3
Acalypha rhomboidea	Common Three-seeded Mercury	Euphorbiaceae	S5	C	0	3
Acer nigrum	Black Maple	Aceraceae	S4?	C	7	3
Acer rubrum	Red Maple	Aceraceae	S5	C	4	0
Acer saccharinum	Silver Maple	Aceraceae	S5	C	5	-3
Acer saccharum	Sugar Maple	Aceraceae	S5	C	4	3
Acer × freemanii	Freeman's Maple	Aceraceae	SNA	hyb	6	-5
Actaea pachypoda	White Baneberry	Ranunculaceae	S5	C	6	5
Actaea rubra	Red Baneberry	Ranunculaceae	S5	C	6	3
Agrimonia gryposepala	Hooked Agrimony	Rosaceae	S5	C	2	3
Alliaria petiolata	Garlic Mustard	Brassicaceae	SNA	IC	n/a	0
Allium tricoccum var. tricoccum	Wild Leek	Liliaceae	S4	C	7	3
Ambrosia artemisiifolia	Common Ragweed	Asteraceae	S5	C	0	3
Ambrosia trifida	Great Ragweed	Asteraceae	S5	C	0	0
Apocynum androsaemifolium	Spreading Dogbane	Apocynaceae	S5	C	3	5
Apocynum cannabinum	Hemp Dogbane	Apocynaceae	S5	C	3	0
Aralia nudicaulis	Wild Sarsaparilla	Araliaceae	S5	C	4	3
Arenaria serpyllifolia	Thyme-leaved Sandwort	Caryophyllaceae	SNA	IC	n/a	0
Arisaema triphyllum	Jack-in-the-pulpit	Araceae	S5	C	5	-3
Asarum canadense	Canada Wild-ginger	Aristolochiaceae	S5	C	6	5
Asclepias exaltata	Poke Milkweed	Asclepiadaceae	S4	R	8	5
Asclepias syriaca	Common Milkweed	Asclepiadaceae	S5	C	0	5
Athyrium filix-femina	Common Lady Fern	Dryopteridaceae	S5	X	4	0
Berberis thunbergii	Japanese Barberry	Berberidaceae	SNA	IX	n/a	3
Betula alleghaniensis	Yellow Birch	Betulaceae	S5	X	6	0
Bidens frondosa	Devil's Beggarticks	Asteraceae	S5	X	3	-3
Boehmeria cylindrica	False Nettle	Urticaceae	S5	X	4	-5
Bromus inermis	Smooth Brome	Poaceae	SNA	IC	n/a	5
Cardamine parviflora	Small-flowered Bittercress	Brassicaceae	S4	N/A	7	0
Carex albursina	White Bear Sedge	Cyperaceae	S5	C	7	5
Carex arctata	Drooping Woodland Sedge	Cyperaceae	S5	C	5	5
Carex bebbii	Bebb's Sedge	Cyperaceae	S5	C	3	-5
Carex blanda	Woodland Sedge	Cyperaceae	S5	C	3	0
Carex careyana	Carey's Sedge	Cyperaceae	S2	R	10	5
Carex cephaloidea	Thin-leaved Sedge	Cyperaceae	S4	U	6	3
Carex communis	Fibrous-root Sedge	Cyperaceae	S5	C	6	5
Carex gracillima	Graceful Sedge	Cyperaceae	S5	C	4	3
Carex hirtifolia	Pubescent Sedge	Cyperaceae	S4S5	C	5	5
Carex hitchcockiana	Hitchcock's Sedge	Cyperaceae	S4S5	U	6	5
Carex jamesii	James' Sedge	Cyperaceae	S4	U	8	5
Carex laxiflora	Loose-flowered Sedge	Cyperaceae	S5	C	5	0
Carex lupulina	Hop Sedge	Cyperaceae	S5	C	6	-5

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Local Rank (per Oldham 2017)	Coefficient of Conservatism	Coefficient of Wetness
Carex pedunculata	Long-stalked Sedge	Cyperaceae	S5	C	5	3
Carex radiata	Eastern Star Sedge	Cyperaceae	S5	C	4	0
Carex rosea	Rosy Sedge	Cyperaceae	S5	C	2	5
Carex scabrata	Eastern Rough Sedge	Cyperaceae	S5	U	8	-5
Carex stipata	Awl-fruited Sedge	Cyperaceae	S5	C	3	-5
Carex woodii	Wood's Sedge	Cyperaceae	S4	C	6	3
Carpinus caroliniana ssp. virginiana	Blue-beech	Betulaceae	S5	C	6	0
Carya cordiformis	Bitternut Hickory	Juglandaceae	S5	X	6	0
Caulophyllum giganteum	Giant Blue Cohosh	Berberidaceae	S5	X	5	5
Celtis occidentalis	Common Hackberry	Ulmaceae	S4	X	8	0
Cephalanthus occidentalis	Eastern Buttonbush	Rubiaceae	S5	X	7	-5
Cerastium fontanum	Common Mouse-ear Chickweed	Caryophyllaceae	SNA	IC	n/a	3
Chenopodium album	White Goosefoot	Chenopodiaceae	SNA	IX	n/a	3
Circaea canadensis ssp. canadensis	Canada Enchanter's Nightshade	Onagraceae	S5	X	2	3
Cirsium vulgare	Bull Thistle	Asteraceae	SNA	IX	n/a	3
Claytonia virginica	Narrow-leaved Spring Beauty	Portulacaceae	S5	C	5	3
Cornus alternifolia	Alternate-leaved Dogwood	Cornaceae	S5	X	6	3
Cornus obliqua	Pale Dogwood	Cornaceae	S5	X	2	-3
Cornus racemosa	Gray Dogwood	Cornaceae	S5	X	2	0
Cornus sericea	Red-osier Dogwood	Cornaceae	S5	C	2	-3
Crataegus punctata	Dotted Hawthorn	Rosaceae	S5	C	4	5
Crepis tectorum	Narrow-leaved Hawksbeard	Asteraceae	SNA	IX	n/a	5
Cryptotaenia canadensis	Canada Honewort	Apiaceae	S5	X	5	0
Cuscuta gronovii var. gronovii	Swamp Dodder	Cuscutaceae	S5?	C	4	-3
Cyperus esculentus	Perennial Yellow Flatsedge	Cyperaceae	S5	C	1	-3
Cypripedium parviflorum var. makasin	Small Yellow Lady's-slipper	Orchidaceae	S4S5	X	5	0
Dactylis glomerata	Orchard Grass	Poaceae	SNA	IC	n/a	3
Daucus carota	Wild Carrot	Apiaceae	SNA	IC	n/a	5
Digitaria sanguinalis	Hairy Crabgrass	Poaceae	SNA	IX	n/a	3
Dirca palustris	Eastern Leatherwood	Thymelaeaceae	S4	X	7	0
Dryopteris marginalis	Marginal Wood Fern	Dryopteridaceae	S5	X	5	3
Echinochloa crus-galli	Large Barnyard Grass	Poaceae	SNA	IC	n/a	-3
Echinocystis lobata	Wild Mock-cucumber	Cucurbitaceae	S5	X	3	-3
Elymus hystrix	Bottlebrush Grass	Poaceae	S5	X	5	5
Epifagus virginiana	Beechdrops	Orobanchaceae	S5	C	6	5
Epilobium hirsutum	Hairy Willowherb	Onagraceae	SNA	IX	n/a	-3
Epipactis helleborine	Eastern Helleborine	Orchidaceae	SNA	IX	n/a	3
Equisetum arvense	Field Horsetail	Equisetaceae	S5	C	0	0
Equisetum fluviatile	Water Horsetail	Equisetaceae	S5	U	7	-5
Equisetum hyemale ssp. affine	Common Scouring-rush	Equisetaceae	S5	C	2	0
Erigeron annuus	Annual Fleabane	Asteraceae	S5	C	0	3
Erigeron canadensis	Canada Horseweed	Asteraceae	S5	C	0	3

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Local Rank (per Oldham 2017)	Coefficient of Conservatism	Coefficient of Wetness
Erigeron philadelphicus	Philadelphia Fleabane	Asteraceae	S5	C	1	-3
Erythronium americanum	Yellow Trout-lily	Liliaceae	S5	X	5	5
Euonymus alatus	Winged Euonymus	Celastraceae	SNA	IR	n/a	5
Euonymus europaeus	European Euonymus	Celastraceae	SNA	IR	n/a	5
Euonymus fortunei	Climbing Euonymus	Celastraceae	SNA	IR	n/a	5
Euonymus obovatus	Running Strawberry Bush	Celastraceae	S4	C	6	5
Euthamia graminifolia	Grass-leaved Goldenrod	Asteraceae	S5	C	2	0
Fagus grandifolia	American Beech	Fagaceae	S4	C	6	3
Frangula alnus	Glossy Buckthorn	Rhamnaceae	SNA	IU	n/a	0
Fraxinus americana	White Ash	Oleaceae	S4	C	4	3
Fraxinus pennsylvanica	Green Ash	Oleaceae	S4	C	3	-3
Galium aparine	Cleavers	Rubiaceae	S5	X	4	3
Galium asprellum	Rough Bedstraw	Rubiaceae	S5	X	6	-5
Galium triflorum	Three-flowered Bedstraw	Rubiaceae	S5	X	4	3
Geranium maculatum	Spotted Geranium	Geraniaceae	S5	X	6	3
Geranium robertianum	Herb-Robert	Geraniaceae	S5	C	2	3
Geum canadense	White Avens	Rosaceae	S5	X	3	0
Glechoma hederacea	Ground Ivy	Lamiaceae	SNA	IX	n/a	3
Glyceria striata	Fowl Mannagrass	Poaceae	S5	X	3	-5
Hepatica acutiloba	Sharp-lobed Hepatica	Ranunculaceae	S5	X	8	5
Hydrophyllum canadense	Canada Waterleaf	Hydrophyllaceae	S4	X	8	0
Hydrophyllum virginianum	Virginia Waterleaf	Hydrophyllaceae	S5	C	6	0
Hypericum perforatum	Common St. John's-wort	Clusiaceae	SNA	IC	n/a	5
Ilex verticillata	Black Holly	Aquifoliaceae	S5	X	5	-3
Impatiens capensis	Spotted Jewelweed	Balsaminaceae	S5	C	4	-3
Impatiens pallida	Pale Jewelweed	Balsaminaceae	S4	X	7	-3
Iris virginica	Southern Blue Flag	Iridaceae	S5	U	5	-5
Juglans nigra	Black Walnut	Juglandaceae	S4?	X	5	3
Juncus dudleyi	Dudley's Rush	Juncaceae	S5	C	1	-3
Juncus effusus	Soft Rush	Juncaceae	S5	X	4	-5
Laportea canadensis	Wood Nettle	Urticaceae	S5	X	6	-3
Leersia virginica	Virginia Cutgrass	Poaceae	S4	X	6	-3
Lemna trisulca	Star Duckweed	Lemnaceae	S5	X	6	-5
Leonurus cardiaca ssp. cardiaca	Common Motherwort	Lamiaceae	SNA	IC	n/a	5
Leucanthemum vulgare	Oxeye Daisy	Asteraceae	SNA	IC	n/a	5
Linaria vulgaris	Butter-and-eggs	Scrophulariaceae	SNA	IC	n/a	5
Lindera benzoin	Spicebush	Lauraceae	S4	X	6	-3
Lithospermum officinale	European Gromwell	Boraginaceae	SNA	IX	n/a	5
Lolium perenne	Perennial Ryegrass	Poaceae	SNA	IX	n/a	3
Lonicera tatarica	Tartarian Honeysuckle	Caprifoliaceae	SNA	IX	n/a	3
Ludwigia palustris	Marsh Seedbox	Onagraceae	S5	X	5	-5
Lycopus uniflorus	Northern Water-horehound	Lamiaceae	S5	C	5	-5

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Local Rank (per Oldham 2017)	Coefficient of Conservatism	Coefficient of Wetness
Lysimachia thyrsiflora	Water Loosestrife	Primulaceae	S5	X	7	-5
Maianthemum canadense	Wild Lily-of-the-valley	Liliaceae	S5	X	5	3
Maianthemum racemosum	Large False Solomon's Seal	Liliaceae	S5	X	4	3
Maianthemum stellatum	Star-flowered False Solomon's Seal	Liliaceae	S5	X	6	0
Malus pumila	Common Apple	Rosaceae	SNA	IX	n/a	5
Medicago lupulina	Black Medic	Fabaceae	SNA	IC	n/a	3
Mitchella repens	Partridge-berry	Rubiaceae	S5	X	6	3
Morus alba	White Mulberry	Moraceae	SNA	IX	n/a	0
Nepeta cataria	Catnip	Lamiaceae	SNA	IC	n/a	3
Oenothera biennis	Common Evening Primrose	Onagraceae	S5	X	0	3
Onoclea sensibilis	Sensitive Fern	Dryopteridaceae	S5	X	4	-3
Osmorhiza claytonii	Hairy Sweet Cicely	Apiaceae	S5	X	5	0
Osmundastrum cinnamomeum	Cinnamon Fern	Osmundaceae	S5	X	7	-3
Ostrya virginiana	Eastern Hop-hornbeam	Betulaceae	S5	C	4	3
Oxalis dillenii	Slender Yellow Wood-sorrel	Oxalidaceae	S5?	N/A	0	3
Oxalis stricta	Upright Yellow Wood-sorrel	Oxalidaceae	S5	X	0	3
Panicum dichotomiflorum ssp. dichotomiflorum	Fall Panicgrass	Poaceae	SNA	IC	n/a	-3
Parthenocissus quinquefolia	Virginia Creeper	Vitaceae	S4?	X	6	3
Parthenocissus vitacea	Thicket Creeper	Vitaceae	S5	X	4	3
Penthorum sedoides	Ditch-stonecrop	Crassulaceae	S5	X	4	-5
Persicaria maculosa	Spotted Lady's-thumb	Polygonaceae	SNA	IX	n/a	-3
Phleum pratense	Common Timothy	Poaceae	SNA	IC	n/a	3
Phlox divaricata	Wild Blue Phlox	Polemoniaceae	S4	X	7	3
Phryma leptostachya var. leptostachya	Lopseed	Verbenaceae	S4S5	X	6	3
Physalis heterophylla	Clammy Ground-cherry	Solanaceae	S4	X	3	5
Phytolacca americana	Common Pokeweed	Phytolaccaceae	S4	X	3	3
Picea abies	Norway Spruce	Pinaceae	SNA	IX	n/a	5
Picea glauca	White Spruce	Pinaceae	S5	IR	6	3
Pilea fontana	Lesser Clearweed	Urticaceae	S4	R	5	-3
Pilea pumila	Dwarf Clearweed	Urticaceae	S5	X	5	-3
Plantago rugelii	Rugel's Plantain	Plantaginaceae	S5	C	1	0
Poa compressa	Canada Bluegrass	Poaceae	SNA	IX	n/a	3
Poa pratensis	Kentucky Bluegrass	Poaceae	S5	N/A	0	3
Podophyllum peltatum	May-apple	Berberidaceae	S5	X	5	3
Polygonatum pubescens	Hairy Solomon's Seal	Liliaceae	S5	X	5	5
Polystichum acrostichoides	Christmas Fern	Dryopteridaceae	S5	X	5	3
Populus deltoides ssp. deltoides	Eastern Cottonwood	Salicaceae	S5	X	4	0
Potentilla norvegica	Norwegian Cinquefoil	Rosaceae	S5	X	0	0
Potentilla recta	Sulphur Cinquefoil	Rosaceae	SNA	IX	n/a	5
Prunus avium	Sweet Cherry	Rosaceae	SNA	IR	n/a	5
Prunus serotina	Black Cherry	Rosaceae	S5	C	3	3
Prunus virginiana	Choke Cherry	Rosaceae	S5	C	2	3

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Local Rank (per Oldham 2017)	Coefficient of Conservatism	Coefficient of Wetness
Ranunculus abortivus	Kidney-leaved Buttercup	Ranunculaceae	S5	C	2	0
Ranunculus acris	Tall Buttercup	Ranunculaceae	SNA	IC	n/a	0
Ranunculus sceleratus	Cursed Buttercup	Ranunculaceae	S5	X	2	-5
Rhamnus cathartica	Common Buckthorn	Rhamnaceae	SNA	IC	n/a	0
Rhus typhina	Staghorn Sumac	Anacardiaceae	S5	C	1	3
Ribes cynosbati	Prickly Gooseberry	Grossulariaceae	S5	C	4	3
Robinia pseudoacacia	Black Locust	Fabaceae	SNA	IC	n/a	3
Rosa multiflora	Multiflora Rose	Rosaceae	SNA	IX	n/a	3
Rosa palustris	Swamp Rose	Rosaceae	S5	X	7	-5
Rubus allegheniensis	Allegheny Blackberry	Rosaceae	S5	C	2	3
Rubus idaeus ssp. strigosus	Wild Red Raspberry	Rosaceae	S5	X	2	3
Rubus occidentalis	Black Raspberry	Rosaceae	S5	C	2	5
Rubus pubescens	Dewberry	Rosaceae	S5	X	4	-3
Rumex crispus	Curly Dock	Polygonaceae	SNA	IC	n/a	0
Rumex obtusifolius	Bitter Dock	Polygonaceae	SNA	IX	n/a	-3
Salix amygdaloides	Peach-leaved Willow	Salicaceae	S5	X	6	-3
Salix bebbiana	Bebb's Willow	Salicaceae	S5	X	4	-3
Salix eriocephala	Heart-leaved Willow	Salicaceae	S5	X	4	-3
Salix interior	Sandbar Willow	Salicaceae	S5	C	1	-3
Salix nigra	Black Willow	Salicaceae	S4	X	6	-5
Sambucus canadensis	Common Elderberry	Caprifoliaceae	S5	X	5	-3
Sambucus racemosa	Red Elderberry	Caprifoliaceae	S5	X	5	3
Sanguinaria canadensis	Bloodroot	Papaveraceae	S5	X	5	3
Sanicula marilandica	Maryland Sanicle	Apiaceae	S5	X	5	3
Saponaria officinalis	Bouncing-bet	Caryophyllaceae	SNA	IX	n/a	3
Scirpus pendulus	Rufous Bulrush	Cyperaceae	S5	C	3	-5
Scutellaria galericulata	Hooded Skullcap	Lamiaceae	S5	X	6	-5
Scutellaria lateriflora	Mad Dog Skullcap	Lamiaceae	S5	X	5	-5
Setaria faberi	Giant Foxtail	Poaceae	SNA	IC	n/a	3
Setaria pumila	Yellow Foxtail	Poaceae	SNA	IX	n/a	0
Silene latifolia	White Campion	Caryophyllaceae	SNA	IX	n/a	5
Sium suave	Hemlock Water-parsnip	Apiaceae	S5	C	4	-5
Smilax tamnoides	Hispid Greenbrier	Smilacaceae	S5	X	6	0
Solanum dulcamara	Bittersweet Nightshade	Solanaceae	SNA	IC	n/a	0
Solanum nigrum	Black Nightshade	Solanaceae	SNA	N/A	n/a	0
Solidago altissima var. altissima	Eastern Tall Goldenrod	Asteraceae	S5	U	1	3
Solidago canadensis var. canadensis	Canada Goldenrod	Asteraceae	S5	X	1	3
Solidago flexicaulis	Zigzag Goldenrod	Asteraceae	S5	X	6	3
Sonchus arvensis	Field Sow-thistle	Asteraceae	SNA	IX	n/a	3
Sonchus asper	Prickly Sow-thistle	Asteraceae	SNA	IX	n/a	3
Stellaria media	Common Chickweed	Caryophyllaceae	SNA	IC	n/a	3
Symphyotrichum cordifolium	Heart-leaved Aster	Asteraceae	S5	C	5	5

Scientific Name	Common Name	Family	S-Rank (per NHIC)	Local Rank (per Oldham 2017)	Coefficient of Conservatism	Coefficient of Wetness
Symphyotrichum ericoides	White Heath Aster	Asteraceae	S5	C	4	3
Symphyotrichum lanceolatum	Panicled Aster	Asteraceae	S5	C	3	-3
Symphyotrichum lateriflorum	Calico Aster	Asteraceae	S5	C	3	0
Symphyotrichum novae-angliae	New England Aster	Asteraceae	S5	C	2	-3
Symphyotrichum ontarionis var. ontarionis	Ontario Aster	Asteraceae	S4	N/A	6	0
Symphyotrichum puniceum	Swamp Aster	Asteraceae	S5	X	6	-5
Symphyotrichum urophyllum	Arrow-leaved Aster	Asteraceae	S4	X	6	5
Symphyotrichum x amethystinum	(Symphyotrichum ericoides X Symphyotrichum novae-ang	Asteraceae	SNA	hyb	n/a	0
Symplocarpus foetidus	Skunk Cabbage	Araceae	S5	C	7	-5
Syringa vulgaris	Common Lilac	Oleaceae	SNA	IX	n/a	5
Taraxacum officinale	Common Dandelion	Asteraceae	SNA	IC	n/a	3
Thalictrum dioicum	Early Meadow-rue	Ranunculaceae	S5	X	6	3
Thalictrum pubescens	Tall Meadow-rue	Ranunculaceae	S5	X	5	-3
Thelypteris palustris	Marsh Fern	Thelypteridaceae	S5	X	5	-3
Thuja occidentalis	Eastern White Cedar	Cupressaceae	S5	X	4	-3
Tiarella stolonifera	Heart-leaved Foam-flower	Saxifragaceae	S5	X	6	3
Tilia americana	American Basswood	Tiliaceae	S5	C	4	3
Toxicodendron radicans var. radicans	Eastern Poison Ivy	Anacardiaceae	S5	C	2	0
Toxicodendron radicans var. rydbergii	Western Poison Ivy	Anacardiaceae	S5	X	2	0
Tragopogon dubius	Yellow Goat's-beard	Asteraceae	SNA	IX	n/a	5
Trifolium pratense	Red Clover	Fabaceae	SNA	IX	n/a	3
Trillium erectum	Red Trillium	Liliaceae	S5	X	6	3
Trillium grandiflorum	White Trillium	Liliaceae	S5	X	5	3
Ulmus americana	American Elm	Ulmaceae	S5	C	3	-3
Ulmus rubra	Slippery Elm	Ulmaceae	S5	X	6	0
Urtica gracilis ssp. gracilis	Slender Stinging Nettle	Urticaceae	S5	C	2	0
Uvularia grandiflora	Large-flowered Bellwort	Liliaceae	S5	X	6	5
Verbascum thapsus	Common Mullein	Scrophulariaceae	SNA	IC	n/a	5
Veronica arvensis	Corn Speedwell	Scrophulariaceae	SNA	IX	n/a	5
Viburnum acerifolium	Maple-leaved Viburnum	Caprifoliaceae	S5	X	6	5
Viburnum opulus var. opulus	Highbush Cranberry	Caprifoliaceae	S5	IR	5	-3
Viola canadensis	Canada Violet	Violaceae	S5	X	6	3
Viola cucullata	Marsh Blue Violet	Violaceae	S5	X	5	-5
Viola rostrata	Long-spurred Violet	Violaceae	S5	X	6	3
Viola sororia	Woolly Blue Violet	Violaceae	S5	X	4	0
Viola tricolor	Johnny-jump-up	Violaceae	SNA	IR	n/a	5
Vitis riparia	Riverbank Grape	Vitaceae	S5	C	0	0

Appendix 4. Anuran Calling Survey Results

1 ANURAN CALLING SURVEY METHODOLOGY

Calling anuran surveys were conducted in accordance with the *Marsh Monitoring Program for Surveying Amphibians* (Bird Studies Canada et al. 2008). This protocol involves the completion of three (3) rounds of surveys once per month between April and June from 30 minutes after sunset until approximately midnight. Appropriate weather conditions include no or very light precipitation and wind speed ≤3 on the Beaufort wind scale. As the Subject Property is located within the central region (between the 43rd and 47th parallels), all three (3) rounds of surveys should occur during the second half of the month (i.e., April 15-30, May 15-31, and June 15-30).

A total of four anuran calling stations were established and situated systematically to cover potentially significant anuran breeding habitats, particularly those that are near proposed areas disturbance. Each station was surveyed for a minimum duration of three (3) minutes. Anurans and evidence of anuran breeding (i.e., vocalizations, tadpoles, etc.) were also recorded incidentally during other field activities on-site.

2 RESULTS

Table 1. Results of Anuran Calling Surveys.

Station ID[1]	Feature or ELC Community Surveyed	Bearing (°)	Survey #1 – 22 April 2025	Survey #2 – 29 May 2025	Survey #3 – 25 June 2025	Comments[2]
A-1	Yellow Birch Organic Deciduous Swamp (SWDO3-2)	240	No calling amphibians	No calling amphibians	No calling amphibians	**Survey #1:** American Toad (1-2) and Spring Peeper (3) calling from Adjacent Lands to the southwest. **Survey #2:** N/A. **Survey #3:** Gray Treefrogs heard calling from adjacent stations.
A-2	Mixed Mineral Meadow Marsh (MASM1-1); Reed Canary Grass Shallow Marsh (MASM1-14)	70	Spring Peeper (3)	No calling amphibians	No calling amphibians	**Survey #1:** N/A. **Survey #2:** Anurans heard calling from adjacent stations. **Survey #3:** N/A.
A-3	Silver Maple Deciduous Swamp (SWDM3-2); Duckweed Floating-leaved Shallow Aquatic (SAF1-3); Cattail Shallow Marsh (MASM1-1)	70	Spring Peeper (3) Wood Frog (1-1)	Gray Treefrog (3)	Gray Treefrog (3) Green Frog (2-4)	**Survey #1:** Spring Peeper chorus deafening. **Survey #2:** N/A. **Survey #3:** N/A.
A-4	Mineral Maple Deciduous Swamp (SWDM3)	239	American Toad (2-4) Spring Peeper (3) Wood Frog (1-3)	Spring Peeper (1-1) Gray Treefrog (2-5)	Gray Treefrog (3)	**Survey #1:** N/A. **Survey #2:** N/A. **Survey #3:** N/A.

[1] Locations of Anuran Calling Stations are shown in **Figure 2.**

[2] **Call Code 1** = Individuals can be counted; calls not simultaneous; **Call Code 2** = Calls distinguishable; some simultaneous calling; **Call Code 3** = Full chorus; calls continuous and overlapping. Second number after the call code indicates the estimated number of individuals calling; no estimate of individuals is provided for Call Code 3.

Appendix 5. Breeding Bird Survey Results

1 BREEDING BIRD SURVEY METHODOLOGY

Two breeding bird surveys were conducted following Ontario Breeding Bird Atlas (OBBA) protocols (Bird Studies Canada et al. 2001). The surveys occurred within the appropriate season (May 24–July 10), time of day (between dawn and 5 hours after dawn), and weather conditions (no rain, wind speed ≤3 on the Beaufort Wind Scale). The stations were surveyed for a minimum duration of ten (10) minutes.

Six (6) survey stations were established and situated systematically to cover the variety of bird habitats on-site, particularly habitats with a high potential to support significant bird species and those that occur within or adjacent to proposed areas of disturbance. The locations of all point count stations and significant bird species were recorded in the field with a high-accuracy GPS.

Signs of breeding activity accompanied each bird record (e.g., singing male, probable pair, agitation, carrying nest material, etc.). The OBBA provides four (4) breeding categories to accompany each observation:

> ***Observed:*** Species observed during its breeding season (no evidence of breeding).
>
> ***Possible Breeding:*** Includes any of the following observation types: 1) species observed in its breeding season in suitable nesting habitat, and 2) singing male present, or breeding calls heard, in its breeding season in suitable nesting habitat.
>
> ***Probable Breeding:*** Includes any of the following observation types: 1) pair observed in their breeding season in suitable nesting habitat, 2) permanent territory presumed through registration of territorial song on at least 2 days, a week or more apart, at the same place, 3) courtship or display between a male and a female or 2 males, including courtship feeding or copulation, 4) visiting probable nest site, 5) agitated behaviour or anxiety calls of an adult, 6) brood patch on adult female or cloacal protuberance on adult male, and 7) nest-building or excavation of nest hole.
>
> ***Confirmed Breeding:*** Includes any of the following observation types: 1) distraction display or injury feigning, 2) used nest or egg shell found (occupied or laid within the period of the study), 3) recently fledged young or downy young, including young incapable of sustained flight, 4) adults leaving or entering nest site in circumstances indicating occupied nest, 5) adult carrying faecal sac, 6) adult carrying food for young, 7) nest containing eggs, and 8) nest with young seen or heard.

2 RESULTS

Table 1 . Results of Breeding Bird Surveys.

Common Name	Scientific Name	Breeding Bird Stations[1] and Breeding Status[2]					
		B-1	**B-2**	**B-3**	**B-4**	**B-5**	**B-6**
American Crow	*Corvus brachyrhynchos*		O		Po		
American Goldfinch	*Spinus tristis*		Po	Po	Po		Pr
American Robin	*Turdus migratorius*						Po
Bank Swallow	***Riparia riparia***					**O**	**Co**
Baltimore Oriole	*Icterus galbula*	Po	Po		Po		
Barn Swallow	***Hirundo rustica***	O					Po
Brown-headed Cowbird	*Molothrus ater*	Pr					Po
Canada Goose	*Branta canadensis*			O			
Cedar Waxwing	*Bombycilla cedrorum*	Po					Po
Chipping Sparrow	*Spizella passerina*	Pr				Po	
Common Grackle	*Quiscalus quiscula*	Pr	Po				
Common Yellowthroat	*Geothlypis trichas*					Po	
Downy Woodpecker	*Dryobates pubescens*		Po		Po	Po	
Eastern Kingbird	*Tyrannus tyrannus*						Po
Eastern Wood-pewee	***Contopus virens***	**Po**		**Po**		**Pr**	**Po**
European Starling	*Sturnus vulgaris*	Pr					
Field Sparrow	*Spizella pusilla*						Pr
Great Crested Flycatcher	*Myrarchus crinitus*					Pr	
Horned Lark	*Ereophila alpestris*	Po					
Indigo Bunting	*Passerina cyanea*		Po	Po	Po	Po	Pr
Killdeer	*Charadrius vociferus*		Po				Po
Mallard	*Anas platyrhynhos*		Po				
Pileated Woodpecker	*Dryocopus pileatus*				Po		
Red-eyed Vireo	*Vireo olivaceus*		Po	Pr		Pr	
Rose-breasted Grosbeak	*Pheucticus ludovicianus*		Po				
Red-winged Blackbird	*Agelaius phoeniceus*	Pr	Po	Po			
Sandhill Crane	*Grus canadensis*		Po				
Savannah Sparrow	*Passerculus sandwichensis*	Po					
Song Sparrow	*Melospiza melodia*	Po	Pr			Pr	Po
Turkey Vulture	*Cathartes aura*						O
Vesper Sparrow	*Pooecetes gramineus*	Po					Po

Common Name	Scientific Name	Breeding Bird Stations[1] and Breeding Status[2]					
		B-1	**B-2**	**B-3**	**B-4**	**B-5**	**B-6**
Warbling Vireo	*Vireo gilvis*		Po				Po
White-breasted Nuthatch	*Sitta carolinensis*			Pr		Po	Po
Wood Duck	*Aix sponsa*		Po				
Yellow-throated Vireo	*Vireo flavifrons*				Pr		

1 Locations of breeding bird survey stations are indicated on **Figure 2**.

2 Co = Confirmed Breeder; Pr = Probable Breeder; Po = Possible Breeder; O = Observed (no evidence of breeding). Breeding status determined based on the results of the formal breeding bird surveys; where a higher level of breeding status was documented incidentally (i.e., during other field surveys), this is noted within the main body of the report (where applicable).

Appendix 6. Significant Wildlife Habitat Assessment

1 RESULTS

Table 1. Results of the Significant Wildlife Habitat Assessment.

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas o within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2024 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Seasonal Concentration Areas of Animals			
Waterfowl Stopover and Staging Areas (Terrestrial)	**No.** Meadows, fields, and/or thickets that annually flood during spring and could support significant congregations of migrating waterfowl are absent.	--	--
Waterfowl Stopover and Staging Areas (Aquatic)	**No.** Large surface water features (e.g., ponds, lakes, bays, coastal inlets, large watercourses, etc.) and/or wetlands that annually flood during spring could support significant congregations of migrating waterfowl are absent.	--	--
Shorebird Migratory Stopover Areas	**No.** Unvegetated open areas adjacent to surface water features (e.g., shorelines, beaches, mudflats, etc.) and could support significant congregations of migrating shorebirds are absent	--	--
Raptor Wintering Areas	**No.** While forest and (to a lesser extent) meadow habitats are present, which may occasionally support wintering raptors, such habitats are too small to support significant congregations of wintering raptors.	--	--
Bat Hibernacula	**No.** Natural features and habitats that could support hibernating bats (e.g., caves, mine shafts, crevices, karsts, etc.) are absent.	--	--
Bat Maternity Colonies	**Yes.** Mature deciduous and mixed forests with a high-density (i.e., >10/ha) of large-diameter (i.e., ≥25 cm DBH) trees containing cracks/cavities are present.	**Unknown.** Acoustic monitoring devices not deployed as part of this study.	**Negligible.** Pit extraction activities are restricted from the boundary (i.e., dripline) of the deciduous forests (FODM5-1, FODM5-7), which have the greatest likelihood of supporting maternal colonies. See report for greater details.
Turtle Wintering Areas	**Yes.** Surface water features and/or wetlands with soft, muddy substrate which do not freeze to the bottom during winter are present.	**Negligible**. No turtles observed during the 2025 fieldwork program.	--
Reptile Hibernaculum	**No.** Features (e.g., small mammal burrows, rock crevices, etc.) and/or habitats (e.g., certain wetlands with a fluctuating water table, etc.) that could provide snakes with access below the frost line are absent.	--	--
Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)	**Yes.** Features that could support nesting by Cliff Swallow and Northern Rough-winged swallow (e.g., eroding banks, sandy hills, borrow pits, steep slopes, cliff faces, etc.) are present on Adjacent Lands to the west.	**Negligible**. Neither species was detected within the Study Area during breeding bird surveys.	--
Colonially - Nesting Bird Breeding Habitat Breeding Habitat (Tree/Shrubs)	**Yes.** Swamp and treed fen communities are present.	**Negligible**. No indicator species was detected within the Study Area during breeding bird surveys. --	--
Colonially - Nesting Bird Breeding Habitat (Ground)	**No.** Rocky islands or peninsulas along lakes or large rivers are absent.	--	--

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas o within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2024 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Migratory Butterfly Stopover Areas	**No.** A mixture of fields and forests within 5 km from the shoreline of Lake Erie or Lake Ontario are absent.	--	--
Landbird Migratory Stopover Areas	**No.** While migrating landbirds may temporarily stopover to feed and rest, the Subject Property is unlikely to support significant congregations of migrating landbirds as it is greater than 5 km from the shoreline of Lake Erie.	--	--
Deer Winter Congregation Areas	**No.** The Subject Property and/or Adjacent Lands have not been identified as a deer wintering area by MNRF.	--	--
Rare Vegetation Communities or Specialized Habitats for Wildlife			
Cliffs and Talus Slopes	**No.** Cliffs and talus slope communities are absent.	--	--
Sand Barren	**No.** Sand barren communities are absent.	--	--
Alvar	**No.** Flora characteristic of alvars are absent.	--	--
Old Growth Forest	**No.** Based on a review of historical aerial photographs, the deciduous forest has emerged recently and would not be expected to exhibit old-growth characteristics (e.g., old trees, abundant snags and downed woody debris, canopy gaps caused by species turnover, limited disturbance, etc.).	--	--
Savannah	**No.** Flora characteristic of savannahs are absent.	--	--
Tallgrass Prairie	**No.** Flora characteristic of tallgrass prairies are absent.	--	--
Other Rare Vegetation Community	**No.** Provincially rare vegetation communities are absent.	--	--
Waterfowl Nesting Area	**Yes.** Wetlands which may support nesting waterfowl are present.	**No**. No observations of listed wildlife species (per the SWH 7E criteria) were recorded within the Study Area. One (1) Mallard was recorded, but no evidence of nesting pairs was observed. Similarly, one (1) Wood Duck was recorded, but no evidence of nesting pairs was observed.	--
Bald Eagle and Osprey Nesting, Foraging and Perching Habitat	**No.** Forest communities adjacent to large surface water features are absent.	--	--
Woodland Raptor Nesting Habitat	**Yes.** On-site forest communities may support nesting raptors.	**No.** No stick nests or evidence of active nesting of listed wildlife species (per the SWH 7E criteria) were documented within Sugar Maple dominated forests (FODM5-1, FODM5-7).	--
Turtle Nesting Areas	**No.** Exposed mineral soils adjacent to surface water features (e.g., lakes, ponds, etc.) and/or wetlands that may support turtles are absent. Any areas of exposed mineral soil were observed to be waterlogged and therefore not suitable for successful turtle nesting.	--	--
Seeps and Springs	**No.** Areas where groundwater emerges at the surface and may support specialized habitat for plants and wildlife are absent.	--	--

Ecoregion 7E	Do any Features, Habitats, or Areas within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Candidate SWH?	Do any Features, Habitats, or Areas o within the Study Area meet relevant criteria (Ecoregion 7E Criteria Schedule) as Confirmed SWH?	Likelihood that Negative Effects to SWH (i.e., "degradation that threatens the health and integrity" as defined in the 2024 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Amphibian Breeding Habitat (Woodland)	**Yes.** Forests with wetlands, ponds, and/or pools that may support significant congregations of breeding amphibians are present.	**Yes**. The Silver Maple dominated swamp (SWDM3-2) and two wetland communities (MASM1-1, SAF1-3) located within the swamp (and deciduous forest) are confirmed SWH based on the presence of confirmed breeding of 2 or more listed wildlife species (per the SWH 7E criteria). The isolated maple dominated swamp (SWDM3) on Adjacent Lands to the west is also confirmed SWH based on the presence of confirmed breeding of 2 or more listed wildlife species (per the SWH 7E criteria).	**Negligible**. Pit extraction activities are restricted from the boundary (i.e., dripline) of the Sugar Maple forest (FODM5-1) which contains this SWH type. No operations are proposed within 30 m of any wetland containing significant amphibian breeding habitat. The maple swamp located on Adjacent Lands to the west is > 50 m from the edge of the Subject Property and was considered through a separate aggregate licence application. See report for further details.
Amphibian Breeding Habitat (Wetlands)	**No.** Wetlands and surface water features (e.g., ponds, lakes, etc.) that may support significant congregations of breeding amphibians are absent.	--	--
Woodland Area-Sensitive Bird Breeding Habitat	**No.** Interior forest interior conditions (i.e., >200 m from edge) are absent.	**--**	--
Habitat for Species of Conservation Concern			
Marsh Bird Breeding Habitat	**Yes.** Wetlands with shallow water and emergent aquatic vegetation are present.	**No**. No observations of listed wildlife species (per the SWH 7E criteria) were recorded within the Site during breeding bird surveys.	--
Open Country Bird Breeding Habitat	**No.** Meadow habitats of sufficient size are absent.	--	--
Shrub/Early Successional Bird Breeding Habitat	**No.** Shrub/early-successional habitats of sufficient size are absent.	**--**	--
Terrestrial Crayfish	**Yes.** Marsh and swamp communities and/or wet fields are present.	**Yes.** Terrestrial crayfish chimneys were documented within the Study Area.	**Negligible**. While crayfish chimneys were observed within the Subject Property, they were not observed within the area proposed for extraction. No chimneys were documented within 100 m of the Site.
Special Concern and Rare Wildlife Species	**Yes.** See **Table 2** below.	**Yes.** See **Table 2** below.	**Possible.** See **Table 2** below.
Animal Movement Corridors			
Amphibian Movement Corridors	**Yes.** Significant amphibian movement habitat may be present.	**Yes.** An amphibian movement habitat was identified as part of the previous licence application for Trafalgar Pit, though it is not known whether amphibians are currently using the corridor for movement or dispersal.	**Negligible**. A previously identified amphibian movement corridor on the western Site boundary (forming the eastern licence boundary of Trafalgar Pit) is being relocated to the northern edge of the licence. The new corridor will better connect areas of higher amphibian breeding activity.

Table 2. Results of the Special Concern and Provincially Rare Species Assessment.

Species	S Rank	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2024 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Birds						
Barn Swallow (*Hirundo rustica*)	S4B	SC	OBBA	• Nests in barns, bridge/culvert undersides, awnings/overhangs on sides of buildings, and (historically) tree cavities. • Forages in a variety of open areas including agricultural lands, meadows, prairies, woodland clearings, marshes, and above waterbodies.	**Confirmed.** Species recorded during breeding bird surveys as "Possible" breeder.	**Negligible**. Proposed extraction activities and related operations are restricted from existing structures suitable for nesting within the Study Area (e.g., residences, barns).
Eastern Wood-pewee (*Contopus virens*)	S4B	SC	NHIC; iNaturalist; OBBA	• Breeds and forages in relatively open, deciduous and mixed forests of various sizes (including urban forest fragments) and along forest edges.	**Confirmed.** Species recorded during breeding bird surveys as "Probable" breeder.	**Negligible**. Proposed extraction activities and related operations are to be restricted from the edge of both deciduous forests (FODM5-1, FODM5-7) which may provide suitable breeding habitat for this species plus a 15 m setback. See report for further details.
Horned Grebe (*Podiceps auritus*)	S1B,S3N,S4M	SC	NHIC "Rare Species" iNaturalist Project	• Breeding in shallow, freshwater ponds. Migrants may stop over on large bodies of water, including rivers.	**Negligible**. The species was not detected during breeding bird surveys.	--
Purple Martin (*Progne subis*)	S3B	--	OBBA	• Nests in man-made structures such as birdhouses, gourds, and occasionally in the eaves of buildings or on porches, often in colonies. • Forages in open areas including fields, parks, and near water bodies, where they catch insects in flight.	**Negligible**. The species was not detected during breeding bird surveys.	--
Redhead (*Aythya americana*)	S2B,S4N	--	NHIC "Rare Species" iNaturalist Project	• Wetlands with emergent vegetation, reservoirs, lakes, coastal marshes, estuaries, and bays.	**Negligible**. The species was not detected during breeding bird surveys.	--
Ruddy Duck (*Oxyura jamaicensis*)	S3B,S4N,S5M	--	NHIC "Rare Species" iNaturalist Project	• Primarily breeds in wetlands and prairie pothole regions, favoring marshes, reservoirs, and other freshwater habitats with abundant vegetation for nesting.	**Negligible**. The species was not detected during breeding bird surveys.	--
Wood Thrush (*Hylocichla mustelina*)	S4B	SC	OBBA	• Breeds and forages in second-growth and mature deciduous and mixed forests with a well-developed understory.	**Negligible**. The species was not detected during breeding bird surveys.	--
Insects						
American Bumble Bee (*Bombus pensylvanicus*)	S3S4	SC	Species distribution	• Occupies a range of open areas with nectaring sites. • Nests above ground in dense mats of long grasses but has also been known to nest in abandoned rodent burrows and bird nests high above the ground.	**Negligible.** Suitable habitat is absent from the Study Area and the species was not observed during the 2025 fieldwork program.	--
Black Dash (*Euphyes conspicua*)	S3	--	Ontario Butterfly Atlas	• Breeds in wet meadows, marshes, and along the edges of ponds and streams, often laying eggs on the leaves of aquatic plants. • Forages in open areas with abundant sunlight, including fields and wetlands, primarily feeding on nectar from flowers and occasionally on tree sap.	**Possible**. Suitable habitat is present within the floating aquatic community (SAF1-3) meadow marsh (MAMM3-1) and shallow marsh communities (MASM1-1, MASM1-14).	**Negligible**. Proposed extraction activities and related operations are to be restricted from the edge of the Sugar Maple dominated forest (FODM5-1) which contains wetland communities which may provide suitable habitat for the species.

Species	S Rank	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy or Use within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area[1]	Likelihood that Negative Effects to the Species or its Habitat (i.e., "degradation that threatens the health and integrity" as defined in the 2024 PPS) will occur based on the Proposed Development Plan and any related Site Alteration Activities.
Monarch (*Danaus plexippus*)	S2N,S4B	SC	Species distribution	•Oviposits on Milkweeds (*Asclepias* spp.). • Generalist foraging that nectars in most areas with wildflowers.	**Possible.** Species is a habitat generalist and occupies a wide range of areas.	**Negligible**. Proposed extraction activities and related operations lack milkweed (as they are under active agriculture). The broader landscape surrounding the Study Area provides nectaring and ovipositing sites for this species.
Reptiles						
Northern Map Turtle (*Graptemys geographica*)	S3	SC	ORAA	• Inhabits large rivers and lakes with slow-moving water and soft bottoms, requiring high-quality water that supports mollusc prey; it prefers areas with abundant basking sites such as rocky shores, fallen trees, and exposed banks, and spends winters hibernating underwater in well-oxygenated, slow-moving sections of these water bodies.	**Negligible.** Species not detected throughout the 2025 fieldwork program.	--
Snapping Turtle (*Chelydra serpentina*)	S4	SC	NHIC, ORAA	• Found primarily in slow-moving freshwater habitats with soft mud or sand bottoms and abundant vegetation, including ponds, marshes, wetlands, rivers, and lakes; it often utilizes shallow waters for hiding and hibernates in mud or silt near shorelines, with nesting typically occurring in open areas with loose sandy soil such as road embankments and shorelines.	**Negligible.** Species not detected throughout the 2025 fieldwork program.	--
Vascular Plants						
Carey's Sedge (*Carex careyana*)	S3	--	Species distribution and on-site habitat	• Occupies rich deciduous forests, wooded slopes, and ravines.	**Confirmed**. Species was confirmed to be present within the Sugar Maple - Black Cherry dominated forest (FODM5-7).	**Negligible**. Proposed extraction activities and related operations are to be restricted from the Sugar Maple - Black Cherry dominated forest (FODM5-7). See report for further details.
Goldenseal (*Hydrastis canadensis*)	S2	SC	Critical Habitat for SAR Dataset	• Occupies rich deciduous forests.	**Negligible**. Species not detected during vascular plant surveys, and suitable habitat is absent from the Study Area.	--
Lizard's-tail (*Saururus cernuus*)	S3	--	NHIC "Rare Species" iNaturalist Project	• Occupies (often deciduous) floodplains, and borders of streams and ponds.	**Negligible**. Species not detected during vascular plant surveys, and suitable habitat is absent from the Study Area.	--

[1] Likelihood categories should be interpreted as follows:

Negligible: so limited that the assessed species can be assumed absent.

Unlikely: while theoretically conceivable, species presence very improbable or temporary based on available information (e.g., habitat conditions, range, abundance in local landscape, etc.).

Possible: species presence plausible based on available information; no convincing evidence suggesting species could not occur on-site.

Probable: while not confirmed, available information suggests species has a high likelihood of being present.

Confirmed: species observed and/or evidence of occupation (e.g., tracks, etc.) documented.

Subnational Ranks (S-Ranks) are interpreted as follows:
S1: Critically Imperiled - Extremely rare in Ontario; usually 5 or fewer occurrences in the province, or very few remaining hectares.
S2: Imperiled - Very rare in Ontario; usually between 5 and 20 occurrences in the province, or very few remaining hectares.
S3: Vulnerable - Rare to uncommon in Ontario; usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining.
S4: Apparently Secure – Apparently secure in the province, with many occurrences.
S5: Secure – Demonstrably secure in Ontario.
SH: Possibly Extirpated – Known from only historical records but still some hope of discovery.

SX: Extirpated – A species or vegetation community that is extirpated from Ontario.
SNA: Not Applicable – A conservation status risk is not applicable because the species or vegetation community is not a suitable target for conservation activities.
SNR: Unranked – Conservation status not yet assessed.
SU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.

Appendix 7. Endangered and Threatened Species Assessment

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
Birds					
Bank Swallow (*Riparia riparia*)	THR	OBBA	• Nests in natural or anthropogenically derived exposed, sandy substrates on vertical or steep surfaces. • Forages in a variety of open areas including agricultural lands, meadows, prairies, woodland clearings, marshes, and above waterbodies.	**Confirmed.** This species is confirmed to be utilizing a berm on Adjacent Lands for nesting.	**Negligible.** Species is absent from the Subject Property though may occur within the Site should the proposed extractive uses be approved. See report for further details.
Bobolink (*Dolichonyx oryzivorus*)	THR	OBBA	• Breeds and forages in hayfields, pastures, meadows, grasslands, and prairies which are often (but not always) greater 4 ha. • May be found in more marginal habitats (e.g., shrubby fields, smaller fields, etc.) during migration or following disturbance to breeding habitats (e.g., hay cutting).	**Negligible.** Suitable breeding habitat is absent.	--
Chimney Swift (*Chaetura pelagica*)	THR	OBBA	• Nests in large, uncapped chimneys and (historically) tree cavities. • May forage above a wide variety of anthropogenic (e.g., cities, towns) and natural (e.g., fields, forests) areas.	**Negligible.** Suitable breeding habitat is absent.	--
Eastern Meadowlark (*Sturnella magna*)	THR	"OBBA	• Breeds and forages in hayfields, savannahs, pastures, meadows, grasslands, prairies, and shrubby fields.	**Negligible.** Suitable breeding habitat is absent.	--
Mammals					
Eastern Red Bat (*Lasiurus borealis*)	END	Species distribution and on-site habitats	• • Maternity roost sites are typically within deciduous or coniferous forests of all age classes, with a preference for roosting in tall, large diameter trees. • • Occurrences of roosting in anthropogenic structures are rare. • • A migratory species primarily found in Ontario during the summer months, with summer habitat consisting of foraging, drinking, and roosting sites.	**Possible.** Forest communities within the Study Area could provide maternity roosting opportunities for this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	**Negligible.** No tree removal is proposed within the forest communities. A timing window restriction is applied to necessary tree removal activities outside the forest communities to avoid impacting roosting bats. Additional mitigation measures for pit operations are also provided. See report for greater details.
Hoary Bat (*Lasiurus cinereus*)	END	Species distribution and on-site habitats	• • Maternity roost sites are typically within deciduous or coniferous forests of all age classes, with a preference for roosting in tall, large diameter trees. • • Occurrences of roosting in anthropogenic structures are rare. • • A migratory species primarily found in Ontario during the summer months, with summer habitat consisting of foraging, drinking, and roosting sites.	**Possible.** Forest communities within the Study Area could provide maternity roosting opportunities for this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	**Negligible.** No tree removal is proposed within the forest communities. A timing window restriction is applied to necessary tree removal activities outside the forest communities to avoid impacting roosting bats. Additional mitigation measures for pit operations are also provided. See report for greater details.
Little Brown Myotis (*Myotis lucifugus*)	END	Species distribution and on-site habitats	• Maternity roosts sites most often include buildings and large diameter trees with cracks, crevices, and/or exfoliating bark. • Overwinters in caves and mines that maintain temperatures above 0°C.	**Possible.** Forest/woodland communities within the Study Area could provide roosting opportunities for maternity colonies of this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest/woodland communities (including	**Negligible.** No tree removal is proposed within the forest/woodland or treed swamp communities. A timing window restriction is applied to necessary tree removal activities outside the forest/woodland and swamp communities to avoid impacting roosting bats.

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
				smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	Additional mitigation measures for pit operations are also provided. See report for greater details.
Northern Myotis (*Myotis septentrionalis*)	END	Species distribution and on-site habitats	• Maternity roosts most often include large diameter trees with cracks, crevices, and/or exfoliating bark (buildings rarely used). • Overwinters in caves and mines that maintain temperatures above 0°C.	**Possible.** Forest/woodland communities within the Study Area could provide roosting opportunities for maternity colonies of this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest/woodland communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	**Negligible.** No tree removal is proposed within the forest/woodland or treed swamp communities. A timing window restriction is applied to necessary tree removal activities outside the forest/woodland and swamp communities to avoid impacting roosting bats. Additional mitigation measures for pit operations are also provided. See report for greater details.
Silver-haired Bat (*Lasionycteris noctivagans*)	END	Species distribution and on-site habitats	• • Maternity roost sites are typically within decaying, large diameter deciduous or coniferous trees with heart-rot or exfoliating bark. • • Known to occasionally roost on or in buildings. • • A migratory species primarily found in Ontario during the summer months, with summer habitat consisting of foraging, drinking, and roosting sites.	**Possible.** Forest communities within the Study Area could provide maternity roosting opportunities for this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	**Negligible.** No tree removal is proposed within the forest communities. A timing window restriction is applied to necessary tree removal activities outside the forest communities to avoid impacting roosting bats. Additional mitigation measures for pit operations are also provided. See report for greater details.
Tri-colored Bat (*Perimyotis subflavus*)	END	Species distribution and on-site habitats	• Maternal roosting sites include Maple (*Acer* spp.) and Oak (*Quercus* spp.) with dead/dying leaf clusters. • Overwinters in caves and mines that maintain temperatures above 0°C.	**Possible.** Forest/woodland communities containing oak (*Quercus* spp.) and maple (*Acer* spp.) within the Study Area could provide roosting opportunities for maternity colonies of this species within larger-diameter snags, cavity trees, or trees with cracks/crevices/loose bark. Other trees within or outside the forest/woodland communities (including smaller-diameter trees) may offer non-specific roosting habitat (i.e., "day roosts") for individual bats (males or non-reproductive females). The forest/woodland edge and canopy openings provide suitable foraging habitat for this species.	**Negligible.** No tree removal is proposed within the forest/woodland or treed swamp communities. A timing window restriction is applied to necessary tree removal activities outside the forest/woodland and swamp communities to avoid impacting roosting bats. Additional mitigation measures for pit operations are also provided. See report for greater details.
Mussels					
Purple Wartyback (*Cyclonaias tuberculata*)	THR	"NHIC Rare Species" iNaturalist Project	• Small to large rivers with cobble, gravel, or sand substrates.	**Negligible**. Suitable habitat is absent from the Study Area.	--
Plants					

Species	Status per O. Reg. 230/08 of the ESA	Rationale for Consideration in this Study	General Description of Habitats and Features which the Species is Known to Occupy within the Ecoregion in which this Study is Located	Likelihood that the Species Occupies the Study Area	Likelihood that Negative Effects to the Species or its Habitat (i.e., "Damage" or "Destruction" as defined in the ESA) will occur based on the Proposed Development Plan and any related Site Alteration Activities
RESTRICTED SPECIES	END	NHIC	• Occupies rich, relatively undisturbed deciduous forests.	Known from Adjacent Lands. Species not documented within the Site or Subject Property during vascular plant surveys.	Known from Adjacent Lands. Species not documented within the Site or Subject Property during vascular plant surveys.
Black Ash (*Fraxinus nigra*)	END	Species distribution and on-site habitats	• Occupies deciduous swamps (often peaty), floodplains, and wet woods.	**Negligible.** Species not documented during vascular plant surveys.	--
Blue Ash (*Fraxinus quadrangulata*)	THR	"NHIC Rare Species" iNaturalist Project	• Areas of full sun within floodplains, sandy beaches, and limestone outcrops associated with Lake Erie.	**Negligible.** Species not documented during vascular plant surveys.	--
Butternut (*Juglans cinerea*)	END	Species distribution and on-site habitats	• Occupies a variety of treed habitats including mature forests, early-successional forests, and hedgerows.	**Negligible.** Species not documented during vascular plant surveys.	--
False Hop Sedge (*Carex lupuliformis*)	END	NHIC	• Edges of maple-dominated swamps, floodplains, and other wetlands.	**Negligible.** Known from the local landscape. Species not documented within the Subject Property during vascular plant surveys.	--
Reptiles					
Blanding's Turtle (*Emydoidea blandingii*)	THR	ORAA	• Occupies freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes, and swamps. • Nests in exposed, usually coarse, friable substrate. • Known to make long-distance overland movements (i.e., several kilometers) between habitats.	**Unlikely.** Suitable feeding and basking habitat (e.g., wetlands, large woodland ponds, etc.) may be present within the Study Area; however, this species was not detected during the 2025 fieldwork program or based on other field activities by Terrastory in the local landscape in 2024.	--
Spotted Turtle (*Clemmys guttata*)	END	Critical Habitat for SAR National Dataset	• A semi-aquatic turtle which prefers ponds, marshes, and ditches with slow-moving, unpolluted water.	**Negligible**. Suitable habitat is absent from the Study Area.	--
Wood Turtle (*Glyptemys insculpta*)	END	Critical Habitat for SAR National Dataset	• Occupies rivers, streams, and lakes with clear water, rocky or gravel bottoms, abundant cover, and an abundance of crayfish.	**Negligible**. Suitable habitat is absent from the Study Area.	--

[1] Likelihood categories are to be interpreted as follows:

Negligible: so limited that the assessed species can be assumed absent.

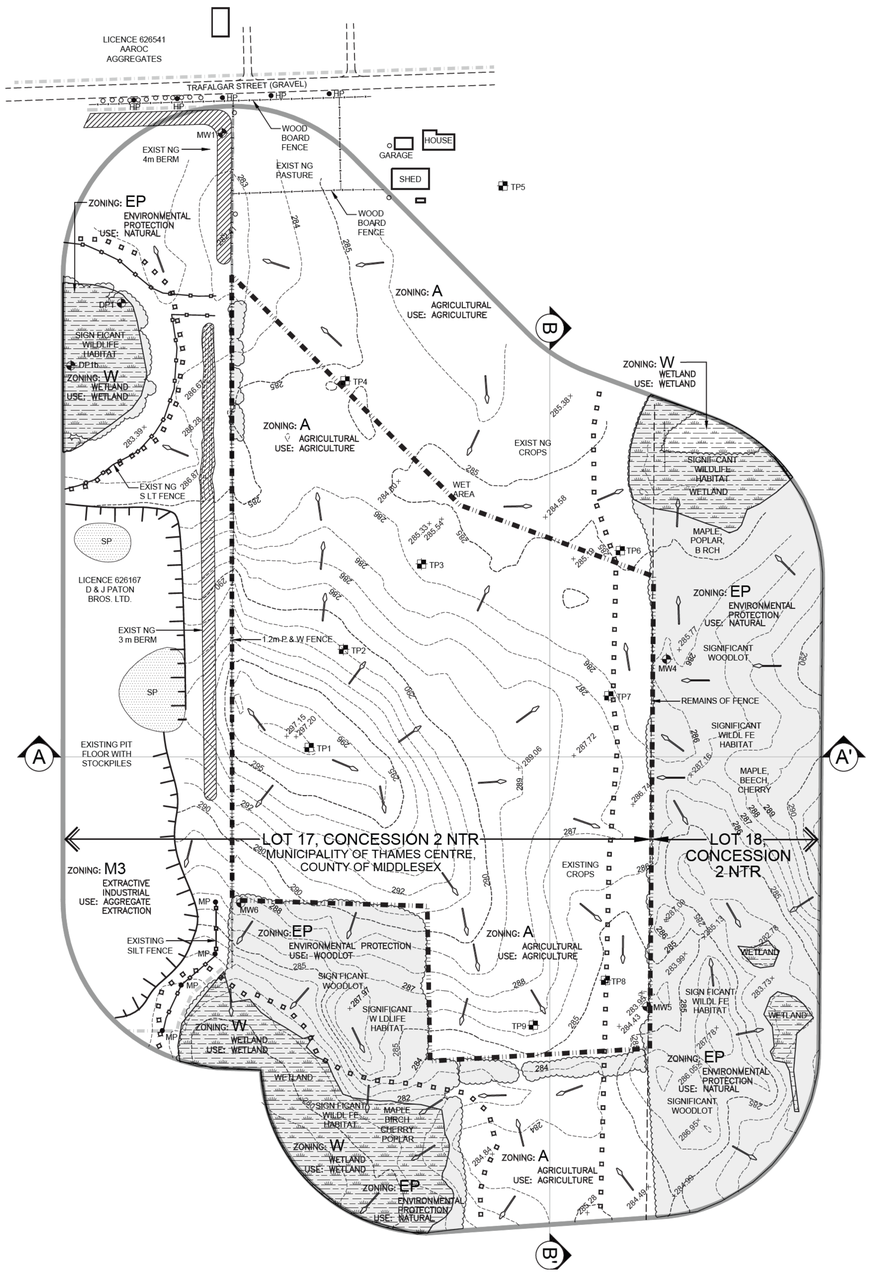
Unlikely: while theoretically conceivable, species presence very improbable or temporary based on available information (e.g., habitat conditions, range, abundance in local landscape, etc.).

Possible: species presence plausible based on available information; no convincing evidence suggesting species could not occur on-site.

Probable: while not confirmed, available information suggests species has a high likelihood of being present.

Confirmed: species observed and/or evidence of occupation (e.g., tracks, etc.) documented.

Appendix 8. Site Plans



EXISTING FEATURES NOTES

GENERAL SITE PLAN INFORMATION

1. THIS SITE PLAN CONSIST OF 4 DRAW NGS AND MUST BE READ COLLECTIVELY.

2. ALL MEASUREMENTS SHOWN ON THIS SITE PLAN ARE IN METRES.

LICENCE INFORMATION

3. THIS SITE PLAN IS PREPARED FOR SUBMISSION TO THE MINISTRY OF NATURAL RESOURCES UNDER THE AGGREGATE RESOURCES ACT FOR A CLASS 'A' LICENCE, PIT BELOW THE WATER TABLE.

4. APPLICANT:
   PATON AGGREGATES & SO LS LTD.
   344026 EBENEZER ROAD,
   MOUNT ELG N, ONTARIO
   N0J 1N0

5. TOTAL AREA TO BE LICENCED: 11 0 ha
   TOTAL AREA TO BE EXTRACTED: 9.4 ha
   TOTAL AREA TO REHABILITATED: 9.4 ha

BASE INFORMATION

6. TOPOGRAPHIC INFORMATION FOR LOT 17, CONCESSION 2 NETR WAS OBTAINED FROM FIRST BASE SOLUTIONS, DECEMBER 13, 2024. ALL ELEVATIONS ARE GEODETIC AND ABOVE SEA LEVEL (ASL).

7. THE SITE WAS F ELD CHECKED BY HARR NGTON MCAVAN LTD., OCTOBER 29, 2024.

8. ZONING INFORMATION OBTA NED FROM MAPS.MIDDLESEX.CA, DECEMBER 19, 2024
   PROPOSED LICENCE AREA IS PRESENTLY ZONED A (AGRICULTURE) . A ZBA W LL BE APPLIED FOR TO CHANGE A TO M3 (EXTRACTIVE INDUSTRIAL).

9. UTRCA REGULATION LIMIT OBTAINED FROM UPPER THAMES RIVER CONSERVATION AUTHORITY REGULATED AREA SCREEN NG MAP, DECEMBER 19, 2024.

HYDROGEOLOGICAL INFORMATION

10. HYDROGEOLOGICAL INFORMATION INCLUDING GROUNDWATER ELEVATION WAS OBTAINED FROM REPORT BY GROUNDWATER SC ENCE CORP. DATED MARCH 2026.

11. THE MAXIMUM PREDICTED WATER TABLE ELEVATION VAR ES ACROSS THE SITE FROM 282.2 TO 283.4 m ABOVE SEA LEVEL (A.S L.).

12. THE SITE IS LOCATED IN THE UPPER THAMES RIVER SOURCE WATER PROTECTION AREA. SOURCE WATER PROTECTION POLIC ES DO NO NOT APPLY TO THIS SITE (REFER TO HYDROGEOLOGICAL REPORT).

TECHNICAL REPORTS

13. HYDROGEOLOGICAL INFORMATION WAS OBTA NED FROM REPORTY BY GROUNDWATERSC ENCE CORP. DATED MARCH 2026 (REFER TO SHEET 2 OF 4 FOR TECHNICAL RECOMMENDATIONS).

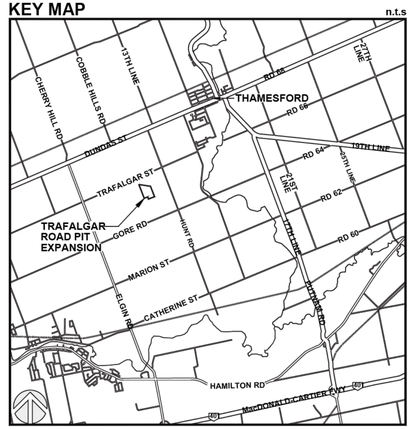
14. NATURAL ENV RONMENT NFORMATION WAS OBTAINED FROM REPORT BY TERRASTORY ENVIRONMENTAL CONSULTING DATED MARCH 2026 (REFER TO SHEET 2 OF 4 FOR TECHNICAL RECOMMENDATIONS).

15. ARCHAEOLOGICAL INFORMATION WAS OBTA NED FROM REPORT BY TIMM NS MARTELLE HERITAGE CONSULTANTS INC. DATED FEBRUARY 18, 2025 (REFER TO SHEET OF 4 FOR TECHNICAL RECOMMENDATIONS).

LEGEND

- BOUNDARY OF AREA TO BE LICENCED
- 120m INFORMATION BOUNDARY
- EXISTING LICENSED AREA
- LOT LINE
- UTRCA REGULATION LIMIT
- WATERCOURSE
- EXISTING FENCE
- EXISTING 6m CONTOUR LINE (285)
- EXISTING 1m CONTOUR LINE (284)
- EXISTING SPOT ELEVATION (+283.95)
- EXISTING VEGETATION
- EXISTING WETLAND
- EXISTING PIT FACE
- EXISTING BERM
- EXISTING SILT FENCE
- EXISTING MARKER POST (MP)
- LOCATION OF SECTION (A)
- EXISTING BUILDING
- EXISTING HYDRO POLE (HP)
- DIRECTION OF SURFACE WATER DRAINAGE
- TEST PIT LOCATION AND NUMBER (DUG BY APPLICANT ON OCTOBER 29, 2024) (TP4)
- MONITORING WELL LOCATION AND NUMBER INSTALLED UNDER THE DIRECTION OF GROUNDWATER SCIENCE CORP. NOVEMBER 2024 (MW 4)

KEY MAP n.t.s



NO.	DATE	REVISIONS	OWNER	HM	MNR
		Pre Licence Review			
		Site Plan Amendments			

Harrington McAvan Ltd
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Offices in Markham & Cambridge

Project Name

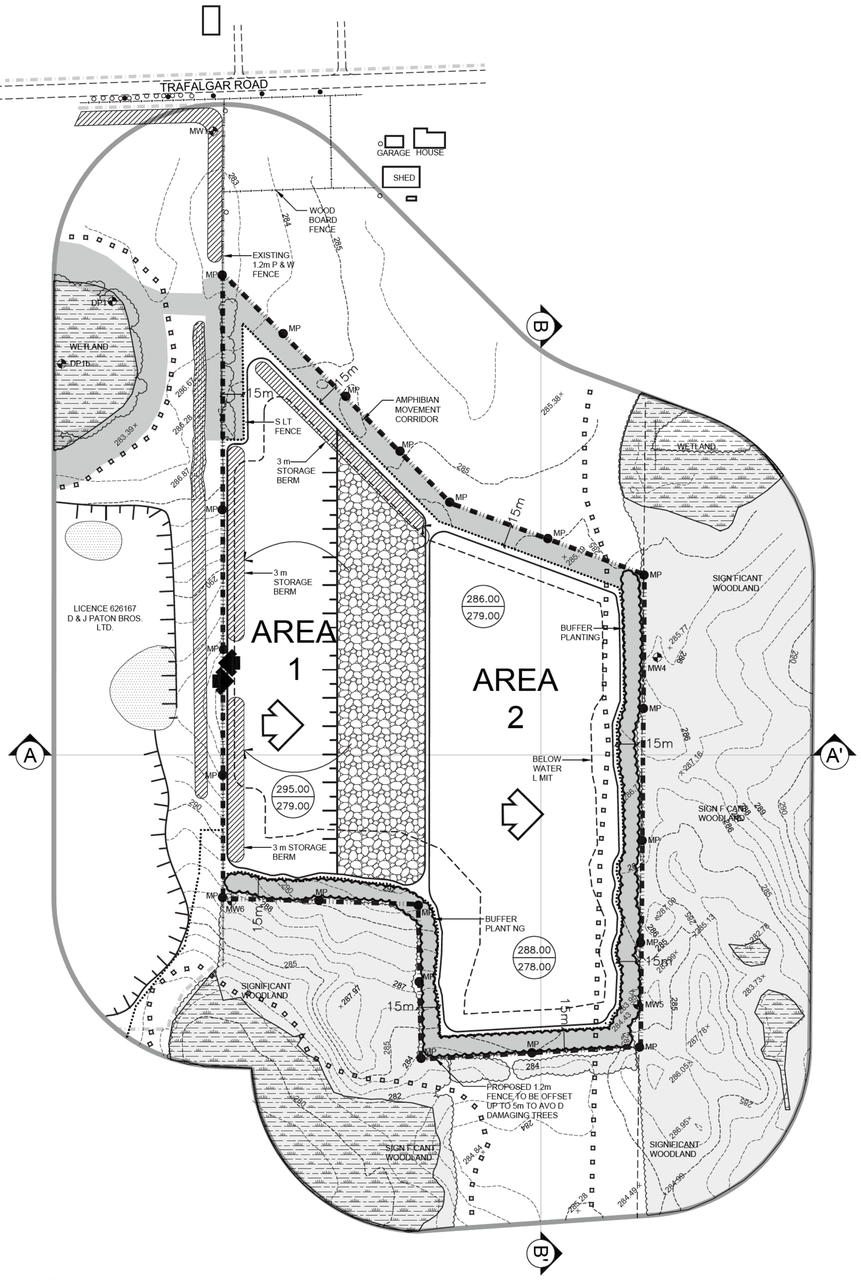
PATON AGGREGATES & SOILS LTD.

TRAFALGAR EXPANSION PIT

LICENCE No:
LICENCEE SIGNATURE
PART LOT 17, CONCESSION 2 NTR (FORMERLY NORTH DORCHESTER)
MUNICIPALITY OF THAMES CENTRE, COUNTY OF MIDDLESEX

Scale 1: 2000 (0 10 50 80m)	North	Stamp: DRAFT
Drawing Status: FOR LICENCE APPROVAL		
Drawn SB	Checked RM/BJ	Issue Date MAR 2026
Drawing Title: EXISTING FEATURES PLAN		Project Number 24-22
		Drawing Number 1 OF 4

FILE NAME: 24-22/COMP/2422-1.DWG
PLOT DATE: MARCH 5, 2026



PHASE A

PHASE A NOTES

1. PRIOR TO ANY ON SITE OPERATIONS, INSTALL MARKER POSTS ON THE LICENCED BOUNDARIES.
2. PRIOR TO EXTRACTION IN AREA 1

a) PLANT AMPHIBIAN MOVEMENT CORRIDOR PER TECHNICAL RECOMMENDATIONS (THIS PAGE).

b) PLANT BUFFER ENHANCEMENT AREA PER NATURAL ENVIRONMENT TECHNICAL RECOMMENDATION # 6.

c) STRIP TOPSOIL AND OVERBURDEN SEPARATELY AND STORE MATERIAL IN BERMS AS SHOWN. EXCESS OVERBURDEN AND TOPSOIL MAY BE STORED IN PILES ON THE PIT FLOOR.

3. BEGIN ABOVE WATER EXTRACTION OF AREA 1 IN DIRECTION SHOWN. STOCKPILING AREA MAY BE TEMPORARILY LOCATED NEAR THE PIT FACE DURING THE INITIAL EXCAVATION OF AGGREGATE.
4. UNDISTURBED PORTIONS OF AREAS 2 REMAIN IN AGRICULTURAL USE.
5. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION

TECHNICAL RECOMMENDATIONS

THE FOLLOWING ARE THE TECHNICAL RECOMMENDATIONS FROM ALL OF THE EXPERTS' REPORTS AS OF FEBRUARY 2026 ADDITIONAL RECOMMENDATIONS MAY BE INCLUDED AS A RESULT OF THE LICENCE REVIEW PROCESS.

ARCHAEOLOGICAL ASSESSMENT - TMHC - FEBRUARY 18, 2025
SHOULD PREVIOUSLY UNDOCUMENTED ARCHAEOLOGICAL RESOURCES BE DISCOVERED, THEY MAY BE A NEW ARCHAEOLOGICAL SITE AND THEREFORE SUBJECT TO SECTION 48(1) OF THE ONTARIO HERITAGE ACT. THE PROPONENT OR PERSON DISCOVERING THE ARCHAEOLOGICAL RESOURCES MUST CEASE ALTERATION OF THE SITE IMMEDIATELY AND ENGAGE A LICENSED CONSULTANT ARCHAEOLOGIST TO CARRY OUT ARCHAEOLOGICAL FIELDWORK, IN COMPLIANCE WITH SECTION 48(1) OF THE ONTARIO HERITAGE ACT.

THE CEMETERIES ACT, R.S.O. 1990 C. C.4 AND THE FUNERAL, BURIAL AND CREMATION SERVICES ACT, 2002, S.O. 2002, C.33 (WHEN PROCLAIMED IN FORCE) REQUIRE THAT ANY PERSON DISCOVERING HUMAN REMAINS MUST NOT FY THE POLICE OR CORONER AND THE REGISTRAR OF CEMETER ES AT THE M INISTRY OF CONSUMER SERVICES.

NATURAL ENVIRONMENT ASSESSMENT - TERRASTORY ENVIRONMENTAL CONSULTING INC. - MARCH 2026
PROVINCIALLY SIGNIFICANT WETLANDS

1. ACTIVITIES AND OTHER DISTURBANCES ASSOCIATED WITH PIT OPERATIONS ARE PROH BITED WITH N 30 m OF THE SIGN FICANT WETLAND.
2. ANY NECESSARY LIGHTING TO SUPPORT PIT OPERATIONS W LL BE DIRECTED AWAY FROM THE SIGN FICANT WETLAND (I.E., NORTHWARD) TO THE EXTENT PRACTICABLE.

SIGNIFICANT WOODLANDS

3. ACTIVITIES AND OTHER DISTURBANCES ASSOCIATED WITH PIT OPERATIONS ARE PROH BITED WITH N 15 m OF THE DR PLINE'S OF THE SIGNIFICANT WOODLANDS.
4. THE 15 m SETBACKS FROM THE DRIPLINES OF THE SIGN FICANT WOODLANDS W LL BE WELL-MARKED (I.E., STAKED) UNDER THE D RECTION OF A QUALIF ED ECOLOGIST.
5. THE 15 m SETBACKS FROM THE DRIPLINES OF THE SIGN FICANT WOODLANDS W LL REMA N IN OR BECOME NATURAL, SELF-SUSTA N NG VEGETATION
6. THE 15 m SETBACKS FROM THE DRIPLINE OF THE SIGN FICANT WOODLANDS W LL ACT AS A BUFFER ENHANCEMENT AREA AND BE SUBJECT TO NATIVE PLANTINGS CONSIST NG OF A VARIETY OF TREES AND SHRUBS.
7. ANY NECESSARY LIGHTING TO SUPPORT PIT OPERATIONS W LL BE DIRECTED AWAY FROM THE SIGN FICANT WOODLANDS TO THE EXTENT PRACTICABLE.

SIGNIFICANT WILDLIFE HABITAT

8. SHOULD ANY TERRESTRIAL CRAYFISH OR ASSOCIATED CH MNEYS BE DENT FIED WITH N 30 m OF ANY PIT OPERATIONS, OR OTHERWISE N AN AREA THAT COULD BE IMPACTED BY PIT OPERATIONS, THEY WILL BE SAFELY RELOCATED TO APPROPRIATE HABITAT IN ACCORDANCE WITH A TERRESTRIAL CRAYFISH RELOCATION PLAN.
9. AN AMPH BIAN MOVEMENT CORRIDOR WILL BE ESTABLISHED ALONG THE NORTHERN BOUNDARY OF THE SITE TO CONSIST OF NATURAL, SELF-SUSTA N NG VEGETATION.
10. EXTRACTIVE USES AND/OTHER DISTURBANCES ASSOCIATED WITH PIT OPERATIONS ARE PROH BITED WITH N THE AMPH BIAN MOVEMENT CORRIDOR.
11. THE AMPHIBIAN MOVEMENT CORR DOR IS TO BE SEEDED WITH THE ONTARIO SEED COMPANY'S RURAL ONTARIO ROADSIDE NATIVE SEED MIXTURE 8145 AND W LL BE PLANTED WITH SCATTERED, NATIVE TREES AND SHRUBS TO PROV DE COVER FOR DISPERSING AMPH BIANS.

HABITAT OF ENDANGERED AND THREATENED SPECIES

12. ALL AGGREGATE OPERATIONS WITH N THE SITE WILL BE UNDERTAKEN CONSISTENT WITH THE DOCUMENT TITLED "BEST MANAGEMENT PRACTICES FOR THE PROTECTION, CREATION AND MA NTENANCE OF BANK SWALLOW HABITAT N ONTARIO" (OMNRF 2017).
13. ANY NECESSARY REMOVAL OF NATURAL VEGETATION TO SUPPORT PIT OPERATIONS WILL BE COMPLETED OUTS DE THE PRIMARY BIRD NESTING AND BAT ACTIVITY PERIODS (I.E., TO BE COMPLETED BETWEEN OCTOBER 1 AND MARCH 31).

HYDROGEOLOGICAL REPORT - GROUNDWATER SCIENCE CORP. - MARCH 2026
MONITORING, MITIGATION, AND CONTINGENCY PLAN
WHERE THE M NISTRY OF NATURAL RESOURCES AND FORESTRY WITH THE ASSISTANCE OF THE MINISTRY OF THE ENVIRONMENT CONSERVATION AND PARKS, ACCORDING TO EXISTING WATER WELL INTERFERENCE COMPLAINT PROTOCOLS, HAS DETERM NED THAT THE OPERATION OF THE PIT HAS CAUSED ANY WELL WATER TO BE ADVERSELY AFFECTED, THE LICENSEE SHALL, AT THELICENSEE'S EXPENSE, EITHER DEEPEN THE WELL OR REPLACE THE WELL TO ENSURE THAT HISTORIC WATER PRODUCTION QUALITY STANDARDS ARE MAINTAINED FOR THAT WELL. F THIS PIT OPERATION HAS CAUSED A WATER SUPPLY PROBLEM, THE LICENSEE SHALL, AT THEIR EXPENSE, ENSURE A CONTINUOUS SUPPLY OF POTABLE WATER TO THE AFFECTED LANDOWNER.

IN ORDER TO CONFIRM WATER TABLE ELEVATIONS AT THE SITE, THE FOLLOWING MONITORING PROGRAM IS RECOMMENDED:

1. WATER LEVEL MEASUREMENTS SHALL BE OBTA NED ON A QUARTERLY (SEASONAL) BASIS AT MW4, MW5, AND MW6, AS ACCESSIBLE.
2. THE MONITORING RESULTS W LL BE SUMMARIZED ANNUALLY BY THE OPERATOR AND MADE AVA LABLE TO MNR UPON REQUEST.

OPERATIONS NOTES

GENERAL INFORMATION

1. THIS PLAN DEPICTS A SCHEMATIC OPERATIONS AND REHABILITATION SEQUENCE FOR THIS PROPERTY BASED ON THE BEST INFORMATION AVA LABLE AT THE T ME OF PREPARATION. PHASES SHOWN ARE SCHEMATIC AND WILL BE OPERATED ACCORD NG TO MATERIAL QUALITY, SITE HYDROLOGY AND HYDROGEOLOGY OR MARKET DEMAND. PHASES DO NOT REPRESENT ANY SPECIFIC OR EQUAL TIME PERIOD.

   EXTRACTION SHALL FOLLOW THE SEQUENCE SHOWN ON THIS PAGE AND ON THE OPERATIONAL PLAN PHASES B-D AND DETAILS (PAGE 3 OF 4). PROGRESSIVE REHAB LITATION SHALL BE CARRIED OUT, AS DEPICTED ON THE 'OPERATIONAL PLAN PHASES B-D AND DETAILS' (PAGE 3 OF 4) AND THE REHABILITATION PLAN (PAGE 4 OF 4). DEMAND FOR CERTAIN PRODUCTS OR BLENDING OF MATERIALS WILL REQUIRE SOME DEVIATION IN THE EXTRACTION AND REHAB LITATION PHASING. ANY DEVIATIONS FROM THE OPERATIONS SEQUENCE SHOWN W LL REQU RE APPROVAL FROM MNR.

2. SITE PLAN VARIANCES ARE LISTED IN THE SITE PLAN VARIANCE TABLE SHOWN ON THIS PAGE.

EXTRACTION/PROCESS NG/HAUL NG INFORMATION

3. TOTAL AREA TO BE EXTRACTED IS 9.4 HECTARES.

4a) MAXIMUM NUMBER OF TONNES OF AGGREGATE TO BE REMOVED FROM THE SITE IN ANY CALENDAR YEAR IS 150,000 TONNES.

b) EXTRACTION OF SAND AND GRAVEL ABOVE WATER TABLE WILL TAKE PLACE. N ONE BENCH, WITH A MAXIMUM HEIGHT OF 6 METRES AND WILL COMPLY WITH OHSA REGULATIONS REGARD NG FACE HEIGHTS. EXTRACTION BELOW WATER SHALL BE TO A DEPTH OF FRONT END LOADERS, EXCAVATORS, AND DRAGLINES WILL BE USED TO EXTRACT MATERIAL AND HAUL TRUCKS OR CONVEYORS W LL CARRY MATERIAL VIA HAUL ROADS TO THE PLANT FOR FURTHER PROCESS NG. REFER TO SECTIONS A-A', B-B', AND C-C' ON DRAWING 4 OF 5 FOR FURTHER DETAILS.

c) HAUL ROADS SHALL BE CONSTRUCTED AS REQUIRED.

d) PORTABLE PROCESS NG EQUIPMENT, FOR CRUSHING AND SCREENING WILL BE USED ON SITE AND W LL BE LOCATED ON THE PIT FLOOR CLOSE TO THE PIT FACE AT START UP. IN ADDITION TO PROCESS NG, SITE ACTIVIT ES WILL INCLUDE STRIPP NG AND REHABILITATION, OPERATIONAL EQUIPMENT MAY NCLUDE TRUCKS, LOADERS, EXCAVATOR, BACKHOES, DRAGL NES, BULLDOZERS, SCRAPERS, CONVEYORS, WASH PLANTS, AND OTHER RELATED EQUIPMENT. PROCESS NG EQUIPMENT, STACKERS AND PRODUCT STOCKPILES WILL NOT EXCEED ±15 METRES IN HEIGHT AND W LL BE LOCATED IN THE AREAS SHOWN AND/OR CLOSE TO PIT FACES.

e) TEMPORARY STORAGE/OFFICE TRAILERS MAY BE LOCATED ON SITE, 30m FROM THE LICENCE BOUNDARY.

f) MATERIAL FROM OTHER PROPERTIES MAY BE IMPORTED INTO THE SITE FOR BLEND NG, CUSTOM PRODUCTS AND/OR RESALE. THIS MAY INCLUDE AGGREGATE AND/OR PEAT AND TOPSOIL.
   i) EXCESS SO L SHALL ONLY BE IMPORTED FOR BLENDING, RESALE AND/OR TEMPORARY STORAGE ON-SITE IN ACCORDANCE WITH ONTARIO REGULATION 244/97 UNDER THE AGGREGATE RESOURCES ACT.
   ii) LIQUID SO L, AS DEFINED IN ONTARIO REGULATION 406/19 UNDER THE ENVIRONMENTAL PROTECTION ACT, IS NOT AUTHORIZED FOR IMPORTATION TO THE SITE.
   iii) THERE SHALL BE NO FURTHER IMPORTATION OF EXCESS SOIL FOR BLENDING, RESALE, AND/OR TEMPORARY STORAGE ONCE EXCAVATION ON-SITE HAS BEEN COMPLETED.
   iv) THE TOTAL AMOUNT OF EXCESS SOIL BROUGHT ONTO THE SITE ANNUALLY AND THE TOTAL AMOUNT STORED ON-SITE AT ANY ONE TIME WILL NOT EXCEED 25,000 M3.

5. EQUIPMENT, SCRAP AND MACH NERY ASSOCIATED WITH THE EXTRACTION OPERATIONS WILL BE REMOVED UPON COMPLETION OF EXTRACTION.

HYDROGEOLOGICAL NFORMATION

6. THE MAXIMUM PREDICTED WATER TABLE ELEVATION VARIES ACROSS THE SITE FROM APPROX MATELY 282.2 TO 283.4 m ABOVE SEA LEVEL (A.S.L.), BASED ON THE HYDROGEOLOGICAL REPORT. REFER TO SECTIONS ON SHEET 4 OF 5.
7. SURFACE DRAINAGE WILL BE D RECTED TO POND/LOW AREAS FOR WATER TO INFILTRATE INTO THE GRANULAR MATERIALS ON THE PIT FLOOR. THERE W LL BE NO OFF-SITE DITCH NG/ DISCHARGE.

NOISE MITIGATION INFORMATION

8. HOURS OF OPERATION:

SITE PREPARATION AND REHABILITATION:	07 00-19:00 WEEKDAYS; 07 00 - NOON SATURDAYS
EXCAVATION AND PROCESS NG	07 00-19:00 WEEKDAYS; 07 00 - NOON SATURDAYS
SHIPPING:	07 00-19:00 WEEKDAYS; 07 00 - NOON SATURDAYS

AIR QUALITY NFORMATION

9. WATER OR CALCIUM CHLOR DE W LL BE APPLIED TO INTERNAL HAUL ROADS AND PROCESSING AREAS AS OFTEN AS REQUIRED TO MITIGATE DUST.

SITE MANAGEMENT INFORMATION
MAINTENANCE/ PROTECTION OF VEGETATION INFORMATION

10. EXIST NG VEGETATION WITHIN THE LICENCED AREA SHALL BE MA NTAINED IN A HEALTHY VIGOROUS GROW NG CONDITION UNTIL SEQUENTIAL STRIPPING BEGINS OR UNT L THE REHABILITATION IS COMPLETE. ANY VEGETATION PLANTED AS PART OF SITE MPROVEMENTS OR PROGRESSIVE AND F NAL REHABILITATION W LL ALSO BE MAINTAINED N A HEALTHY, VIGOROUS GROW NG CONDITION.

FENC NG & BOUNDARY DEMARCATION INFORMATION

11. BOUNDARIES OF THE AREA TO BE LICENCED THAT ARE PRESENTLY FENCED ARE SHOWN ON DRAW NG 1 OF 5 EXIST NG FEATURES. UNFENCED BOUNDARIES SHALL BE DEMARCATED WITH HIGHLY VIS BLE MARKER POSTS AT NTER-VISIBLE INTERVALS.

TOPSO L/SUBSOIL/OVERBURDEN STORAGE INFORMATION

12. TOPSOIL AND OVERBURDEN SHALL BE STR PPED AND STORED SEPARATELY IN BERMS WHERE SHOWN AND IN THE STOCKP L NG AREA AS SHOWN.

BERM INFORMATION

13. BERMS SHALL BE CONSTRUCTED AS SHOWN ON OPS PLAN. BERMS SHALL NOT EXCEED 2:1. REFER TO TYPICAL BERM CROSS SECTION ON DRAWING 3 OF 5. ALL BERMS SHALL BE SEEDED (USING GRASS/ LEGUME MIXTURE, SEE REHABILITATION PLAN, NOTE #7) IMMEDIATELY UPON COMPLETION TO MINIMIZE NOISE, DUST AND EROSION. ALL BERMS SHALL BE MAINTAINED.
14. ON COMPLETION OF THE BERMS, EXCESS ON-SITE OVERBURDEN W LL BE USED TO PROGRESSIVELY BACKFILL AND REHAB LITATE THE SITE. TOPSOIL CAN BE TEMPORARILY STOCKPILED ON THE PIT FLOOR.

SCRAP STORAGE INFORMATION

15. ALL SCRAP, USED MACH NERY AND STUMPS GENERATED THROUGH THE OPERATIONS WITHIN THIS LICENCE WILL BE REMOVED FROM SITE ON AN ONGOING BASIS. STUMPS/ WOODY MATERIAL MAY BE CHIPPED AND USED FOR SO L ENHANCEMENT OR SAVED AND USED FOR HABITAT DURING PROGRESSIVE REHABILITATION. TREES WILL BE HARVESTED AND SOLD AS LUMBER OR UTILIZED FOR F REWOOD AND/ OR THEIR BEST USE. UPON COMPLETION OF EXTRACTION, ALL SCRAP EQUIPMENT AND USED MACHINERY SHALL BE REMOVED.

PETROLEUM STORAGE INFORMATION

16. FUEL, O L, RADIATOR AND HYDRAULIC FLU D, AND OTHER CHEMICALS NEEDED FOR THE MAINTENANCE AND FUNCTION NG OF ON-SITE AGGREGATE PROCESSING EQUIPMENT SHALL BE APPROPRIATELY STORED IN ABOVE-GROUND CONTAINERS AND SHALL MEET THE REQU REMENTS OF THE GASOL NE HANDLING ACT, AS AMENDED, AND THE GASOL NE HANDLING CODE AND REGULATIONS, AS AMENDED BY THE TECHNICAL STANDARDS AND SAFETY ACT (TSSA) AND LIQU D FUELS HANDLING CODE, AND IN ACCORDANCE WITH THE MINISTRY OF THE ENVIRONMENT, CONSERVATION, AND PARK'S CHEMICAL STORAGE GUIDELINES. ALL REFUELING SHALL BE WITHIN A CONTAINMENT PAD. ALL SPILLS TO THE ENVIRONMENT MUST BE REPORTED TO THE SPILLS ACTION CENTRE OF MECP. ANY SP LL SHALL BE REMOVED AND DISPOSED OF AT AN APPROPRIATE MECP APPROVED FACILITY.

SITE PLAN VARIANCES

THE FOLLOWING CONDITIONS ILLUSTRATED ON THESE PLANS VARY FROM THE OF THE PROVINCIAL STANDARDS MADE UNDER THE AGGREGATE RESOURCES ACT

ITEM		SECTION
1.	SETBACK IS REDUCED TO 0 m ALONG THE SOUTH 300 m OF THE WEST BOUNDARY, PER AGREEMENT WITH ADJACENT LICENSEE.	0.13(1)10i
2.	STOCKP L NG MAY OCCUR WITHIN 30m OF THE WEST BOUNDARY PER AGREEMENT WITH ADJACENT LICENSEE.	0.13(1)13i
3.	FENC NG WILL BE OMITTED FROM THE WEST BOUNDARY PER AGREEMENT WITH ADJACENT LICENSEE; ALONG THE EAST AND SOUTHWEST BOUNDARY, WOODED AND WETLAND CONDITIONS PROH BIT ACCESS; AND ALONG THE NORTH BOUNDARY PER AGREEMENT WITH ADJACENT LANDOWNER. FENCING AND FIELD ACCESS GATE WILL BE INSTALLED ALONG THE NORTH PROPERTY BOUNDARY.	0.13(3)a
4.	A GATE SHALL BE OMITTED AT THE ENTRANCE/EXIT ALONG THE WEST BOUNDARY PER AGREEMENT WITH ADJACENT LICENSEE. ENTRANCE/EXIT MAY BE LOCATED ANYWHERE ALONG THE 0 m SETBACK.	0.13(1)1
5.	SOUTH BOUNDARY FENCE SHALL BE OFFSET UP TO 5 m TO PREVENT DAMAGE TO TREES.	0.13(3)a

LEGEND

- BOUNDARY OF AREA TO BE LICENCED
- 120m INFORMATION BOUNDARY
- EXISTING LICENSED AREA
- LOT LINE
- UTRCA REGULATION LIMIT
- EXISTING FENCE
- 285 — EXISTING 5m ASL CONTOUR LINE
- 284 — EXISTING 1m ASL CONTOUR LINE
- X 283.55 — EXISTING SPOT ELEVATION m ASL
- EXISTING VEGETATION
- EXISTING WETLAND
- EXTRACTION FACE
- BERM
- UNDISTURBED AREA
- AREA STRIPPED OF TOPSOIL AND OVERBURDEN
- PROPOSED VEGETATION
- HP — EXISTING HYDRO POLE
- BH/MW — BOREHOLE LOCATION AND NUMBER DRILLED AND MONITORING WELL INSTALLED JUNE 15-16, 2021
- ENTRANCE/ EXIT
- DIRECTION OF EXTRACTION
- DIRECTION OF TOPSOIL AND OVERBURDEN MOVEMENT
- R03 — LOCATION OF NOISE RECEPTOR
- 286.00 / 286.00 — EXISTING ELEVATION PROPOSED ELEVATION
- A — LOCATION OF SECTION
- SILT FENCE
- MP — PROPOSED MARKER POST

NO.	DATE	REVISIONS	OWNER	HM	MNR

Pre Licence Review

NO.	DATE	REVISIONS	OWNER	HM	MNR

Site Plan Amendments

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Offices in Markham & Cambridge

Project Name

PATON AGGREGATES & SOILS LTD.

TRAFALGAR EXPANSION PIT

LICENCE No:
LICENCEE SIGNATURE
PART LOT 17, CONCESSION 2 NTR (FORMERLY NORTH DORCHESTER)
MUNICIPALITY OF THAMES CENTRE, COUNTY OF MIDDLESEX

Scale 1: 2000
0 10 50 80m

North

Stamp
DRAFT

Drawing Status
PRELIMINARY FOR DISCUSSION

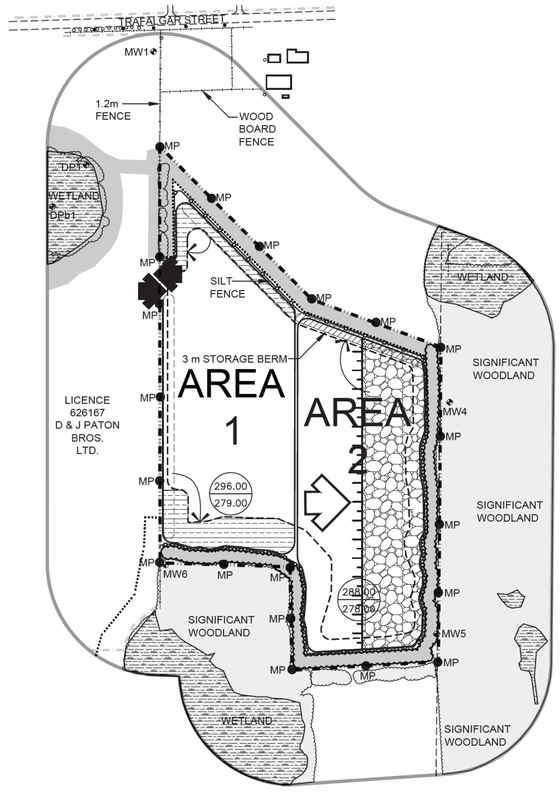
Drawn SB | Checked RM/BJ | Issue Date

Drawing Title
OPERATIONAL PLAN PHASE B

Project Number
24-22

Drawing Number
2 OF 4

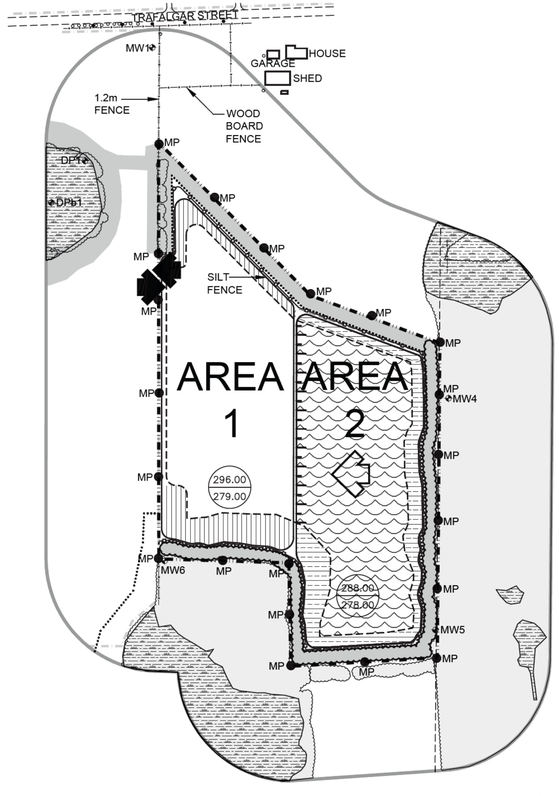
FILE NAME: 24-22/COMP/2422-1.DWG
PLOT DATE: DECEMBER 1, 2025



PHASE B

PHASE B NOTES

1. COMPLETE ABOVE WATER EXTRACTION IN AREA 1.
2. PRIOR TO EXTRACTION IN AREA 2, STRIP TOPSOIL AND OVERBURDEN SEPARATELY AND USE TO BEGIN PROGRESSIVE REHABILITATION OF NORTH AND SOUTH SIDE SLOPES IN AREA 1. EXCESS OVERBURDEN AND TOPSOIL MAY BE STORED IN PILES ON THE PIT FLOOR AND STORAGE BERMS AS SHOWN.
3. BEGIN ABOVE WATER EXTRACTION IN AREA 2 IN DIRECTION SHOWN.
4. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION



PHASE C

PHASE C NOTES

1. COMPLETE PROGRESSIVE REHABILITATION OF NORTH AND SOUTH SIDE SLOPES IN AREA 1.
2. COMPLETE ABOVE WATER EXTRACTION IN AREA 2.
3. BEGIN PROGRESSIVE REHABILITATION OF SIDE SLOPES IN AREA 2.
3. BEGIN BELOW WATER EXTRACTION IN AREA 2 IN DIRECTION SHOWN.
4. BEGIN PROGRESSIVE REHABILITATION OF SHORELINE IN AREA 2.
5. MAINTAIN ALL VEGETATION IN A HEALTHY, VIGOROUS GROWING CONDITION

PHASE D (NOT SHOWN)

PHASE D NOTES

1. COMPLETE BELOW WATER EXTRACTION IN AREA 2 AND BEGIN BELOW WATER EXTRACTION IN AREA 1 IN DIRECTION SHOWN.
2. COMPLETE SHORELINE REHABILITATION IN AREA 2 AND BEGIN PROGRESSIVE REHABILITATION OF SHORELINE IN AREA 1.
3. COMPLETE BELOW WATER EXTRACTION IN AREA 2.
4. COMPLETE SHORELINE REHABILITATION AND REHABILITATION OF ALL REMAINING AREAS USING MATERIALS STORED IN BERMS.
5. SITE IS REHABILITATED TO A POND.

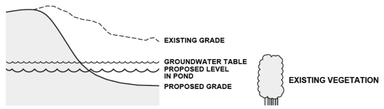
LEGEND

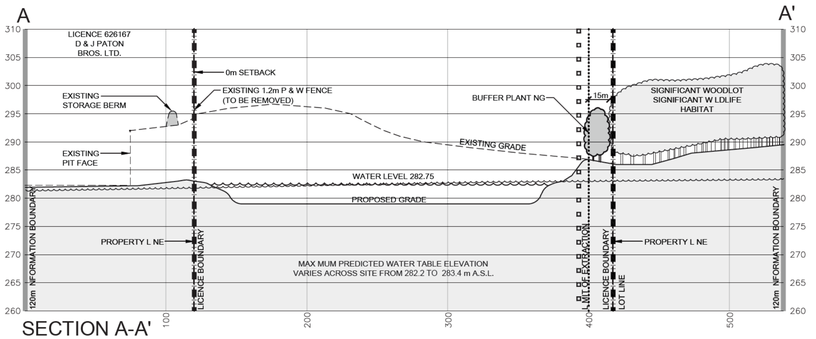
- BOUNDARY OF AREA TO BE LICENCED
- 120m INFORMATION BOUNDARY
- EXISTING LICENSED AREA
- EXISTING VEGETATION
- EXISTING WETLAND
- EXTRACTION FACE
- BERM
- AREA STRIPPED OF TOPSOIL AND OVERBURDEN
- BELOW WATER EXTRACTION
- PROPOSED VEGETATION
- EXISTING FENCE
- SILT FENCE
- EXISTING BUILDING
- HP EXISTING HYDRO POLE
- MW MONITORING WELL INSTALLED JUNE 15-16, 2021
- ENTRANCE/ EXIT
- DIRECTION OF EXTRACTION
- DIRECTION OF TOPSOIL AND OVERBURDEN MOVEMENT
- 296.00 / 286.00 EXISTING ELEVATION / PROPOSED ELEVATION
- A LOCATION OF SECTION
- MP MARKER POST

SECTION NOTES

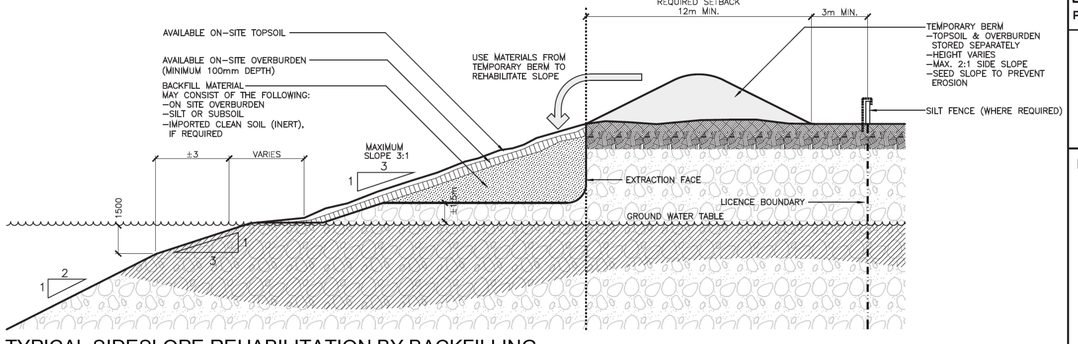
GENERAL INFORMATION

1. SECTION LINES ARE INDICATED ON DRAW NGS 1, 2 AND 5.

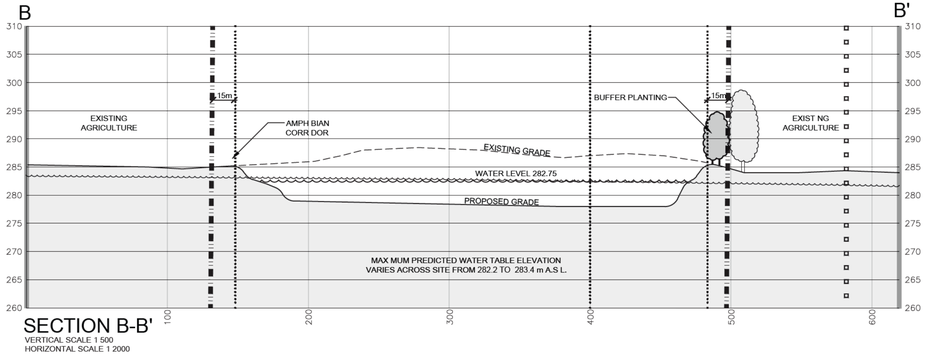




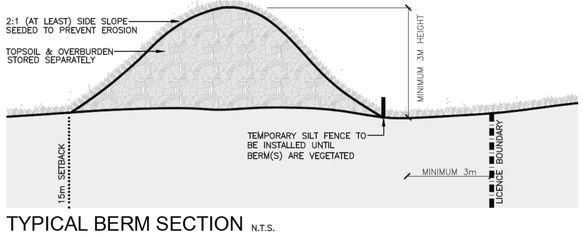
SECTION A-A'
VERTICAL SCALE 1 500
HORIZONTAL SCALE 1:2000



TYPICAL SIDESLOPE REHABILITATION BY BACKFILLING N.T.S.



SECTION B-B'
VERTICAL SCALE 1 500
HORIZONTAL SCALE 1 2000



TYPICAL BERM SECTION N.T.S.

NO.	DATE	REVISIONS	OBN/R	HM	MNR
		Pre Licence Review			

NO.	DATE	REVISIONS	OBN/R	HM	MNR
		Site Plan Amendments			

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Offices in Markham & Cambridge

Project Name

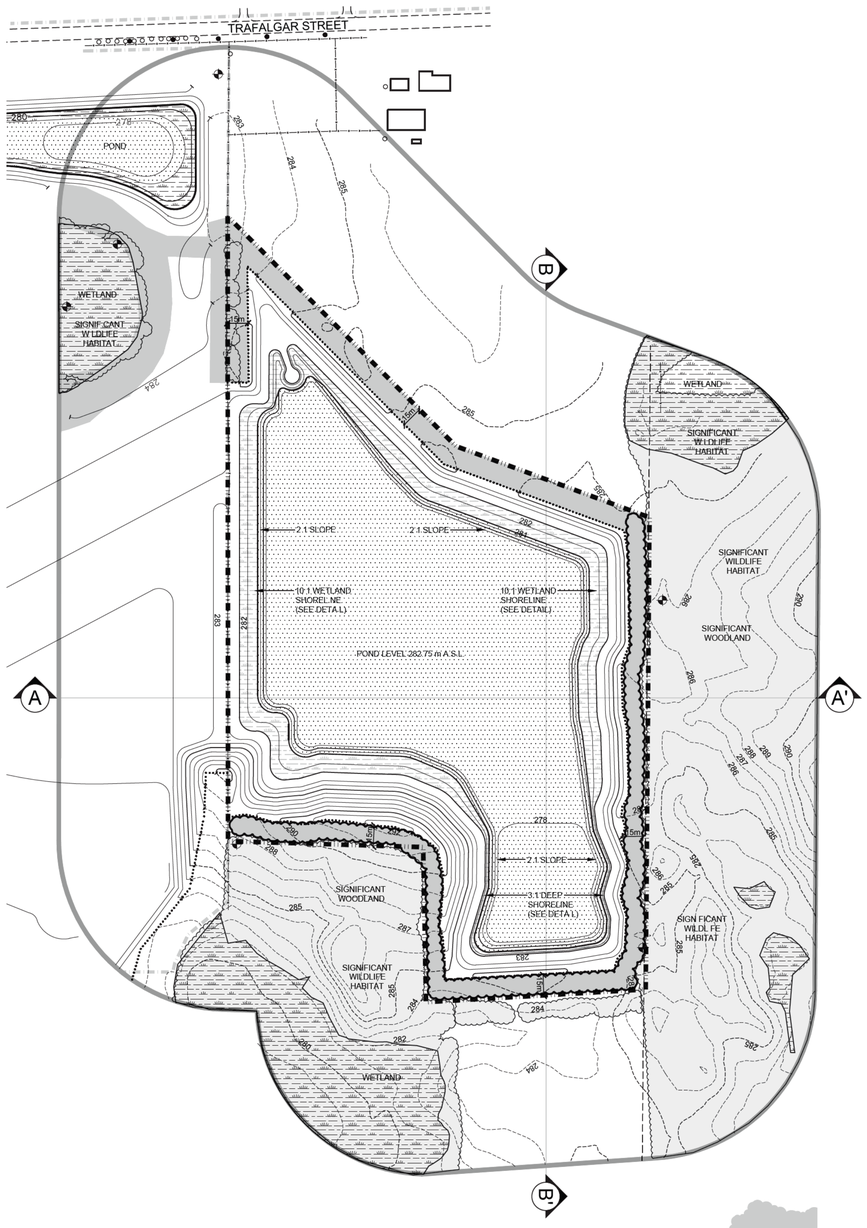
PATON AGGREGATES & SOILS LTD.

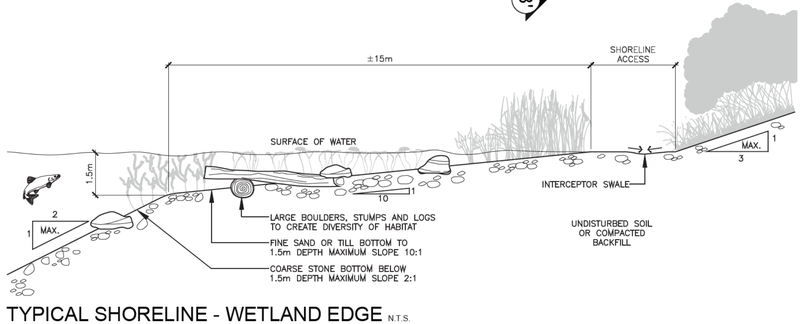
TRAFALGAR EXPANSION PIT

LICENCE No:
LICENCEE SIGNATURE
PART LOT 17, CONCESSION 2 NTR (FORMERLY NORTH DORCHESTER)
MUNICIPALITY OF THAMES CENTRE, COUNTY OF MIDDLESEX

Scale 1: 2000 (0 10 50 80m)	North	Stamp: DRAFT
Drawing Status: PRELIMINARY FOR DISCUSSION		
Drawn SB	Checked RM/BJ	Issue Date
Drawing Title: OPERATIONAL PLAN PHASE B - D		Project Number: 24-22
		Drawing Number: 3 OF 4

FILE NAME: 24-22/COMP/2422-3.DWG
PLOT DATE: FEBRUARY 5, 2026





TYPICAL SHORELINE - WETLAND EDGE N.T.S.

REHABILITATION NOTES

GENERAL INFORMATION

1. REFER TO SHEET 1 OF 5 FOR EXISTING FEATURES, 2 AND 3 OF 5 FOR SCHEMATIC OPERATIONS, PAGE 4 OF 5 CROSS SECTIONS AND DETA LS, AND PAGE 5 OF 5 REHABILITATION NOTES AND DETAILS.

2. PROPERTY SHALL BE REHABILITATED TO:

POND	5.7 HA
WETLAND	1.2 HA
MEADOW	2.5 HA
WOODLAND	9.4 HECTARES
TOTAL REHAB LITATION	

HYDROGEOLOGICAL INFORMATION

3. IT IS ANTICIPATED THAT THE GROUNDWATER ELEVATION ACROSS THE SITE WILL REMAIN RELATIVELY UNCHANGED AT 282 2 TO 283.4 m A.S.L. (REFER TO HYDROGEOLOGICAL ASSESSMENT).

4. ALL SURFACE DRAINAGE WILL BE D RECTED TO THE LOW AREAS REMAINING ON THE PIT FLOOR SO THAT THE WATER CAN NFILTRATE INTO THE SOILS.

SIDESLOPE AND NATURAL AREAS REHABILITATION INFORMATION

GRAD NG NFORMATION

5. REHABILITATED SLOPES WITH N THE LICENCED AREA W LL BE CONSTRUCTED AS SHOWN ON THE CROSS SECTIONS. SLOPES SHALL BE REHABILITATED BY BACKF LL NG (MINIMUM 3:1) AND/OR CUT AND FILL METHOD US NG ON SITE SO L AND/OR OVERBURDEN.

TOPSOILING NFORMATION

6. ALL AVA LABLE TOPSOIL ON THE SITE W LL REMA N AND BE USED FOR REHABILITATION OF THIS SITE.

VEGETATION STABILIZATION INFORMATION

7. BERMS SHALL BE SEEDED WITH A MIXTURE THAT MAY INCLUDE THE FOLLOWING AT A RATE OF APPROX MATELY 125KG/HA:

BUCKWHEAT	RED CLOVER	WHITE CLOVER
TALL FESCUE	ANNUAL RYE	

SIDESLOPE MEADOW AREAS SHALL BE SEEDED WITH A SUITABLE MIX COMPRISED OF FORBS, HERBS AND GRASS SPECIES, INCLUDING POLL NATOR-BENEFICIAL SPEC ES THAT ARE NATIVE TO THE AREA. NO NVASIVE SPECIES SHALL BE INCLUDED IN THE SEED MIX.

OPEN WATER POND REHABILITATION INFORMATION

8. THE AVERAGE WATER LEVEL IN THE POST-EXTRACTION POND IS ESTIMATED TO BE 282.75 m ASL.

9. THE SHAPE AND GRADING OF THE PROPOSED POND IS BASED ON THE BEST AVA LABLE INFORMATION AT THE T ME OF LICENSING. ACTUAL EXTRACTION WILL FOLLOW THE BELOW WATER DEPOSIT AND REHAB LITATION SHALL FOLLOW THE CONCEPT ILLUSTRATED. THE POND SHALL BE NO LARGER THAN 12.9 HA.

WETLAND REHABILITATION INFORMATION

10. AREAS SHALL BE REHAB LITATED TO WETLAND HABITAT AS FOLLOWS:
    - UNDERWATER SLOPES WILL BE FORMED WITH ON-SITE F LL
    - UNDERWATER SLOPES SHALL BE A MAXIMUM OF 2:1

11. RESTORATION OF THE NEARSHORE, SHALLOW WETLAND ZONE AS SHOWN ON THE TYPICAL SHALLOW SHORELINE SECTION, SHEET 5 OF 5, WILL GENERALLY BE ACCOMPLISHED AS FOLLOWS:

a. EXTRACTION AND ROUGH GRAD NG W LL CREATE A NEARSHORE SHOREL NE AREA AT A SLOPE OF 10:1
b. FINAL SLOP NG OF THE SHORELINE TO CREATE PHYSICAL DIVERSITY BY SCALLOPING THE SHOREL NE AND ADDING STRUCTURES.
c. WOODY DEBRIS- BRANCHES, TREE TRUNKS, STUMPS, ETC. CLEARED IN THE EXTRACTION PROCESS WILL BE SALVAGED WHERE POSS BLE, FOR USE IN SHORELINE RESTORATION/ UNDERWATER HABITAT ENHANCEMENT.
d. STUMPS, LOGS, BRUSH BUNDLES, ETC. SHALL BE INSTALLED ±30m O.C. ALONG THE SHOREL NE IN THE SHALLOW ZONE TO CREATE PHYSICAL DIVERSITY.
e. OVERSIZE ROCKS NOT UT LIZED N THE AGGREGATE OPERATIONS WILL ALSO BE PLACED N THE SHALLOW ZONE TO CREATE PHYSICAL DIVERSITY.
f. THE NITIAL SHORELINE RESTORATION AREA WILL BE SPORADICALLY PLANTED WITH TREES AND SHRUBS.SPECIES MAY INCLUDE THE FOLLOWING NATIVE PLANTS:

RED MAPLE	PUSSY W LLOW	SILVER MAPLE	RED OSIER DOGWOOD
STAGHORN SUMAC	SPECKLED ALDER	LARCH	
WHITE CEDAR	CHOKE CHERRY	SMOOTH SERVICEBERRY	
COMMON N NEBARK	GRAY DOGWOOD	COMMON ELDERBERRY	

12. INITIAL SHORELINE WETLAND AREAS SHALL BE PLANTED WITH CLUMPS OF EMERGENT AND SUBMERGENT NATIVE WETLAND PLANTS TO INITIATE COLONIZATION OF THE SITE AS NUTRIENT LEVELS NCREASE TO SUPPORT THEM. NATIVE WETLAND PLANTS SUCH AS:

FLOATING PONDWEED	COONTAIL
BROAD LEAVED ARROWHEAD	PICKERELWEED
COMMON WOOLY BULRUSH	SOFTSTEM BULRUSH
GREEN-FRUITED BURREED	RIVER BULRUSH
BROAD LEAVED ARROWHEAD	DARK GREEN BULRUSH
SWAMP M LKWEED	WATER-LILY

WILL BE PLANTED N CLUSTERS OF 5 AT APPROPRIATE DEPTHS TO BEGIN THE COLONIZATION.

WOODLAND BUFFER PLANTING INFORMATION

13. TWO ROWS OF NATIVE TREES (INCLUDING ANY OF THE FOLLOWING NATIVE SPEC ES) SHALL BE PLANTED AT 3 m ON CENTRE WITHIN THE 15 m SIGNIFICANT WOODLAND SETBACK

WHITE PINE	EASTERN COTTONWOOD	SUGAR MAPLE
RED PINE	WHITE BIRCH	SILVER MAPLE
EASTERN WHITE CEDAR	BUR OAK	RED MAPLE
WHITE SPRUCE	RED OAK	SL PPERY ELM
COMMON HACKBERRY	BLACK CHERRY	

IMPORTATION OF EXCESS SOIL INFORMATION

14. EXCESS SO L, AS DEFINED IN ONTARIO REGULATION 244/97 MAY BE IMPORTED TO THIS SITE TO FACILITATE THE FOLLOWING REHABILITATION:

a.i CREATION OF 3:1 SLOPES (OR SLOPING RATIO OTHERWISE DESCRIBED ON THE FINAL REHAB LITATION PAGE)
ii TOP DRESSING TO ESTABLISH VEGETATION
iii GENERAL FILL VOLUME AS REQU RED TO ACHIEVE REHAB LITATION GRADE.

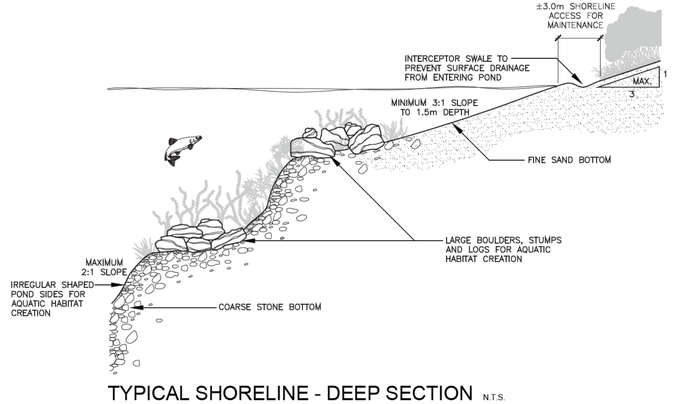
b. LIQU D SO L, AS DEFINED BY ONTARIO REGULATION 406/19 UNDER THE ENVIRONMENTAL PROTECTION ACT, IS NOT AUTHORIZED FOR MPORTATION NTO THE SITE.

c. THE QUALITY OF EXCESS SOIL IMPORTED TO THE SITE FOR FINAL PLACEMENT MUST BE EQUIVALENT TO OR MORE STRINGENT THAN THE APPLICABLE EXCESS SOIL QUALITY STANDARDS AS DETERMINED IN ACCORDANCE WITH ONTARIO REGULATION 244/97 AS AMENDED FROM T ME TO TIME AND MUST BE CONSISTENT WITH THE SITE CONDITIONS AND THE END USE IDENTIFIED IN THE APPROVED REHABILITATION PLAN.

d. WHERE A QUALIFIED PERSON IS RETA NED OR REQUIRED TO BE RETAINED IN ACCORDANCE WITH ONTARIO REGULATION 244/97, THE QUALITY, STORAGE, AND FINAL PLACEMENT OF EXCESS SOILS SHALL BE DONE ACCORD NG TO THE ADVICE OF THE QUAL F ED PERSON.

e. EXCESS SOIL IMPORTED TO FAC LITATE REHAB LITATION AS DESCRIBED ON THIS SITE PLAN SHALL BE UNDERTAKEN IN ACCORDANCE WITH ONTARIO REGULATION 244/97 UNDER THE AGGREGATE RESOURCES ACT, AS AMENDED FROM TIME TO T ME.

f. THE CUMULATIVE TOTAL AMOUNT OF EXCESS SOIL THAT MAY BE IMPORTED TO THIS SITE FOR REHAB LITATION PURPOSES IS 30,000 m3.



TYPICAL SHORELINE - DEEP SECTION N.T.S.

LEGEND

- BOUNDARY OF PROPOSED LICENCE
- BOUNDARY OF EXISTING LICENCED AREA
- 120m INFORMATION BOUNDARY
- PROPERTY LINES
- REGULATORY SETBACK AND LIMIT OF EXTRACTION
- LOT LINE
- EXISTING FENCE
- 285 EXISTING 5m ASL CONTOUR LINE
- 284 EXISTING 1m ASL CONTOUR LINE
- × 283.05 EXISTING SPOT ELEVATION m ASL
- 285 PROPOSED 5m CONTOUR LINE
- 284 PROPOSED 1m CONTOUR LINE
- + 283.1 PROPOSED SPOT ELEVATION
- EXISTING VEGETATION
- EXISTING WETLAND
- PROPOSED WETLAND
- PROPOSED OPEN WATER
- EXISTING BUILDING
- HP EXISTING HYDRO POLE
- A LOCATION OF SECTION

SITE PLAN VARIANCES

THE FOLLOW NG CONDITIONS LLUSTRATED ON THESE PLANS VARY FROM THE OF THE PROV NCIAL STANDARDS MADE UNDER THE AGGREGATE RESOURCES ACT

ITEM	SECTION
1. N ORDER TO MAXIMIZE RESOURCE RECOVERY, BELOW WATER GRADES SHALL BE A MAXIMUM 2:1 SLOPE.	0.13(1)19i

NO.	DATE	REVISIONS	OWNER	HM	MNR

Pre Licence Review

NO.	DATE	REVISIONS	OWNER	HM	MNR

Site Plan Amendments

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Offices in Markham & Cambridge

Project Name

PATON AGGREGATES & SOILS LTD.

TRAFALGAR EXPANSION PIT

LICENCE No:
LICENCEE SIGNATURE
PART LOT 17, CONCESSION 2 NTR (FORMERLY NORTH DORCHESTER)
MUNICIPALITY OF THAMES CENTRE, COUNTY OF MIDDLESEX

Scale 1: 2000 (0 10 50 80m)	North	Stamp: DRAFT
Drawing Status: PRELIMINARY FOR DISCUSSION		
Drawn SB	Checked RM/BJ	Issue Date
Drawing Title: REHABILITATION PLAN		Project Number: 24-22
		Drawing Number: 4 OF 4

FILE NAME: 24-22/COMP/2422-4.DWG
PLOT DATE: JANUARY 16, 2026

Appendix 9. Summary of Technical Recommendations

Natural Feature	Technical Recommendations (per Section 6 of report)
Significant Wetlands	• **Activities and other disturbances associated with pit operations are prohibited within 30 m of the Significant Wetland.** • **Any necessary lighting to support pit operations will be directed away from the Significant Wetland (i.e., northward) to the extent practicable.**
Significant Woodlands	• **Activities and other disturbances associated with pit operations are prohibited within 15 m of the driplines of the Significant Woodlands.** • **The 15 m setbacks from the driplines of the Significant Woodlands will be well-marked (i.e., staked) under the direction of a qualified Ecologist.** • **The 15 m setbacks from the driplines of the Significant Woodlands will remain or become in natural, self-sustaining vegetation.** • **The 15 m setbacks from the dripline of the Significant Woodlands will act as a Buffer Enhancement Area and be subject to native plantings consisting of a variety of trees and shrubs.** • **Any necessary lighting to support pit operations will be directed away from the Significant Woodlands to the extent practicable.**
Significant Wildlife Habitat	• **Should any Terrestrial Crayfish or associated chimneys be identified within 30 m of any pit operations, or otherwise in an area that could be impacted by pit operations, they will be safely relocated to appropriate habitat in accordance with a Terrestrial Crayfish Relocation Plan.** • **An Amphibian Movement Corridor will be established along the northern boundary of the Site to consist of natural, self-sustaining vegetation.** • **Extractive uses and/other disturbances associated with pit operations are prohibited within the Amphibian Movement Corridor.** • **The Amphibian Movement Corridor is to be seeded with the Ontario Seed Company's Rural Ontario Roadside Native Seed Mixture 8145 and will be planted with scattered, native trees and shrubs to provide cover for dispersing amphibians.**
Habitat of Endangered and Threatened Species	• **All aggregate operations within the Site will be undertaken consistent with the document titled "Best Management Practices for the Protection, Creation and Maintenance of Bank Swallow Habitat in Ontario" (OMNRF 2017).** • **Any necessary removal of natural vegetation to support pit operations will be completed outside the primary bird nesting and bat activity periods (i.e., to be completed between December 1 and March 31).**