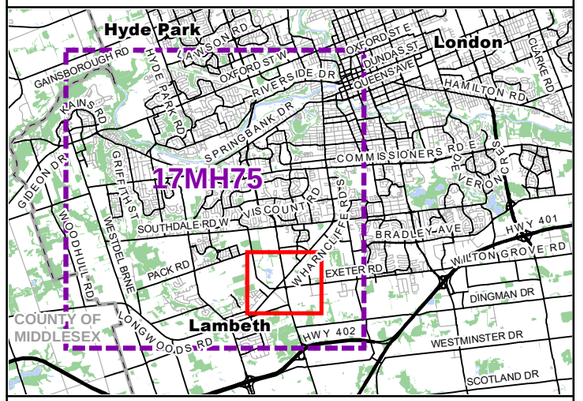
Maps

Map 1

38 Exeter Road

Study Area and Natural Features



Legend

- Study Area (200m)
- Subject Property
- Utility Line
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Wooded Area
- Natural Heritage Information Centre (NHIC) 1x1km
- Ontario Breeding Bird Atlas (OBBA) 10x10km*

Aquatic Resource Area (ARA)

- ARA Survey Point
- ARA Watercourse Segment

*Entire map extent encompassed by OBBA square 17MH75

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 2803
Date: March 15, 2022

NAD83 - UTM Zone 17
Size: 11x17"
1:8,000

0 100 200 300 400 500 Metres

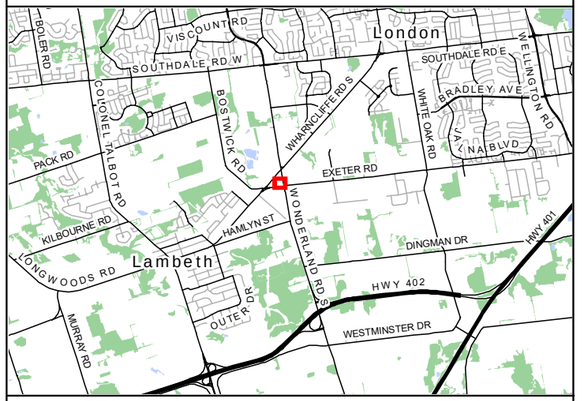
N

Path: X:\2803_38ExeterRd_EIS_TIPP\NRSI_2803_Map1_StudyArea_8K_2022_03_15_MV.mxd

Map 2

38 Exeter Rd, London

Vegetation Communities & Preliminary Site Plan



Legend

- Subject Property
- Proposed Site Plan
- Ecological Land Classification (ELC)

(CUW1) Mineral Cultural Woodland Ecosite

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 2803 Date: October 11, 2022	NAD83 - UTM Zone 17 Size: 11x17" **1:600**

0 10 20 30 40 Metres

N

Path: X:\2803_38ExeterRd_EIS_TIPP\NRSI_2803_Map2_ELC_PreliminarySitePlan_1K_2022_10_11_KEF.mxd

Appendix I
Record of Pre-Application Consultation and Terms of Reference

The following appendix contains documents that are difficult to make screen reader accessible. Please contact Madison Postma at mpostma@nrsi.on.ca for further description or details of these documents at any time.

The first document is a Record of Pre-Application Consultation from the City of London which outlines the various requirements needed to proceed with the proposed retail development. This document states the request for a Scoped EIS due to possible SAR and SWH on the subject property.

The second document is the Terms of References for the Scoped EIS, prepared by Jeremy Bannon at Natural Resource Solutions Inc. on March 18th 2022. The Terms of Reference discusses the project overview including relevant policies and legislation, background information, a description of terrestrial field surveys, and reporting needed to complete the Scoped EIS for the proposed development.

RECORD OF PRE-APPLICATION CONSULTATION

The following form is to be completed and signed off at/following the Pre-application Consultation Meeting (PACM).

Date: January 4, 2022

TO: Raj Khanuja

FROM: Monica Wu

RE: 38 Exeter Road

PLANNING APPLICATION TEAM: Monica Wu, Planner II (mwu@london.ca); Amanda Lockwood, Urban Designer (alockwood@london.ca); Sonia Wise, Site Development Planner (swise@london.ca); Paul Di Losa, Senior Engineering Technologist (pdilosa@london.ca); Laura Dent, Heritage Planner (ldent@london.ca); Lisa McNiven, Landscape Architect (lmcniven@london.ca); Craig Smith, Senior Planner, Parks Planning & Design (crsmith@london.ca); Shane Butnari, Ecologist (sbutnari@london.ca)

City staff reviewed your Proposal Summary submitted December 7, 2021 at an Internal Review Meeting on December 23, 2021. The following form summarizes a preliminary list of issues to be considered during the processing of your application. We have also identified the initial material submissions (Studies, Reports, Background or Information) that must be submitted along with the completed application form, required fees and this Record of Pre-Application Consultation Form before your application will be accepted as complete for opening and processing.

PROPOSED DEVELOPMENT:

- London Plan Place Type: Shopping Area
- 1989 Official Plan: Enterprise Corridor
- Current Zone: Holding Restricted Service Commercial (h-17*RSC1/RSC4)
- Requested Zone: None requested (applicant to specify)
- Proposed Development: Two retail/commercial buildings

POLICY/REGULATORY FRAMEWORK OVERVIEW:

- The site is located in the Shopping Area Place Type in the London Plan and is designated Enterprise Corridor in the 1989 Official Plan
    - A broad range of commercial, residential, office, entertainment, service, institutional and educational uses are contemplated at this location
    - Mixed-use buildings are encouraged
- The site is located in the Wonderland Road Community Enterprise Corridor in the Southwest Area Secondary Plan (SWAP)
    - Development shall be planned on the basis that future intensification in the form of mixed-use developments or reformatted commercial development will occur (SWAP, 20.5.6.1 (i); 20.5.6.1(v)(a))
    - Mixed-use developments are encouraged (SWAP, 20.5.6.1(ii))
    - Grid pattern of development is encouraged through the provision and dedication of local roads and/or rights-of-way aligned perpendicular to Wonderland Road South (SWAP, 20.5.6.1(i); 20.5.6.1(iii))
    - Please refer to Section 20.5.6.1 in the SWAP for additional policies pertaining to the Wonderland Road Community Enterprise Corridor
- The site is zoned Holding Restricted Service Commercial (h-17*RSC1/RSC4).
    - The RSC Zone variation permits trade service and moderate intensity commercial uses

        - The proposed uses are not permitted at this location and a re-zoning is required
    - The h-17 holding provision requires full municipal sanitary sewer and water services to be available prior to its removal

MAJOR ISSUES:

- Applicant to confirm proposed zone
    - Special provision to permit reduced parking is required (required: 1 space per $15m^2$)
    - Additional special provisions may be identified through the Site Plan Pre-Consultation process
- Proponent is encouraged to consider acquiring lands to the north and west to maximize future development potential
- The proposed development is encouraged to orient buildings towards Exeter and Wonderland Road South to establish a pedestrian- and transit-oriented built street edge
    - Proponent is encouraged to consider reconfiguring the site to along a small amount of parking between the buildings to provide both pedestrians and drivers with convenient access to the unit entrances and ensure the functional front doors are located close to the streets – see Urban Design comments below for future details
- Right-of-way dedication of 24.0 m from the centre line of Exeter Road and Wonderland Road South is required
    - Additional 6.0 m setback is required from the easterly and southerly lot lines – to be confirmed during Site Plan Pre-Consultation

Site Plan:

- Add landscape islands to the parking area in the hatched area and to enclose the parking row at the north end of each aisle
- Provide buffer from parking spaces to property boundaries, or confirm easements for shared use if integrating access or function with neighbouring properties
- Confirm easements for shared access for drive aisles from Wonderland to the north of the site
- Show dimensions of proposed north-south access that exits to Exeter Road and confirm if any easements are required for joint use for neighbouring properties
- Identify and confirm any perimeter fencing type proposed
- Provide pedestrian connections from the parking area to the buildings
- Identify and label snow storage areas
- Identify and label fire route(s) if required
- Identify any changes to the use of property to north due to site changes at 38 Exeter Road (appears to have current garbage storage along property boundary)
- Consider locating garbage storage within building
- Proposal seems to meet the definition for shopping centre which would have a parking rate of 1/15sqm for all uses, if there are at least 4 or more individual business establishments. Parking would be required at 66 spaces for 990sqm of GFA.
- Accessible and bicycle parking would need to be updated accordingly
- If the concept changes significantly, please circulate to Site Plan for revised comments

Urban Design:

- This site is within the Wonderland Road Community Enterprise Corridor of the Southwest Area Secondary Plan [SWAP].
    - Consider developing the site with a more intense, mixed-use development including commercial at grade and residential above, in line with the vision of the Wonderland corridor.
    - Development will be encouraged in a “main street” format where buildings are oriented to a public street with direct pedestrian connections to the city sidewalk [SWAP 20.5.6.1].

    - The frontage of the building facing Wonderland Road South and Exeter Road should be lined with small scale stores and have multiple entrances [SWAP 20.5.6.1].
        - Front facades and doors to the majority of units should be provided along the public street frontages, or in close, direct proximity. Consider reconfiguring the site to along a small amount of parking between the buildings to provide both pedestrians and drivers with convenient access to the unit entrances and ensure the functional front doors are located close to the streets.
    - This site is adjacent to 17 and 31 Exeter Road which is anticipated to be a gateway to the Southwest Area of the London and the Wonderland Road Community Enterprise Corridor. This site should be cohesive with the anticipated use of those properties, including buildings that are focused to the street with parking areas located predominantly in side or rear yards. Emphasis shall be placed on architectural quality and urban design to create an urban main street character. The development should provide for a walkable urban main street experience on a pedestrian scale. Buildings along Exeter and Wonderland Road should be street oriented, with the public right-of-way designed to support pedestrian activity and street-oriented retail or other active uses. Boulevards may include wider sidewalks and outdoor patio areas, and hard and soft surface landscaping treatments including street trees and furniture [SWAP 20.5.6.5].
- Ensure all parking rows have a parking island with sufficient room for two trees.
- Provide full elevations with materials and dimensions labelled. Further urban design comments may be provided after receipt of these elevations.
- This application is to be reviewed by the Urban Design Peer Review Panel (UDPRP), and as such, an Urban Design Brief will be required. UDPRP meetings take place on the third Wednesday of every month, once an Urban Design Brief is submitted as part of a complete application the application will be scheduled for an upcoming meeting and the assigned planner as well as the applicant's agent will be notified. If you have any questions relating to the UDPRP or the Urban Design Briefs please contact Wyatt Rotteau at 519.661.CITY (2489) x7545 or by email at wrotteau@london.ca.

Ecology/Landscaping:

- A scoped Environmental Impact Study (EIS) will be required as part of a complete application submission to address Species at Risk (SAR) concerns for potential Butternut present in Black Walnut stand
- A scoping meeting shall be held between the proponent and a City Ecologist to review and confirm the study scope. A site visit may be requested in support of application review.
- The proponent and/or their consultant is required to complete the Environmental Impact Study Issues Scoping Checklist as a draft for submission to the City in advance of the scoping meeting. Once all comments regarding the draft Checklist have been received and finalized the City of London will send written approval (e-mail or letter).
    - No disturbance arising from demolition, construction, or any other activity shall take place on the property prior to Development Services receiving and approving the EIS to ensure that all technical requirements have been satisfied.
    - It is an offence under Section 10(1) of the *Endangered Species Act* to damage or destroy the habitat of a species that is listed on the Species at Risk in Ontario list as an Endangered or Threatened species.
    - Avoid tree removal within the active bat roosting period (April 30 – September 1) to reduce potential interactions with Endangered bat species, to avoid contravention of the *Endangered Species Act.*
    - Avoid vegetation removal within the active breeding bird period (April 1 – August 1) to avoid disturbing nesting birds and contravening the *Migratory Bird Convention Act.*
- A Tree Preservation Plan is required as part of a complete application to:

    - establish the ownership of trees growing along property lines, including the identification of boundary trees that are protected by the province's Forestry Act 1998, c. 18, Sched. I, s. 21.
    - Identify rare or endangered species that are protected by the province's Endangered Species Act, 2007, S.O., C.6
    - Identify canopy spread of existing trees, tree symbols to reflect canopy extents
    - Identify Tree Protection Areas
    - Identify City Owned trees and shrubs that require consent to injure or remove
    - Detail tree removals, tree retention, tree fence alignment and construction mitigation measures
    - evaluation of the impact of the proposed development upon the existing vegetation
    - opinion of the significance of the vegetation
- The Tree Preservation Plan and tree protection measures must include:
    - inventory of existing vegetation-species, size, location, health, age, rare or threatened species. Include trees ≥10cm dbh and shrubs 1.5m high

Archaeological/Heritage:

- An Archaeological Assessment Stage 1-2 – entire property is required as part of a complete application submission.
    - If an archaeological assessment has already been completed and received a compliance letter from the Ministry, the compliance letter along with the assessment report may be submitted for review to ensure they meet municipal requirements.
- The proponent shall retain a consultant archaeologist, licensed by the Ministry of Heritage, Sport, Tourism, and Culture Industries under the provisions of the *Ontario Heritage Act* (R.S.O. 1990 as amended) to carry out a minimum of a Stage 1-2 archaeological assessment and follow through on recommendations to mitigate, through preservation or resource removal and documentation, adverse impacts to any significant archaeological resources found (Stages 3-4).
- The archaeological assessment must be completed in accordance with the most current Standards and Guidelines for Consulting Archaeologists, Ministry of Tourism, Culture and Sport.
- All archaeological assessment reports will to be submitted to the City of London once the Ministry of Heritage, Sport, Tourism and Culture Industries has accepted them into the Public Registry; both a hard copy and PDF format of archaeological reports should be submitted to Current Development.
    - No soil disturbance arising from demolition, construction, or any other activity shall take place on the property prior to Current Development receiving the Ministry of Heritage, Sport, Tourism, and Culture Industries compliance letter indicating that all archaeological licensing and technical review requirements have been satisfied.
    - It is an offence under Section 48 and 69 of the *Ontario Heritage Act* for any party other than a consultant archaeologist to make alterations to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from an archaeological site.
    - Should previously undocumented (i.e. unknown or deeply buried) archaeological resources be discovered, they may be a new archaeological site and therefore be 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 consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*. Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, or have artifacts removed from them, except by a person holding an archaeological license.

- If human remains/or a grave site is discovered, the proponent or person discovering the human remains and/or grave site must cease alteration of the site immediately. The *Funerals, Burials and Cremation Services Act* requires that any person discovering human remains must immediately notify the police or coroner and the Registrar of Burial Sites, War Graves, Abandoned Cemeteries and Cemetery Closures, Ontario Ministry of Government and Consumer Services.

Parks:

- Parkland dedication is required in the form of cash in lieu, pursuant to By-law CP-9 and will be finalized at the time of site plan approval.

Transportation:

- A Transportation Impact Assessment (TIA) will be required as part of a complete application submission.
  - The TIA will evaluate the impact the development will have on the transportation infrastructure in the area and provide recommendations for any mitigation measures.
  - The TIA will need to be scoped with City staff prior to undertaking and be undertaken in general conformance with the City's TIA guidelines.
- Right-of-way dedication of 24.0 m from the centre line be required along Exeter Rd.
- Right-of-way dedication of 24.0 m from the centre line be required along Wonderland Rd South.
- 6.0mx6.0m daylight triangle required at the intersection corner.
- Detailed comments regarding access design and location will be made through the site plan process.

Water

- Water is available for the subject site via the municipal 300mm watermain on Exeter Road.

Wastewater

- The municipal sanitary sewer available is the 450mm diameter sewer on Exeter Rd. There is a 150mm diameter PDC stubbed at property line.

Stormwater

- As per attached accepted Storm Drainage Area Plan Drawing No (15311) , the site at C=0.70 is tributary to the existing 600mm diameter storm sewer on Exeter Rd. The applicant should be aware that any future changes to the C-value will require the applicant to demonstrate sufficient capacity in this pipe and downstream systems to service the proposed development as well as provide on-site SWM controls. On-site SWM controls design should include, but not be limited to required storage volume calculations, flow restrictor sizing, bioswales, etc.
- As per as-constructed Drawing No (29249), the City cannot confirm a storm PDC exists to service the property. The consultant would be required to provide for a storm PDC to service the site.
- The proposed land use of a commercial will trigger(s) the application of design requirements of Permanent Private Storm System (PPS) as approved by Council resolution on January 18, 2010. A standalone Operation and Maintenance manual document for the proposed SWM system is to be included as part of the system design and submitted to the City for review.
- The number of proposed/existing parking spaces exceeds 29, the owner shall be required to have a consulting Professional Engineer confirming how the water quality will be addressed to the standards of the Ministry of the Environment, Conservation and Parks (MECP) with a minimum of 80% TSS removal to the satisfaction of the City Engineer. Applicable options could include, but not be limited to the use of oil/grit separators or any LID filtration/infiltration devises.
- Based on the Dingman Subwatershed study, the runoff control hierarchy for the 25mm event is to be achieved for sites within the Subwatershed. The consulting engineer is to ensure that any proposed option of LID solutions are to be in

compliance with the LID Screening Tools Section 6.5.2.2 Stormwater Management of the Design Specifications & Requirements Manual.

- Any proposed LID solutions should be supported by a Geotechnical Report and/or hydrogeological investigations prepared with focus on the type of soil, it's infiltration rate, hydraulic conductivity (under field saturated conditions), and seasonal high ground water elevation. The report(s) should include geotechnical and hydrogeological recommendations of any preferred/suitable LID solution. All LID proposals are to be in accordance with Section 6 Stormwater Management of the Design Specifications & Requirements manual.
- As per 9.4.1 of The Design Specifications & Requirements Manual (DSRM), all multi-family, commercial and institutional block drainage is to be self-contained. The owner is required to provide a lot grading plan for stormwater flows and major overland flows on site and ensure that stormwater flows are self-contained on site, up to the 100 year event and safely convey the 250 year storm event.
- The Owner shall allow for conveyance of overland flows from external drainage areas that naturally drain by topography through the subject lands
- Stormwater run-off from the subject lands shall not cause any adverse effects to adjacent or downstream lands.
- An erosion/sediment control plan that will identify all erosion and sediment control measures for the subject site and that will be in accordance with City of London and MECP standards and requirements, all to the specification and satisfaction of the City Engineer. This plan is to include measures to be used during all phases of construction. These measures shall be identified in the Storm/Drainage Servicing Report.
- All applicants and their consultants shall ensure compliance with the City of London, Design Specifications and Requirements Manual, Ministry of the Environment, Conservation & Parks (MECP) Guidelines and Recommendation, and the SWM criteria ,as well as, targets for the Dingman Creek Subwatershed.
- Additional SWM related comments will be provided upon future review of this site.

General comments for sites within Dingman Creek Subwatershed:

- The subject lands are located in the Dingman Subwatershed. The Owner shall provide a Storm/Drainage Servicing Report demonstrating compliance with the SWM criteria and environmental targets identified in the Dingman Subwatershed Study that may include but not be limited to, runoff volume control, quantity/quality control (80% TSS), erosion, stream morphology, etc.
- The Owner agrees to promote the implementation of SWM Best Management Practices (BMP's) within the plan, including Low Impact Development (LID) where possible, to the satisfaction of the City Engineer.
- The owner is required to provide a lot grading plan for stormwater flows and major overland flows on site and ensure that stormwater flows are self-contained on site, up to the 100 year event and safely conveys up to the 250 year storm event, all to be designed by a Professional Engineer for review.
- The Owner shall allow for conveyance of overland flows from external drainage areas that naturally drain by topography through the subject lands.
- Stormwater run-off from the subject lands shall not cause any adverse effects to adjacent or downstream lands.
- An erosion/sediment control plan that will identify all erosion and sediment control measures for the subject site shall be prepared to the specification and satisfaction of the City Engineer and shall be in accordance with City of London and MECP (formerly MOECC) standards and requirements. This plan is to include measures to be used during all phases of construction. These measures shall be identified in the Storm/Drainage Servicing Report.

Studies, Reports, Background or Information to be completed and submitted with the application form

- Zoning By-law Amendment application and fees
- Zoning Data Sheet
- Record of Site Plan Pre-Consultation
- Site Concept Plan, Floor Plans, Elevations & Renderings
- Planning Justification Report
- Urban Design Brief
- Stage 1 – 2 Archaeological Assessment – entire property
- Transportation Impact Assessment (TIA)
- Scoped Environmental Impact Study (EIS)
- Tree Preservation Plan
- Image for use on sign and webpage (in accordance with the Graphic Requirements contained in Schedule APP-3 of the application form)
- All background reports and drawings are required to meet the Accessibility for Ontarians with Disabilities Web Content Accessibility Guidelines (AODA WCAG 2.0 AA) regulations. See application form for more detail.
- Electronic copies of all supporting background information

PRE-APPLICATION CONSULTATION HAS OCCURRED

☐ YES ☑ NO

PLANNER: Monica Wu

PROPONENT: _____

DATE: January 4, 2022

Disclaimer

The pre-application consultation process is intended to identify issues early in the process and to identify the reports, studies and information required to be submitted as part of a complete application. A complete application enables Council to make informed decisions within a reasonable period of time and ensures that the public and other stakeholders have access to the relevant information early in the process. While every effort has been made to identify information needs at this stage, additional issues and/or information needs may be identified through the application review process and may be requested at that time. Should a formal submission of an application not materialize within 9 months, a subsequent Pre-Application Consultation Meeting (PACM) will be required.

Council adopted The London Plan, the City's new Official Plan for the City, on June 23, 2016. It is not yet in force and effect, but should it come into force and effect before you submit your complete application, City staff may identify additional complete application requirements at the time of application submission in order to comply with The London Plan policies.

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

March 18, 2022 2803

Dr. Raj Khanuja
rajdds@yahoo.com

c/o Paul Crocker
pcrocker@callondietz.com
Callon Dietz Inc.
41 Adelaide Street North, Unit 1
London, ON
N6B 3P4

RE: 38 Exeter Road, London
Scoped Environmental Impact Study and Tree Preservation Plan - Terms of Reference

On behalf Natural Resource Solutions Inc. (NRSI), I am pleased to provide the following Terms of Reference (TOR) for an Environmental Impact Study (EIS) and Tree Preservation Plan (TPP) for a proposed retail development at 38 Exeter Road, London, Ontario.

The subject property is approximately 0.42ha in size and is located northwest of the intersection of Exeter Road and Wonderland Road South. The property contains treed areas and sits adjacent to retail areas and agricultural lands (Map 1). A Record of Pre-Application Consultation provided by the City of London outlines the requirement for a Scoped EIS "to address Species at Risk (SAR) concerns for potential Butternut present in [the] Black Walnut stand", as well as a Tree Preservation Plan to allow for any proposed tree removal. The following Terms of Reference identifies the scope of the workplan for this undertaking.

Project Scoping

The proposed EIS and TPP will provide background information, methods and findings of field surveys, and a variety of impact analyses that rely on a pre-defined set of geographical terms. This section aims to clarify important terms that will be used throughout both reports.

The term *development area* refers to the location where construction will be required to facilitate the proposed development. This will include grading activities that may extend past the final developed footprint. This area is not yet finalized and will be determined through iterative, multidisciplinary reviews and discussions.

The term *subject property* refers to the legal lands owned by the proponent, which is outlined on all mapping. The term *study area* refers to the subject property and lands within 200m, as well as any connected natural features. The 200m radius that is included in the study area has been selected based on several policy definitions that must be considered during the development of an EIS. Primarily, these are:

- The definition of "adjacent lands" provided in the Natural Heritage Reference Manual (Ministry of Natural Resources and Forestry (MNRF) 2010), which requires the assessment of potential impacts on all relevant ecological receivers and wildlife habitat for any development within 120m; and

- The inclusion of potential regulated habitat for several Species at Risk (SAR).

Finally, the study area is nested within a broader geographical area for which a variety of available background information sources was reviewed to inform this TOR. Legacy data was collected from several atlases, which is available in 10x10km grids (square 17MH75), as well as the Natural Heritage Information database, which is available in 1x1km grids (square 17MH7752; NDMNRF 2022).

The described subject property and study area are shown on Map 1.

Project Overview

NRSI has been retained by Dr. Raj Khanuja to complete a scoped EIS and TPP for the proposed development of two retail buildings within the subject property. The EIS will include an analysis of the proposed draft plan completed by other project team members.

This TOR outlines the steps required to complete the EIS and TPP for the proposed development, and consists of three phases:

1. Background information review;
2. Natural resource characterization, and;
3. EIS and TPP reporting.

Each of these components is described in separate sections within this letter.

1. Background Information Review

NRSI has reviewed the London Plan (City of London 2021) and other policies and legislation to inform this EIS. Detailed below are the relevant policy areas that will be considered during the development of the EIS.

Table 1. Relevant Policies and Legislation

Policy/Legislation	Description	Project Relevance
Provincial Policy Statement (OMMAH 2020)	• Issued under the authority of Section 3 of the Planning Act and came into effect on May 1, 2020, replacing the 2014 PPS (OMMAH 2014). • One of the key goals of the PPS is to "[*provide*] *for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural and built environment."* • Section 2.1 of the PPS – Natural Heritage establishes clear direction on the adoption of an ecosystem approach and the protection of resources that have been identified as 'significant'. This section also identifies that natural features are to be protected for the long term. • Section 2.1.5 of the PPS identifies that development and site alteration shall	• Based on the background review, pre-construction monitoring reports and SAR/SCC screening, several natural features afforded consideration within the PPS have the potential to occur in the study area, including: o Significant Wildlife Habitats, and o Habitat for endangered and threatened species.

Policy/Legislation	Description	Project Relevance
	not be permitted within the area outlined in sub-sections a) – f) *"unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions."* • The Natural Heritage Reference Manual (OMNR 2010) and the Significant Wildlife Habitat Technical Guide (OMNR 2000) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS.	
Endangered Species Act (Government of Ontario 2007)	• The original ESA, written in 1971, underwent a year-long review which resulted in a number of changes which came into force in 2007. • The ESA prohibits killing, harming, harassing, or capturing Endangered or Threatened and protects their habitats from damage and destruction.	• Based on information available through background documents and field surveys, including the SAR/SCC screening, several SAR were identified as potentially having suitable habitat within the subject property: ○ Butternut (*Juglans cinerea*); ○ Little Brown Myotis (*Myotis lucifungus);* ○ Northern Myotis (*Myotis septentrionalis);* and ○ Monarch (*Danaus plexippus*)
Migratory Birds Convention Act (Canadian Wildlife Service (CWS) 2017)	• The MBCA protects migratory game birds, insectivorous birds, and several other migratory non-game birds from persecution in the form of harassment. • The schedule of on-site work must consider MBCA windows, with timing of breeding bird season typically occurring between April 1 and August 31, however, this is a guideline, since the MBCA applies to nesting bird species. • "Incidental take" is considered illegal, with the exception of a permit obtained by the Canadian Wildlife Service (CWS).	• The timing of construction activities, especially vegetation clearing and site grading must have consideration for the MBCA timing windows.
Fish and Wildlife Conservation Act (Government of Ontario 2019)	• The FWCA provides protection for certain bird species, not protected under the MBCA (e.g., raptors), as well as furbearing mammals and their dens or habitual dwellings, aside from the Red Fox (*Vulpes vulpes*) and Striped Skunk (*Mephitis mephitis*).	• The timing of construction activities, especially vegetation clearing and site grading must have consideration for bird nesting and den sites for fur-bearing mammals.
The Canadian *Fisheries Act* (Government of Canada 1985)	• Last amended in August 2019, the federal *Fisheries Act* provides for the protection of fish and fish habitat • Fish are protected through two core prohibitions: Section 34.4(1) prohibits	• A watercourse is present within the study area, situated in an agricultural field east of the subject property. • The need for project review by the Department of Fisheries and Oceans

Policy/Legislation	Description	Project Relevance
	the death of fish by means other than fishing, and Section 35(1) prohibits the harmful alteration, disruption, or destruction (HADD) of fish habitat (Government of Canada 2019). • Fish habitat is defined as "spawning grounds and any other areas, including nursery, rearing, food supply and migration areas, on which fish depend directly or indirectly in order to carry out their life processes".	(DFO) Fish and Fish Habitat Protection Program (FFHPP) will be determined upon the completion of a proponent-led assessment of whether the proposed undertaking can meet all measures to protect fish and fish habitat (as outlined in the DFO's online Projects Near Water guidelines). • Should the proponent-led assessment indicate that impacts to fish and fish habitat may occur as a result of the proposed development, project review by the DFO will be necessary to determine if the proposed undertaking has the potential to contravene the Fisheries Act, and if an Authorization under the Act will be required. • No Species at Risk fish or fish habitat has been identified within the subject property.
UTRCA Ontario Regulation 157/06 (Government of Ontario 2013)	• Regulation issued under *Conservation Authorities Act,* R.S.O. 1990. • Through this regulation, the Upper Thames River Conservation Authority (UTRCA) has the responsibility to regulate activities in natural and hazardous areas (i.e. areas in and near rivers, streams, floodplains, wetlands, and slopes). Section 2(1) outlines the regulated natural features within which development is prohibited • The Environmental Planning Policy Manual (UTRCA 2017) outlines policies designed to protect natural heritage features and systems from the potentially negative impacts of development and site alteration.	• The subject property is not regulated by the UTRCA. • A watercourse has been identified to occur within the study area, situated in an agricultural field east of the subject property. The feature is regulated by the UTRCA.
London Plan (City of London 2021)	• The London Plan was adopted by Council and the Province in 2016 and last consolidated in May, 2021. • This official plan outlines current policies for the protection of natural features within the City of London which represent a constraint for development. • The *Environmental Policies* section of the London Plan denotes components of the Natural Heritage System. Natural heritage features and areas such as fish habitat and habitat of endangered species and threatened species are included as part of the Green Space Place Type.	• Map 1 – *Place Types* indicates that the subject property is located within a Shopping Area Place Type. • Map 5 – *Natural Heritage* indicates that the subject property does not contain any Natural Heritage System features. A watercourse is present in the study area, within an agricultural field east of Wonderland Road. • Map 6 – *Hazards and Natural Resources* indicates that the subject property is located on a Highly Vulnerable Aquifer and Significant Groundwater Recharge Area. • Site alteration is not permitted in Habitats of Endangered and Threatened species, which must be

Policy/Legislation	Description	Project Relevance
	• Features such as unevaluated wetlands, unevaluated vegetation patches, valleylands, and potential environmentally significant areas are included in the Environmental Review Place Type.	identified in the EIS. The subject property may provide suitable habitat for Endangered or Threatened species.
City of London Tree Preservation By-law C.P.-1555-252 (City of London 2016)	• Regulates harm or destruction of trees within the Urban Growth Boundary. • Outlines Tree Protection Areas. • Amended by C.P—1555(b) – 29 on December 21, 2021. • Trees described as Distinctive or located within a Tree Protection Area are protected by this by-law.	• The subject property occurs within the Urban Growth Boundary. • A tree inventory and Tree Preservation Plan must be completed to identify ownership of trees growing along property lines, identify Tree Protection Areas, evaluate significance of vegetation features, and inform tree retention and protection for the development.

Collection and Review of Background Information

NRSI has already completed the majority of this stage to inform this TOR. Existing background information has been collected for the 10x10km grid overlapping the subject property, as described above. Existing studies with natural environment components have been reviewed and are listed below. Background sources reviewed include the following:

- The London Plan (City of London 2021)
- Middlesex County Natural Heritage Study (Upper Thames River Conservation Authority (UTRCA) 2014)
- Natural Heritage Information Centre (NHIC) (Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) 2022);
- Natural Heritage Reference Manual (MNRF 2010);
- Significant Wildlife Habitat Technical Guide (OMNR 2000);
- Significant Wildlife Habitat Criteria Schedules For Ecoregion 7E (OMNR 2015)
- Significant Wildlife Habitat Support Tool (MNRF 2014b);
- Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF) Aylmer District;
- Ministry of Environment, Conservation and Parks (MECP) Species at Risk;
- Government of Canada Species at Risk Act (SARA) Registry;
- Department of Fisheries and Oceans Aquatic Species at Risk mapping (DFO 2021)
- Ontario Breeding Bird Atlas (OBBA, Bird Studies Canada (BSC) et al. 2006);
- Ontario Reptile and Amphibian Atlas (Ontario Nature 2019);
- Mammal Atlas of Ontario (Dobbyn 1994);
- Ontario Butterfly Atlas Online (Macnaughton et al. 2020); and
- Ontario Odonata Atlas Database (OOAD 2021).

Initial wildlife species lists for the study area were developed using these background sources. Based on available background information, a screening exercise was completed for potential Species at Risk (SAR), and Species of Conservation Concern (SCC) as well as potential Significant Wildlife Habitat (SWH) within the subject property and study area (see enclosed). The SAR and SCC screening exercise identified a preliminary list of species that may have suitable habitat within the subject property. These species, as well as the proposed surveys to properly assess their presence, is provided below.

- Northern Myotis (*Myotis septentrionalis*) – Bat habitat assessment;
- Eastern Small-footed Myotis (*Myotis leibii*) – Bat habitat assessment;
- Monarch (*Danaus plexippus*) – Vegetation surveys and wildlife observations; and
- Butternut (*Juglans cinerea*) – Tree inventory.

The SWH screening exercise identified a preliminary list of candidate SWH (OMNR 2000; MNRF 2015) that may be present on the subject property and in the study area, and which will be assessed through the proposed field program. A list of potential habitats within the study area, as well as the proposed surveys to properly assess their presence, is provided below.

- Waterfowl Stopover and Staging Area (Terrestrial) – Terrestrial habitat assessment and documentation;
- Reptile Hibernaculum – Terrestrial habitat assessments and documentation;
- Rare Vegetation Communities – Vegetation surveys;
- Terrestrial Crayfish Habitat - Terrestrial habitat assessments and documentation; and
- Special Concern and Rare Wildlife Species – Detailed by species listed above.

2. Natural Resource Characterization

This phase includes all field surveys, as well as a preliminary analysis of field survey data to inform the development plan, including setbacks, buffers, and natural heritage constraints.

Terrestrial Field Surveys

Vegetation Community Description and Mapping

Vegetation communities within the study area will be mapped and classified following the Ecological Land Classification (ELC) system for southern Ontario (Lee et al. 1998). Details on the vegetation communities will be recorded, including species composition, dominance, uncommon species or features, surficial soil types, and evidence of human impact.

Spring Vegetation Inventory

A spring vegetation inventory will be conducted in tandem with ELC surveys to record all species of vascular flora within the subject property. The subject property will be systematically searched for plant species and any rare species will be documented and georeferenced, as access allows. Vascular flora species will be recorded by ELC polygon. Any SAR identified during the vegetation inventory will be recorded, and the location identified and mapped using handheld GPS unit.

Terrestrial Habitat Assessments and Documentation of Other Wildlife

NRSI biologists will assess wildlife habitats within the subject properties during all site visits. Any features that may be indicative of SWH or habitat for SAR will be documented in detail, photographed, and georeferenced. Observations of lepidoptera, odonata, herpetofauna, bumblebees, mammals, and all other wildlife will be recorded while on-site. In addition to direct observations, any evidence such as dens, tracks, and scat will also be documented.

Tree Inventory

NRSI arborists will complete an inventory of all trees ≥10cm diameter at breast height (DBH) on the subject property and adjacent areas with the potential to be impacted by the proposed development, in accordance with the London Plan. Inventoried trees will be tagged and assessed by a Certified Arborist and/or Registered Professional Forester. Each tree within the subject property will be tagged with a pre-numbered aluminum forestry tag or given a unique map identifier, and the following information will be recorded for each individual assessed tree;

- Unique alpha-numeric identifier;
- Species;
- DBH (cm);
- Crown radius (metres);
- General health (excellent, good, fair, poor, very poor);
- Potential for structural failure (improbable, possible, probable, imminent);
- Location;
- Evidence of candidate bat habitat (e.g., exfoliating bark, cavities, leaf clusters);
- General comments (i.e., disease, aesthetic quality, development constraints, sensitivity to development);
- Management recommendations where appropriate (i.e., prune, relocate, remove, retain, etc.); and
- Rationale for any proposed action.

During the assessment of each individual tree, NRSI staff will record the location of the tree using a GPS unit capable of sub-meter mapping grade accuracy. A preliminary map of existing conditions will be developed to inform the proposed plans. The tree inventory will identify boundary and off-site trees and potential for their protection. This data will be used to inform maximum tree retention in the final site plan through iterative correspondence with the project team.

Bat Habitat Assessment

An inspection of trees within the subject property will be completed to determine the likelihood of suitable roosting habitat for bats. Cavity tree assessments and searching for leaf roosts will follow guidelines provided by the NDMNRF in the April 2017 document Survey Protocol for Species at Risk Bats in Treed Habitats (MNRF 2017). The bat habitat assessments will be focused in areas of potential tree removals, to be determined in consultation with the project team. Based on the preliminary plans for the subject property, the bat cavity tree assessments will require extensive surveys to identify all suitable habitats within the trees on-site.

Natural Feature, Mitigation and Constraints Assessment

The results of the field surveys will be combined with the background information to provide a detailed summary of the existing natural features that occur within the subject property and study area. In addition to natural features, the report will identify existing and historic land uses on the property and known modifications to these features.

Buffers to any identified natural features or habitats on the property (e.g., hydrologic features) will be recommended and mapped as environmental constraints. All other aspects of natural feature significance or sensitivity identified through the field surveys will be incorporated into this assessment, and provided to the client to inform their plans.

3. Environmental Impact Study and Tree Protection Plan Reporting

Environmental Impact Study Report

Natural Feature Constraints Assessment

The natural feature assessment detailed above will form the existing conditions of the EIS, including survey results, delineated vegetation communities, and final SAR, SCC and SWH screenings. NRSI will use the reports prepared by the project team to summarize the assessments of surface water systems and hydrogeologic areas (including surface and groundwater conditions), geomorphic features, and natural hazards such as floodplains and erosion.

Impact Assessment, Mitigations, and Other Recommendations

An impact and net effects assessment will be completed based on the proposed site plan, in accordance with the London Plan (2021). This analysis will consider existing (e.g. previous or existing land uses), potential direct (e.g., habitat removal), and potential indirect (e.g., construction-related, hydrological) impacts on the existing natural features. Induced impacts that extend into the broader landscape fabric will also be considered. The impact analysis will be prepared based on details of the proposed development, where available. NRSI staff will incorporate and summarize the results of other relevant technical studies and plans to be completed by project team members.

The report will identify natural features proposed to be protected and those proposed to be removed. Recommendations will be provided to avoid, or otherwise minimize or mitigate adverse impacts to natural features associated with the proposed development. Where applicable, recommendations may be provided for construction- or post-construction monitoring, as well as ecological restoration, enhancement, or management.

Tree Preservation Plan (TPP)

Inventoried trees will be mapped and the location of each tree will be compared to the proposed site plan and grading plan to determine which trees can be retained, removed, or where feasible, relocated.

A Tree Preservation Plan will be developed in tandem with the final plans for this stage, with an effort to retain a maximum number of trees throughout the development. The plan will identify individual trees to be retained, removed or relocated, including their dripline, location and type of tree protection fencing, and location of information signs along the tree protection fencing. The plan will incorporate consideration of boundaries trees and compensation for any removed trees.

A Tree Protection Plan report will be prepared providing a summary of tree inventory results and recommendations for tree management, mitigation and compensation, if required.

Should you have any questions or comments regarding this letter, please do not hesitate to contact me.

Sincerely,
Natural Resource Solutions Inc.

Jeremy Bannon, B.E.S.
Project Lead / Certified Arborist

Encl.
Map 1: Study Area and Natural Features
SAR and SCC Screening Tables
SWH Screening Tables

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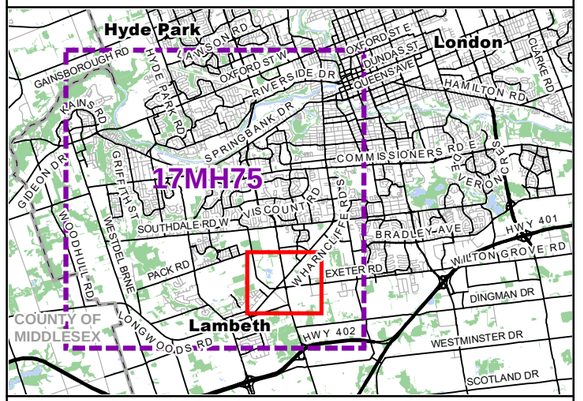
Map 1

38 Exeter Road

Study Area and Natural Features



Legend

- Study Area (200m)
- Subject Property
- Utility Line
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Wooded Area
- Natural Heritage Information Centre (NHIC) 1x1km
- Ontario Breeding Bird Atlas (OBBA) 10x10km*

Aquatic Resource Area (ARA)

- ARA Survey Point
- ARA Watercourse Segment

*Entire map extent encompassed by OBBA square 17MH75

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 2803
Date: March 15, 2022

NAD83 - UTM Zone 17
Size: 11x17"
1:8,000

0 100 200 300 400 500 Metres

N

476500 477000 477500 478000 478500

4753000 4752500 4752000 4751500

125965945 115532059 650994275 650994279 650994375 650994380 650994388 115532058 650994444 125965947 650994398 125965946 115531618 115531737 650994401 650994411 650994417 650994516

17MH7653 17MH7753 17MH7853 17MH7652 17MH7752 17MH7852 17MH7651 17MH7751 17MH7851

WONDERLAND RD S WHARNCLIFFE RD S BOSTWICK RD MIDDLETON AVE KENNINGTON WAY STEWART AVE EXETER RD MEADOWBROOK DR BLAKIE RD RED THORNE AVE DEBRA DR BAKERVILLA ST SAVOY ST WESTWICK WALK WESTPOINT HTS THORNCROFT CRES BEATTIE ST HAMLYN ST

Path: X:\2803_38ExeterRd_EIS_TIPP\NRSI_2803_Map1_StudyArea_8K_2022_03_15_MV.mxd

Species at Risk and Species of Conservation Concern Screening Table

Scientific Name	Common Name	S-RANK[1]	SARO[1]	COSEWIC[2]	SARA[2]	SARA Schedule[2]	Habitat Requirements	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Chaetura pelagica	Chimney Swift	S3B	THR	T	T	Schedule 1	Commonly found in urban areas near buildings; nests in chimneys, hollow trees, and crevices of rock cliffs. Feeds over open water.[3,4]	No	No	Suitable chimneys, rock cliffs, and open water features are not present in the subject property or study area.
Chordeiles minor	Common Nighthawk	S4B	SC	SC	T	Schedule 1	Open ground; clearings in dense forests (including burns and logged areas); rock barrens; peat bogs; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.[3,4]	No	Yes	Open, ploughed agricultural fields in the study area may provide suitable habitat for this species.
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	T	Schedule 1	Large (>10 ha), open expansive grasslands, pastures, hayfields, meadows or fallow fields with dense ground cover. Occassionally nest in large (>50 ha) fields of winter wheat and rye in southwestern Ontario. [3,4]	No	Yes	The subject property does not contain the grasslands and fields required to support this species. The agricultural fields to the south and east of the subject property may provide ground cover of sufficient size for this species.
Hirundo rustica	Barn Swallow	S4B	THR	SC	T	Schedule 1	Farmlands, rural areas and other open or semi-open areas near body of water. Nests almost exclusively on human-made structures such as open barns, buildings, bridges and culverts.[3,4]	No	Yes	The subject property does not contain open landscapes or anthroprogenic structures preferred by this species. Farmalnds and buildings within the study area may provide suitable habitat for this species.
Sturnella magna	Eastern Meadowlark	S4B, S3N	THR	T	T	Schedule 1	Open pastures, hayfields, grasslands or grassy meadows with elevated singing perches (small trees, shrubs or fence posts). Also weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields or other open areas. Generally prefers larger tracts of habitat >10 ha, but will sometimes use smaller tracts.[3,4]	No	Yes	The subject property does not contain the large open fields required to support this species. The large agricultural features and roadside features in the study area may provide suitable habitat.
Myotis leibii	Eastern Small-footed Myotis	S2S3	END				Roosts in caves, mine shafts, crevices or buildings that are in or near woodland. Hibernates in cold dry caves or mines. Maternity colonies in caves or buildings. Hunts in forests.[3,4]	Yes	Yes	The forested feature within the subject property may contain suitable roosting and hunting habitat for this species.
Myotis septentrionalis	Northern Myotis	S3	END	E	E	Schedule 1	Roosts in houses and man-made structures but prefers hollow trees or under loose bark. Hibernates in mines or caves. Hunts within forest, below the canopy.[3,4]	Yes	Yes	The forested feature within the subject property may provide hunting habitat and/or contain trees with suitable features for roosting.
Taxidea taxus jacksoni	American Badger (Southwestern Ontario population)	S2	END	E	E	Schedule 1	Open grasslands, oak savannahs, sand barrens and farmland.[3,4]	No	Yes	The farmlands within the study area may provide suitable habitat for this species.
Danaus plexippus	Monarch	S2N, S4B	SC	END	SC	Schedule 1	Adults found in a diversity of habitats with a variety of wildflowers. Caterpillars are confined to meadows and open areas where milkweeds grow (larval food plants).[3]	Yes	Yes	The natural features on the subject property may provide suitable habitat for the larval food plants of this species.
Juglans cinerea	Butternut	S2?	END	E	E	Schedule 1	Stream banks and swamps, as well as upland beech-maple, oak-hickory, and mixed hardwood stands.[23]	Yes	Yes	The forested feature within the subject property may provide suitable upland habitat to support this species.

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					
Rationale: Habitat important to migrating waterfowl	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. - Fields with seasonal flooding and waste grain in the Long Point, Rondeau, Lake. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	Fields with sheet water during Spring (mid March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available[cxlviii] Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Any mixed species aggregations of 100[i] or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependant on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii]. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMIST[cxlix] Index #7 provides development effects and mitigation measures.	The agricultural fields in the study area may flood with sheet water in the spring. Site visits completed in the spring of 2022 will confirm the presence of flooded fields. **Candidate SWH.** Not present in the subject property.

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					
Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district	Canada Goose Cackling Goose Snow Goose Green-winged Teal American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Blue-winged Teal Hooded Merganser Common Merganser Red-breasted Merganser Lesser Scaup Greater Scaup Common Goldeneye Bufflehead Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Canvasback Redhead Ruddy Duck Brant White-winged Scoter Black Scoter	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). Information Sources • Environment Canada • Naturalist clubs often are aware of staging/stopover areas • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100[i] or more of listed species for 7 days[i], results in >700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[cxlix] • The combined area of the ELC ecosites and a 100m radius area is the SWH[cxlviii] • Wetland area and shorelines associated with sites identified within the SWHTG[cxlviii] Appendix K[cxlix] are significant wildlife habitat. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMIST[cxlix] Index #7 provides development effects and mitigation measures.	The study area does not contain water bodies or suitable watercourses with abundant food supply. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shorebird Migratory Stopover Area					
Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. Information Sources • Western hemisphere shorebird reserve network • Canadian Wildlife Service (CWS) Ontario Shorebird Survey • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000[i] shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100[i] Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area[cxlviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #8 provides development effects and mitigation measures.	The study area does not contain aquatic features with shoreline habitat to support migratory shorebirds. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Raptor Wintering Area					
Rationale: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class. Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW Bald Eagle: Forest Community Series: FOD, FOM, FOC, SWD, SWM, or SWC, on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering (hawk/owl) sites need to be > 20ha[cxlviii, cxlix] with a combination of forest and upland[xvi, xvii, xviii, xix, xx, xxi]. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands[cxlix] Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water and large trees and snags aviable for roosting[cxlix] Information Sources • OMNRF Districts • Natural clubs • Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from CAs • Results of Christmas Bird Counts	Studies confirm the use of these habitats by: • One or more Short-eared Owls, or, One of more Bald Eagles or; at least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds[i]. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	The subject property and study area do not contain woodland and upland communities >15ha to support raptor wintering. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Hibernacula					
Rationale: Bat hibernacula, are rare habitats in all Ontario landscapes.	Big Brown Bat Eastern Pipistrelle/Tri-colored Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered The locations of bat hibernacula are relatively poorly known. Information Sources • OMNRF for possible locations and contact for local experts • Natural Heritage Information Centre (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts	• All sites with confirmed hibernating bats are SWH[í]. • The area includes 200m radius around the entrance of the hibernaculum[cxlviii, ccvii, í]. for the development types and 1000m for wind farms [ccv.] • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the[ccv]."Bats and Bat Habitats: Guidelines for Wind Power Projects" [ccv] • SWHMIST[cxlix] Index #1 provides development effects and mitigation measures.	The study area does not contain caves, mine shafts, underground foundations, or karsts that would support bat hibernacula. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Maternity Colonies					
Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in building [sxxii, xxv, xxvi, xxvii, xxxi] (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario[xxii]. • Maternity colonies located in Mature deciduous or mixed forest stands[ccix, ccx] with >10/ha large diameter (>25cm dbh) wildlife trees[ccvii]. • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3[ccxiv] or class 1 or 2[ccxii]. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred[ccx]. Information Sources • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts	Maternity Colonies with confirmed use by: • >10 Big Brown Bats[i] • >5 Adult Female Silver-haired Bats[i] • The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies[i]. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"[ccv]. • SWHMIST[cxlix] Index #12 provides development effects and mitigation measures.	The treed features in the study area are not mature enough to support bat maternity colonies. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Wintering Area					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles: ELC Community Classes: SW, MA, OA and SA ELC Community Series: FEO and BOO Northern Map Turtle: Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen[cix, cx, cxi, cxviii]. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH Information Sources • EIS studies carried out by Conservation Authorities • Field naturalists clubs • OMNRF Ecologist or Biologist • Natural Heritage Information Centre (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant[l]. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant[l]. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – Apr)[cvii]. Congregation of turtles is more common where wintering areas are limited and therefore significant[cix, cx, cxi, cxii]. • SWHMIST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	The study area does not contain natural, permanent bodies with suitable depth and substrates for turtle wintering. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Reptile Hibernaculum					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake	For all snakes, habitat may be found in any ecosite in southern Ontario other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. The existence of rock piles or slopes, stone fences, and crumbling foundations assist in identifying candidate SWH.	For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line[xliv, l, li, lii, cxii]. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information available from CAs • Local naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • Natural Heritage Information Centre (NHIC)	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp., or, individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp., or, individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)[i]. • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWH[i]. • SWHMIST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula.	The subject property and study area may provide suitable subterranean hibernaculum sites. **Candidate SWH.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from CAs • Ontario Breeding Bird Atlas[ccv]. • Bird Studies Canada: Nature Counts http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlvix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests[ccvii]. • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #4 provides development effects and mitigation measures.	The study area does not contain exposed soil banks, suitable structures, or the steep topography required to support these species. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas[ccv], colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from CAs • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of 2 or more active nests of Great Blue Heron or other list species. • The habitat extends from the the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH[cc, ccvii]. • Confirmation of active colonies must be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMIST[cxlix] Index #5 provides development effects and mitigation measures.	The study area does not contain water bodies, islands, or peninsulas required to support colonially-nesting bird breeding habitat. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					
Rationale: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. Information Sources • Ontario Breeding Bird Atlas[ccv], rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of >25 active nests for Herring Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern[l]. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant[l]. • Presence of 5 or more pairs for Brewer's Blackbird[l]. • The edge of the colony and a minimum 150m radius area of the habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH[cc, ccvii]. • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #6 provides development effects and mitigation measures.	The study area does not contain rocky islands, peninsulas, or water bodies required to support colonially-nesting bird breeding habitat. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Migratory Butterfly Stopover Areas					
Rationale: Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter	Painted Lady Red Admiral Special Concern: Monarch	Combination of ELC Community Series; need to have present one Community Series from each landclass: Field: CUM CUT CUS Forest: FOC FOD FOM CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10ha in size with a combination of field and forest habitat present, and will be located within 5km of Lake Ontario and Erie[cxlix]. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south [xxxii, xxxiii, xxxiv, xxxv, xxxvi]. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat [cxlviii, cxlix]. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes [xxxvii, xxxviii, xxxix, xl, xli]. Information Sources • MNRF District Offices • Natural Heritage Information Centre (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[xliii]. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur[xl, xlii]. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or White Admiral's is to be considered significant[í]. • SWHMIST[cxlix] Index #16 provides development effects and mitigation measures.	The study area is not located within 5km of Lake Ontario or Lake Erie. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Landbird Migratory Stopover Areas					
Rationale: Sites with a high diversity of species as well as high numbers are most significant	All migratory songbirds Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >5 ha[i] in size and within 5km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario and Erie. If woodlands are rare in an area of shoreline, woodland fragments 2-5ha can be considered for this habitat • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Erie or Ontario are more significant[cxlix]. • Sites have a variety of habitats: forest, grassland and wetland complexes[cxlix]. • The largest sites are more significant[cxlix] • Woodlots and forest fragments are important habitats to migrating birds[ccxviii], these features located along the shore and located within 5km of Lake Ontario and Lake Erie are Candidate SWH[cxlviii]. Information Sources • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the habitat by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates[i]. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (March/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #9 provides development effects and mitigation measures.	The treed features in the study area are not within 5km of Lake Ontario or Lake Erie. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Deer Winter Congregation Areas					
Rationale: Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions [cxlviii]	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations (CUP) smaller than 50 ha may also be used.	• Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots>50ha[i]. • Deer movement during winter in Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii]. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha[ccxxiv]. • Woodlots with high densities of deer due to artificial feeding are not significant[i]. Information Sources • MNRF District Offices • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF[cxlviii]. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF[i]. • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques[ccxxiv], ground or road surveys, or a pellet count deer density survey[ccxxv]. • SWHMIST[cxlix] Index #2 provides development effects and mitigation measures.	The treed features within the study area are not >50ha in area. **Not present.**

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Cliff and Talus Slopes					
Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii] • SWHMIST[cxlix] Index #21 provides development effects and mitigation measures.	The study area does not contain cliffs or talus slopes. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Sand Barrens					
Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	A sand barren area >0.5ha in size Information Sources • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens[lxxviii] • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp)[i]. • SWHMIST[cxlix] Index #20 provides development effects and mitigation measures.	The study area does not contain sand barrens. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Alvar					
Rationale: Alvars are extremely rare habitats in Ecoregion 7E	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species:** 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 7E[cxlix]	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover[lxxviii].	An Alvar site > 0.5ha in size[lxxv]. Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie[cxcix]. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi]. • Ontario Nature – Conserving Great Lakes Alvars[ccviii]. • Natural Heritage Information Centre (NHIC) has location information available on their website • OMNRF Staff • Field Naturalist clubs • Conservation Authorities	Field studies identify four of the five **Alvar indicator species**[lxxv] at a candidate Alvar site is Significant • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses[lxxv]. • SWHMIST[cxlix] Index #17 provides development effects and mitigation measures.	The study area does not contain alvars. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Old Growth Forest					
Rationale: Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old growth forests are characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland area is >0.5ha Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Districts • Field naturalist clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat[cxlviii]. • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities [cxlviii] (cut stumps will not be present) • Determine ELC Vegetation Type for forest area containing the old growth characteristics[lxxviii]. • SWHMIST[cxlix] Index #23 provides development effects and mitigation measures.	The study area does not contain old growth forest. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Savannah					
Rationale: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)[cc].	No minimum size to site[i] Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location data available on their website • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present[i]. Note: Savannah plant spp. list from Ecoregion 7E should be used. • Area of the ELC Vegetation type is the SWH[lxxviii]. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMIST[cxlix] Index #18 provides development effects and mitigation measures.	The study area does not contain savannah. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Tallgrass Prairie					
Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)[cc].	No minimum size to site[i]. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Centre (NHIC has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in[lxxv] Appendix N should be present[i]. Note: Prairie plant spp. list from Ecoregion 7E should be used. • Area of the ELC Vegetation Type is the SWH[lxxviii]. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMIST[cxlix] Index #19 provides development effects and mitigation measures.	The study area does not contain tallgrass prairie. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Other Rare Vegetation Communities					
Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG[cxlviii]. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M[cxlviii]. The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Centre (NHIC) has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG[cxlviii]. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMIST[cxlix] Index #37 provides development effects and mitigation measures.	Vegetation surveys conducted in the subject property will confirm the presence or absence of rare vegetation communities. **Candidate SWH.**

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Nesting Area					
Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends: 120m[cxlix] from a wetland (>0.5ha) or a wetland (>0.5ha) with small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120m of each individual wetland where waterfowl nesting is known to occur[cxlix]. • Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards[l], or, • Presence of 10 or more nesting pairs for listed species including Mallards[l]. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMIST[cxlix] Index #25 provides development effects and mitigation measures.	The study area does not contain wetlands required for waterfowl nesting. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					
Rationale: Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario • MNRF values information (LIO/NRVIS) will list known nesting locations, Note: data from NRVIS is provided as a point format and does not include all the habitat. • Nature Counts, Ontario Nest Records Scheme data • OMNRF Districts • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area[cxlviii]. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWH[ccvii], maintaining undisturbed shorelines with large trees within this area is important[cxlviii]. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi, ccvii]. Area of the habitat from 400-800m is dependant on site lines from the nest to the development and inclusion of perching and foraging habitat[cvi]. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥3 years or suspected of not being used for >5 years before being considered not significant[ccvii]. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #26 provides development effects and mitigation measures.	The study area does not contain waterbodies with forested shorelines, islands, or other structures. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Woodland Raptor Nesting Habitat					
Rationale: Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands combined >30ha or with >4ha of interior habitat[lxxxviiii, lxxxix, xc, xci, xciii, xciv, xcv,xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii]. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. Information Sources • OMNRF Districts • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • Presence of 1 or more active nests from species list is considered significant[cxlviii]. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha of habitat is the SWH[ccvii].(the 28ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH[ccvii]. • Broad-winged Hawk and Coopers Hawk – A 100m radius around the nest is the SWH[ccvii]. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH[ccvii]. • Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMIST[cxlix] Index #27 provides development effects and mitigation measures.	The study area does not contain forested areas >30ha with >4ha of interior habitat. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Nesting Area					
Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. Information Sources • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) Field naturalist clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles[i] • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[i] • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH[cxlviii]. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat[cxlix]. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observation studies observing the turtles nesting is a recommended method. • SWHMIST[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.	The study area lacks suitable aquatic habitat and includes several road intersections. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Seeps and Springs					
Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system[cxvii, cxlix]. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species[cxix, cxx, cxxi, cxxii, cxiii, cxiv]. <u>Information Sources</u> • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped	Field Studies confirm: • Presence of a site with 2 or more[l] seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation of the habitat[cxlviii]. • SWHMIST[cxlix] Index #30 provides development effects and mitigation measures.	The study area is not located within the headwaters of a stream or river system. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx]. Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii]. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts and wetland evaluations • Field naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. • A combination of observational study and call count surveys [cviii] will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of woodland area[lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi]. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWHMIST[cxlix] Index #14 provides development effects and mitigation measures.	The study area does not contain wetlands or waterbodies adjacent to woodlands. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
Rationale: Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario Landscapes	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500m^2 (about 25m diameter)[ccvii] supporting high species diversity are significant: some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats[clxxxiv]. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from CAs	Studies confirm: • Presence of breeding population of 1or more of the listed newt/salamander species or 2 or more of the listed frog or toad species and with at least 20 breeding individuals (adults and eggs masses)[lxxi, lxxiii] or 2 or more of the listed frog/toad species with Call Level of 3. or; Wetland with confirmed breeding Bullfrogs are significant[l]. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys cviii to determine breeding/larval stages will be required during the spring (May March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMIST[cxlix] Index #15 provides development effects and mitigation measures.	The study area does not contain wetlands. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Woodland Area-Sensitive Bird Breeding Habitat					
Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30ha[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxxv, cxxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix]. • Interior forest habitat is at least 200m from forest edge habitat[clxiv]. Information Sources • Local birder clubs • Canadian Wildlife Service (CWS) for the location of forest bird monitoring • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species. • Reports and other information available from CAs	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species[i]. • Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH[i]. • Conduct field investigations in early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #34 provides development effects and mitigation measures.	The study area does not contain mature forests or woodlots >30ha. **Not present.**

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Marsh Bird Breeding Habitat					
Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites	• Nesting occurs in wetlands • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present[cxxiv]. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • OMNRF Districts and wetland evaluations • Field naturalist clubs • Natural Heritage Information Centre (NHIC) • Reports and other information available from CAs • Ontario Breeding Bird Atlas[ccv]	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species[i]. • Note: any wetland with breeding of 1 or more Trumpeter Swans, Black Terns, Green Heron or Yellow Rail is SWH[i]. • Area of the ELC ecosite is the SWH • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #35 provides development effects and mitigation measures	The study area does not contain wetlands. **Not present.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Open Country Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30ha[clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix]. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years)[i]. Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources • Agricultural land classification maps Ministry of Agriculture • Local birder clubs • Ontario Breeding Bird Atlas[ccv] • EIS Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species[i]. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #32 provides development effects and mitigation measures	The large fields present in the study area are actively used for farming and are not considered suitable habitat for the listed species. **Not present.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat such as woodland area for some bird species.	Large natural field areas succeeding to shrub and thicket habitats >10ha[clxiv] in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years)[i]. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species[clxxiii]. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[i]. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat[i]. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #33 provides development effects and mitigation measures.	The study area does not contain successional fields >10ha in size. Fields in the study area are actively used for farming and are not considered suitable habitat for the listed species. **Not present.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Terrestrial Crayfish					
Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. [Ccii]	Chimney or Digger Crayfish (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998.	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites[cci]. • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the large ecosite area is the SWH • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult [cci] • SWHMIST[cxlix] Index #36 provides development effects and mitigation measures.	The agricultural fields in the study area may contain suitable substrates and moisture to support these species. **Candidate SWH.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Special Concern and Rare Wildlife Species					
Rationale: These species are quite rare or have experienced significant population declines in Ontario	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites[lxxviii]. Information Sources • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists and element occurrences for these species. • NHIC Website: "Get Information" http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas[ccv] • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat neess to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat for foraging habitat. • SWHMIST[cxlix] Index #37 provides development effects and mitigation measures.	The subject property and study area may provide suitable habitat for various special concern and rare wildlife species. **Candidate SWH.**

Significant Wildlife Habitat Assessment Tables

Table 5. Characteristics of Animal Movement Corridors for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Movement Corridors					
Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Blue-spotted Salamander Spotted Salamander Four-toed Salamander Gray Treefrog Northern Leopard Frog Pickerel Frog Western Chorus Frog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	Movement corridors between breeding habitat and summer habitat[clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi] Movement corridors must be considered when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule[i]. Information Sources • MNRF District Office • Natural Heritage Information Centre NHIC • Reports and other information available from CAs • Field naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant[cxlix]. • Corridors should have at least 15m of vegetation on both sides of waterwaycxlix or be up to 200m widecxlix of woodland habitat and with gaps <20m[cxlix] • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat[cxlix]. • SWHMIST[cxlix] Index #40 provides development effects and mitigation measures.	The study area does not contain wetlands and thus does not provided suitable amphibian breeding habitat. **Not present.**

Appendix II
Issues Summary Checklist

The following appendix contains documents that are difficult to make screen reader accessible. Please contact Madison Postma at mpostma@nrsi.on.ca for further description or details of these documents at any time.

The document is a check list that was completed by Jeremy Bannon for the City of London and the Upper Thames River Conservation Authority. The check list was used to scope the focus of the Environmental Impact Study and includes information such as required surveys, specific details about the subject property, and which policies the study should conform to.

APPENDIX B - Environmental Study Scoping Checklist

Application/Project Name: 38 Exeter Road

Proponent: Dr. Raj Khanuja **Date:** March 14, 2022

Proposed Project Works: Two retail/commercial buildings

Study Type: Environmental Impact Study and Tree Preservation Plan

Lead Consultant: Natural Resource Solutions Inc.

Key Contact: Jeremy Bannon

Subconsultants: _____

Technical Review Team:

☐ Ecologist Planner: _____ ☐ Province – Species at Risk: _____

☐ Planner for the File: _____ ☐ Province - Other: _____

☐ Conservation Authority: UTRCA Contact: _____

☐ EEPAC: _____ ☐ Other: _____

☐ Project Manager, Environmental Assessment: _____

☐ First Nation(s): _____

Subject Lands and Study Area:

Location/Address and Size (ha) of Subject Lands:
38 Exeter Road.

Study Area Size (approximate ha): 0.42 ▣ Map (attached): Map 1 Study Area

Position of Site in Subwatershed: Dingman Creek Subwatershed, outside screening area

Tributary Fact Sheet: _____

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

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

Policy:

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

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

Map 1 Place Types:

☐ Green Space ☐ Environmental Review

Other Place Types: Shopping Area

Map 4 Active Mobility Network:

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

Map 5 Natural Heritage System:

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

☐ Provincially Significant Wetland Name: _____

☐ Wetlands ☐ Unevaluated Wetlands*

☐ Area of Natural & Scientific Interest Name: _____

☐ Environmentally Significant Area Name: _____

☐ Potential ESAs ☐ Upland Corridors

☐ Significant Woodlands ☐ Woodlands

☐ Significant Valleylands ☐ Valleylands

☐ Unevaluated Vegetation Patches ☐ Potential Naturalization Areas

Patch No. _____

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

Map 6 Hazards and Natural Resources:

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

Required Field Investigations:

Aquatic:

☐ Aquatic Habitat Assessment: _____

☐ Fish Community (Collection): _____

☐ Spawning Surveys: _____

☐ Benthic Invertebrate Survey: _____

☐ Mussels: _____

☐ Other: _____

Wetlands:

☐ Wetland Delineation: _____

☐ Wetland Evaluation (OWES): _____

☐ Other: _____

Terrestrial (Wetland, Upland and Lowland):

- ☑ Vegetation Communities (ELC): Lee et al. (1998) ELC Survey Protocol
- ☑ Botanical Inventories ☐ Winter ☑ Spring ☐ Summer ☐ Fall
- ☐ Breeding Bird Surveys (type & frequency): _____
- ☐ Raptor Surveys: _____ ☐ Shoreline Birds: _____
- ☐ Crepuscular Surveys: _____ ☐ Grassland Surveys: _____
- ☐ Amphibian Surveys (type & frequency): _____
- ☐ Reptile Surveys:
  - ☐ Turtle (type & frequency): _____
  - ☐ Snake (type & frequency): _____
  - ☐ Other (type & frequency): _____
- ☑ Bat Habitat, Cavity & Acoustic Surveys: Survey Protocol for SAR Bats (MNRF 2017)
- ☐ Mammal Surveys: _____
  - ☐ Winter Wildlife Surveys: _____
- ☐ Butterflies (Lepidoptera): _____
- ☐ Dragonflies / Damselflies (Odonata): _____
- ☑ Species at Risk Specific Surveys: Visual search for Butternut
- ☑ Species of Conservation Concern Surveys: Wildlife habitat assessment
- ☑ Significant Wildlife Habitat Surveys: Wildlife habitat assessment
- ☑ Other field investigations: Documentation of other wildlife

Supporting Concurrent Studies/Investigations:

- ☐ Hydrogeological/Groundwater: _____
- ☐ Surface Water/Hydrology: _____
- ☐ Water Balance: _____
- ☐ Fluvial Geomorphological: _____
- ☐ Geotechnical: _____
- ☑ Tree Inventory: Including Butternut search
- ☐ Other: _____

Evaluation of Significance:

Federal:

- ☐ Fish Habitat ☐ Other Federal: _____
- ☑ Species at Risk (*SARA*)

Provincial:

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

Municipal/London:

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

Impact Assessment:

- ☑ Impact Assessment Required
- ☑ Net Effects Table Required

Environmental Management Recommendations:

- ☑ Environmental Management Plan: _____
- ☑ Specifications & Conditions of Approval: _____
- ☐ Other: _____

Environmental Monitoring:

- ☑ Baseline Monitoring: _____
- ☑ Construction Monitoring: _____
- ☑ Post-Construction Monitoring: _____

Additional Requirements and Notes:

Appendix III
Species at Risk (SAR) and Species of Conservation Concern (SCC) Screening Tables

The following appendix contains documents that are difficult to make screen reader accessible. Please contact Madison Postma at mpostma@nrsi.on.ca for further description or details of these documents at any time.

The following documents contains the results of a screening exercise to assess the presence of possible Species at Risk and Species of Conservation Concern within the study area of the subject property, based on the preliminary background review and the results of the field studies.

Scientific Name	Common Name	S-RANK[1]	SARO[1]	COSEWIC[2]	SARA[2]	SARA Schedule[2]	Habitat Requirements	Suitable Habitats within Subject Property	Rationale
Chaetura pelagica	Chimney Swift	S3B	THR	T	T	Schedule 1	Commonly found in urban areas near buildings; nests in chimneys, hollow trees, and crevices of rock cliffs. Feeds over open water.[3,4]	No	Suitable chimneys, rock cliffs, and open water features are not present in the subject property or study area.
Chordeiles minor	Common Nighthawk	S4B	SC	SC	T	Schedule 1	Open ground; clearings in dense forests (including burns and logged areas); rock barrens; peat bogs; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.[3,4]	No	Suitable habitat was not found within the subject property during field work.
Contopus virens	Eastern Wood-pewee	S4B	SC	SC	SC	Schedule 1	Mid-canopy layer of forest clearings and edges of deciduous and mixed forest. Abundant in intermediate-age mature forest stands with little understory vegetation.[3,4]	No	The deciduous wooded feature on the subject property is not mature enough to support this species.
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	T	Schedule 1	Large (>10 ha), open expansive grasslands, pastures, hayfields, meadows or fallow fields with dense ground cover. Occassionally nest in large (>50 ha) fields of winter wheat and rye in southwestern Ontario. [3,4]	No	The subject property does not contain the grasslands and fields required to support this species. The agricultural fields to the south and east of the subject property may provide ground cover of sufficient size for this species.
Hirundo rustica	Barn Swallow	S4B	THR	SC	T	Schedule 1	Farmlands, rural areas and other open or semi-open areas near body of water. Nests almost exclusively on human-made structures such as open barns, buildings, bridges and culverts.[3,4]	No	The subject property does not contain open landscapes or anthroprogenic structures preferred by this species. Farmalnds and buildings within the study area may provide suitable habitat for this species.
Hylocichla mustelina	Wood Thrush	S4B	SC	T	T	Schedule 1	Carolinian and Great Lakes-St. Lawrence forest zones. Undisturbed moist mature deciduous or mixed forest with deciduous sapling growth. Near pond or swamp. Must have some trees higher than 12 m.[3,4]	No	The subject property and study area are relatively disturbed and urban, with few nearby water features.
Riparia riparia	Bank Swallow	S4B	THR	T	T	Schedule 1	Nests in burrows in natural and human-made settings with vertical faces in silt and sand deposits. Usually on banks of river and lakes, but also found in sand and gravel pits.[3,4]	No	Silt and sand deposits, sand and gravel pits, and banks are not present in the subject property or study area.
Sturnella magna	Eastern Meadowlark	S4B, S3N	THR	T	T	Schedule 1	Open pastures, hayfields, grasslands or grassy meadows with elevated singing perches (small trees, shrubs or fence posts). Also weedy borders of croplands, roadsides, orchards, airports, shrubby overgrown fields or other open areas. Generally prefers larger tracts of habitat >10 ha, but will sometimes use smaller tracts.[3,4]	No	The subject property does not contain the large open fields required to support this species. The large agricultural features and roadside features in the study area may provide suitable habitat.
Vermivora chrysoptera	Golden-winged Warbler	S3B	SC	T	T	Schedule 1	Areas with young shrubs surrounded by mature forest, including locations that have recently been disturbed, such as abandoned fields, field edges, hydo or utility right-of-ways, or logged areas with saplings and grasses.[3,4]	No	The subject property and study area contain disturbed habitat with young shrubs, but lack the adjacent mature forest to support this species.

Scientific Name	Common Name	S-RANK[1]	SARO[1]	COSEWIC[2]	SARA[2]	SARA Schedule[2]	Habitat Requirements	Suitable Habitats within Subject Property	Rationale
Chelydra serpentina	Snapping Turtle	S4	SC	SC	SC	Schedule 1	Slow-flowing rivers and streams, lakes, and permanent or semi-permanent wetlands with soft substrates and vegetation. Key habitat requirements: open areas with structures for basking, open sand or gravel areas for nesting, shallow areas with soft substrates to bury in, soft banks or substrates for hibernation.[3]	No	The watercourse identified within the agricultural field east of the subject property is unlikely to have suitable slow-fflowing conditions, soft substrates, and vegetation to support this species. Wetlands, waercourses, and appropriate substrates are not present in the study area.
Emydoidea blandingii	Blanding's Turtle (Great Lakes / St. Lawrence population)	S3	THR	E	T	Schedule 1	Eutrophic, shallow wetlands such as marshes, ponds, swamps, bogs, fens, or coastal wetlands, with soft, muddy substrates, abundant aquatic vegetation, and basking structures (logs, stumps, hummocks). Large overland movements occur between aquatic habitats and to open sandy or gravelly areas for nesting. Forest habitat is important for upland movements. Overwintering typically occurs in permanent wetlands.[7]	No	Wetlands with abundant vegetation, basking opportunities, and connected forested habitat are not present in the subject property or study area.
Graptemys geographica	Northern Map Turtle	S3	SC	SC	SC	Schedule 1	Large bodies of water such as rivers and lakes with soft bottoms, aquatic vegetation, abundant mollusc prey, and basking structures such as logs or rocks. Nesting occurrs in open areas with soft substrates such as sand or gravel. Hibernate on the bottom of deep areas of lakes or deep, slow-moving sections of rivers.[3]	No	Large bodies of water with aquatic vegetation, prey, and basking structures are not present in the subject property or study area.
Heterodon platirhinos	Eastern Hog-nosed Snake	S3	THR	T	T	Schedule 1	Open habitats, such as open woods, brushland or forest edges, with well-drained loose or sandy soils, well-drained substrates. Specializes in hunting and eating toads; occurs in habitats near or adjacent to wetland habitats where toads are present. Rocks, logs, stumps, etc. are used for shelter. Use snout to dig nests as well as to dig burrows for overwintering.[11]	No	Suitable wetland habitats that would support prey populations are not present in the subject property or study area.
Pantherophis gloydi pop. 2	Eastern Foxsnake (Carolinian population)	S2	END	E	E	Schedule 1	Open natural and semi-natural upland habitats, such as meadows, fields, restored prairies, and marshes and creeks. Root wads and logs provide cover and shelter. Nests in rotten logs, stumps, dune slopes, decaying piles of vegetation. Hibernates communally underground in animal burrows, or in old wells or foundations.[12]	No	Suitable unforested upland and aquatic habitat are not present in the subject property or study area.
Regina septemvittata	Queensnake	S2	END	E	E	Schedule 1	Rivers, streams and lakes with clear water, rocky or gravel bottoms, and an abundance of crayfish. Also in marsh and wetland habitats. Rarely found more than 5m from a shoreline. Requires shelter and basking objects both in the water and on shore such as rocks, logs, and vegetation. Hibernation sites include crevices or fissures in bedrock, small mammal burrows, openings along tree roots, or abutments of old bridges.[14]	No	Suitable clear water bodies, watercourses, and shorelines are not present in the subject property or study area.

Scientific Name	Common Name	S-RANK[1]	SARO[1]	COSEWIC[2]	SARA[2]	SARA Schedule[2]	Habitat Requirements	Suitable Habitats within Subject Property	Rationale
Microtus pinetorum	Woodland Vole	S3?	SC	SC	SC	Schedule 1	Mature deciduous forest in the Carolinian region where there is a deep litter layer that allows it to burrow.[3,4]	No	The forested feature within the subject property is likely not mature enough to support this species.
Myotis leibii	Eastern Small-footed Myotis	S2S3	END				Roosts in caves, mine shafts, crevices or buildings that are in or near woodland. Hibernates in cold dry caves or mines. Maternity colonies in caves or buildings. Hunts in forests.[3,4]	No	Suitable habitat was not found within the subject property during field work.
Myotis septentrionalis	Northern Myotis	S3	END	E	E	Schedule 1	Roosts in houses and man-made structures but prefers hollow trees or under loose bark. Hibernates in mines or caves. Hunts within forest, below the canopy.[3,4]	No	Suitable habitat was not found within the subject property during field work.
Taxidea taxus jacksoni	American Badger (Southwestern Ontario population)	S2	END	E	E	Schedule 1	Open grasslands, oak savannahs, sand barrens and farmland.[3,4]	No	Suitable habitat was not found within the subject property during field work.
Danaus plexippus	Monarch	S2N, S4B	SC	END	SC	Schedule 1	Adults found in a diversity of habitats with a variety of wildflowers. Caterpillars are confined to meadows and open areas where milkweeds grow (larval food plants).[3]	No	Suitable habitat for the larval food plants of this species was not found on the subject property.
Arisaema dracontium	Green Dragon	S3	SC	SC	SC	Schedule 3	Moist forests, especially along river banks and floodplains.[23]	No	The forested feature within the subject property is likely too dry to support this species.
Juglans cinerea	Butternut	S2?	END	E	E	Schedule 1	Stream banks and swamps, as well as upland beech-maple, oak-hickory, and mixed hardwood stands.[23]	No	Suitable habitat was not found within the subject property during field work.

Appendix IV
Significant Wildlife Habitat (SWH) Screening Tables

The following appendix contains documents that are difficult to make screen reader accessible. Please contact Madison Postma at mpostma@nrsi.on.ca for further description or details of these documents at any time.

The following documents contains the results of a screening exercise to assess the presence of Significant Wildlife Habitat within the study area of the subject property, based on the preliminary background review and the results of the field studies.

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					
Rationale: Habitat important to migrating waterfowl	American Black Duck Northern Pintail Gadwall Blue-winged Teal Green-winged Teal American Wigeon Northern Shoveler Tundra Swan	CUM1 CUT1 - Plus evidence of annual spring flooding from melt water or run-off within these Ecosites. - Fields with seasonal flooding and waste grain in the Long Point, Rondeau, Lake. St. Clair, Grand Bend and Pt. Pelee areas may be important to Tundra Swans.	Fields with sheet water during Spring (mid March to May). • Fields flooding during spring melt and run-off provide important invertebrate foraging habitat for migrating waterfowl. • Agricultural fields with waste grains are commonly used by waterfowl, these are not considered SWH unless they have spring sheet water available[cxlviii] Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Any mixed species aggregations of 100[i] or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependant on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii]. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMIST[cxlix] Index #7 provides development effects and mitigation measures.	The agricultural fields in the study area may flood with sheet water in the spring. **Candidate SWH.** Not present in the subject property.

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					
Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district	Canada Goose Cackling Goose Snow Goose Green-winged Teal American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Blue-winged Teal Hooded Merganser Common Merganser Red-breasted Merganser Lesser Scaup Greater Scaup Common Goldeneye Bufflehead Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Canvasback Redhead Ruddy Duck Brant White-winged Scoter Black Scoter	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). Information Sources • Environment Canada • Naturalist clubs often are aware of staging/stopover areas • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100[i] or more of listed species for 7 days[i], results in >700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[cxlix] • The combined area of the ELC ecosites and a 100m radius area is the SWH[cxlviii] • Wetland area and shorelines associated with sites identified within the SWHTG[cxlviii] Appendix K[cxlix] are significant wildlife habitat. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMIST[cxlix] Index #7 provides development effects and mitigation measures.	The study area does not contain water bodies or suitable watercourses with abundant food supply. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shorebird Migratory Stopover Area					
Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. Information Sources • Western hemisphere shorebird reserve network • Canadian Wildlife Service (CWS) Ontario Shorebird Survey • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000[l] shorebird use days during spring or fall migration period (shorebird use days are the accumulated number of shorebirds counted per day over the course of the fall or spring migration period). • Whimbrel stop briefly (<24hrs) during spring migration, any site with >100[l] Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area[cxlviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #8 provides development effects and mitigation measures.	The study area does not contain aquatic features with shoreline habitat to support migratory shorebirds. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Raptor Wintering Area					
Rationale: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class. Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW Bald Eagle: Forest Community Series: FOD, FOM, FOC, SWD, SWM, or SWC, on shoreline areas adjacent to large rivers or adjacent to lakes with open water (hunting area).	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering (hawk/owl) sites need to be > 20ha[cxlviii, cxlix] with a combination of forest and upland[xvi, xvii, xviii, xix, xx, xxi]. Least disturbed sites, idle/fallow or lightly grazed field/meadow (>15ha) with adjacent woodlands[cxlix] Field area of the habitat is to be wind swept with limited snow depth or accumulation. Eagle sites have open water and large trees and snags aviable for roosting[cxlix] Information Sources • OMNRF Districts • Natural clubs • Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from CAs • Results of Christmas Bird Counts	Studies confirm the use of these habitats by: • One or more Short-eared Owls, or, One of more Bald Eagles or; at least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds[í]. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	The subject property and study area do not contain woodland and upland communities >15ha to support raptor wintering. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Hibernacula					
Rationale: Bat hibernacula, are rare habitats in all Ontario landscapes.	Big Brown Bat Eastern Pipistrelle/Tri-colored Bat	Bat Hibernacula may be found in these ecosites: CCR1 CCR2 CCA1 CCA2 (Note: buildings are not considered to be SWH)	Hibernacula may be found in caves, mine shafts, underground foundations and Karsts. Active mine sites should not be considered The locations of bat hibernacula are relatively poorly known. Information Sources • OMNRF for possible locations and contact for local experts • Natural Heritage Information Centre (NHIC) Bat Hibernaculum • Ministry of Northern Development and Mines for location of mine shafts • Clubs that explore caves (eg. Sierra Club) • University Biology Departments with bat experts	• All sites with confirmed hibernating bats are SWH[i]. • The area includes 200m radius around the entrance of the hibernaculum[cxlviii, ccvii, i]. for the development types and 1000m for wind farms [ccv]. • Studies are to be conducted during the peak swarming period (Aug. – Sept.). Surveys should be conducted following methods outlined in the[ccv]."Bats and Bat Habitats: Guidelines for Wind Power Projects" [ccv] • SWHMIST[cxlix] Index #1 provides development effects and mitigation measures.	The study area does not contain caves, mine shafts, underground foundations, or karsts that would support bat hibernacula. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Maternity Colonies					
Rationale: Known locations of forested bat maternity colonies are extremely rare in all Ontario landscapes.	Big Brown Bat Silver-haired Bat	Maternity colonies considered SWH are found in forested Ecosites. All ELC Ecosites in ELC Community Series: FOD FOM SWD SWM	Maternity colonies can be found in tree cavities, vegetation and often in building [sxxii, xxv, xxvi, xxvii, xxxi] (buildings are not considered to be SWH). • Maternity roosts are not found in caves and mines in Ontario[xxii]. • Maternity colonies located in Mature deciduous or mixed forest stands[ccix, ccx] with >10/ha large diameter (>25cm dbh) wildlife trees[ccvii]. • Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3[ccxiv] or class 1 or 2[ccxii]. • Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred[ccx]. Information Sources • OMNRF for possible locations and contact for local experts • University Biology Departments with bat experts	Maternity Colonies with confirmed use by: • >10 Big Brown Bats[i] • >5 Adult Female Silver-haired Bats[i] • The area of the habitat includes the entire woodland or the forest stand ELC Ecosite containing the maternity colonies[l]. • Evaluation methods for maternity colonies should be conducted following methods outlined in the "Bats and Bat Habitats: Guidelines for Wind Power Projects"[ccv]. • SWHMIST[cxlix] Index #12 provides development effects and mitigation measures.	The treed features in the study area are not mature enough to support bat maternity colonies. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Wintering Area					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles: ELC Community Classes: SW, MA, OA and SA ELC Community Series: FEO and BOO Northern Map Turtle: Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	• For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen[cix, cx, cxi, cxviii]. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH Information Sources • EIS studies carried out by Conservation Authorities • Field naturalists clubs • OMNRF Ecologist or Biologist • Natural Heritage Information Centre (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant[j]. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant[j]. • The mapped ELC ecosite area with the over wintering turtles is the SWH. If the hibernation site is within a stream or river, the deep-water pool where the turtles are over wintering is the SWH. • Over wintering areas may be identified by searching for congregations (Basking Areas) of turtles on warm, sunny days during the fall (Sept. – Oct.) or spring (Mar. – Apr)[cvii]. Congregation of turtles is more common where wintering areas are limited and therefore significant[cix, cx, cxi, cxii]. • SWHMIST[cxiix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	The study area does not contain natural, permanent bodies with suitable depth and substrates for turtle wintering. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Reptile Hibernaculum					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake	For all snakes, habitat may be found in any ecosite in southern Ontario other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. The existence of rock piles or slopes, stone fences, and crumbling foundations assist in identifying candidate SWH.	For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural locations. Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line[xliv, l, li, liii, cxii]. Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information available from CAs • Local naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • Natural Heritage Information Centre (NHIC)	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp., or, individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp., or, individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct)[i]. • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population (i.e. strong hibernation site fidelity). Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWH[i]. • SWHMIST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula.	Suitable habitat was not identified within the subject property. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow population are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from CAs • Ontario Breeding Bird Atlas[ccv]. • Bird Studies Canada: Nature Counts http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlvix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests[ccvii]. • Field surveys to observe and count swallow nests are to be completed during the breeding season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #4 provides development effects and mitigation measures.	The study area does not contain exposed soil banks, suitable structures, or the steep topography required to support these species. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
Rationale: Large colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-Heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15 m from ground, near the top of the tree. Information Sources • Ontario Breeding Bird Atlas[ccv], colonial nest records. • Ontario Heronry Inventory 1991 available from Bird Studies Canada or NHIC (OMNRF). • Natural Heritage Information Centre (NHIC) Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries. • Reports and other information available from CAs • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of 2 or more active nests of Great Blue Heron or other list species. • The habitat extends from the the edge of the colony and a minimum 300m radius or extent of the Forest Ecosite containing the colony or any island <15.0ha with a colony is the SWH[cc, ccvii]. • Confirmation of active colonies must be achieved through site visits conducted during the nesting season (April to August) or by evidence such as the presence of fresh guano, dead young and/or eggshells • SWHMIST[cxlix] Index #5 provides development effects and mitigation measures.	The study area does not contain water bodies, islands, or peninsulas required to support colonially-nesting bird breeding habitat. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					
Rationale: Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. Information Sources • Ontario Breeding Bird Atlas[ccv], rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Centre (NHIC) Colonial Waterbird Nesting Area • MNRF District Offices • Field naturalist clubs	Studies confirming: • Presence of >25 active nests for Herring Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern[l]. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant[l]. • Presence of 5 or more pairs for Brewer's Blackbird[l]. • The edge of the colony and a minimum 150m radius area of the habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH[cc, ccvii]. • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #6 provides development effects and mitigation measures.	The study area does not contain rocky islands, peninsulas, or water bodies required to support colonially-nesting bird breeding habitat. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Migratory Butterfly Stopover Areas					
<u>Rationale:</u> Butterfly stopover areas are extremely rare habitats and are biologically important for butterfly species that migrate south for the winter	Painted Lady Red Admiral <u>Special Concern</u>: Monarch	Combination of ELC Community Series; need to have present one Community Series from each landclass: Field: CUM CUT CUS Forest: FOC FOD FOM CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10ha in size with a combination of field and forest habitat present, and will be located within 5km of Lake Ontario and Erie[cxlix]. • The habitat is typically a combination of field and forest, and provides the butterflies with a location to rest prior to their long migration south [xxxii, xxxiii, xxxiv, xxxv, xxxvi]. • The habitat should not be disturbed, fields/meadows with an abundance of preferred nectar plants and woodland edge providing shelter are requirements for this habitat [cxlviii, cxlix]. • Staging areas usually provide protection from the elements and are often spits of land or areas with the shortest distance to cross the Great Lakes [xxxvii, xxxviii, xxxix, xl, xli]. <u>Information Sources</u> • MNRF District Offices • Natural Heritage Information Centre (NHIC) • Agriculture Canada in Ottawa may have list of butterfly experts. • Field Naturalist Clubs • Toronto Entomologists Association • Conservation Authorities	Studies confirm: • The presence of Monarch Use Days (MUD) during fall migration (Aug/Oct)[xliii]. MUD is based on the number of days a site is used by Monarchs, multiplied by the number of individuals using the site. Numbers of butterflies can range from 100-500/day[xxxvii], significant variation can occur between years and multiple years of sampling should occur[xl, xlii]. • Observational studies are to be completed and need to be done frequently during the migration period to estimate MUD • MUD of >5000 or >3000 with the presence of Painted Ladies or White Admiral's is to be considered significant[í]. • SWHMIST[cxlix] Index #16 provides development effects and mitigation measures.	The study area is not located within 5km of Lake Ontario or Lake Erie. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Landbird Migratory Stopover Areas					
Rationale: Sites with a high diversity of species as well as high numbers are most significant	All migratory songbirds Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >5 ha[i] in size and within 5km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario and Erie. If woodlands are rare in an area of shoreline, woodland fragments 2-5ha can be considered for this habitat • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake Erie or Ontario are more significant[cxlix]. • Sites have a variety of habitats: forest, grassland and wetland complexes[cxlix]. • The largest sites are more significant[cxlix] • Woodlots and forest fragments are important habitats to migrating birds[ccxviii], these features located along the shore and located within 5km of Lake Ontario and Lake Erie are Candidate SWH[cxlviii]. Information Sources • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the habitat by >200 birds/day and with >35 spp. with at least 10 bird spp. recorded on at least 5 different survey dates[i]. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (March/May) and fall (Aug/Oct) migration using standardized assessment techniques. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMIST[cxlix] Index #9 provides development effects and mitigation measures.	The treed features in the study area are not within 5km of Lake Ontario or Lake Erie. **Not present.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Deer Winter Congregation Areas					
Rationale: Deer movement during winter in the southern areas of Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands to reduce or avoid the impacts of winter conditions [cxlviii]	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations (CUP) smaller than 50 ha may also be used.	• Woodlots >100 ha in size or if large woodlots are rare in a planning area woodlots>50ha[i]. • Deer movement during winter in Ecoregion 7E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii]. • Large woodlots > 100ha and up to 1500 ha are known to be used annually by densities of deer that range from 0.1-1.5 deer/ha[ccxxiv]. • Woodlots with high densities of deer due to artificial feeding are not significant[i]. Information Sources • MNRF District Offices • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF[cxlviii]. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNRF[i]. • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques[ccxxiv], ground or road surveys, or a pellet count deer density survey[ccxxv]. • SWHMIST[cxlix] Index #2 provides development effects and mitigation measures.	The treed features within the study area are not >50ha in area. **Not present.**

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Cliff and Talus Slopes					
Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Cliffs or Talus Slopes[lxxviii] • SWHMIST[cxlix] Index #21 provides development effects and mitigation measures.	The study area does not contain cliffs or talus slopes. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Sand Barrens					
Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always ≤ 60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	A sand barren area >0.5ha in size Information Sources • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location information available on their website • Field naturalist clubs • Conservation Authorities	• Confirm any ELC Vegetation Type for Sand Barrens[lxxviii] • Site must not be dominated by exotic or introduced species (<50% vegetative cover are exotics sp)[i]. • SWHMIST[cxlix] Index #20 provides development effects and mitigation measures.	The study area does not contain sand barrens. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Alvar					
Rationale: Alvars are extremely rare habitats in Ecoregion 7E	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 **Five Alvar Indicator Species:** 1) Carex crawei 2) Panicum philadelphicum 3) Eleocharis compressa 4) Scutellaria parvula 5) Trichostema brachiatum These indicator species are very specific to Alvars within Ecoregion 7E[cxlix]	An alvar is typically a level, mostly unfractured calcareous bedrock feature with a mosaic of rock pavements and bedrock overlain by a thin veneer of soil. The hydrology of alvars is complex, with alternating periods of inundation and drought. Vegetation cover varies from sparse lichen-moss associations to grasslands and shrublands and comprising a number of characteristic or indicator plant. Undisturbed alvars can be phyto- and zoogeographically diverse, supporting many uncommon or are relict plant and animals species. Vegetation cover varies from patchy to barren with a less than 60% tree cover[lxxviii].	An Alvar site > 0.5ha in size[lxxv]. Alvar is particularly rare in Ecoregion 7E where the only known sites are found in the western islands of Lake Erie[cxcix]. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi]. • Ontario Nature – Conserving Great Lakes Alvars[ccviii]. • Natural Heritage Information Centre (NHIC) has location information available on their website • OMNRF Staff • Field Naturalist clubs • Conservation Authorities	Field studies identify four of the five **Alvar indicator species**[lxxv] at a candidate Alvar site is Significant • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • The alvar must be in excellent condition and fit in with surrounding landscape with few conflicting land uses[lxxv]. • SWHMIST[cxlix] Index #17 provides development effects and mitigation measures.	The study area does not contain alvars. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Old Growth Forest					
Rationale: Due to historic logging practices and land clearance for agriculture, old growth forest is rare in Ecoregion 7E.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old growth forests are characterized by heavy mortality or turnover of overstorey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland area is >0.5ha Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Districts • Field naturalist clubs • Conservation Authorities • Sustainable Forestry Licence (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat[cxlviii]. • The forested area containing the old growth characteristics will have experienced no recognizable forestry activities [cxlviii] (cut stumps will not be present) • Determine ELC Vegetation Type for forest area containing the old growth characteristics[lxxviii]. • SWHMIST[cxlix] Index #23 provides development effects and mitigation measures.	The study area does not contain old growth forest. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Savannah					
Rationale: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%. In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)[cc].	No minimum size to site[i] Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNRF Districts • Natural Heritage Information Centre (NHIC) has location data available on their website • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present[i]. Note: Savannah plant spp. list from Ecoregion 7E should be used. • Area of the ELC Vegetation type is the SWH[lxxviii]. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMIST[cxlix] Index #18 provides development effects and mitigation measures.	The study area does not contain savannah. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Tallgrass Prairie					
Rationale: Tallgrass Prairies are extremely rare habitats in Ontario.	TPO1 TPO2	A Tallgrass Prairie has ground cover dominated by prairie grasses. An open Tallgrass Prairie habitat has < 25% tree cover. In Ecoregion 7E, known Tallgrass Prairie and savannah remnants are scattered between Lake Huron and Lake Erie, near Lake St. Clair, north of and along the Lake Erie shoreline, in Brantford and in the Toronto area (north of Lake Ontario)[cc].	No minimum size to site[i]. Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • Natural Heritage Information Centre (NHIC has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Prairie indicator species listed in[lxxv] Appendix N should be present[i]. Note: Prairie plant spp. list from Ecoregion 7E should be used. • Area of the ELC Vegetation Type is the SWH[lxxviii]. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMIST[cxlix] Index #19 provides development effects and mitigation measures.	The study area does not contain tallgrass prairie. **Not present.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 7E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Other Rare Vegetation Communities					
Rationale: Plant communities that often contain rare species which depend on the habitat for survival.	Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of the SWHTG[cxlviii]. Any ELC Ecosite Code that has a possible ELC Vegetation Type that is Provincially Rare is Candidate SWH.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	ELC Ecosite codes that have the potential to be a rare ELC Vegetation Type as outlined in appendix M[cxlviii]. The OMNRF/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Centre (NHIC) has location information available on their website • OMNRF Districts • Field naturalists clubs • Conservation Authorities	Field studies should confirm if an ELC Vegetation Type is a rare vegetation community based on listing within Appendix M of SWHTG[cxlviii]. • Area of the ELC Vegetation Type polygon is the SWH. • SWHMIST[cxlix] Index #37 provides development effects and mitigation measures.	Vegetation surveys conducted in the subject property did not identify rare vegetation communities. **Not present.**

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Nesting Area					
Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 **Note: includes adjacency to Provincially Significant Wetlands**	A waterfowl nesting area extends: 120m[cxlix] from a wetland (>0.5ha) or a wetland (>0.5ha) with small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120m of each individual wetland where waterfowl nesting is known to occur[cxlix]. • Upland areas should be at least 120m wide so that predators such as racoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards[l], or, • Presence of 10 or more nesting pairs for listed species including Mallards[l]. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMIST[cxlix] Index #25 provides development effects and mitigation measures.	The study area does not contain wetlands required for waterfowl nesting. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					
Rationale: Nest sites are fairly uncommon in Ecoregion 7E and are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands.	Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario • MNRF values information (LIO/NRVIS) will list known nesting locations, Note: data from NRVIS is provided as a point format and does not include all the habitat. • Nature Counts, Ontario Nest Records Scheme data • OMNRF Districts • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area[cxlviii]. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWH[ccvii], maintaining undisturbed shorelines with large trees within this area is important[cxlviii]. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi, ccvii]. Area of the habitat from 400-800m is dependant on site lines from the nest to the development and inclusion of perching and foraging habitat[cvi]. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for ≥3 years or suspected of not being used for >5 years before being considered not significant[ccvii]. • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #26 provides development effects and mitigation measures.	The study area does not contain waterbodies with forested shorelines, islands, or other structures. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Woodland Raptor Nesting Habitat					
Rationale: Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3	All natural or conifer plantation woodland/forest stands combined >30ha or with >4ha of interior habitat[lxxxviiii, lxxxix, xc, xci, xciii, xciv, xcv,xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii]. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small off-shore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. Information Sources • OMNRF Districts • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • Presence of 1 or more active nests from species list is considered significant[cxlviii]. • Red-shouldered Hawk and Northern Goshawk – A 400m radius around the nest or 28 ha of habitat is the SWH[ccvii].(the 28ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH[ccvii]. • Broad-winged Hawk and Coopers Hawk – A 100m radius around the nest is the SWH[ccvii]. • Sharp-Shinned Hawk – A 50m radius around the nest is the SWH[ccvii]. • Conduct field investigations from early March to end of May. The use of call broadcasts can help in locating territorial (courting/nesting) raptors and facilitate the discovery of nests by narrowing down the search area. • SWHMIST[cxlix] Index #27 provides development effects and mitigation measures.	The study area does not contain forested areas >30ha with >4ha of interior habitat. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Nesting Area					
Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles.	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. Information Sources • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) Field naturalist clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles[i] • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[i] • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependant on slope, riparian vegetation and adjacent land use is the SWH[cxlviii]. • Travel routes from wetland to nesting area are to be considered within the SWH as part of the 30-100m area of habitat[cxlix]. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observation studies observing the turtles nesting is a recommended method. • SWHMIST[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.	The study area lacks suitable aquatic habitat and includes several road intersections. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Seeps and Springs					
Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system[cxvii, cxlix]. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species[cxlix, cxx, cxxi, cxxii, cxiii, cxiv]. <u>Information Sources</u> • Topographical Map • Thermography • Hydrological surveys conducted by CAs and MOE • Field naturalists and landowners • Municipalities and Conservation Authorities may have drainage maps and headwater areas mapped	Field Studies confirm: • Presence of a site with 2 or more[l] seeps/springs should be considered SWH. • The area of a ELC forest ecosite containing the seeps/springs is the SWH. The protection of the recharge area considering the slope, vegetation, height of trees and groundwater condition need to be considered in delineation of the habitat[cxlviii]. • SWHMIST[cxlix] Index #30 provides development effects and mitigation measures.	The study area is not located within the headwaters of a stream or river system. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[clxxxii, lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx]. Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii]. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF Districts and wetland evaluations • Field naturalist clubs • Canadian Wildlife Service Amphibian Road Call Survey • Ontario Vernal Pool Association: http://www.ontariovernalpools.org	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog/toad species with Call Level Codes of 3. • A combination of observational study and call count surveys [cviii] will be required during the spring (March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the wetland area plus a 230m radius of woodland area[lxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx, lxxi]. If a wetland area is adjacent to a woodland, a travel corridor connecting the wetland to the woodland is to be included in the habitat. • SWHMIST[cxlix] Index #14 provides development effects and mitigation measures.	The study area does not contain wetlands or waterbodies adjacent to woodlands. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
Rationale: Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario Landscapes	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Treefrog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500m^2 (about 25m diameter)[ccvii] supporting high species diversity are significant: some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats[clxxxiv]. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from CAs	Studies confirm: • Presence of breeding population of 1or more of the listed newt/salamander species or 2 or more of the listed frog or toad species and with at least 20 breeding individuals (adults and eggs masses)[lxxi, lxxiii] or 2 or more of the listed frog/toad species with Call Level of 3. or; Wetland with confirmed breeding Bullfrogs are significant[l]. • The ELC ecosite wetland area and the shoreline are the SWH. • A combination of observational study and call count surveys cviii to determine breeding/larval stages will be required during the spring (May March-June) when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • If a SWH is determined for Amphibian Breeding Habitat (Wetlands) then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMIST[cxlix] Index #15 provides development effects and mitigation measures.	The study area does not contain wetlands. **Not present.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Woodland Area-Sensitive Bird Breeding Habitat					
Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Pileated Woodpecker Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs. old) forest stands or woodlots >30ha[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxxv, cxxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvi, clvii, clviii, clix]. • Interior forest habitat is at least 200m from forest edge habitat[clxiv]. Information Sources • Local birder clubs • Canadian Wildlife Service (CWS) for the location of forest bird monitoring • Bird Studies Canada conducted a 3-year study of 287 woodlands to determine the effects of forest fragmentation on forest birds and to determine what forests were of greatest value to interior species. • Reports and other information available from CAs	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species[i]. • Note: any site with breeding Cerulean Warblers or Canada Warbler is to be considered SWH[i]. • Conduct field investigations in early summer when birds are singing and defending their territories. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #34 provides development effects and mitigation measures.	The study area does not contain mature forests or woodlots >30ha. **Not present.**

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Marsh Bird Breeding Habitat					
Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites	• Nesting occurs in wetlands • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present[cxxiv]. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • OMNRF Districts and wetland evaluations • Field naturalist clubs • Natural Heritage Information Centre (NHIC) • Reports and other information available from CAs • Ontario Breeding Bird Atlas[ccv]	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or breeding by any combination of 4 or more of the listed species[i]. • Note: any wetland with breeding of 1 or more Trumpeter Swans, Black Terns, Green Heron or Yellow Rail is SWH[i]. • Area of the ELC ecosite is the SWH • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #35 provides development effects and mitigation measures	The study area does not contain wetlands. **Not present.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Open Country Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >30ha[clx, clxi, clxii, clxiii, clxiv, clxv, clxvi, clxvii, clxviii, clxix]. Grasslands not Class 1 or 2 agricultural lands, and not being actively used for farming (i.e. no row cropping or intensive hay or livestock pasturing in the last 5 years)[i]. Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources • Agricultural land classification maps Ministry of Agriculture • Local birder clubs • Ontario Breeding Bird Atlas[ccv] • EIS Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species[i]. • A field with 1 or more breeding Short-eared Owls is to be considered SWH. • The area of SWH is the contiguous ELC ecosite field areas. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories. • Evaluation methods to follow “Bird and Bird Habitats: Guidelines for Wind Power Projects”[ccxi] • SWHMIST[cxlix] Index #32 provides development effects and mitigation measures	The large fields present in the study area are actively used for farming and are not considered suitable habitat for the listed species. **Not present.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records.	Indicator Spp: Brown Thrasher Clay-coloured Sparrow Common Spp. Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat such as woodland area for some bird species.	Large natural field areas succeeding to shrub and thicket habitats >10ha[clxiv] in size. Shrub land or early successional fields, not class 1 or 2 agricultural lands, not being actively used for farming (i.e. no row-cropping, haying or live-stock pasturing in the last 5 years)[i]. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species[clxxiii]. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Local bird clubs • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[i]. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat[i]. • The area of the SWH is the contiguous ELC ecosite field/thicket area. • Conduct field investigations of the most likely areas in spring and early summer when birds are singing and defending their territories • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMIST[cxlix] Index #33 provides development effects and mitigation measures.	The study area does not contain successional fields >10ha in size. Fields in the study area are actively used for farming and are not considered suitable habitat for the listed species. **Not present.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Terrestrial Crayfish					
Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. [Ccii]	Chimney or Digger Crayfish (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM CUM1 with inclusions of above meadow marsh ecosites can be used by terrestrial crayfish	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998.	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites[cci]. • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the large ecosite area is the SWH • Surveys should be done April to August in temporary or permanent water. Note the presence of burrows or chimneys are often the only indicator of presence, observance or collection of individuals is very difficult [cci] • SWHMIST[cxlix] Index #36 provides development effects and mitigation measures.	Suitable habitat was not identified within the subject property. **Not present.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Special Concern and Rare Wildlife Species					
Rationale: These species are quite rare or have experienced significant population declines in Ontario	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre (NHIC).	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites[lxxviii]. Information Sources • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists and element occurrences for these species. • NHIC Website: "Get Information" http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas[ccv] • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat neess to be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat for foraging habitat. • SWHMIST[cxlix] Index #37 provides development effects and mitigation measures.	Suitable habitat for various special concern and rare wildlife species was not identified within the subject property. **Not present.**

Significant Wildlife Habitat Assessment Tables

Table 5. Characteristics of Animal Movement Corridors for Ecoregion 7E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Movement Corridors					
Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt American Toad Blue-spotted Salamander Spotted Salamander Four-toed Salamander Gray Treefrog Northern Leopard Frog Pickerel Frog Western Chorus Frog	Corridors may be found in all ecosites associated with water. • Corridors will be determined based on identifying the significant breeding habitat for these species in Table 1.1.	Movement corridors between breeding habitat and summer habitat[clxxiv, clxxv, clxxvi, clxxvii, clxxviii, clxxix, clxxx, clxxxi] Movement corridors must be considered when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (Amphibian Breeding Habitat – Wetland) of this Schedule[i]. Information Sources • MNRF District Office • Natural Heritage Information Centre NHIC • Reports and other information available from CAs • Field naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Corridors unbroken by roads, waterways or bodies, and undeveloped areas are most significant[cxlix]. • Corridors should have at least 15m of vegetation on both sides of waterwaycxlix or be up to 200m widecxlix of woodland habitat and with gaps <20m[cxlix] • Shorter corridors are more significant than longer corridors, however amphibians must be able to get to and from their summer and breeding habitat[cxlix]. • SWHMIST[cxlix] Index #40 provides development effects and mitigation measures.	The study area does not contain wetlands and thus does not provided suitable amphibian breeding habitat. **Not present.**

Appendix V
Vascular Flora and Wildlife Species Lists

The following appendix contains documents that are difficult to make screen reader accessible. Please contact Madison Postma at mpostma@nrsi.on.ca for further description or details of these documents at any time.

The following documents contain the complete lists of all plant, bird, herpetofauna, mammal, butterfly, and odonate species observed within the subject property during the field studies, or have reported within the vicinity of the study area through the preliminary background review.

Plant Species Reported from the Study Area - 38 Exeter Road (Project #2803)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Middlesex	NHIC Data*	NRSI Observed
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	Oldham 2017	NDMNRF 2022	NRSI Results From XXXX
Dicotyledons	**Dicots**								
Apiaceae	**Carrot or Parsley Family**								
Daucus carota	Wild Carrot	SE5					IC		X
Asteraceae	**Composite or Aster Family**								
Arctium minus	Common Burdock	SE5					IC		X
Cirsium arvense	Creeping Thistle	SE5					IC		X
Cirsium discolor	Field Thistle	S3					R		X
Solidago altissima	Tall Goldenrod	S5							X
Tanacetum vulgare	Common Tansy	SE5					IX		X
Brassicaceae	**Mustard Family**								
Alliaria petiolata	Garlic Mustard	SE5					IC		X
Caprifoliaceae	**Honeysuckle Family**								
Lonicera tatarica	Tatarian Honeysuckle	SE5					IX		X
Celastraceae	**Staff-tree Family**								
Euonymus alatus	Winged Euonymus	SE2					IR		X
Cornaceae	**Dogwood Family**								
Cornus racemosa	Gray Dogwood	S5					X		X
Cornus sericea	Red-osier Dogwood	S5					C		X
Juglandaceae	**Walnut Family**								
Juglans nigra	Black Walnut	S4?					X		X
Onagraceae	**Evening-primrose Family**								
Oenothera biennis	Common Evening-primrose	S5					X		X
Phytolaccaceae	**Pokeweed Family**								
Phytolacca americana	Common Pokeweed	S4					X		X
Rosaceae	**Rose Family**								
Rubus occidentalis	Black Raspberry	S5					C		X
Rubiaceae	**Madder Family**								
Galium aparine	Cleavers	S5					X		X
Salicaceae	**Willow Family**								
Populus deltoides	Eastern Cottonwood	S5					X		X
Salix euxina	Crack Willow	SE					IX		X
Salix interior	Sandbar Willow	S5					C		X
Scrophulariaceae	**Figwort Family**								
Verbascum thapsus	Common Mullein	SE5					IC		X
Vitaceae	**Grape Family**								
Parthenocissus vitacea	Thicket Creeper	S5					X		X
Monocotyledons	**Monocots**								
Araceae	**Arum Family**								
Arisaema dracontium	Green Dragon	S3		SC	SC	Schedule 3	U	X	
Poaceae	**Grass Family**								
Bromus inermis	Smooth Brome	SE5					IC		X
Phragmites australis	Common Reed	SU							X
Poa pratensis	Kentucky Bluegrass	S5							X
TOTAL								**1**	**24**

*NHIC Atlas Square(s): 17MH7752

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Bird Species Reported from the Study Area - 38 Exeter Road EIS (Project #2803)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	OBBA*	NHIC Data**
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	BSC et al. 2006	NDMNRF 2022
Anatidae	**Ducks, Geese & Swans**							
Aix sponsa	Wood Duck	S5B, S3N					CO	
Anas platyrhynchos	Mallard	S5					CO	
Branta canadensis	Canada Goose	S5					CO	
Lophodytes cucullatus	Hooded Merganser	S5					CO	
Phasianidae	**Partridges, Grouse & Turkeys**							
Bonasa umbellus	Ruffed Grouse	S5					PO	
Meleagris gallopavo	Wild Turkey	S5					CO	
Columbidae	**Pigeons & Doves**							
Columba livia	Rock Pigeon	SNA					CO	
Zenaida macroura	Mourning Dove	S5					CO	
Cuculiformes	**Cuckoos & Anis**							
Coccyzus americanus	Yellow-billed Cuckoo	S4B					PO	
Coccyzus erythropthalmus	Black-billed Cuckoo	S4S5B					PO	
Caprimulgidae	**Goatsuckers**							
Chordeiles minor	Common Nighthawk	S4B	SC	SC	T	Schedule 1	PR	
Apodidae	**Swifts**							
Chaetura pelagica	Chimney Swift	S3B	THR	T	T	Schedule 1	CO	X
Trochilidae	**Hummingbirds**							
Archilochus colubris	Ruby-throated Hummingbird	S5B					PR	
Rallidae	**Rails, Gallinules & Coots**							
Porzana carolina	Sora	S5B					PR	
Rallus limicola	Virginia Rail	S4S5B					PR	
Charadriidae	**Plovers & Lapwings**							
Charadrius vociferus	Killdeer	S4B					CO	
Scolopacidae	**Sandpipers & Allies**							
Actitis macularia	Spotted Sandpiper	S5B					PR	
Scolopax minor	American Woodcock	S4B					PO	
Ardeidae	**Herons & Bitterns**							
Ardea herodias	Great Blue Heron	S4					PO	
Butorides virescens	Green Heron	S4B					CO	
Cathartidae	**Vultures**							
Cathartes aura	Turkey Vulture	S5B, S3N					CO	
Accipitridae	**Hawks, Kites, Eagles & Allies**							
Accipiter cooperii	Cooper's Hawk	S4	NAR	NAR	NS	No schedule	CO	
Accipiter striatus	Sharp-shinned Hawk	S5	NAR	NAR	NS	No schedule	CO	
Buteo jamaicensis	Red-tailed Hawk	S5	NAR	NAR	NS	No schedule	CO	
Strigidae	**Typical Owls**							
Bubo virginianus	Great Horned Owl	S4					CO	
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR	NS	No schedule	CO	
Alcedinidae	**Kingfishers**							
Megaceryle alcyon	Belted Kingfisher	S5B, S4N					PR	
Picidae	**Woodpeckers**							
Colaptes auratus	Northern Flicker	S5					CO	
Dryobates pubescens	Downy Woodpecker	S5					CO	
Dryobates villosus	Hairy Woodpecker	S5					CO	

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	OBBA*	NHIC Data**
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	BSC et al. 2006	NDMNRF 2022
Melanerpes carolinus	Red-bellied Woodpecker	S5					CO	
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B, S3N					PR	
Falconidae	**Caracaras & Falcons**							
Falco sparverius	American Kestrel	S4					PR	
Tyrannidae	**Tyrant Flycatchers**							
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	SC	Schedule 1	PO	
Empidonax minimus	Least Flycatcher	S5B					PO	
Empidonax traillii	Willow Flycatcher	S4B					PO	
Myiarchus crinitus	Great Crested Flycatcher	S5B					CO	
Sayornis phoebe	Eastern Phoebe	S5B					CO	
Tyrannus tyrannus	Eastern Kingbird	S4B					CO	
Vireonidae	**Vireos**							
Vireo gilvus	Warbling Vireo	S5B					CO	
Vireo olivaceus	Red-eyed Vireo	S5B					CO	
Corvidae	**Crows & Jays**							
Corvus brachyrhynchos	American Crow	S5					CO	
Cyanocitta cristata	Blue Jay	S5					CO	
Alaudidae	**Larks**							
Eremophila alpestris	Horned Lark	S4					PR	
Hirundinidae	**Swallows**							
Hirundo rustica	Barn Swallow	S4B	THR	SC	T	Schedule 1	CO	
Petrochelidon pyrrhonota	Cliff Swallow	S4S5B					CO	
Progne subis	Purple Martin	S3B					PO	
Riparia riparia	Bank Swallow	S4B	THR	T	T	Schedule 1	CO	
Stelgidopteryx serripennis	Northern Rough-winged Swallow	S4B					CO	
Tachycineta bicolor	Tree Swallow	S4S5B					CO	
Paridae	**Chickadees & Titmice**							
Poecile atricapillus	Black-capped Chickadee	S5					CO	
Sittidae	**Nuthatches**							
Sitta canadensis	Red-breasted Nuthatch	S5					CO	
Sitta carolinensis	White-breasted Nuthatch	S5					CO	
Troglodytidae	**Wrens**							
Thryothorus ludovicianus	Carolina Wren	S4					CO	
Troglodytes aedon	House Wren	S5B					CO	
Polioptilidae	**Gnatcatchers**							
Polioptila caerulea	Blue-gray Gnatcatcher	S4B					CO	
Turdidae	**Thrushes**							
Catharus fuscescens	Veery	S5B					PO	
Hylocichla mustelina	Wood Thrush	S4B	SC	T	T	Schedule 1	PR	
Sialia sialis	Eastern Bluebird	S5B, S4N	NAR	NAR	NS	No schedule	CO	
Turdus migratorius	American Robin	S5					CO	
Mimidae	**Mockingbirds, Thrashers & Allies**							
Dumetella carolinensis	Gray Catbird	S5B, S3N					CO	
Toxostoma rufum	Brown Thrasher	S4B					CO	
Sturnidae	**Starlings**							
Sturnus vulgaris	European Starling	SNA					CO	
Bombycillidae	**Waxwings**							
Bombycilla cedrorum	Cedar Waxwing	S5					CO	

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	OBBA*	NHIC Data**
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	BSC et al. 2006	NDMNRF 2022
Passeridae	**Old World Sparrows**							
Passer domesticus	House Sparrow	SNA					CO	
Fringillidae	**Finches & Allies**							
Haemorhous mexicanus	House Finch	SNA					CO	
Spinus tristis	American Goldfinch	S5					CO	
Emberizidae	**New World Sparrows & Allies**							
Melospiza georgiana	Swamp Sparrow	S5B, S4N					PO	
Melospiza melodia	Song Sparrow	S5					CO	
Passerculus sandwichensis	Savannah Sparrow	S5B, S3N					CO	
Pipilo erythrophthalmus	Eastern Towhee	S4B, S3N					PR	
Pooecetes gramineus	Vesper Sparrow	S4B					PR	
Spizella passerina	Chipping Sparrow	S5B, S3N					CO	
Spizella pusilla	Field Sparrow	S4B, S3N					PR	
Icteridae	**Troupials & Allies**							
Agelaius phoeniceus	Red-winged Blackbird	S5					CO	
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	T	Schedule 1	PR	
Icterus galbula	Baltimore Oriole	S4B					CO	
Icterus spurius	Orchard Oriole	S4B					CO	
Molothrus ater	Brown-headed Cowbird	S5					CO	
Quiscalus quiscula	Common Grackle	S5					CO	
Sturnella magna	Eastern Meadowlark	S4B, S3N	THR	T	T	Schedule 1	CO	X
Parulidae	**Wood Warblers**							
Geothlypis trichas	Common Yellowthroat	S5B, S3N					CO	
Setophaga pensylvanica	Chestnut-sided Warbler	S5B					PO	
Setophaga petechia	Yellow Warbler	S5B					CO	
Setophaga pinus	Pine Warbler	S5B, S3N					PR	
Setophaga ruticilla	American Redstart	S5B					PO	
Vermivora cyanoptera	Blue-winged Warbler	S4B					PR	
Cardinalidae	**Cardinals, Grosbeaks & Allies**							
Cardinalis cardinalis	Northern Cardinal	S5					CO	
Passerina cyanea	Indigo Bunting	S5B					CO	
Pheucticus ludovicianus	Rose-breasted Grosbeak	S5B					CO	
Piranga olivacea	Scarlet Tanager	S5B					PO	
Total							**91**	**2**

*OBBA Atlas Square: 17MH75

**NHIC Atlas Square: 17MH7752

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Reptile and Amphibian Species Reported from the Study Area - 38 Exeter Road EIS (Project #2803)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	ORAA*	NHIC Data**
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	Ontario Nature 2019	NDMNRF 2022
Turtles								
Chelydra serpentina	Snapping Turtle	S4	SC	SC	SC	Schedule 1	X	
Chrysemys picta marginata	Midland Painted Turtle	S4		SC	SC	Schedule 1	X	
Emydoidea blandingii	Blanding's Turtle (Great Lakes / St. Lawre	S3	THR	E	E	Schedule 1	X	
Graptemys geographica	Northern Map Turtle	S3	SC	SC	SC	Schedule 1	X	
Trachemys scripta	Pond Slider	SNA					X	
Snakes								
Pantherophis gloydi pop. 2	Eastern Foxsnake (Carolinian population)	S2	END	E	E	Schedule 1	X	
Heterodon platirhinos	Eastern Hog-nosed Snake	S3	THR	T	T	Schedule 1	X	
Lampropeltis triangulum	Milksnake	S4	NAR	SC	SC	Schedule 1	X	
Opheodrys vernalis	Smooth Greensnake	S4					X	
Nerodia sipedon sipedon	Northern Watersnake	S5	NAR	NAR	NS	No schedule	X	
Regina septemvittata	Queensnake	S2	END	E	E	Schedule 1	X	
Storeria dekayi	Dekay's Brownsnake	S5	NAR	NAR	NS	No schedule	X	
Thamnophis sirtalis sirtalis	Eastern Gartersnake	S5					X	
Salamanders								
Ambystoma maculatum	Spotted Salamander	S4					X	
Hemidactylium scutatum	Four-toed Salamander	S4	NAR	NAR	NS	No schedule	X	
Notophthalmus viridescens viridescens	Red-spotted Newt	S5					X	
Plethodon cinereus	Eastern Red-backed Salamander	S5					X	
Frogs and Toads								
Anaxyrus americanus	American Toad	S5					X	
Hyla versicolor	Gray Treefrog	S5					X	
Pseudacris triseriata pop. 1	Western Chorus Frog (Carolinian populat	S4	NAR	NAR	NS	No schedule	X	
Pseudacris crucifer	Spring Peeper	S5					X	
Lithobates catesbeianus	American Bullfrog	S4					X	
Lithobates clamitans	Green Frog	S5					X	
Lithobates palustris	Pickerel Frog	S4	NAR	NAR	NS	No schedule	X	
Lithobates pipiens	Northern Leopard Frog	S5	NAR	NAR	NS	No schedule	X	
Lithobates sylvaticus	Wood Frog	S5					X	
Total							**26**	**0**

*ORAA Atlas Square: 17MH75
**NHIC Atlas Square: 17MH7752

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Mammal Species Reported from the Study Area - 38 Exeter Road EIS (Project #2803)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Ontario Mammal Atlas	NHIC Data**
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	Dobbyn 1994	NDMNRF 2022
Didelphimorphia	**Opossums**							
Didelphis virginiana	Virginia Opossum	S4					X	
Eulipotyphla	**Shrews, Moles, Hedgehogs, and Allies**							
Blarina brevicauda	Northern Short-tailed Shrew	S5					X	
Condylura cristata	Star-nosed Mole	S5					X	
Parascalops breweri	Hairy-tailed Mole	S4					X	
Sorex cinereus	Masked Shrew	S5					X	
Sorex fumeus	Smoky Shrew	S5					X	
Sorex hoyi	Pygmy Shrew	S4					X	
Sorex palustris	Water Shrew	S5					X	
Chiroptera	**Bats**							
Eptesicus fuscus	Big Brown Bat	S4					X	
Lasionycteris noctivagans	Silver-haired Bat	S4					X	
Lasiurus borealis	Eastern Red Bat	S4					X	
Lasiurus cinereus	Hoary Bat	S4					X	
Myotis leibii	Eastern Small-footed Myotis	S2S3	END				X	
Myotis septentrionalis	Northern Myotis	S3	END	E	E	Schedule 1	X	
Lagomorpha	**Rabbits and Hares**							
Lepus americanus	Snowshoe Hare	S5					X	
Lepus europaeus	European Hare	SNA					X	
Sylvilagus floridanus	Eastern Cottontail	S5					X	
Rodentia	**Rodents**							
Castor canadensis	Beaver	S5					X	
Erethizon dorsatum	Porcupine	S5					X	
Glaucomys volans	Southern Flying Squirrel (Great Lakes Pla	S4	NAR	NAR	NS	No schedule	X	
Marmota monax	Woodchuck	S5					X	
Microtus pennsylvanicus	Meadow Vole	S5					X	
Microtus pinetorum	Woodland Vole	S3?	SC	SC	SC	Schedule 1	X	
Mus musculus	House Mouse	SNA					X	
Napaeozapus insignis	Woodland Jumping Mouse	S5					X	
Ondatra zibethicus	Muskrat	S5					X	
Peromyscus leucopus	White-footed Mouse	S5					X	
Peromyscus maniculatus	Deer Mouse	S5					X	
Rattus norvegicus	Norway Rat	SNA					X	
Sciurus carolinensis	Eastern Gray Squirrel	S5					X	
Synaptomys cooperi	Southern Bog Lemming	S4					X	
Tamias striatus	Eastern Chipmunk	S5					X	
Tamiasciurus hudsonicus	Red Squirrel	S5					X	
Zapus hudsonius	Meadow Jumping Mouse	S5					X	
Canidae	**Canines**							
Canis latrans	Coyote	S5					X	
Vulpes vulpes	Red Fox	S5					X	
Felidae	**Felines**							
Lynx canadensis	Canada Lynx	S5	NAR	NAR	NS	No schedule	X	
Mephitidae	**Skunks and Stink Badgers**							
Mephitis mephitis	Striped Skunk	S5					X	
Mustelidae	**Weasels and Allies**							
Mustela erminea	Ermine	S5					X	
Mustela frenata	Long-tailed Weasel	S4					X	
Neovison vison	American Mink	S4					X	
Taxidea taxus jacksoni	American Badger (Southwestern Ontario	S1	END	E	E	Schedule 1	X	X
Procyonidae	**Raccoons and Allies**							
Procyon lotor	Northern Raccoon	S5					X	
Artiodactyla	**Deer and Bison**							
Cervus elaphus	Elk	SNA	EXT				X	
Odocoileus virginianus	White-tailed Deer	S5					X	
Total							**43**	**1**

*Mammal Atlas Square Numbers: MT
**NHIC Atlas Squares: 17MH7752

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Butterfly Species Reported from the Study Area - 38 Exeter Road EIS (Project #2803)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Ontario Butterfly Atlas*	NHIC Data**
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	Macnaughton et al. 2022	NDMNRF 2022
Hesperiidae	**Skippers**							
Anatrytone logan	Delaware Skipper	S4					X	
Ancyloxypha numitor	Least Skipper	S5					X	
Epargyreus clarus	Silver-spotted Skipper	S4					X	
Erynnis baptisiae	Wild Indigo Duskywing	S4					X	
Erynnis brizo	Sleepy Duskywing	S1					X	
Erynnis icelus	Dreamy Duskywing	S5					X	
Erynnis juvenalis	Juvenal's Duskywing	S5					X	
Euphyes vestris	Dun Skipper	S5					X	
Poanes hobomok	Hobomok Skipper	S5					X	
Polites mystic	Long Dash Skipper	S5					X	
Polites peckius	Peck's Skipper	S5					X	
Polites themistocles	Tawny-edged Skipper	S5					X	
Pompeius verna	Little Glassywing	S4					X	
Thymelicus lineola	European Skipper	SNA					X	
Wallengrenia egeremet	Northern Broken Dash	S5					X	
Papilionidae	**Swallowtails**							
Papilio cresphontes	Giant Swallowtail	S4					X	
Papilio glaucus	Eastern Tiger Swallowtail	S5					X	
Papilio polyxenes	Black Swallowtail	S5					X	
Papilio troilus	Spicebush Swallowtail	S4					X	
Pieridae	**Whites and Sulphurs**							
Colias eurytheme	Orange Sulphur	S5					X	
Colias philodice	Clouded Sulphur	S5					X	
Pieris oleracea	Mustard White	S4					X	
Pieris rapae	Cabbage White	SNA					X	
Lycaenidae	**Harvesters, Coppers, Hairstreaks, Blues**							
Callophrys augustinus	Brown Elfin	S5					X	
Celastrina lucia	Northern Spring Azure	S5					X	
Celastrina neglecta	Summer Azure	S5					X	
Celastrina sp.	Azure species	SNA					X	
Cupido comyntas	Eastern Tailed Blue	S5					X	
Lycaena epixanthe	Bog Copper	S4S5					X	
Lycaena phlaeas	American Copper	S5					X	
Satyrium acadica	Acadian Hairstreak	S4					X	
Satyrium calanus	Banded Hairstreak	S4					X	
Satyrium liparops	Striped Hairstreak	S5					X	
Strymon melinus	Gray Hairstreak	S4					X	
Nymphalidae	**Brush-footed Butterflies**							
Aglais milberti	Milbert's Tortoiseshell	S5					X	
Asterocampa celtis	Hackberry Emperor	S3					X	
Asterocampa clyton	Tawny Emperor	S3					X	
Boloria bellona	Meadow Fritillary	S5					X	
Boloria selene	Silver-bordered Fritillary	S5					X	
Cercyonis pegala	Common Wood-Nymph	S5					X	
Chlosyne nycteis	Silvery Checkerspot	S5					X	
Coenonympha tullia	Common Ringlet	S5					X	
Danaus plexippus	Monarch	S2N,S4B	SC	E	SC	Schedule 1	X	
Euphydryas phaeton	Baltimore Checkerspot	S4					X	
Junonia coenia	Common Buckeye	SNA					X	
Lethe anthedon	Northern Pearly-Eye	S5					X	
Lethe appalachia	Appalachian Brown	S4					X	
Lethe eurydice	Eyed Brown	S5					X	
Libytheana carinenta	American Snout	SNA					X	
Limenitis archippus	Viceroy	S5					X	
Limenitis arthemis arthemis	White Admiral	S5					X	
Limenitis arthemis astyanax	Red-spotted Purple	S5					X	
Megisto cymela	Little Wood-Satyr	S5					X	
Nymphalis antiopa	Mourning Cloak	S5					X	
Nymphalis l-album	Compton Tortoiseshell	S5					X	
Phyciodes cocyta	Northern Crescent	S5					X	
Phyciodes tharos	Pearl Crescent	S4					X	

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Ontario Butterfly Atlas*	NHIC Data**
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	Macnaughton et al. 2022	NDMNRF 2022
Polygonia comma	Eastern Comma	S5					X	
Polygonia interrogationis	Question Mark	S5					X	
Polygonia progne	Gray Comma	S5					X	
Speyeria cybele	Great Spangled Fritillary	S5					X	
Vanessa atalanta	Red Admiral	S5B					X	
Vanessa cardui	Painted Lady	S5B					X	
Vanessa virginiensis	American Lady	S5					X	
Total							**40**	**0**

*TEA Atlas Square: 17MH75
**NHIC Atlas Square: 17MH7752

References

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Government of Canada. 2021. Species at Risk Public Registry: Species Search. COSEWIC Last Assessment Date: 2021-12-01. Available: https://species-registry.canada.ca/index-en.html#/species?sortBy=commonNameSort&sortDirection=asc&pageSize=10

Macnaughton A., Layberry R., Cavasin R., Edwards B., and C. Jones. 2022. Ontario Butterfly Atlas. Updated February 2022. Available: https://www.ontarioinsects.org/atlas/index.html

Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF). 2022. Natural Heritage Information Centre (NHIC): Make a Natural Heritage Area Map Application. Published: 2014-07-17. Updated 2022-01-20. Available: https://www.ontario.ca/page/make-natural-heritage-area-map

Odonate Species Reported from the Study Area - 38 Exeter Road (Project #2803)

Scientific Name	Common Name	SRANK	SARO	COSEWIC	SARA	SARA Schedule	Odonate Atlas*	NHIC Data**
		NDMNRF 2021	MECP 2022	Government of Canada 2021	Government of Canada 2021	Government of Canada 2021	OOAD 2022	NDMNRF 2022
Calopterygidae	**Broadwinged Damselflies**							
Calopteryx maculata	Ebony Jewelwing	S5					X	
Hetaerina americana	American Rubyspot	S4					X	
Lestidae	**Spreadwings**							
Lestes congener	Spotted Spreadwing	S5					X	
Lestes dryas	Emerald Spreadwing	S5					X	
Lestes eurinus	Amber-winged Spreadwing	S4					X	
Lestes rectangularis	Slender Spreadwing	S5					X	
Lestes unguiculatus	Lyre-tipped Spreadwing	S5					X	
Coenagrionidae	**Narrow-winged Damselflies**							
Argia apicalis	Blue-fronted Dancer	S4					X	
Argia tibialis	Blue-tipped Dancer	S3					X	
Enallagma antennatum	Rainbow Bluet	S4					X	
Enallagma aspersum	Azure Bluet	S4					X	
Enallagma basidens	Double-striped Bluet	S3					X	
Enallagma boreale	Boreal Bluet	S5					X	
Enallagma ebrium	Marsh Bluet	S5					X	
Enallagma exsulans	Stream Bluet	S5					X	
Enallagma hageni	Hagen's Bluet	S5					X	
Ischnura posita	Fragile Forktail	S4					X	
Ischnura verticalis	Eastern Forktail	S5					X	
Nehalennia irene	Sedge Sprite	S5					X	
Aeshnidae	**Darners**							
Aeshna constricta	Lance-tipped Darner	S5					X	
Aeshna umbrosa	Shadow Darner	S5					X	
Anax junius	Common Green Darner	S5					X	
Cordulegasteridae	**Spiketails**							
Cordulegaster diastatops	Delta-spotted Spiketail	S4					X	
Corduliidae	**Emeralds**							
Epitheca cynosura	Common Baskettail	S5					X	
Libellulidae	**Skimmers**							
Celithemis elisa	Calico Pennant	S5					X	
Erythemis simplicicollis	Eastern Pondhawk	S5					X	
Leucorrhinia intacta	Dot-tailed Whiteface	S5					X	
Libellula pulchella	Twelve-spotted Skimmer	S5					X	
Libellula semifasciata	Painted Skimmer	S3					X	
Pachydiplax longipennis	Blue Dasher	S5					X	
Plathemis lydia	Common Whitetail	S5					X	
Sympetrum obtrusum	White-faced Meadowhawk	S5					X	
Sympetrum rubicundulum	Ruby Meadowhawk	S5					X	
Sympetrum vicinum	Autumn Meadowhawk	S5					X	
Total							**34**	**0**

**Odonate Atlas Square Numbers: 17MH75*
***NHIC Atlas Squares: 17MH7752*

References

Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF). 2021. Natural Heritage Information Centre (NHIC): Species List for Ontario. Published: 2014-07-17. All Species List Updated: 2021-07-29. Available: https://www.ontario.ca/page/get-natural-heritage-information

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Government of Canada. 2021. Species at Risk Public Registry: Species Search. COSEWIC Last Assessment Date: 2021-12-01. Available: https://species-registry.canada.ca/index-en.html#/species?sortBy=commonNameSort&sortDirection=asc&pageSize=10

Ontario Odonata Atlas Database. 2021. Natural Heritage Information Centre, Ontario Ministry of Natural Resources and Forestry. Species list from atlas squares 17MH75 queried on 03/16/2022.

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Ministry of Natural Resources and Forestry (MNRF). 2022. Natural Heritage Information Centre (NHIC): Make a Natural Heritage Area Map Application. Published: 2014-07-17. Updated 2022-01-20. Available: https://www.ontario.ca/page/make-natural-heritage-area-map

Appendix VI
Tree Preservation Plan

38 Exeter Road, London
Tree Preservation Plan

Prepared for:

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Project No. 2803

October 2022

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Tree Preservation Plan

Project Team

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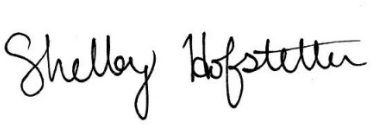
Kaitlin Filippov, GIS Analyst

Report submitted on October 7, 2022



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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained by private landowner Dr. Raj Khanuja to complete a tree inventory and Tree Preservation Plan (TPP) for a small commercial development located at 38 Exeter Road in London, Ontario (Map 1). The property contains scattered trees and is generally bound by Exeter Road to the south, Wonderland Road South to the east, and existing commercial units to the north and west (Map 1). For the purposes of this report, this property proposed for development, 38 Exeter Road, will be referred to as the "subject property".

This TPP was completed in accordance with of The London Plan (City of London 2021b), the City of London Tree Protection By-law (no. C.P.-1555-252) (2021a) and Section 12 of the Design Specifications & Requirements Manual, Tree Planting and Protection Guidelines (City of London 2018), herein referred to as "the Design Specifications". The by-law regulates the injuring and destruction of trees on private property within the City of London that meet either of the following criteria:

1. Trees that have a trunk diameter of 50cm or greater measured 1.4m above Natural Ground Level, within the Urban Growth Boundary,
2. Trees of any size within a Tree Protection Area (as shown in Schedule B of the Tree Protection By-law),

The subject property is located entirely within the 'Urban Growth Boundary' as per the London Plan (2021b), and is also within one of the City's Tree Protection Areas, as identified in Schedule D-7 of the City's Tree Protection By-law. However, the inventoried trees are not protected by the by-law, as outlined in criteria subsection (d), which provides an exemption to trees to be removed:

"*As a condition to the approval of a site plan, a plan of subdivision or a consent under section 41, 51 or 53, respectively, of the Planning Act, or as a requirement of a site plan agreement or subdivision agreement entered into under those sections.*"

Despite this, a TPP is still required for site plan approval. In developing this TPP, the London Plan, Tree Protection By-law, and the Design Specifications were considered and followed as appropriate.

This report provides the findings of the tree inventory, analysis of proposed development against the trees' overall health and structural integrity, protection measures for trees to be

retained, and recommended mitigation and compensation measures. Tree inventory data and mapping has been compared to the layout of the proposed draft concept plan that is current at the time of writing of this report, and prepared by Antrix Architects Inc. (dated September 21, 2022, plan number A0), as shown on Map 2.

2.0 Tree Inventory and Methodology

A comprehensive inventory and assessment of trees within the subject property was completed by NRSI Certified Arborists on May 4, 2022. Trees located along the boundary of the subject property, as well as trees adjacent to the subject property with the potential to be impacted by the proposed development, were also included in the inventory and assessment.

Individual trees ≥10cm Diameter at Breast Height (DBH) were surveyed using an SXBlue II GNSS GPS, and are shown on Map 2. Where a tree had multiple stems, the DBH of each stem ≥10cm DBH was recorded, however for the purposes of identifying which trees are considered Distinctive Trees, only the measurement of the largest stem was used (Sara Rowland, pers. comm. May 13, 2021). Individual trees that were ≥10cm in DBH were tagged with a pre-numbered aluminum forestry tag and assessed by NRSI arborists. Where isolated trees were located near property boundaries, or were inaccessible due to health and safety concerns, tagging was avoided. Any untagged trees have been assigned with a letter map code (e.g., A, B, C, etc.). A complete list of trees that were assessed and their overall health and potential for structural failure is included in Appendix I.

The following information was recorded for each tree:

- Species,
- DBH (centimetres),
- Approximate crown radius (metres),
- General health (excellent, good, fair, poor, very poor, dead),
- Potential for structural failure (improbable, possible, probable, imminent),
- Tree location (on-site/off-site/boundary), and
- General comments (i.e. disease, aesthetic quality, development constraints, sensitivity to development).

The overall health and potential for structural failure of each tree was assessed based on the criteria outlined in Appendix II (Dunster 2009; Dunster et al. 2013). NRSI has exercised a reasonable standard of care, skill and diligence as would be customarily and normally provided in carrying out these assessments. The assessments have been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, the condition of any visible root structures, the direction of stem lean (if any), the general condition

of the trees and the surrounding site, and the current or planned proximity of property and people. None of the trees examined on the property were dissected, cored, probed, or climbed and detailed root crown examinations involving excavation were not undertaken. The conditions for this assessment, including restrictions, professional responsibility, and third-party liability can be found in Appendix III.

2.1 Bat Habitat Assessment Methodology

Three bat species known from the area are listed as Endangered provincially and are afforded general habitat protection under the *Endangered Species Act* (2007). Bat Species at Risk (SAR) include Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Eastern Small-Footed Myotis (*Myotis leibii*).

These species are known to roost in tree cavities, hollows, or under loose bark, as well as within buildings (MNRF 2015). As part of the tree health assessments, NRSI's Certified Arborists, who are trained and experienced in the Ministry of Natural Resources and Forestry (MNRF) bat habitat assessment protocols (OMNR 2011) (MNRF 2014), visually scanned all trees ≥10cm DBH for the presence of features (i.e. cavities, loose bark, etc.) that may provide bat maternity colony habitat.

Information considered (and recorded, where applicable) for cavity trees included tree species, location, DBH, canopy cover, tree height, decay class according to Watt and Caceres (Watt and Caceres 1999), and number of potentially suitable cavities. Other criteria were also considered, including the use of cavities by other wildlife, the potential for cavities to be used by predators, supporting/surrounding habitat, and other characteristics which may contribute to the habitat requirements of these species, such as temperature regulation.

3.0 Summary of Tree Inventory Findings

In total, 52 trees were inventoried, comprising three species: Black Walnut (*Juglans nigra*), Eastern Cottonwood (*Populus deltoides*), and Crack Willow (*Salix euxina*). Of the trees inventoried and assessed, 51 (98.1%) are native species and one (1.9%) Crack Willow is non-native.

One Distinctive Tree, a Black Walnut, was identified on the subject property. However, due to the exemption from the Tree Protection By-law under subsection (d) (City of London 2021a), Distinctive status of trees does not warrant specific permitting or compensation requirements for this site plan application, and instead consideration and compensation requirements apply to all trees ≥10cm DBH, as per the London Plan (2021b). None of the tree species observed are regionally significant or protected under the *Species at Risk Act* (2002) or *Endangered Species Act* (2007).

A complete list of inventoried trees is provided in Appendix I and tree locations are shown on Map 2. Appendix IV includes both a list of tree species inventoried, their health, and whether they are native or non-native, as well as a summary of the overall health of the trees inventoried and their potential for structural failure.

3.1 Bat Habitat Findings

Each inventoried tree was assessed for suitable bat habitat, including cavities, exfoliating bark, and dead leaf clusters. All assessments were completed concurrently with the tree inventory during the leaf-off period in the spring of 2022. No suitable bat habitat was identified.

4.0 Tree Removal and Retention Analysis

The existing overall health and/or potential for structural failure was compared to the proposed development layout to determine whether existing trees would be impacted by the proposed undertaking. Avoidance, mitigation, and protection measures for trees were examined to determine which trees would be impacted and which could be retained. The retention analysis presented below is based on the proposed draft concept plan prepared by Antrix Architects Inc. (dated September 21, 2022, plan number A0), and provided to NRSI in September 2022 (Map 2).

Of the 52 inventoried trees, 41 are anticipated to require removal based on the extent of the proposed development, and/or due to their health and potential for structural failure. Two of the trees anticipated to be removed are considered boundary trees (Tree # 1112 and 1129), and six are located on the adjacent property to the west (Tree # 1114, 1122, 1124, 1125, 1127, and C). The removal or impact of boundary or off-site trees requires the permission of all owners involved, as per the City of London Tree Protection By-Law (2021a). If the main stem of any tree is located on multiple properties, all owners of those properties must be consulted before any tree removal or impact occurs. In addition, following the boundary measurement standards set by the City of London's Tree Protection Zone (TPZ) requirements (2018), Tree # 1115 located on the adjacent property to the west, has been prescribed for retention but is anticipated to be minimally impacted by the proposed development. Therefore, permission to impact will be required by neighboring landowners before construction takes place. NRSI is not aware of receipt of approval for the removal or impact to off-site or boundary trees at this time, and our recommendation for removal should not be inferred to reflect approval from any of the required parties.

The majority of the trees proposed for removal are in fair or good health with an improbable potential for structural failure, and range in size from 10.9cm to 51.5cm DBH. None of the trees anticipated to be removed were identified as dead during the tree inventory.

5.0 Compensation

The London Plan subsection 399.4.b (2021b) requires that trees shall be replaced at a ratio of one replacement tree for every 10cm of tree diameter that is removed. The recommended replacement plantings summarized in Table 1 have been developed to satisfy this requirement. Where a tree had multiple stems, the measurement of the largest stem was used to determine the number of replacement plantings required.

Table 1. Replacement Planting Summary

Number of Trees Designated for Removal	Total Diameter (cm) of Trees Designated for Removal	Number of Replacement Trees Required
41	1,065.6	107

If possible, replacement plantings should be installed on the subject property. A post-construction remediation plan may be required to further address replacement plantings, as per the Design Specifications (City of London 2018). Species used for replacement/enhancement plantings should be native to the City of London, and all plantings should adhere to the specifications outlined in Section 12.2.3 of the Design Specifications (City of London 2018). Approved Street Tree species are outlined in Appendix 5 of the Design Specifications (City of London 2018).

It is recommended that the following criteria be followed during the development of proposed planting plans, should they occur:

- The plan should be developed by, or reviewed and approved by an Ontario Landscape Architect (OLA), Certified Arborist, or Registered Professional Forester (RPF);
- Be limited to non-invasive species, with preference toward native species to the City of London;
- Include hardy, native tree species where feasible that are known to thrive in more urban conditions (i.e. compacted soil, drought, high salt tolerance),
- Include a diversity of trees from several genus to increase disease and pest tolerance and discourage monocultures (no more than 30% from a single genus, 10% from a single species),
- Include a watering and monitoring plan for two years following planting,
- Be replaced if they are documented to have died within the two-year monitoring plan,
- Be spaced so as to allow material to reach its ultimate size and form;
- Be provided with appropriate soil types and soil volumes;

- Avoid Ash species due to the risk of the Emerald Ash Borer (*Agrilus planipennis*),
- Avoid ‘messy trees’, such as fruiting trees or Poplars (*Populus* spp.) where plantings occur in close proximity to driveways and roadways;
- Spacing of plant material should account for the ultimate size and form of the selected species and also the purpose of the planting, whether it be for screening, shade, naturalizing, rehabilitation, etc.; and
- Special attention to location and height of trees in proximity to utilities.

6.0 Tree Protection Measures and Recommended Mitigation

6.1 Prior to Construction and Site Alteration

Temporary tree protection fencing (TPF) will be situated where trees are adjacent to the proposed development as shown on Map 2. A combined sediment and erosion control fence (i.e. silt fence) and TPF is recommended where trees are situated adjacent to the limit of disturbance. This TPF is to take the form of plastic mesh fencing (such as snow fencing), t-bar stakes, heavy duty silt fencing, and topped with 2x4 beams, as outlined in the Design Specifications (City of London 2018). Detailed requirements and a corresponding fencing diagram from the Design Specifications can be found on Map 2.

The TPF will be installed and maintained by the Developer prior to any construction activities (rough grading, vegetation and tree removal). Prior to works commencing on-site, fence installation and location should to be inspected by a Certified Arborist or RPF. Signage indicating the purpose of protection fencing will be attached to the TPF every 100-150m. Recommended signage, as outlined in the Design Specifications (City of London 2018) is shown on Map 2.

Section 12.1.3 of the Design Specifications (City of London 2018) stipulates the minimum size of any TPZ based on the size of DBH of the protected trees. TPZ's for trees designated for retention are shown on Map 2, applying the protection distances specified for trees within Open Spaces and Woodlands as per the Design Specifications (City of London 2018). The minimum TPZ will be maintained for all retained trees, with the exception of Tree # 1099, 1100, and 1115, for which the TPZ cannot be maintained to its full extent due to the proposed development plan. In these cases, trees have been recommended for retention despite the expectation that a minor portion, no more than 10% of their approximate root zone, will be impacted by the proposed construction activities. This recommendation has been made with the intent of retaining as many existing trees as possible, and anticipating that the affected trees will tolerate the proposed impacts.

6.1.1 Tree Removal Timing Windows

Migratory Birds

The removal of trees and vegetation has the potential to disrupt nesting birds. The schedule of on-site work must consider the *Migratory Birds Convention Act* (MBCA) (Government of Canada 2019) construction window. All tree and vegetation removal should occur outside of the core nesting period for migratory birds as established by the Canadian Wildlife Service (CWS)

(2012). This period extends from approximately April 1 – August 31. For any tree or vegetation removal which occurs during the core nesting period, nest surveys may be conducted by a qualified biologist within small, simple habitat areas (i.e., individual isolated trees and hedgerow trees as found on the subject property) just prior to the removal activity (less than 48hrs prior to) to ensure that nesting birds are not present. If active nests are present, nests and an appropriate buffer are to be flagged and protected until the young have fledged and left the nest.

Raptors

The eggs and nests of all species of wild birds are also protected under the *Fish and Wildlife Conservation Act* (Government of Ontario 1997). This includes species identified as raptors (e.g. hawks and owls), which are not protected under the *Migratory Birds Convention Act*. It should be noted that some species of raptors breed and nest during the winter months in Ontario. Although the subject property does not contain suitable habitat for winter raptor nesting, care and consideration of the possible presence of winter nesting species should be executed should tree removal occur in the winter.

Species at Risk Bats

SAR bats and their habitats are protected by the *Endangered Species Act* (Government of Ontario 2007). In order to avoid impact to bats and their habitat, it is recommended that trees be removed outside of the bat active roosting period, which extends from approximately April 1 – September 30. Any tree removal that has the potential to impact SAR bats or their habitat requires prior correspondence with the Ministry of Environment, Conservation and Parks (MECP).

All developers/consultants/contractors, etc. are legally obligated to carry out due diligence to protect wildlife species, as described above, from harm during all phases of construction projects. Timing windows represent recommendations to avoid contravention of the above-mentioned Acts, but it should be noted that the species, as mentioned above, are afforded protection regardless of the time of year.

6.2 During Construction

Temporary TPF is to be maintained by the Developer during the entire construction period to ensure that any trees to be retained (including their root systems) are protected. Any minimal damage (i.e., damage to limbs or roots) to trees to be retained during construction must be pruned using proper arboricultural techniques. Should any of the trees intended to be retained

be seriously damaged or die as a result of construction activities, consultation with the City will be required.

6.3 Post-Construction

It is recommended that the TPF be removed upon completion of construction activities and adjacent areas are stabilized with a suitable vegetative cover to the satisfaction of the Environmental Inspector or qualified biologist. Removal of TPF and revegetation will permit increased root development for the remaining trees. A Certified Arborist or RPF must inspect all retained trees and their rooting area, and recommend remediation work if needed, as outlined in Section 12.1.6 of the Design Specifications (City of London 2018). A post-construction remediation plan may be required if damage to retained trees is noted. Following remediation activities, if needed, a final assessment should be done to ensure all protocols were met, ensuring final project approval.

7.0 Conclusion

NRSI was retained by private landowner Dr. Raj Khanuja, to complete a tree inventory and TPP for the property located at 38 Exeter Road in London, Ontario.

NRSI Certified Arborists conducted a comprehensive inventory and assessment of trees within the subject property on May 4, 2022. Trees located on the boundary of the subject property, as well as trees adjacent to the subject property with the potential to be impacted by the proposed development, were also included in the inventory and assessment. A total of 52 trees belonging to three common native and non-native species were inventoried and assessed for removal within the subject property and boundaries. Of the 52 trees inventoried, 41 are designated for removal.

It is recommended that all proposed tree removals occur with consideration to the protection and general timing windows for migratory birds, raptors, and SAR bats. It is required that written permission from impacted adjacent landowners be sought out and granted in advance of any boundary or off-property tree removals and/or injury. TPF is to be installed prior to any on-site work, in order to provide adequate protection for retained trees and their root systems. All TPF is to conform to the specifications of Section 12.1.4 of the Design Specifications (City of London 2018).

As per the compensation ratio specified in the London Plan (2021b), the installation of 107 replacement trees is required to compensate for the removal of 41 trees. Replacement plantings should consist of site-appropriate native and/or approved street tree species. For trees that cannot be planted on the subject property, a cash-in-lieu fee should be paid to the City of London.

8.0 References

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Appendix I
Tree Inventory Data

38 Exeter Road, London Tree Protection Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Distinctive Tree (Y/N)[1]	Tree Protection Zone[2] (m)	Comments
1083	Black Walnut	*Juglans nigra*	Native	2	34.8+34.3	5.0	Possible	Fair	On-site	Remove	N	-	Codominant stems with included bark; small broken branches; vines.
1084	Black Walnut	*Juglans nigra*	Native	1	38.3	5.0	Improbable	Good	On-site	Remove	N	-	Asymmetrical crown; small broken branches; vines.
1085	Eastern Cottonwood	*Populus deltoides*	Native	1	19.5	3.0	Improbable	Good	On-site	Remove	N	-	Asymmetrical crown; slight lean east.
1086	Eastern Cottonwood	*Populus deltoides*	Native	1	15.2	1.0	Improbable	Fair	On-site	Remove	N	-	Pistol butt; growing on slope; slight lean south; small clonal stems.
1087	Eastern Cottonwood	*Populus deltoides*	Native	1	18.8	1.5	Improbable	Good	On-site	Remove	N	-	Minor dieback; supressed.
1088	Eastern Cottonwood	*Populus deltoides*	Native	1	20.5	4.0	Improbable	Fair	On-site	Remove	N	-	Minor lean south.
1089	Eastern Cottonwood	*Populus deltoides*	Native	2	14.5+12.7	1.0	Improbable	Good	On-site	Remove	N	-	Codominant stem; slight lean west.
1090	Black Walnut	*Juglans nigra*	Native	1	24.5	4.0	Improbable	Fair	On-site	Remove	N	-	Extensive vines; minor infill.
1091	Black Walnut	*Juglans nigra*	Native	1	27.6	4.0	Improbable	Fair	On-site	Remove	N	-	Minor dieback and broken branches; callous wounds.
1092	Black Walnut	*Juglans nigra*	Native	1	30.4	4.0	Improbable	Fair	On-site	Remove	N	-	Previous pruning; minor vines.
1093	Black Walnut	*Juglans nigra*	Native	1	16.5	3.5	Improbable	Fair	On-site	Remove	N	-	Asymmetrical crown south.
1094	Black Walnut	*Juglans nigra*	Native	2	41.2+34.7	5.0	Improbable	Fair	On-site	Remove	N	-	Codominant stems with included bark; small broken branches.
1095	Black Walnut	*Juglans nigra*	Native	4	29.3+24.3+22.4+18.9	3.0	Improbable	Fair	On-site	Remove	N	-	Multiple stems with included bark; debris collecting in branch union; small broken branches.
1096	Black Walnut	*Juglans nigra*	Native	2	28.5	3.0	Improbable	Fair	On-site	Remove	N	-	Asymmetrical crown east; codominant leaders with included bark near surface.
1097	Black Walnut	*Juglans nigra*	Native	1	12.5	1.5	Improbable	Good	On-site	Remove	N	-	Minor dieback.
1098	Black Walnut	*Juglans nigra*	Native	2	32.3+24.6	7.0	Improbable	Fair	On-site	Remove	N	-	Codominant stems with included bark; small broken branches.
1099	Black Walnut	*Juglans nigra*	Native	1	13.3	0.5	Improbable	Good	On-site	Retain	N	3.6	Minor vines.
1100	Black Walnut	*Juglans nigra*	Native	1	10.0	0.5	Improbable	Good	On-site	Retain	N	3.6	Minor vines.
1101	Black Walnut	*Juglans nigra*	Native	3	27.6+26.4+26.3	7.0	Improbable	Fair	On-site	Remove	N	-	Multiple leaders with included bark; extensive vines; small broken branches.
1102	Black Walnut	*Juglans nigra*	Native	1	32.1	5.0	Improbable	Fair	On-site	Remove	N	-	Large cankers; minor vines; tall crown.
1103	Black Walnut	*Juglans nigra*	Native	1	41.7	4.0	Probable	Fair	On-site	Remove	N	-	Large dead branches; minor vines; tall crown.
1104	Black Walnut	*Juglans nigra*	Native	1	35.2	5.0	Improbable	Fair	On-site	Remove	N	-	Asymmetrical crown toward south; small dead branches.
1105	Black Walnut	*Juglans nigra*	Native	2	21.8+21.1	3.0	Improbable	Poor	On-site	Remove	N	-	Large open cankers with failing reaction wood; vines.
1106	Black Walnut	*Juglans nigra*	Native	1	11.6	0.5	Possible	Poor	On-site	Remove	N	-	Poor vigour; extensive vines, pulling leaders over.
1107	Black Walnut	*Juglans nigra*	Native	1	32.0	4.0	Improbable	Fair	On-site	Remove	N	-	Codominant leaders with included bark; small broken branches; tall crown; minor vines.
1108	Black Walnut	*Juglans nigra*	Native	1	28.2	3.5	Improbable	Fair	On-site	Remove	N	-	Minor dieback.
1109	Black Walnut	*Juglans nigra*	Native	1	39.5	3.5	Improbable	Fair	On-site	Remove	N	-	Minor broken branches.
1110	Black Walnut	*Juglans nigra*	Native	1	51.5	5.0	Probable	Fair	On-site	Remove	Y	-	Large broken branch; vines.
1111	Black Walnut	*Juglans nigra*	Native	1	13.8	2.0	Improbable	Fair	On-site	Remove	N	-	Extensive vines.
1112	Black Walnut	*Juglans nigra*	Native	1	29.2	4.0	Improbable	Fair	Boundary	Remove	N	-	Open crown; minor vines.
1113	Black Walnut	*Juglans nigra*	Native	1	28.5	3.0	Improbable	Fair	On-site	Remove	N	-	Extensive vines; assymetrical crown toward south.
1114	Black Walnut	*Juglans nigra*	Native	1	22.0	4.0	Improbable	Fair	Off-site	Remove	N	-	Asymmetrical crown south; vines.
1115	Black Walnut	*Juglans nigra*	Native	1	25.9	3.0	Improbable	Fair	Off-site	Retain	N	3.6	Extensive vines; sparse crown; small broken branches.
1116	Eastern Cottonwood	*Populus deltoides*	Native	1	26.1	3.0	Improbable	Fair	Off-site	Retain	N	3.6	Pistol butt; growing on slope; slight lean west.
1117	Eastern Cottonwood	*Populus deltoides*	Native	1	37.8	1.0	Improbable	Fair	Off-site	Retain	N	4.8	Pistol butt; growing in drainage ditch in standing water; dieback of lower branches; callous wound.
1118	Eastern Cottonwood	*Populus deltoides*	Native	1	18.5	1.0	Improbable	Poor	Off-site	Retain	N	3.6	Slight lean west with good reaction wood; growing at edge of drainage ditch in standing water; dieback of lower branches.
1119	Eastern Cottonwood	*Populus deltoides*	Native	1	28.9	1.5	Improbable	Fair	Off-site	Retain	N	3.6	Growing at edge of drainage ditch in standing water; pistol butt; minor vines; tall crown.
1120	Eastern Cottonwood	*Populus deltoides*	Native	1	10.0	0.5	Probable	Very Poor	Off-site	Retain	N	3.6	Growing in drainage ditch in standing water; topped at 2m, small lateral branches remain; extensive vines.
1121	Eastern Cottonwood	*Populus deltoides*	Native	1	18.0	1.0	Improbable	Fair	Off-site	Retain	N	3.6	Growing in drainage ditch in standing water; minor vines; tall, sparse crown.
1122	Eastern Cottonwood	*Populus deltoides*	Native	1	17.5	1.0	Possible	Poor	Off-site	Remove	N	-	Growing in drainage ditch in standing water; extensive vines; fallen tree leaning on stem, curved horizontal.
1123	Black Walnut	*Juglans nigra*	Native	1	21.5	3.5	Improbable	Fair	On-site	Remove	N	-	Minor vines.
1124	Black Walnut	*Juglans nigra*	Native	1	25.5	3.0	Improbable	Fair	Off-site	Remove	N	-	Minor vines; minor dieback.
1125	Black Walnut	*Juglans nigra*	Native	1	41.6	5.5	Improbable	Excellent	Off-site	Remove	N	-	No apparent problems.
1126	Black Walnut	*Juglans nigra*	Native	1	28.5	4.0	Improbable	Fair	On-site	Remove	N	-	Minor dieback.

38 Exeter Road, London Tree Protection Plan
Tree Inventory Data

Tree Number	Common Name	Scientific Name	Native/ Non-native	Stem Count	DBH (cm)	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Distinctive Tree (Y/N)[1]	Tree Protection Zone[2] (m)	Comments
1127	Black Walnut	*Juglans nigra*	Native	1	30.1	4.0	Improbable	Fair	Off-site	Remove	N	-	Growing on slope at edge of drainage ditch; pistol butt; minor dieback of lower branches.
1128	Eastern Cottonwood	*Populus deltoides*	Native	1	10.9	1.0	Improbable	Fair	On-site	Remove	N	-	Minor vines; minor dieback of lower branches.
1129	Eastern Cottonwood	*Populus deltoides*	Native	1	14.3	1.0	Improbable	Fair	Boundary	Remove	N	-	Minor vines; minor dieback of lower branches.
1130	Eastern Cottonwood	*Populus deltoides*	Native	1	16.1	1.0	Improbable	Fair	On-site	Remove	N	-	Minor vines; minor dieback of lower branches.
1131	Eastern Cottonwood	*Populus deltoides*	Native	1	24.5	1.0	Improbable	Fair	On-site	Remove	N	-	Minor dieback of lower branches; small callous wounds.
A	Eastern Cottonwood	*Populus deltoides*	Native	1	26.0	3.5	Improbable	Fair	Off-site	Retain	N	3.6	Growing in drainage ditch in standing water.
B	Eastern Cottonwood	*Populus deltoides*	Native	1	26.1	4.0	Improbable	Fair	Off-site	Retain	N	3.6	Tall, small crown; growing at edge of drainage ditch.
C	Crack Willow	*Salix euxina*	Non-native	1	16.0	2.0	Possible	Very Poor	Off-site	Remove	N	-	Heavy lean east; leaning along ditch slope; dead top.

[1]Where multiple stems were present, only the largest was used to determine Distinction status

[2]Shown for trees proposed for retention only; as per London's Design Specifications (2018) for areas designated Open Space or Woodlands

Appendix II

Tree Health and Potential for Structural Failure Assessment Criteria

Tree Health Assessment Criteria

Assessment Criteria	Definition[1]
Excellent	Represents a tree in near perfect form, health, and vigour. This tree would exhibit no deadwood, no decline, and no visible defects.
Good	Represents a tree ranging from a generally healthy tree to a near perfect tree in terms of health, vigour and structure. This tree exhibits a complete, balanced crown structure with little to no deadwood and minimal defects as well as a properly formed root flare.
Fair	Represents a tree with minor health, balance or structural issues with minimal to moderate deadwood. Branching structure shows signs of included bark or minor rot within the branch connections or trunk wood. The root flare shows minimal signs of mechanical injury, decay, poor callusing, or girdling roots. Trees in the category require minor remedial actions to improve the vigour and structure of the tree.
Poor	Represents a tree that exhibits a poor vigour, reduced crown size (<30% of crown typical of species caused by overcrowding or decline), extreme crown imbalance, or extensive rot in the branching and trunk wood. Fungus could be seen from these rotting areas, suggesting further decay. These trees have extensive crown die back with a large amount of deadwood, and possibly dead sections. These weakened areas can lead to a potential failure of tree sections. Rooting zones show signs of extensive root decay or damage (fruiting bodies or mechanical damage) or girdling roots. Trees in this category require more extensive actions to prevent failure. A tree identified as poor would be a candidate for removal in the near future.
Very Poor	Represents a tree that exhibits major health and structural defects. Quite often the defects or diseases affecting this tree will be fatal. Large quantities of fungus, large dead sections with possible cavities and bark falling off all are signs that a tree is in a major state of decline and would be identified as very poor. These trees have a probable or imminent potential for structural failure. These trees should be identified for removal.
Dead	Represents a tree that exhibits no sign of new growth, including buds, foliage, or shoot growth. These trees have a probable or imminent potential for structural failure. These trees should be identified for removal.

[1] (Dunster 2009)

Potential for Structural Failure Assessment Criteria

Assessment Criteria*	Definition[1]
Improbable	The tree or branch is not likely to fail during normal weather conditions and may not fail in many severe weather conditions within the specified time frame.
Possible	Failure could occur, but it is unlikely during normal weather conditions within the specified time frame.
Probable	Failure may be expected under normal weather conditions within the specified time frame.
Imminent	Failure has started or is most likely to occur in the near future, even if there is no significant wind or increased load. This is a rare occurrence for an assessor to encounter, and it may require immediate action to protect people from harm.
	*A specified time frame of 1 year will be used when assessing potential for structural failure.

[1] (Dunster et al. 2013)

Appendix III
Conditions of Assessment

Conditions of Tree Assessment

Limitations

This tree inventory and assessment is based on the circumstances and observations by Natural Resource Solutions Inc. (NRSI) as they existed at the time of the site inspection(s) of the Client's Property as described in this report (the "Property") and the trees situated thereon, and upon information provided by the Client to NRSI. The opinions in this assessment are given based on observations made and using generally accepted professional judgment, however, because trees are living organisms and subject to change, damage and disease, the results, observations, recommendations, and analysis as set out in this assessment are valid only at the date any such observations and analysis took place. No guarantee, warranty, representation or opinion is offered or made by NRSI as to the length of the validity of the results, observations, recommendations and analysis contained within this assessment. As a result, the Client shall not rely upon this assessment, save and except for representing the circumstances and observations at the date of site inspection(s), and the analysis and recommendations made in relation to the proposed undertaking. It is recommended that the inventoried trees discussed in this assessment should be re-assessed periodically, where required.

Further Services

Neither NRSI, nor any assessor employed or retained by NRSI (the "Assessor") for the purpose of preparing or assisting in the preparation of this assessment shall be required to provide any further consultation or services to the Client including, without limitation, acting as an expert witness or witness in any court in any jurisdiction unless the Client has first made specific arrangements with respect to such further services, including providing payment of the Assessor's regular hourly billing fees.

NRSI accepts no responsibility for the implementation of all or any part of this report, unless specifically requested to examine the implementation of such activities recommended herein. Any request for the inspection or supervision of all or part of the implementation shall be made in writing and the details agreed to in writing by both parties.

Assumptions

The Client is hereby notified that where any of the information set out and referenced in this assessment are based on assumptions, facts or information provided to NRSI, NRSI will in no way be responsible for the veracity or accuracy of any such information. Further, the Client acknowledges and agrees that NRSI has, for the purposes of preparing their assessment, assumed that the Property is in full compliance with all applicable federal, provincial, municipal and local statutes, regulations, by-laws, guidelines and other related laws. NRSI explicitly denies any legal liability for any and all issues with respect to non-compliance with any of the above-referenced statutes, regulations, by-laws, guidelines and laws as it may pertain to or affect the Property.

Restriction of Assessment

The assessment carried out was restricted to the areas as described in this report. NRSI is not legally liable for any other trees except those expressly discussed herein. The conclusions of this assessment do not apply to any areas, trees, or any other property not covered or referenced in this assessment.

Professional Responsibility

In carrying out this assessment, NRSI and any Assessor appointed for and on behalf of NRSI to perform and carry out the assessment has exercised a reasonable standard of care, skill and diligence. The assessment has been made using accepted arboricultural techniques. These include a visual examination of each tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of insect attack, discolored foliage (during the leaf-on period), the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the tree(s) and the surrounding site, and the current or planned proximity of property and people. Except where specifically noted in the assessment, none of the trees examined on the property were dissected, cored, probed, or climbed, and detailed root crown examinations involving excavation were not undertaken.

No guarantees are offered, or implied, that trees recommended for retention, or all parts of them, will remain standing. It is professionally impossible to predict with absolute certainty the behaviour of any single tree or group of trees, or all their component parts, in all given circumstances. Inevitably, a standing tree will always pose some risk. Most

trees have the potential to fall, lean, or otherwise pose a danger to property and persons in the event of extreme weather conditions, and this risk can only be eliminated if the tree is removed.

Without limiting the foregoing, no liability is assumed by NRSI or its directors, officers, employers, contractors, agents or Assessors for:

a) any legal description provided with respect to the Property;
b) issues of title and/or ownership with respect to the Property;
c) the accuracy of the Property line locations or boundaries with respect to the Property; and
d) the accuracy of any other information provided to NRSI by the Client or third parties;
e) any consequential loss, injury or damages suffered by the Client or any third parties, including but not limited to replacement costs, loss of use, earnings and business interruption; and
f) the unauthorized distribution of the assessment.

Third Party Liability

This assessment was prepared by NRSI for the Client. The data collected reflect NRSI's best assessment of the inventoried trees situated on the Property with the information available at the time of observation. Data analysis and the assessment of potential impacts to inventoried trees is specific to the proposed undertaking as described in this report. NRSI accepts no responsibility for any damages or loss suffered by any third party or by the Client as a result of decisions made or actions based upon the use of this assessment for purposes unrelated to the proposed undertaking.

General

Any plans and/or illustrations in this assessment are included only to help the Client visualize the issues in this assessment and shall not be relied upon for any other purpose.

This report shall be considered as a whole, no sections are severable, and the assessment shall be considered incomplete if any pages are missing.

Appendix IV
Tree Data Summary Tables

Summary of Inventoried Trees

Common Name	Scientific Name	Excellent	Good	Fair	Poor	Very Poor	Dead	Total
Native Species								
Black Walnut	*Juglans nigra*	1	4	26	2			33
Eastern Cottonwood	*Populus deltoides*		3	12	2	1		18
Total		**1**	**7**	**38**	**4**	**1**	**0**	**51**
Non-Native Species								
Crack Willow	*Salix euxina*					1		1
Total		**0**	**0**	**0**	**0**	**1**	**0**	**1**
Overall Total		**1**	**7**	**38**	**4**	**2**	**0**	**52**

Overall Health of Trees Inventoried

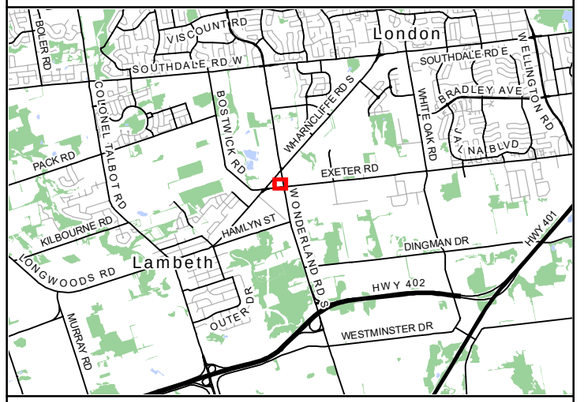
Potential for Structural Failure Rating	Excellent overall condition	Good overall condition	Fair overall condition	Poor overall condition	Very poor overall condition	Dead	Total
Improbable	1	7	35	2			45
Possible			1	2	1		4
Probable			2		1		3
Imminent							0
Total	**1**	**7**	**38**	**4**	**2**	**0**	**52**

Maps

Map 1

38 Exeter Rd, London

Subject Property



Legend

Subject Property

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 2803 Date: May 16, 2022	NAD83 - UTM Zone 17 Size: 11x17" **1:600**

0 10 20 30 40 Metres

N

Path: X:\2803_38ExeterRd_EIS_TIPP\NRSI_2803_Map1_SubjectProperty_8K_2022_05_16_KEF.mxd

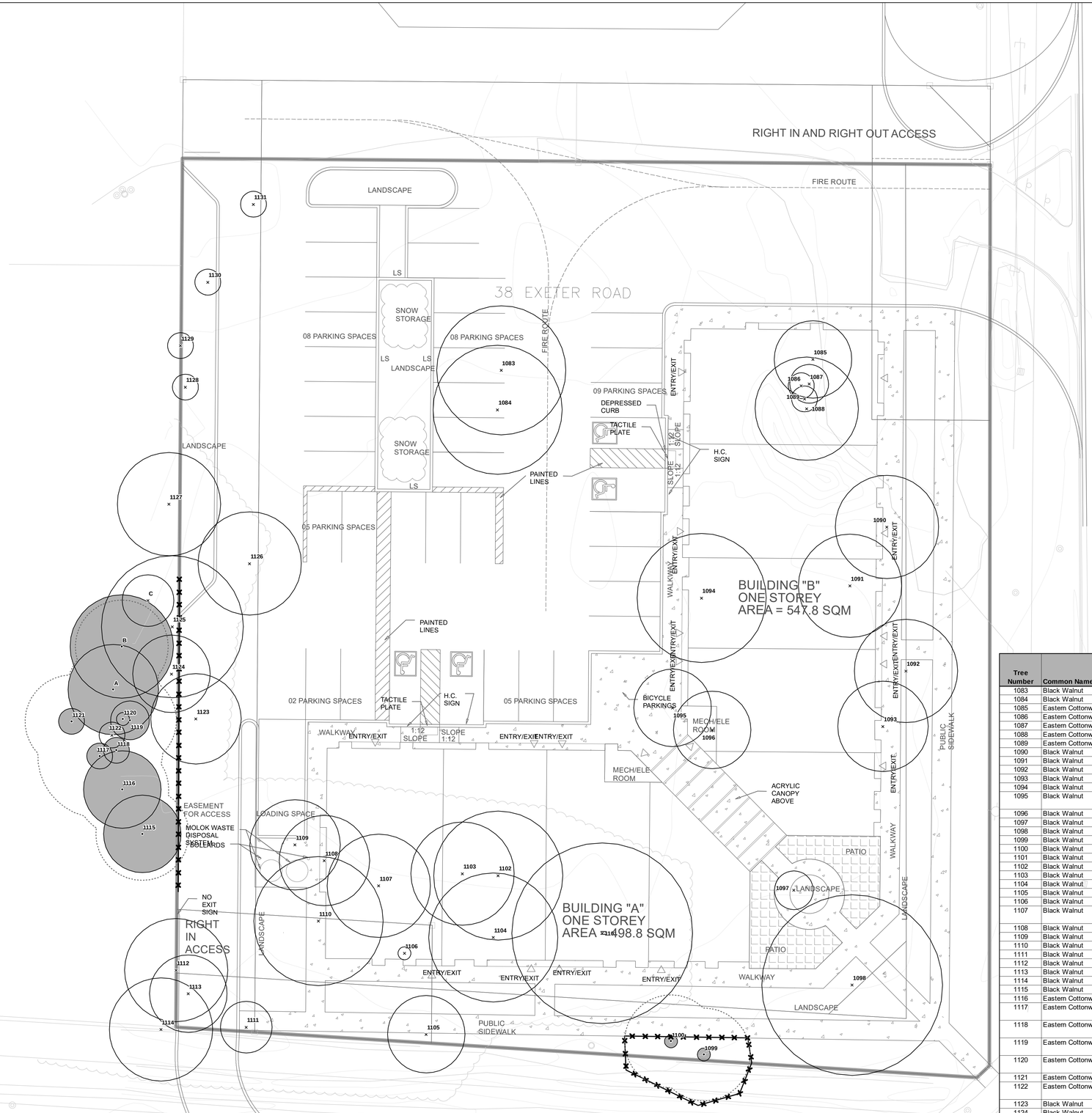
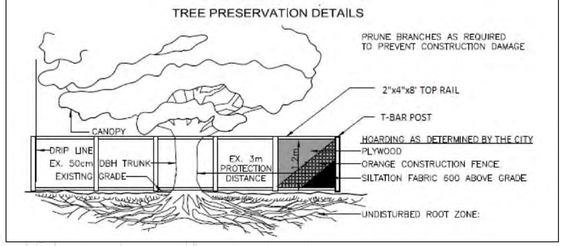


FIGURE 1

Example for Boulevard Trees



Migratory Birds Convention Act

1. The destruction of migratory birds and their nests is prohibited under the federal *Migratory Birds Convention Act (MBCA)*, 1994, which is regulated by the Canadian Wildlife Service (CWS).
2. Vegetation clearing has the potential to directly impact bird breeding activity through damage and destruction of nests, eggs and young, or avoidance of the area by breeding adults.
3. Vegetation clearing is recommended to occur outside the bird nesting season (April 1 – August 31) so as to limit disturbances to nesting activities of birds within the proposed work zone.
4. Specific to simple habitats*, if vegetation clearing cannot be avoided during the bird nesting season, a qualified biologist will be retained to carry out a nest search ahead of clearing activities within the work zone.
5. Nest areas will be identified in the field. There shall be no construction activity in identified nesting areas until sign-off is obtained from the biologist.
6. Areas identified as having no bird nesting activity can be cleared; however, clearing must occur within 48 hours of nest searching. If vegetation clearing is not performed within 48 hours, additional nest searches must be conducted.

*Simple habitats are characterized by the CWS as habitats consisting of urban parks with isolated trees, vacant lots with few possible nest sites, a previously cleared area, or a structure such as a bridge, tower, or building, and specifically excludes meadows. More information is available at (https://www.canada.ca/en/environment-climate-change/services/avoiding-harm-migratory-birds/reduce-risk-migratory-birds.html).

Species at Risk Bat Habitat

1. The destruction of Species at Risk (SAR) bats and their habitat is prohibited under the *Endangered Species Act (ESA)*, 2007.
2. Vegetation clearing has the potential to directly impact bat roosting habitat.
3. Tree removal should occur outside of the active roosting season (April 1 to September 30) to avoid destruction of potential bat habitat, and therefore contravention of the *ESA*.
4. Any vegetation removal that has the potential to impact SAR bat habitat requires prior correspondence with the Ministry of the Environment, Conservation and Parks (MECP).

Map 2

38 Exeter Rd, London

Tree Inventory and Preservation Plan

Legend

- Subject Property
- Inventoried Tree to be Retained (Crown to Scale)
- Inventoried Tree to be Removed (Crown to Scale)
- Minimum Protection Distance (City of London)
- Tree Protection Fencing (TPF)
- Proposed Site Plan
- Proposed Fire Route
- Existing Conditions
- Contour

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 2803
Date: October 5, 2022

NAD83 - UTM Zone 17
Size: 24x36"
1:160

0 2 4 6 8 10 Meters

N

TREE PROTECTION ZONE

No grade change, storage of materials or equipment is permitted within this TPZ. Tree protection barrier must not be moved or altered in any way without the written authorization from the City.
For information contact City of London at:
(519) 661-2500 ext ????

London CANADA

Tree Number	Common Name	Scientific Name	Native/ Non-native	DBH (cm)	Stem Count	Crown Radius (m)	Potential for Structural Failure Rating	Overall Condition	Location	Proposed Action	Comments
1083	Black Walnut	*Juglans nigra*	Native	34.8+34.3	2	5.0	Possible	Fair	On-site	Remove	Codominant stems with included bark; small broken branches; vines.
1084	Black Walnut	*Juglans nigra*	Native	38.3	1	5.0	Improbable	Good	On-site	Remove	Asymmetrical crown; small broken branches; vines.
1085	Eastern Cottonwood	*Populus deltoides*	Native	19.5	1	3.0	Improbable	Good	On-site	Remove	Asymmetrical crown; slight lean east.
1086	Eastern Cottonwood	*Populus deltoides*	Native	15.2	1	1.0	Improbable	Fair	On-site	Remove	Pistol butt; growing on slope; slight lean south; small clonal stems.
1087	Eastern Cottonwood	*Populus deltoides*	Native	18.8	1	1.5	Improbable	Good	On-site	Remove	Minor dieback; supressed.
1088	Eastern Cottonwood	*Populus deltoides*	Native	20.5	1	4.0	Improbable	Fair	On-site	Remove	Minor lean south.
1089	Eastern Cottonwood	*Populus deltoides*	Native	14.5+12.7	2	1.0	Improbable	Good	On-site	Remove	Codominant stem; slight lean west.
1090	Black Walnut	*Juglans nigra*	Native	24.5	1	4.0	Improbable	Fair	On-site	Remove	Extensive vines; minor infill.
1091	Black Walnut	*Juglans nigra*	Native	27.6	1	4.0	Improbable	Fair	On-site	Remove	Minor dieback and broken branches; callous wounds.
1092	Black Walnut	*Juglans nigra*	Native	30.4	1	4.0	Improbable	Fair	On-site	Remove	Previous pruning; minor vines.
1093	Black Walnut	*Juglans nigra*	Native	16.5	1	3.5	Improbable	Fair	On-site	Remove	Asymmetrical crown south.
1094	Black Walnut	*Juglans nigra*	Native	41.2+34.7	2	5.0	Improbable	Fair	On-site	Remove	Codominant stems with included bark; small broken branches.
1095	Black Walnut	*Juglans nigra*	Native	29.3+24.3+22.4+18.9	4	3.0	Improbable	Fair	On-site	Remove	Multiple stems with included bark; debris collecting in branch union; small broken branches.
1096	Black Walnut	*Juglans nigra*	Native	28.5	2	3.0	Improbable	Fair	On-site	Remove	Asymmetrical crown east; codominant leaders with included bark near surface.
1097	Black Walnut	*Juglans nigra*	Native	12.5	1	1.5	Improbable	Good	On-site	Remove	Minor dieback.
1098	Black Walnut	*Juglans nigra*	Native	32.3+24.6	2	7.0	Improbable	Fair	On-site	Remove	Codominant stems with included bark; small broken branches.
1099	Black Walnut	*Juglans nigra*	Native	13.3	1	0.5	Improbable	Good	On-site	Retain	Minor vines.
1100	Black Walnut	*Juglans nigra*	Native	10.0	1	0.5	Improbable	Good	On-site	Retain	Minor vines.
1101	Black Walnut	*Juglans nigra*	Native	27.6+26.4+26.3	3	7.0	Improbable	Fair	On-site	Remove	Multiple leaders with included bark; extensive vines; small broken branches.
1102	Black Walnut	*Juglans nigra*	Native	32.1	1	5.0	Improbable	Fair	On-site	Remove	Large cankers; minor vines; tall crown.
1103	Black Walnut	*Juglans nigra*	Native	41.7	1	4.0	Probable	Fair	On-site	Remove	Large dead branches; minor vines; tall crown.
1104	Black Walnut	*Juglans nigra*	Native	35.2	1	5.0	Improbable	Fair	On-site	Remove	Asymmetrical crown toward south; small dead branches.
1105	Black Walnut	*Juglans nigra*	Native	21.8+21.1	2	3.0	Improbable	Poor	On-site	Remove	Large open cankers with failing reaction wood; vines.
1106	Black Walnut	*Juglans nigra*	Native	11.6	1	0.5	Possible	Poor	On-site	Remove	Poor vigour; extensive vines, pulling leaders over.
1107	Black Walnut	*Juglans nigra*	Native	32.0	1	4.0	Improbable	Fair	On-site	Remove	Codominant leaders with included bark; small broken branches; tall crown; minor vines.
1108	Black Walnut	*Juglans nigra*	Native	28.2	1	3.5	Improbable	Fair	On-site	Remove	Minor dieback.
1109	Black Walnut	*Juglans nigra*	Native	39.5	1	3.5	Improbable	Fair	On-site	Remove	Minor broken branches.
1110	Black Walnut	*Juglans nigra*	Native	51.5	1	5.0	Probable	Fair	On-site	Remove	Large broken branch; vines.
1111	Black Walnut	*Juglans nigra*	Native	13.8	1	2.0	Improbable	Fair	On-site	Remove	Extensive vines.
1112	Black Walnut	*Juglans nigra*	Native	29.2	1	4.0	Improbable	Fair	Boundary	Remove	Open crown; minor vines.
1113	Black Walnut	*Juglans nigra*	Native	28.5	1	3.0	Improbable	Fair	On-site	Remove	Extensive vines; assymetrical crown toward south.
1114	Black Walnut	*Juglans nigra*	Native	22.0	1	4.0	Improbable	Fair	Off-site	Remove	Asymmetrical crown south; vines.
1115	Black Walnut	*Juglans nigra*	Native	25.9	1	3.0	Improbable	Fair	Off-site	Retain	Extensive vines; sparse crown; small broken branches.
1116	Eastern Cottonwood	*Populus deltoides*	Native	26.1	1	3.0	Improbable	Fair	Off-site	Retain	Pistol butt; growing on slope; slight lean west.
1117	Eastern Cottonwood	*Populus deltoides*	Native	37.8	1	1.0	Improbable	Fair	Off-site	Retain	Pistol butt; growing in drainage ditch in standing water; dieback of lower branches; callous wound.
1118	Eastern Cottonwood	*Populus deltoides*	Native	18.5	1	1.0	Improbable	Poor	Off-site	Retain	Slight lean west with good reaction wood; growing at edge of drainage ditch in standing water; dieback of lower branches.
1119	Eastern Cottonwood	*Populus deltoides*	Native	28.9	1	1.5	Improbable	Fair	Off-site	Retain	Growing at edge of drainage ditch in standing water; pistol butt; minor vines; tall crown.
1120	Eastern Cottonwood	*Populus deltoides*	Native	10.0	1	0.5	Probable	Very Poor	Off-site	Retain	Growing in drainage ditch in standing water; topped at 2m, small lateral branches remain; extensive vines.
1121	Eastern Cottonwood	*Populus deltoides*	Native	18.0	1	1.0	Improbable	Fair	Off-site	Retain	Growing in drainage ditch in standing water; minor vines; tall, sparse crown.
1122	Eastern Cottonwood	*Populus deltoides*	Native	17.5	1	1.0	Possible	Poor	Off-site	Remove	Growing in drainage ditch in standing water; extensive vines; fallen tree leaning on stem, curved horizontal.
1123	Black Walnut	*Juglans nigra*	Native	21.5	1	3.5	Improbable	Fair	On-site	Remove	Minor vines.
1124	Black Walnut	*Juglans nigra*	Native	25.5	1	3.0	Improbable	Fair	Off-site	Remove	Minor vines; minor dieback.
1125	Black Walnut	*Juglans nigra*	Native	41.6	1	5.5	Improbable	Excellent	Off-site	Remove	No apparent problems.
1126	Black Walnut	*Juglans nigra*	Native	28.5	1	4.0	Improbable	Fair	On-site	Remove	Minor dieback.
1127	Black Walnut	*Juglans nigra*	Native	30.1	1	4.0	Improbable	Fair	Off-site	Remove	Growing on slope at edge of drainage ditch; pistol butt; minor dieback of lower branches.
1128	Eastern Cottonwood	*Populus deltoides*	Native	10.9	1	1.0	Improbable	Fair	On-site	Remove	Minor vines; minor dieback of lower branches.
1129	Eastern Cottonwood	*Populus deltoides*	Native	14.3	1	1.0	Improbable	Fair	Boundary	Remove	Minor vines; minor dieback of lower branches.
1130	Eastern Cottonwood	*Populus deltoides*	Native	16.1	1	1.0	Improbable	Fair	On-site	Remove	Minor vines; minor dieback of lower branches.
1131	Eastern Cottonwood	*Populus deltoides*	Native	24.5	1	1.0	Improbable	Fair	On-site	Remove	Minor dieback of lower branches; small callous wounds.
A	Eastern Cottonwood	*Populus deltoides*	Native	26.0	1	3.5	Improbable	Fair	Off-site	Retain	Growing in drainage ditch in standing water.
B	Eastern Cottonwood	*Populus deltoides*	Native	26.1	1	4.0	Improbable	Fair	Off-site	Retain	Tall, small crown; growing at edge of drainage ditch.
C	Crack Willow	*Salix euxina*	Non-native	16.0	1	2.0	Possible	Very Poor	Off-site	Remove	Heavy lean east; leaning along ditch slope; dead top.

Appendix VII
Net Effects Impact Table

The following appendix contains documents that are difficult to make screen reader accessible. Please contact Madison Postma at mpostma@nrsi.on.ca for further description or details of these documents at any time.

The following documents contains a table that summarizes the impact and net effect assessment completed in Section 5 of this report.

SOURCE OF IMPACT	POTENTIAL AREAS AFFECTS & POTENTIAL EFFECTS	AVOIDANCE, MITIGATION, COMPENSATION	NET EFFECTS & RATIONALE
1.0 Existing Impacts (where opportunities for net positive effects have been identified):			
5.2 Existing Conditions	The subject property currently contains a number of invasive species and has been degraded by urban pollution such as garbage and road salt.	Removing the invasive species from the property will stop their spread into surrounding area and into the greater surrounding natural features outside of the study area. Native, non-invasive plant species should be used in any future landscaping plans for the proposed development.	No significant net effects are expected.
2.0 Direct Impacts:			
5.3.1 Vegetation and Tree Removal	Removal of isolated trees and herbaceous species is proposed. This can adversely affect wildlife that rely on this habitat. Trees reduce flooding and heat island effects.	Trees are protected wherever possible, as shown in the Tree Preservation Plan. Trees should be removed outside of MBCA and active bat seasons, outlined in the TPR. Compensation trees are required at 1 tree per 10cm removed.	With proposed compensation and tree protection fencing, and adherence to wildlife timing windows, no significant net effects are expected.
5.3.2 Erosion and Sedimentation	During construction, areas of bare soil may be exposed that have the potential to erode during precipitation events and impact adjacent natural features. In the event of a heavy rain or snow melt event, sediment laden runoff can enter adjacent natural areas by way of overland flow.	Erosion and Sediment Control (ESC) fencing will be required as part of an ESC Plan.	With an effective ESC Plan, no significant net impacts are expected.
3.0 Indirect Impacts:			
5.4. Indirect Impacts	There will be no indirect impacts to the subject property as there are no natural features within close proximity to the study area that would be negatively impacted by the proposed construction.	N/A	No significant net effects are expected.