EXQUISITE DEVELOPERS INC.

SCOPED ENVIRONMENTAL IMPACT STUDY

78-82 EASTVIEW RD, GUELPH, ONTARIO

MARCH 11, 2019

SCOPED ENVIRONMENTAL IMPACT STUDY

78-82 EASTVIEW RD, GUELPH, ONTARIO

EXQUISITE DEVELOPERS INC.

PROJECT NO.: 17M-01526-00
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1 INTRODUCTION

1.1 PROJECT OVERVIEW

WSP Canada Group Limited (WSP) has been retained to complete a Scoped Environmental Impact Study (EIS) in support of a Zoning By-law Amendment application for a new townhouse condominium development at 78-82 Eastview Road, Guelph Ontario (the "*subject property*"; see Figure 1). The current zoning of the site is Urban Reserve and Residential Single Detached. It is proposed the property be re-zoned as Residential Townhouse.

This EIS will encompass the subject property and natural feature(s) within ~ 120 m of the subject property (the "*study area*", see Figure 1). A portion of the subject property supports municipally and provincially significant natural heritage features, as identified in the City of Guelph Official Plan March 2018 Consolidation. That portion, and all other natural features that meet the criteria for designation as natural heritage system (NHS) components will be retained and protected with setbacks and other buffer management measures determined through this Scoped EIS.

The subject property is located within the Eramosa River Watershed and is dominated by tableland and gently rolling topography. There is a gradual grading down to the wetland and woodland located on the western portion of the subject property. No watercourses are present.

The subject property is approximately 3.25 ha in size, located near the northeastern edge of Guelph, and is comprised of two residential lots (78 and 82 Eastview). Each property has a vacant residence fronting on Eastview Rd, and associated outbuildings. The immediate area around 78 Eastview consists of mown lawn. The remainder of the property consists of natural area (forest, wetland, cultural thicket, and cultural woodland). 82 Eastview consists of cultural meadow being maintained by occasional mowing. The subject property contains designated natural heritage features including a portion of the Guelph Northeast Provincially Significant Wetland (PSW) Complex and various City of Guelph Natural Heritage System (NHS) components (i.e. 'Significant Woodlands', 'Locally Significant Wetland'), together leading to designation as a 'Significant Natural Area'. No 'Significant Valleylands and Significant Landforms' or 'Surface Water and Fish Habitat' are identified on the subject property (per Official Plan March 2018 Consolidation NHS mapping).

Surrounding land uses are urban residential (south, west, east), and natural area associated with the Guelph Northeast PSW complex (north).

1.2 STUDY TEAM AND OBJECTIVES

Robert Russell Planning Consultants Inc. is coordinating all planning and servicing components of the work. WSP is undertaking the natural environment, hydrogeology and conceptual trail alignment components of the study. MTE Consultants Inc. is undertaking the stormwater management component of the study.

The proposed development envelope has been restricted to the portion of the subject property that supports cultural vegetation community types or was under previous residential land use. The portion of the site containing 'Significant Natural Area' (per Official Plan March 2018 Consolidation mapping, which includes provincially and locally significant wetlands, and significant woodlands) will be retained in full and protected with setbacks and buffer management measures. The primary objectives of this EIS are to 1) evaluate the sensitivity and significance of the Significant Natural Area and other natural features and functions that could be influenced by the development 2) identify opportunities and constraints to development, 3) assess potential negative impacts on natural features and functions, and 4) to identify mitigation measures to avoid, minimize and / or compensate for negative impacts.

1.3 DESCRIPTION OF THE PROPOSED DEVELOPMENT

The proposed development fronts on Eastview Road and includes 57 townhouse units in seven blocks. It will have two separate common element roadways accessed from Eastview Road. A single stormwater management (SWM) facility is also identified on the Preliminary Site Plan, as well as landscaped, amenity and parking areas.

On the Land Use Plan (Guelph OP Consolidation, March 2018, Schedule 2), the subject property is identified as General Residential and Significant Natural Area. City of Guelph zoning maps identify the subject property as Residential (R.1B) and Urban Reserve (UR). A portion of the property is identified as having 'Locally Significant Wetlands, Significant Woodlands, Natural Corridor or Linkage.'

The proposed development requires the subject property to rezone the lands outside of the natural area from its current zoning of Residential Single Detached (R.1B) and Urban Reserve (UR), to Residential Townhouse Zones (R.3A) to allow for the development. As noted in the Environmental Implementation Report for 66 Eastview Road (Ecoplans, 2013), there is a planned trail route leading from Carter Park to Eastview Park per the Guelph Trail Master Plan and the City of Guelph's Official Plan. As part of the EIS, the proposed trail design will be refined to include further construction detail, mitigation of construction impacts, and integration into the existing landscape.

2 STUDY APPROACH

2.1 BACKGROUND DATA REVIEW

Relevant agencies were contacted and background material was collected and reviewed.

Specifically, the following sources of information were reviewed:

- Topographic mapping (OBM, NTS);
- Aerial photography;
- Natural Heritage Information Centre (NHIC) data (Significant Areas and Species at Risk);
- Species at Risk range maps and habitat descriptions;
- Species at Risk Regional Lists (MNRF);
- Land Information Ontario (LIO) feature and base mapping;
- Provincially Significant Wetland (PSW) Evaluation Documents for Guelph Northeast Complex (MNR 2002);
- City of Guelph Natural Heritage Strategy, Phase 2 Final Report (Dougan and Associates, March 2009);
- Clythe Creek Subwatershed Overview, 1998;
- GRCA GRIN mapping (regulation, wetlands, watercourses);
- Ontario Breeding Bird Atlas;
- Ontario Reptile and Amphibian Atlas;
- Ontario Butterfly Atlas;
- Relevant municipal and provincial policy documents and legislation;
- Past reports for adjacent properties.

Background and other data sources are listed in the References section of this report.

2.2 AGENCY LIAISON

As part of the natural environment review and assessment, the following agency consultation has occurred:

- **Pre-consultation Summary**. A pre-consultation summary was provided by the City of Guelph on August 15, 2017 that provided guidance for preparation of the Terms of Reference.

- **Terms of Reference Circulation and Review**. A Terms of Reference (TOR) was prepared by the project team and circulated to the City of Guelph, Environmental Advisory Committee (EAC), and GRCA for review and comment on October 31, 2017. It outlined the planning context and detailed the scope of work (background data collection, agency liaison, field survey program, data review and EIS report structure).
- **Environmental Advisory Committee (EAC) Meeting**. WSP presented the draft Terms of Reference (previously circulated to EAC) on January 10, 2018. The revised TOR was approved on May 7, 2018. The Terms of Reference is included in Appendix B.
- **MNRF Consultation**. Guelph District MNRF was contacted on October 11, 2017 to request information on provincially tracked species and Species at Risk (SAR) known from the subject property, and to request guidance on Yellow-banded Bumblebee survey protocol.
- **GRCA Consultation.** GRCA (Nathan Garland, Policy Planner) was contacted October 11, 2017 to request information any available natural heritage information pertinent to the study area.
- **Agency Site Walk**. A Site walk with GRCA and the City of Guelph was held on July 16, 2018 to confirm woodland and wetland limits.
- **Meeting with City of Guelph**. A meeting was held with the City of Guelph on December 6, 2018, to discuss natural feature limits, buffer widths and other planning-related issues.

2.3 FIELD SURVEYS

Field surveys completed as part of this study are listed below. Detailed descriptions of the field survey methodologies and results for vegetation, flora, and wildlife are provided in Section 4.5. Field methodologies and results for the tree management plan / multi-use trail design and hydrogeology are presented under separate cover (Appendices H and J, respectively), with results briefly described in Section 4.

- Vegetation and Flora
    - Ecological Land Classification (ELC) mapping and community description
    - Botanical inventory (3 season survey)
    - Wetland and Woodland boundary delineation
- Wildlife
    - Avifaunal surveys (breeding birds, winter raptor)
    - Herpetofauna surveys (amphibian calling surveys, amphibian breeding habitat assessment, snake habitat assessment)
    - Bat cavity tree assessment

- Yellow-banded Bumblebee surveys
- Terrestrial crayfish habitat assessment
- Lepidoptera and Odonata habitat assessment
- Monarch habitat assessment (milkweed concentrations)
- SAR habitat assessment (conducted during all field visits)
- Significant Wildlife Habitat (SWH) assessment (conducted during all field visits)
- Other incidental wildlife observations (conducted during all field visits)

3 CONTEXT AND PLANNING FRAMEWORK

This section provides an overview of the relevant planning policy and legislation that was reviewed in the completion of this study. These policies are reviewed in detail in relation to the proposed development in Section 7.

3.1 FISHERIES ACT, 1985

The Canadian Fisheries Act provides provisions for the protection of fish and fish habitat. Section 35 (1) of the Fisheries Act states:

> *"No person shall carry on any work, undertaking or activity that results in serious harm to fish that are part of a commercial, recreational or Aboriginal fishery, or to fish that support such a fishery."*

The Act interprets 'serious harm to fish' as "the death of fish or any permanent alteration to, or destruction of, fish habitat."

Proponents that plan to undertake activities in or near water have potential to negatively affect fisheries, as such, are responsible for avoiding, mitigating, and offsetting 'serious harm to fish.' Avoidance is achieved by undertaking measures which completely prevent serious harm to fish. These measures include project design considerations, location of activity, and timing of works. Mitigation is implemented by following best practices such as those described in the 'measures to avoid harm' to fish and fish habitat. Any residual impacts are then required to be addressed by appropriate offsetting measures. An offsetting measure is one that counterbalances serious harm to fish resulting from a project, where serious harm remains after all feasible mitigation measures have been applied.

3.2 MIGRATORY BIRDS CONVENTION ACT (MBCA), 1994

The Migratory Birds Convention Act, MBCA (1994) and Migratory Birds Regulations, MBR (2014) protect most species of migratory birds anywhere they are found in Canada, including surrounding ocean waters, regardless of ownership. General prohibitions under the MBCA and MBR protect migratory birds, their nests and eggs and prohibit the deposit of harmful substances in waters / areas frequented by them.

The MBR includes an additional prohibition against incidental take, defined by Environmental Canada as:

> "*The inadvertent harming, killing, disturbance or destruction of migratory birds, nests and eggs*."

Environment Canada implements policies and guidelines to protect migratory birds, their eggs

and their nests. There is guidance on the Environment Canada website to minimize the risk of incidental take effects on migratory birds, achieve compliance with the law and maintain sustainable populations of migratory birds.

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

3.3 SPECIES AT RISK ACT (SARA), 2002

The federal Species at Risk Act (SARA) incorporates several prohibitions to protect individuals of listed threatened, endangered or extirpated Species at Risk (per Schedule 1 of the Species at Risk Act), including:

- Section 32(1). No person shall kill, harm, harass, capture or take an individual of a Threatened, Endangered or Extirpated species.
- Section 32(2). No person shall possess, collect, buy, sell or trade an individual of a Threatened, Endangered or Extirpated species, or any part or derivative of such an individual.
- Section 33. No person shall damage or destroy the residence of one or more individuals of a Threatened or Endangered species, or of an Extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.
- Section 58. No person shall destroy any part of the critical habitat of any listed Endangered species or of any listed Threatened species – or of any listed Extirpated species if a recovery strategy has recommended the reintroduction of the species into the wild in Canada.

Per Section 34, Section 58 and Section 61, these prohibitions apply to:

1. Aquatic species – on any lands
2. Species of migratory birds protected by the Migratory Birds Convention Act – on any lands
3. Any listed wildlife species – when on federal lands
4. Any listed wildlife species – when on non-federal lands, if recommended by the Minister of the Environment to the Governor in Council.

3.4 ENDANGERED SPECIES ACT (ESA), 2007

Species listed under Ontario Regulation 230/08 of the Endangered Species Act, otherwise known as Species at Risk in Ontario (SARO), and their habitats (e.g. areas essential for breeding, rearing, feeding, hibernation and migration) are automatically afforded legal protection under the Endangered Species Act (ESA) (Government of Ontario, 2007). ESA Subsection 9(1) states that:

"No person shall,

(a) kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species;

(b) possess, transport, collect, buy, sell, lease, trade or offer to buy, sell, lease or trade,

(i) a living or dead member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species,

(ii) any part of a living or dead member of a species referred to in subclause (i),

(iii) anything derived from a living or dead member of a species referred to in subclause (i); or

(c) sell, lease, trade or offer to sell, lease or trade anything that the person represents to be a thing described in subclause (b) (i), (ii) or (iii).

Clause 10(1) (a) of the ESA states that:

"No person shall 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"

The ESA also calls for the development of species-specific Recovery Strategies and Habitat Regulations. Unlike the *general habitat* of a species, *regulated habitat* may include areas that are currently unoccupied by the species. These areas are commonly referred to as "recovery habitat."

To balance social and economic considerations with protection and recovery goals, the ESA also enables the MNRF to issue permits or enter into agreements with proponents to authorize activities that would otherwise be prohibited by subsections 9(1) or 10(1) of the Act provided the legal requirements of the Act are met.

3.5 PROVINCIAL POLICY STATEMENT (PPS), 2014

The Provincial Policy Statement (PPS) was issued under Section 3 of the Planning Act; the current PPS came into effect April 30, 2014. Key natural heritage policies are discussed below with an evaluation in Section 6.5.

Per Section 2.1.4 of the PPS, development and site alteration shall not be permitted in:

1. significant wetlands in Ecoregions 5E, 6E and 7E; and
2. significant coastal wetlands.

Per Section 2.1.5 of the PPS, development and site alteration shall not be permitted in:

3. significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
4. significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
5. significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);

6. significant wildlife habitat;
7. significant areas of natural and scientific interest; and
8. coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b)

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

Per Section 2.1.6 of the PPS, "Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements."

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

Per Section 2.1.8 of the PPS, "Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4, 2.1.5, and 2.1.6 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions."

3.6 CITY OF GUELPH OFFICIAL PLAN (MARCH 2018 CONSOLIDATION) AND ASSOCIATED DOCUMENTS

The City of Guelph Official Plan (March 2018 Consolidation) provides goals, objectives and policies to direct land use change and activity in the City of Guelph. Of relevance to this Scoped EIS are the directions regarding consideration of the natural environment in the land development process (Section 4 of the Official Plan). This includes the Natural Heritage System and associated background documents (i.e., Guelph Natural Heritage Strategy Phase 2 Report (Dougan and Associates, 2009)). Also relevant is the City of Guelph's Guidelines for the Preparation of Environmental Impact Studies (2017) which supports and assists the implementation of the Natural Heritage System policies contained in the Official Plan.

Schedule 4 of the City of Guelph's Official Plan (March 2018 Consolidation) identifies the approximate limits of the City's *Natural Heritage System* (NHS) on the subject property. Per Section 4.1 of the City of Guelph's Official Plan (March 2018 Consolidation): "the Natural Heritage System is made up of natural heritage features and areas, linked by natural corridors which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems within the City of Guelph" (p. 27). The NHS is comprised of two components; *Significant Natural Areas* and *Natural Areas*. As discussed in Section 4.4, two natural heritage features that comprise the *Significant Natural Areas* designation are present on the subject property (i.e. Significant Woodlands, Significant Wetlands).

Also of note is the Trail Network Map (Schedule 6) which identifies a "proposed city trail" along the perimeter of the Natural Heritage System on the subject property. This conceptual trail alignment links westerly to Carter Drive and easterly to an existing city trail.

3.7 GRAND RIVER CONSERVATION AUTHORITY (GRCA) REGULATIONS AND POLICIES

The Grand River Conservation Authority (GRCA) regulates development and/or interference with wetlands in accordance with Ontario Regulation 150/06 made under the Conservation Authorities Act. The regulation applies to areas that are adjacent or close to shorelines of lakes, river or stream valleys, wetlands, hazard lands, and other areas where development could interfere with the hydrologic function of a wetland.

The "*Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation*" (GRCA, 2015) document provides further direction on the implementation of Ontario Regulation 150/06. This was also considered in the completion of this scoped EIS.

4 EXISTING CONDITIONS

4.1 PAST AND PRESENT LAND USE

The subject property is approximately 3.25 ha in size, located near the northeastern edge of Guelph, and is comprised of two residential lots (78 and 82 Eastview). Each property has a vacant residence fronting on Eastview Rd, and associated outbuildings. The immediate area around 78 Eastview consists of mown lawn. The remainder of the property consists of natural area, including forest, wetlands, cultural thicket and cultural woodland. 82 Eastview consists cultural meadow being maintained by occasional mowing.

The former resident of 82 Eastview, Mr. Silvano Zilio, who lived at the property from the 1950's until 2018, provided historical information about the property and area in general, including the following:

- the former land owner (who purchased the property in or around 1917) had grown potatoes on the field.
- after cessation of potato-growing, the field was used as a horse pasture.
- firewood was logged from the natural area to heat his home and that of his neighbours.
- the natural area on 78 Eastview was seeded with Poplar seed as part of restoration efforts (this area is now dominated by Trembling Aspen and Balsam Poplar). Further details on the restoration are not known, however, it appears to have occurred post-1954 (a 1954 air photo shows this area mostly devoid of tree cover) (pers. comm., S. Zilio, May 14, 2018).

4.2 PHYSIOGRAPHY AND GEOLOGY

The study area is in the physiographic region of Guelph Drumlin Field as per Chapman and Putnam (1984). The drumlins in the region are aligned in the North-West direction. The drumlins are sparse with extensive low-lying areas that are covered by fluvial materials. The field is characterized by parallel valleys running at near right angles to the trend of the drumlins. The bottoms of these valleys are found to be swampy (Chapman and Putnam,1984). Chapman and Putnam (1984) describe the area as a sloping plain with the topography varying between 1,000 and 1,400 feet above sea level.

The surficial geology of the study area consists of glaciofluvial deposits. These deposits include proglacial and deltaic deposits primarily composed of sand and gravel. The study area is also encompassed by Wentworth Till which is characterized by a silt to sandy silt matrix and low to moderate clast content. The bedrock underlying the study area belongs to the Guelph Formation (Silurian age) that consists of buff to cream colored crystalline dolomite.

The meadow area is on fill, probable fill or reworked soils, as confirmed through the geotechnical investigations (Geopro, 2017; Geopro, 2018).

4.3 HYDROGEOLOGY

4.3.1 BACKGROUND

Several hydrogeological and geotechnical studies have been completed for the subject property and were incorporated into the background review. These included:

- *Preliminary Geotechnical Investigation, Proposed Subdivision Development, 82 Eastview Road* (GeoPro, 2016)
- *Preliminary Geotechnical Investigation, Proposed Subdivision Development, 78 Eastview Road* (GeoPro, 2017)
- *78-82 Eastview Road, Guelph, Ontario. Groundwater and Soil Sampling Report* (Premier Environmental Services, 2017)
- *Scoped Hydrogeology Study: Proposed Development 66 Eastview Road Guelph, Ontario* (LVM Inc. 2012)
- *Preliminary Geotechnical Investigation Report: Proposed Development 66 Eastview Road Guelph, Ontario* (LVM Inc. 2012)

Key results of the studies are provided below, additional details and borehole information can be found in the above referenced reports.

78 Eastview

The proposed development area on 78 Eastview has a topsoil thickness of 180 mm to 260 mm. It is underlain by fill and probable fill materials consisting of “sandy silt” and “silty sand and sandy silt to sand and silt” ranging from a depth of about 1.1 m to 2.3 m below the existing ground surface. Confirmed sandy silt till extends to a depth of at least 4.0 m below the existing ground surface on part of the property (Borehole 1 was drilled to a depth of 4.0 m and terminated in this fill).

Groundwater was encountered in one of the three boreholes. Borehole 1 encountered groundwater at a depth of 2.4 m below the existing ground surface. Groundwater levels can vary and are subject to seasonal fluctuations in response to weather events.

82 Eastview

The proposed development area on 82 Eastview has a topsoil thickness of 460 mm to 610 mm. It is underlain by reworked sandy silt deposits (Boreholes 1 and 2) to a depth of 0.7 m below the existing ground surface, and organic silt fill material (Boreholes 3 and 4) to depths ranging from about 0.7 m to 1.8 m below the existing ground surface. Various compositions of sand, silt, clay, and gravel were found below the reworked deposits and fill material.

Groundwater was encountered in three of the four boreholes. Borehole 1 encountered groundwater at a depth of 2.1 m below the existing ground surface, Borehole 3 at 3.0 m below

the existing surface, and Borehole 4 at 4.0 m below the existing ground surface. Groundwater levels can vary and are subject to seasonal fluctuations in response to weather events.

4.3.2 RESULTS OF FIELD INVESTIGATIONS

The hydrogeology report (WSP, 2019) has been provided in Appendix H of this report. Results of field investigations are provided in Section 5.4. Conclusions and recommendations are provided in Section 7.2.5.

4.4 TREE INVENTORY AND MULTI-USE TRAIL

4.4.1 RESULTS OF FIELD INVESTIGATIONS

The Tree Management Plan (WSP, 2019) has been provided in Appendix J of this report and summarized results are provided below, with conclusions and recommendations provided in Section 7.2.7 and 7.2.8.

A total of thirty-three (33) trees and nineteen (19) tree groups were inventoried. Trees in accessible locations were tagged using aluminum numbered tags affixed to the tree (1157-1185). Trees out of reach of an adjacent property were not tagged, but were given a number and located on the Tree Management Plans (T1-T15). The drip line edge was identified in the field for areas containing multiple trees in close proximity. These areas were given a grouping number. Individual trees were located in the field using the following criteria; the tree is out in the open, a regionally significant species, of significant size or near a property line. Both individual trees and the drip line edge are referenced in the Tree Management Plans.

A total of 81 trees are recommended for removal across 10 vegetation groups.

4.4.2 MULTI-USE TRAIL

As part of the development, a trail connection conforming to the Guelph Trail Master Plan is required. The proposed trail is located within the 10m woodlot buffer and connects existing trails to the south of the property and informal trails to the north which will become formalized as those properties are developed. Three different proposed trail spurs provide connection to proposed residential parking and proposed park amenity. The trail will be installed primarily on existing grades with spurs constructed within proposed slopes to facilitate connections. The 2.5m wide multi-use trail will be constructed per the layout/detail plans in the Tree Management Plan (WSP, 2019; Appendix J). Construction of the trail requires the removal of group G24 and Tree #1185 as per L-220 (see Appendix A in the Tree Management Plan). Minor field fitting is to occur in order to minimize the impacts of development.

4.5 ENVIRONMENTAL DESIGNATIONS

Based on a review of background information and agency consultation, several designated features were identified on or adjacent to the subject property. They are associated with the forested and wetland portions of the property.

Guelph Northeast Provincially Significant Wetland (PSW) Complex

A portion of the subject property is located within the boundaries of the Guelph Northeast PSW Complex, as identified on the GRCA mapping presented in Appendix A, Figure 1. The wetland complex is composed of two wetland types; swamp (90%) and marsh (10%). For additional information please refer to the Wetland Data Record and Evaluation – Guelph Northeast Complex (Timmerman and Ross, 2002).

City of Guelph Natural Heritage System (NHS) and Associated Designations

A portion of the property is identified on Schedule 4 of the City of Guelph Official Plan (March 2018 Consolidation) as Natural Heritage System (NHS). The NHS is comprised of two components; Significant Natural Areas and Natural Areas. Each of these components consist of several sub-components.

Two of the sub-components that comprise the Significant Natural Areas designation are identified as being present on the subject property: Significant Woodlands (as identified on Schedule 4C of the Official Plan), and Significant Wetlands (i.e. Provincially Significant Wetlands and City of Guelph Locally Significant Wetlands, as identified on Schedule 4A of the Official Plan). These designations are associated with wooded portions of the subject property that will be retained and protected with setbacks and other mitigation measures.

A brief description of these features is provided below. No Natural Areas as defined in the City of Guelph Official Plan (March 2018 Consolidation) mapping (Schedule 4) are identified as being present on the subject property.

Significant Woodlands

Significant Woodlands on the subject property are identified on Schedule 4C of the Official Plan (March 2018 Consolidation) mapping. Limits of Significant Woodlands on the subject property were confirmed, with minor refinements during ELC field work, and based on significant woodland designation criteria guidance in Section 4.1.3.6 of the Official Plan (March 2018 Consolidation). The refined dripline on the subject property was flagged in the field, verified during a site walk with City of Guelph staff on July 16, 2018, and total station surveyed. The refined limits of this feature are presented on Figure 2 (as 'surveyed significant woodland limit'), and this limit has been incorporated into draft plans to inform development setbacks.

Significant Wetlands (PSW and City of Guelph Defined Locally Significant Wetlands)

Approximate limits of Significant Wetlands (PSW and LSW) are present on the subject property as identified on Schedule 4A of Official Plan (March 2018 Consolidation) mapping. These approximate limits were confirmed / refined on the subject property according to the Ontario

Wetland Evaluation System (OWES) protocols. This feature was field assessed by WSP, confirmed by GRCA staff during a site walk on July 16, 2018 and total station surveyed. The confirmed limits of this feature are presented on Figure 2 (as 'surveyed wetland limit'), and this limit has been incorporated into draft plans to inform development setbacks.

GRCA Regulated Area

In addition to the designated areas, a portion of the subject property is located within GRCA regulated areas. This regulated area is associated with the wetland features and associated buffers.

4.6 ECOLOGICAL FIELD INVESTIGATIONS

4.6.1 VEGETATION

Vegetation surveys of the study area were completed on the following dates:

2017

- August 28

2018

- May 14, July 9, July 16, July 30, and July 31

The total vegetation survey field effort was approximately 25 hours.

METHODOLOGY

The scope of the field surveys included:

- Delineating and classifying vegetation communities using the Ecological Land Classification (ELC) System for Southern Ontario (Lee et al., 1998). Soils were examined to support ecological land classification. Vegetation communities are described in Table 1 and delineated on Figure 1 (Appendix A).
- Evaluating the sensitivity and significance of vegetation communities, with guidance from the Natural Heritage Information Centre (NHIC) (vegetation community rarity ranks).
- Completing a three-season botanical inventory and compiling a vascular plant list, included in Appendix D.
- Evaluating significance and sensitivity of flora recorded during the field review, using the NHIC website (updated periodically), and the Significant Plant List for Wellington County (Dougan and Associates 2009).
- Delineating the limits of wetland present on the subject property according to the Ontario Wetland Evaluation System (OWES) protocols. Wetlands on the subject property were field assessed by WSP, confirmed by GRCA staff during a field walk on July 16, 2018,

total station surveyed and plotted on base plans.

- Delineating the woodland limits on the subject property according to the requirements identified in City of Guelph Official Plan (March 2018 Consolidation). Woodlands on the subject property were field assessed by WSP, confirmed by City of Guelph staff during a field walk on July 16, 2018, total station surveyed and plotted on base plans.
- Taking representative site photographs, which are on file at WSP.

RESULTS – FLORA

In total, 152 vascular plant species were recorded during the WSP field review, with an additional 16 identified to the genus level only. A list of all species recorded is provided in Appendix D. Summary statistics for these species are provided below.

- Of the 152 species recorded, 67 (44%) are non-native species, many of which are typical of old field and disturbed areas. These species are generally widespread and abundant in the cultural habitats of the study area.
- Of the 85 native species recorded, 80 (94%) are considered 'secure, common and widespread' in Ontario (ranked S5 or S5?) and 3 (4%) are considered 'apparently secure, uncommon but not rare' in Ontario (S4 or S4?).
- One species, Freeman's Maple (*Acer x freemanii*) has a provincial ranking of SU (Currently unrankable due to lack of information or due to substantially conflicting information about status or trends).
- No species are federal or provincial SAR.
- One species, Cup Plant (*Silphium perfoliatum*) has a provincial ranking of S2 (Imperiled), however it is a garden escapee into cultural woodland adjacent to a residential backyard (Unit 26).
- One species, Common Hackberry (*Celtis occidentalis*) is considered significant in Wellington County (Dougan and Associates, 2009), however, it is a planted specimen in a cultural meadow (Unit 28). Three additional species that are considered significant in Wellington County were identified during fieldwork for the 66 Eastview EIS (Ecoplans, 2013): Hop Sedge (*Carex lupulina*), Mountain Ash (*Sorbus americana*), and Rough-leaved Goldenrod (*Solidago patula*).

RESULTS – VEGETATION COMMUNITIES

Vegetation communities are shown on Figure 1 in Appendix A and described in Table 1.

In total, 25 Vegetation Units have been delineated and described; some are relatively homogeneous, with or without habitat inclusions; and some are complexes / mosaics of different habitat types.

A total of 10 Vegetation Community Types were classified within the study area:

- Forest

    - FOC4-1 Fresh-Moist White Cedar Coniferous Forest
    - FOD8-1 Fresh-Moist Poplar Deciduous Forest

- Swamp
    - SWD3-3 Swamp Maple Mineral Deciduous Swamp
    - SWD4-1 Willow Mineral Deciduous Swamp
    - SWD4-3 White Birch-Poplar Mineral Deciduous Swamp
    - SWT2-8 Silky Dogwood Mineral Thicket Swamp

- Cultural
    - CUM1-1 Dry-Moist Old Field Meadow
    - CUS1 Mineral Cultural Savannah
    - CUT1 Mineral Cultural Thicket
    - CUW1 Mineral Cultural Woodland

One of these communities is ranked as S3S4 (meaning that it falls between ‘rare to uncommon’ and ‘apparently secure’) (per NHIC, 2018):

- SWT2-8 Silky Dogwood Mineral Thicket Swamp

Table 1: Vegetation Community Descriptions

UNIT	ELC VEGETATION TYPE	COMPONENT (% COVER)	COMPONENT SPECIES	PLANT SPECIES OF CONSERVATION CONCERN	DESIGNATIONS	ADDITIONAL DESCRIPTION AND COMMENTS
1	CUW1	**Sub-Canopy** (25-35%)	Northern White Cedar, Scot's Pine, Black Cherry		Unit 1: Overlaps with 30m wetland buffer and 10m woodland buffer.	Unit 1 a young community. Relative health and sensitivity considered low-moderate. Regenerating young cultural woodland dominated by Eastern White Cedar with occasional Scots Pine, and Black Cherry associates. Heavily disturbed by clearing and dumping.
		Understory (25-25%)	Common Buckthorn, Tartarian Honeysuckle, Chokecherry			
		Ground Layer (1-10%)	Tall Buttercup, Queen Anne's Lace			
2	**SWD4-1** Inclusions: SWT2-2 MAM2-2	**Canopy** (35-60%)	>75% deciduous: White Willow, Trembling Aspen, Balsam Poplar, Manitoba Maple		**Contained within PSW and NHS.**	A mid-aged, willow dominated deciduous swamp community surrounding an old constructed pond area. The constructed pond has two "cells" separated by an earthen berm. The south cell supports a willow mineral thicket swamp inclusion dominated by cottony willow, the north cell supports a reed canary grass meadow math inclusion. Frequent tires dumped in cells.
		Sub-Canopy (10-25%)	Manitoba Maple, American Basswood, Balsam Poplar, Glossy Buckthorn			
		Understory (60-75%)	Silky Dogwood, Cottony Willow, Buckthorn			
		Ground Layer (60-75%)	Variable cover; Treed areas generally have dense understory with limited ground layer dominated by Buckthorn regeneration. Inclusions support dense cover of Reed Canary Grass.			
3, 7b	CUT1	**Sub-Canopy** (35-60%)	Trembling Aspen		Unit 3: Overlaps with 30m wetland buffer and 10m woodland buffer. Unit 7b: Overlaps with 30m wetland buffer and 10m woodland buffer.	Unit 3 and Unit 7b are pioneer communities. Relative sensitivity considered low. Unit 3 was formerly a meadow community (66 Eastview 2013 EIS), and is regenerating with Trembling Aspen saplings that have seeded in from the adjacent natural area. Unit 7b is similar, but with more species diversity. In addition to Trembling Aspen, there is also White Birch, Black Cherry and Green Ash regeneration, and the ground layer contains many species of forbs. Both communities provide good insect habitat, with insect diversity highest in Unit 7b.
		Understory (10-25%)	Trembling Aspen			
		Ground Layer (75-100%)	Kentucky Bluegrass, Tall Goldenrod			
4, 16	CUS1	**Sub-Canopy** (35-60%)	White Cedar, Scot's Pine, White Birch, Black Cherry		Unit 4: Overlaps with 30m wetland buffer.	Unit 4 and Unit 16 are pioneer communities. Planted Sugar Maples are present in Unit 16. Relative health and sensitivity considered low - moderate. Unit 4 has a fire pit and associated debris. Unit 16 has residential lawn waste dumping.
		Understory (25-60%)	White Cedar, Scot's Pine, White Birch, Tartarian Honeysuckle			
		Ground Layer (60-100%)	Grasses, Queen Anne's Lace, Knapweed, Common Yarrow			

UNIT	ELC VEGETATION TYPE	COMPONENT (% COVER)	COMPONENT SPECIES	PLANT SPECIES OF CONSERVATION CONCERN	DESIGNATIONS	ADDITIONAL DESCRIPTION AND COMMENTS
5, 29	**SWD4-3**	**Canopy** (35-60%)	>75% deciduous: Balsam Poplar > Trembling Aspen	Unit 29: Regionally Significant Species: Hop Sedge, Rough-leaved Goldenrod (per 66 Eastview 2013 EIS)	**Units 5 & 29: Contained within PSW and NHS.**	Young communities. Relative health considered moderate; Relative sensitivity considered high. Unit 5 is somewhat disturbed, occupying the narrow low-lying area between two rural residential lots. It has low canopy cover and very dense understory of Buckthorn (abundant and widespread). Grading within adjacent property (to east) has apparently altered drainage/soil moisture conditions within unit. Unit 29 has low canopy cover and a moderate understory of Buckthorn.
		Sub-Canopy (35-60%)	Balsam Poplar, Trembling Aspen, Riverbank Grape			
		Understory (75-100%)	Buckthorn, Silky Dogwood, Northern White Cedar			
		Ground Layer (25-35%)	Rough Goldenrod, Sedge spp., Buckthorn (regeneration)			
6, 11	**CUW1**	**Canopy** (35-60%)	Trembling Aspen, Green Ash		Units 6 & 11: Overlap with 30m wetland buffer and 10m woodland buffer.	Young communities. Relative health and sensitivity considered low - moderate. Disturbed deciduous cultural woodland with frequent gaps and a ground layer dominated by tolerant species. Frequent and widespread invasive species (i.e. Buckthorn, Glossy Buckthorn and Tartarian Honeysuckle). Unit 6 with frequent piles of old construction materials apparently associated with adjacent residential property - woodland has grown up around the piles. Unit 11 has a very dense Buckthorn understory.
		Sub-Canopy (10-25%)	Trembling Aspen, Green Ash			
		Understory (60-100%)	Buckthorn, Glossy Buckthorn, Tartarian Honeysuckle, Green Ash, Red Osier Dogwood			
		Ground Layer (60-75%)	Buckthorn (regeneration), Tall Goldenrod, Kentucky Bluegrass, Virginia Strawberry			
7a, 28	**CUM1-1**	**Ground Layer** (75-100%)	Grass sp. (including Kentucky Bluegrass, Orchard Grass, Timothy Grass), Bird's-foot Trefoil, Knapweed, Dandelion, Virginia Strawberry		Units 7a and 28: Overlap with 30m wetland buffer and 10m woodland buffer.	Pioneer communities. Relative health considered moderate; Relative sensitivity considered low. Unit 7a: Old field associated with a vacant residential lot, occasionally mowed. Unit 28: Old field regenerating with woody vegetation. Planted saplings also present. Both communities provide good insect habitat. Yellow-banded Bumblebee, a Species at Risk, was observed nectaring on Knapweed within Unit 28.
8	**Hedgerow**		Primarily composed of live and dead Green Ash, Manitoba Maple, and Black Cherry, with an understory and ground layer of Buckthorn, Chokecherry, and Tall Goldenrod			Many dead and dying Ash trees (being killed off by the non-native Emerald Ash Borer beetle). Understory and ground layer are dominated by Buckthorn, an invasive species.
12	**CUW1**	**Sub-Canopy** (35-60%)	Buckthorn, Tartarian Honeysuckle, Manitoba Maple		Overlaps with 30m wetland buffer.	Young community; Relative health considered moderate; Relative sensitivity considered low. A small cultural thicket dominated by invasive species (i.e. Buckthorn and Tartarian Honeysuckle).

UNIT	ELC VEGETATION TYPE	COMPONENT (% COVER)	COMPONENT SPECIES	PLANT SPECIES OF CONSERVATION CONCERN	DESIGNATIONS	ADDITIONAL DESCRIPTION AND COMMENTS
		Understory (60-75%)	Buckthorn, Tartarian Honeysuckle, Riverbank Grape, Thicket Creeper, Alternate-leaved Dogwood			Occasional old garbage.
		Ground Layer (35-60%)	Buckthorn (regeneration), Chokecherry			
13, 14, 22	**FOC4-1**	**Canopy** (1-10%)	Trembling Aspen, Black Cherry		Units 13, 14 & 22: **Contained within NHS**; overlap with 30m wetland buffer.	Young communities. Relative health and sensitivity considered moderate. Northern White Cedar dominated forest with sparse understory and ground layer. Low botanical diversity. Occasional invasive species (i.e. Buckthorn). Several tree forts present in unit 14.
		Sub-Canopy (80-100%)	>75% coniferous: Northern White Cedar			
		Understory (1-10%)	Northern White Cedar, Buckthorn			
		Ground Layer (1-10%)	Sedge sp., Buckthorn			
15	**SWT2-8**	**Canopy** (10-25%)	Green Ash, Freeman's Maple, Trembling Aspen, Peach-leaved Willow	Regionally Significant Species: Rough-leaved Goldenrod, Hop Sedge (per 66 Eastview EIS, 2013)	**Contained within PSW and NHS.**	Mid-aged community. Relative health and sensitivity considered high. A large silky dogwood thicket swamp with relatively low levels of disturbance and a diverse assemblage of hydrophilic ground layer species. Occasional Buckthorn and Glossy Buckthorn are widespread throughout unit but are not abundant. Well-defined, informal trail bisects unit.
		Sub-Canopy (60-100%)	Silky Dogwood, Buckthorn, Glossy Buckthorn			
		Understory (25-60%)	Silky Dogwood, Red-osier Dogwood, Black Elderberry, Glossy Buckthorn			
		Ground Layer (60-75%)	Spotted Jewelweed, Fowl Manna Grass, Sensitive Fern, Climbing Nightshade, Rice Cutgrass			
17, 26	**CUW1**	**Canopy** (35-60%)	>75% deciduous: Manitoba Maple, Eastern Cottonwood, Trembling Aspen > Black Locust		Overlaps with 30 m wetland buffer	Young to mid-aged community. Relative health and sensitivity considered low. Two similar cultural woodland units. Unit 17 is a disturbed, narrow band of cultural woodland, dominated by Manitoba Maple, situated along a steep embankment. Abundant garbage dumped throughout unit. Frequent invasive species (i.e. Buckthorn in understory and Black Locust in canopy). Canopy gaps support typical old field species. Road noise prevalent. Unit 26 is similar, a disturbed, narrow band located along the west edge of 66 Eastview Rd. A large patch of Goutweed noted. Unit 26 is almost entirely dominated by Manitoba Maple. Frequent dumping of garden waste and other garbage from top of slope.
		Sub-Canopy (10-25%)	Manitoba Maple dominates			
		Understory (25-35%)	Buckthorn > Manitoba Maple, Riverbank Grape >> Red-osier Dogwood			
		Ground Layer (35-60%)	Colt's Foot > Virginia Strawberry, Wood Avens, Enchanter's Nightshade			

UNIT	ELC VEGETATION TYPE	COMPONENT (% COVER)	COMPONENT SPECIES	PLANT SPECIES OF CONSERVATION CONCERN	DESIGNATIONS	ADDITIONAL DESCRIPTION AND COMMENTS
19, 21, 25	**FOD8-1**	**Canopy** (25-60%)	>75% deciduous: Trembling Aspen, Balsam Poplar	Regionally Significant Species: Rough-leaved Goldenrod (recorded in Unit 19 and 25, per 66 Eastview EIS, 2013)	Unit 19, 21 & 23: **Contained within NHS**; Overlaps with 30m wetland buffer.	Young communities. Relative health considered low; Relative sensitivity considered moderate. Disturbed deciduous forest. Abundant mature and regenerating invasive species (i.e. Buckthorn). Low botanical diversity overall.
		Sub-Canopy (25-80%)	Buckthorn, Balsam Poplar, White Birch, Green Ash			
		Understory (60-100%)	Buckthorn, Trembling Aspen, Balsam Poplar, Green Ash, European Privet, Chokecherry			
		Ground Layer (60-75%)	Buckthorn (regeneration), Green Ash, Glossy Buckthorn, Chokecherry, Tall Buttercup			
20	**SWD3-3**	**Canopy** (25-60%)	>75% deciduous: Freeman's Maple dominates	Regionally Significant Species: Rough-leaved Goldenrod, Hop Sedge (per 66 Eastview EIS, 2013)	**Contained within PSW.**	Mid-aged to mature community. Relative health and sensitivity considered high. Deciduous swamp with relatively low levels of disturbance. Mineral soils saturated but no standing water observed at time of survey. Invasive species (i.e. Buckthorn and Glossy Buckthorn) present in understory, but not abundant.
		Sub-Canopy (60-100%)	Freeman's Maple dominates			
		Understory (10-25%)	Green Ash, Glossy Buckthorn, Thicket Creeper, Silky Dogwood			
		Ground Layer (35-60%)	Fowl Manna Grass, Rice Cutgrass, Sensitive Fern, Northern Bugleweed, Green Ash			
27	**CUT1**	**Canopy** (10-25%)	Trembling Aspen, Green Ash, Manitoba Maple, American Basswood, Scot's Pine		**Overlaps with NHS and with 30 m wetland buffer.**	Pioneer community. Relative health and sensitivity considered low. A band of Buckthorn dominated cultural thicket with occasional young deciduous and coniferous trees along the western edge of 66 Eastview. Invasive species (i.e. Buckthorn) widespread and abundant throughout unit. Trash and dumping (including lawn waste) occasional throughout.
		Sub-Canopy (25-35%)	Buckthorn, Scot's Pine, Trembling Aspen, Green Ash			
		Understory (75-100%)	Buckthorn, Manitoba Maple, Riverbank Grape > Red-osier Dogwood			
		Ground Layer (60-100%)	Buckthorn (regeneration), Canada Goldenrod, Tall Goldenrod, St John's Wort			
30	**CUT1**	**Canopy** (10-25%)	Black Cherry, Northern White Cedar, Manitoba Maple, Green Ash	Regionally Significant Species: American Mountain-ash (per 66 Eastview 2013 EIS)	Overlaps with 30m wetland buffer.	Pioneer community. Relative health considered moderate; Relative sensitivity considered low. A regenerating old field area with approximately 50% cover of shrubs and young trees. Sandy loam soils. Occasional old piles of construction waste (bricks, scrap wood). Occasional informal trails through
		Understory (35-60%)	Northern White Cedar, Buckthorn, Riverbank Grape			

UNIT	ELC VEGETATION TYPE	COMPONENT (% COVER)	COMPONENT SPECIES	PLANT SPECIES OF CONSERVATION CONCERN	DESIGNATIONS	ADDITIONAL DESCRIPTION AND COMMENTS
		Ground Layer (75-100%)	Grasses (including Canada Bluegrass, Kentucky Bluegrass, Orchard Grass), Canada Goldenrod, Field Goldenrod, English Plantain			unit. Road noise prevalent.
31	**Hedgerow**		Primarily composed of mid-aged Eastern White Cedar			A single narrow, dense row of Eastern White Cedar. Approximately 6 m high.

4.6.2 WILDLIFE

4.6.2.1 AVIFAUNA

METHODOLOGY

Winter Raptor Surveys

The Significant Wildlife Habitat criterion assessment for Raptor Wintering Areas (MNRF, 2015) focuses on candidate areas consisting of large (>20 ha) contiguous areas of forest and meadow habitat. There are no areas within the study area that meet the criteria for candidate Raptor Wintering Areas under the Significant Wildlife Habitat Ecoregion 6E Criterion Schedules (MNRF, 2015). The study area consists primarily of old field habitat that is occasionally mown, surrounded by woodland and wetland vegetation communities, most of which does not meet the Ecosite criteria for SWH. However, candidate habitat for Raptor Wintering Areas may be present northeast of the study area in Pollinator Park, where suitable grassland restoration / naturalization areas occur. This area was included in the winter raptor surveys for context given the proximity to the study area.

The winter raptor surveys consisted of two rounds of point counts at six locations (stations) that encompassed the study area as well as Pollinator Park to the northeast. The station locations were selected to cover potential winter raptor foraging habitat and forest shelter / perching habitat along the tree line, with two points (PC 1 and 2) located in the study area, and four points (PC 3 – 6) located within Pollinator Park.

Point counts were completed by visually scanning above and 360 degrees around each point, both with the naked eye and using binoculars. Any raptor observations recorded while walking between stations were also included in the closest station. General observations of habitat conditions, such as suitable grassland vegetation cover and snow depth, were also recorded during each visit.

Surveys were conducted by an experienced avian biologist on two dates approximately three weeks apart in the winter season (February 12 and March 5, 2018) beginning at approximately 9:30 am and under suitable weather conditions (no precipitation and clear / good visibility).

Breeding Bird Surveys

Two breeding bird surveys were undertaken by qualified, experienced staff, using protocols consistent with the Ontario Breeding Bird Atlas (OBBA) on May 28 and June 12, 2018. These were targeted early morning surveys within the southern Ontario bird breeding period (generally May 24 to July 10), conducted under appropriate weather conditions (i.e., low wind and no precipitation).

All habitats within and immediately adjacent the study area were thoroughly surveyed using walking transects with frequent listening / observation stops at random locations. During field surveys, species abundance and level of breeding evidence were recorded for all avifauna observed. Level of breeding evidence was determined using the OBBA methodology and

terminology (Cadman et.al., 2007; Bird Studies Canada, 2001).

Avifaunal species status was evaluated using the following sources:

- City of Guelph Locally Significant Species for local significance
- MNRF / NHIC website for provincial rarity ranks (i.e., S-Ranks)
- Species at Risk in Ontario list (MNRF website – updated periodically) for provincial status designations
- Significant Wildlife Habitat (SWH) Criteria Schedules for Ecoregion 6E (MNRF, 2015) for Area-Sensitive species, and
- National Species at Risk list (Government of Canada Species at Risk Public Registry – updated periodically) for national status designations.

RESULTS

Winter Raptor Surveys

Only one species of the listed raptor species from the SWH Criterion for Raptor Wintering Areas was observed during the surveys conducted by WSP in 2018. Two Red-tailed Hawks (*Buteo jamaicensis*) were observed at Pollinator Park, these individuals were observed circling high above the northeast corner of the park. None of the listed species were observed within the study area.

Within the study area, only small areas of naturalized grass cover are present as most of the open meadow area in the study area is mown. Additionally, the open meadow area in the study area is not wind swept (due to the surrounding tree cover and residential development) and had between 30 and 40 cm of snow accumulation during the surveys. According to the SWH Criterion for Raptor Wintering Areas, the field / meadow sites must be greater than 15 ha and need to be wind swept with limited snow depth.

Given the habitat conditions within the study area as well as the lack of raptor observations during targeted surveys, the study area does not meet the criteria for candidate or confirmed Raptor Wintering Area SWH.

Breeding Bird Surveys

In total, 52 avifauna species were recorded during the breeding bird surveys and supplemental observations made during additional field visits. A full list of species is provided, by date in Appendix E. Of these 52 species, 38 were recorded during targeted breeding bird surveys, and breeding evidence ('Possible', 'Probable' or 'Confirmed' according to OBBA standards) was recorded for 32 species. Six species were 'Observed' with no breeding evidence (foraging or flying over study area, with no suitable nesting habitat present): Canada Goose (*Branta canadensis*), Barn Swallow (*Hirundo rustica*), Chimney Swift (*Chaetura pelagica*), Great Blue Heron (*Ardea herodias*), Green Heron (*Butorides virescens*) and Ring-billed Gull (*Larus delawarensis*).

The remaining 14 (of the 52 total) species were observed during additional field visits outside of

the accepted southern Ontario bird breeding period (generally May 24 to July 10): American Woodcock (*Scolopax minor*), Belted Kingfisher (*Megaceryle alcyon*), Common Raven (*Corvus corax*), Dark-eyed Junco (*Junco hyemalis*), Hairy Woodpecker (*Picoides villosus*), Indigo Bunting (*Passerina cyanea*), Killdeer (*Charadrius vociferus*), Osprey (*Pandion haliaetus*), Red-tailed Hawk (*Buteo jamaicensis*), Ruffed Grouse (*Bonasa umbellus*), Turkey Vulture (*Cathartes aura*), Wild Turkey (*Meleagris gallopavo*), Wood Duck (*Aix sponsa*) and Yellow-bellied Sapsucker (*Sphyrapicus varius*). In addition to being recorded outside of the southern Ontario bird breeding period, the habitat preferences and known breeding range for these species (except for Hairy Woodpecker, Indigo Bunting and Killdeer) do not match the habitats present, nor the location of the study area. As such, it is likely that these species were only using habitat in the study area for foraging or as a stopover during migration.

The avifauna species recorded with breeding evidence were expected given the habitat conditions, which includes deciduous forest, wetland and various cultural communities. Most species recorded are generally disturbance tolerant and common in southern Ontario (e.g., American Goldfinch (*Spinus tristis*), American Robin (*Turdus migratorius*), Blue Jay (*Cyanocitta cristata*), Song Sparrow (*Melospiza melodia*)). Some species typically associated with interior or larger forest habitats which may be more sensitive to disturbance were also recorded (e.g., American Redstart (*Setophaga ruticilla*), Red-bellied Woodpecker (*Melanerpes carolinus*), Northern Flicker (*Colaptes auratus*). The more sensitive species are associated with the forested habitat contiguous with the City of Guelph NHS, which will be retained in full with appropriate buffers and setbacks applied.

Avifaunal Species of Conservation Concern

For the purposes of this report, Species of Conservation Concern (SCC) include federally and provincially designated SAR, globally rare / uncommon (G-rank G1 to G3) species, provincially rare / uncommon (S-rank S1 to S3) and species listed as Locally Significant according to the City of Guelph Locally Significant Species List.

- Three species are designated as SAR in Ontario (COSSARO) and / or Canada (COSEWIC):
    - Barn Swallow (*Hirundo rustica* – Threatened, COSSARO and COSEWIC) – This species was recorded as ‘Observed’, with one individual observed foraging over cultural meadow habitat in Unit 7a; potential nesting habitat present on buildings within study area, no nests observed.
    - Chimney Swift (Threatened, COSSARO and COSEWIC) – Recorded as ‘Observed’, with two individuals observed foraging over the southwest corner of the study area; no suitable nesting habitat present in the study area.
    - Eastern Wood-pewee (*Contopus virens* – Special Concern, COSSARO and COSEWIC) – Recorded with ‘Possible’ breeding evidence; one singing male recorded.
- Sixteen (16) species are designated as Locally Significant in the City of Guelph:
    - American Redstart – Recorded with ‘Probable’ breeding evidence;

- Baltimore Oriole (*Icterus galbula*) – Recorded with 'Possible' breeding evidence;
- Belted Kingfisher – Single individual observed foraging at SWM pond in northwest corner of study area during July 30th ELC survey; no suitable habitat present in study area;
- Carolina Wren (*Thryothorus ludovicianus*) – Recorded with 'Probable' breeding evidence;
- Common Raven – Single individual observed flying over study area during February 12th winter raptor survey;
- Dark-eyed Junco – Total of 11 individuals observed foraging during winter raptor surveys;
- Eastern Towhee (*Pipilo erythrophthalmus*) – Recorded with 'Possible' breeding evidence;
- Eastern Wood-pewee – Recorded with 'Possible' breeding evidence;
- Great Blue Heron – Single individual observed flying over study area during June 12th breeding bird survey;
- Green Heron – Single individual observed flying over study area during May 28th breeding bird survey;
- Hairy Woodpecker – Single individual observed during fall ELC survey;
- Northern Flicker – Recorded with 'Confirmed' breeding evidence;
- Pileated Woodpecker (*Dryocopus pileatus*) – Recorded with 'Possible' breeding evidence;
- Red-Bellied Woodpecker – Recorded with 'Possible' breeding evidence;
- Ring-billed Gull – Single individual observed flying over study area during June 12th breeding bird survey;
- Yellow-bellied Sapsucker – Feeding evidence (holes) observed during April 27th and May 14th field surveys.

4.6.2.2 *HERPETOFAUNA*

METHODOLOGY

Amphibian Calling Surveys

Three spring amphibian breeding (calling) surveys were completed at five locations (stations) on the subject property (AC 1 – AC5) according to the Marsh Monitoring Program (MMP) protocol (Bird Studies Canada, 2008) on the following dates in 2018:

- April 23, May 9 and June 18.

Each survey was conducted at dusk / early evening under appropriate weather conditions (i.e., suitable air temperatures and low wind). Night time air temperatures were ≥ 5°C for the 'first' survey, ≥ 10°C for the 'second' survey and ≥ 17°C for the 'third; survey.

Each station was surveyed for three minutes and surveys were completed between one half hour after sunset and midnight. Amphibian calling activity was rated using three levels: Level 1 (individual calls can be counted with no overlap), Level 2 (some calls can be counted or estimated, some overlap) or Level 3 (calls continuous and overlapping, individuals not distinguishable).

Snake Habitat Assessment

A snake habitat / potential hibernacula assessment was completed within the study area, in accordance with the Milksnake Survey Protocol developed by the MNRF- Guelph District (MNRF, 2013), with additional guidance provided by the MNRF's Survey Protocol for Ontario's Species at Risk Snakes (MNRF 2016).

Potential habitat was identified using aerial photographs and Ecological Land Classification (ELC) mapping. A site visit was then conducted to actively search for snakes by looking under and turning over potential cover objects by hand, in conjunction with visual encounter surveys (watching for snakes moving around or basking). The surveys were conducted on April 22, April 27, and May 14, 2018, under appropriate weather conditions (i.e., suitable air temperatures and low wind). Searches occurred on sunny days when air temperatures were between 8° and 25°C, or if overcast, when temperatures were above 15°C. Observations were also made incidentally during other site visits (an additional seven days). In addition, the two vacant residences (78 and 82 Eastview Road) were checked for any cracks in the foundations that may permit snakes to enter for overwintering. The surveys were undertaken by qualified, experienced staff, with an understanding of snake biology and ecology, as well as prior experience with the target species.

RESULTS

Amphibian Calling Surveys

Six anuran species were recorded during amphibian calling surveys: American Toad (*Anaxyrus americanus*), Gray Treefrog (*Hyla versicolor*), Green Frog (*Lithobates clamitans*), Northern Leopard Frog (*Lithobates pipiens*), Spring Peeper (*Pseudacris crucifer*) and Wood Frog (*Lithobates sylvaticus*). Each calling station had amphibian calling recorded, with differences in species diversity and abundance observed across the study area.

Overall, the stations exhibited moderate anuran species richness, with two species recorded in moderate to high abundances. Generally, the remaining four species were recorded in low abundances across the study area (highest calling level of Level 2, with a maximum of five individuals counted).

- Spring Peeper was the most widely distributed species, recorded at four of the five stations in low to high numbers.
- American Toad and Gray Treefrog were the next most widely distributed, recorded at three

of the five stations in low numbers.

- Green Frog was recorded at two of the five stations, in low numbers.
- Wood Frog and Northern Leopard Frogs were each recorded at one station, in high and low numbers respectively.

Table 2 below summarizes the results from the amphibian calling surveys.

Table 2: Amphibian Calling Survey Results

Station Number	Survey Number	Species	Calling Level	Count
AC1	1	Wood Frog	L3	N/A
		Spring Peeper	L1	1
	2 – 3	No Observations		
AC2	1	No Observations		
	2	Spring Peeper	L1	2
		American Toad	L1	1
		Gray Treefrog	L1	3
	3	No Observations		
AC3	1	Spring Peeper	L2	5
	2	Spring Peeper	L1	3
		American Toad	L1	1
	3	No Observations		
AC4	1	No Observations		
	2	American Toad	L1	3
		Gray Treefrog	L1	1
		Northern Leopard Frog	L1	1
	3	Green Frog	L1	4
AC5	1	No Observations		
	2	Spring Peeper	L3	N/A
		Gray Treefrog	L2	5
	3	Green Frog	L1	5

Snake Habitat Assessment

One snake species was observed: Eastern Gartersnake (*Thamnophis sirtalis sirtalis*). The two vacant residences, associated outbuildings and construction waste piles were identified by the surveyor as potential snake habitat. The exteriors of the buildings were searched for any foundation cracks that may permit snakes to enter for overwintering habitat. No cracks were observed. In addition, the areas around the outbuildings, including construction waste piles, were searched over multiple visits, and no snakes were observed. The previous resident of 82 Eastview (who had resided on the property since the 1950's) stated he had not seen any other snake species other than Eastern Gartersnakes on the property (pers. comm. Mr. Silvano Zilio,

April 27, 2018).

Twelve Eastern Gartersnakes were observed in total (one of which was dead). See Table 3 for more details.

A potential hibernaculum was noted within the study area, on the 66 Eastview property, in Cultural Thicket habitat (see Figure 4, Appendix A). On April 27, 2018, six Eastern Gartersnakes were seen at this location. The snakes had a coating of dried mud, indicating they had recently emerged. Snow had been present on the ground in Guelph until approximately April 23, 2018, then temperatures quickly rose, with most snow melted on the date of survey (weather conditions on the day of survey were sunny, with a high of 16°C). The snakes were all observed within 20 feet of a mound (appearing man-made), and three holes were found on the surface of the mound. No snakes were observed entering or exiting the holes. Two of the holes were the size of chipmunk burrows and had snail shells strewn around the entrance. The third hole was larger (3" in diameter), on the edge of a well-rotted tree stump. The mound is within 25 feet of a swamp, suggesting a high groundwater table (preferred by hibernating snakes). The two snakes closest to the potential hibernacula entrance showed curious behavior, twice quickly approaching the surveyor, then retreating. No mating activity was observed.

The concentration of snakes, evidence of recent emergence, curious behavior, presumed artificial mounding and high groundwater table, all suggest a potential hibernaculum at this location.

Table 3: Eastern Gartersnake Observations within the Study Area, 2017-2018

Abundance	ELC Unit	Date	Note
6	Unit 12, CUT1 (Cultural Thicket)	April 27, 2018	Basking, Potential Hibernaculum
3	Unit 3, CUT1 (Cultural Thicket)	April 27, 2018	Basking
1	Unit 20, SWD3-3 (Swamp Maple Mineral Deciduous Swamp)	April 27, 2018	Basking
1	Unit 25, FOD8-1 (Fresh-Moist Poplar Forest)	July 30, 2018	Basking
1	Unit 5, SWD4-3 (White Birch-Poplar Mineral Deciduous Swamp)	May 14, 2018	Dead of unknown causes

4.6.2.3 *BAT CAVITY ASSESSMENT*

METHODOLOGY

A bat cavity assessment was completed within the study area, in accordance with the Survey Protocol for Species at Risk Bats within Treed Habitats protocol developed by the MNRF – Guelph District (MNRF, 2016) with additional guidance provided by the MNRF's Technical Note on Species at Risk Bats (MNRF, 2015).

Potential habitat for maternity roost trees for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-coloured Bat (*Perimyotis subflavus*) was identified using

aerial photographs and Ecological Land Classification (ELC) mapping. A site visit was then conducted to actively search for suitable maternity roost trees. The survey was conducted on April 27, 2018, with trees in leaf-off condition (for improved visibility). The hedgerow on the east side of 82 Eastview (Unit 8), was thoroughly searched, as it may be impacted by construction activities. In addition, high-quality trees within the study area were also noted. The survey consisted of the following:

- identifying live and dead standing trees greater than or equal to 10 cm DBH (diameter at breast height) with loose or naturally exfoliating bark, cavities or cracks (for Little Brown Myotis and Northern Myotis)
- noting all oak trees greater than or equal to 10 cm DBH
- if oak is absent, identifying all maples greater than or equal to 10cm DBH ***if*** dead/dying leaf clusters are present, and maples greater than 25 cm DBH ***if*** no dead/dying leaf clusters are present
- In addition, the vacant residences at 78 and 82 Eastview were checked for any signs of use by bats

RESULTS

Two trees suitable for Little Brown Myotis and Northern Myotis maternity roosts were observed in the hedgerow. One tree, a Black Cherry (*Prunus serotina*), with two stems of 27 cm DBH and 24 cm DBH, had loose bark. The second tree, a Green Ash (*Fraxinus pennsylvanica*), believed to be dead and 39 cm DBH, had a cavity where a branch had broken off. No trees suitable for Tri-coloured Bat were observed in the hedgerow.

Although two isolated cavity trees recorded within the hedgerow are proposed for removal, suitable maternity roost trees for all three species are present within the forested habitat in the study area (specifically within the Swamp Maple Mineral Deciduous Swamp, Vegetation Unit 20). The forest habitat is contiguous with the City of Guelph NHS and will be retained in full with appropriate buffers and setbacks applied. As only two isolated cavity trees will be impacted, and better quality habitat is present within the City of Guelph NHS, no net adverse impacts to maternity roost habitat are anticipated.

No evidence of bat use was noted at the vacant residences, and no possible entrances were noted (e.g. holes in roofs, soffits, etc.).

4.6.2.4 *YELLOW-BANDED BUMBLEBEE ASSESSMENT*

METHODOLOGY

A Yellow-banded Bumble Bee assessment was completed within the study area, in accordance with the protocol for Surveying for Rusty-patched Bumblebee in Guelph District (as directed by the MNRF).

Potential habitat for Yellow-banded Bumblebee (*Bombus terricola*) was identified using aerial photographs and Ecological Land Classification (ELC) mapping. Two site visits were conducted

in late summer, which is when colonies are largest, and when individuals of this species are most likely to be encountered. The targeted surveys were conducted on August 9 and 10, 2018. The species was also searched for incidentally during other site visits to the study area. The targeted surveys focused on meadow, thicket, and mown areas of the 78 and 82 Eastview properties, as well as the thicket community to the north of 82 Eastview (Unit 7b). The surveys were conducted during suitable weather conditions (low wind, no precipitation, temperature between 15°C and 30°C). Bumblebee species were observed and identified both "in situ", and through catch-and-release methods. Photographs were taken to represent each different species encountered.

RESULTS

No Yellow-banded Bumblebee species were encountered during the targeted surveys; however, one Yellow-banded Bumblebee was encountered incidentally during ELC field work on July 30, 2018. The bumblebee was observed on the adjacent 66 Eastview property (see Figure 4, Appendix A). It was photographed in a cultural meadow (Unit 28) nectaring on Knapweed (*Centaurea sp.)*. The identification was confirmed by Colin Jones (entomologist with the Ministry of Natural Resources and Forestry's Natural Heritage Information Centre). While similar habitat and nectaring habitat is present on the subject property, no Yellow-banded Bumblebees were observed.

4.6.2.5 *GENERAL WILDLIFE*

METHODOLOGY

In addition to the targeted surveys described in the preceding sections, a general wildlife survey and habitat assessment was undertaken during all field surveys. This involved recording all direct observations and signs of birds, amphibians, mammals, reptiles and insects, including: browse, track / trails, animal scat, bird nesting activity, tree cavities, burrows and vocalizations. Additionally, these surveys were used to assess SAR habitat, inspect structures for use by nesting migratory birds, and assess the potential presence of SWH features within the study area.

RESULTS

Mammals

Six mammal species were recorded during field investigations: Coyote (*Canis latrans*), Eastern Cottontail (*Sylvilagus floridanus*), Grey Squirrel (*Sciurus* carolinensis), Raccoon (*Procyon lotor*), Red Squirrel (*Tamiasciurus hudsonicus*) and White-tailed Deer (*Odocoileus virginianus*).

- The study area provides habitat for a range of common wildlife typically found in residential areas and urban natural areas, including large and small mammals. Key attributes are overall size, habitat diversity and presence of large woodland with continuity with offsite features.
- Mammals recorded include common expected species based on habitat: urban-adapted and/or tolerant species. Other species expected that were not observed include Virginia Opossum (*Didelphis virginiana*), Striped Skunk (*Mephitis mephitis*) and small mammals that are often undetected during field surveys (e.g., mice, voles).

- No federally (SARA / COSEWIC) or provincially (MNR / COSSARO) designated mammal SAR, or provincially rare mammal species (i.e. S1 to S3 ranked by NHIC) were recorded on the study area during field surveys.
- We are not aware of any records of mammal species of conservation concern on the subject property.

Turtles

No turtles were observed in the study area. There are a few shallow ponds within Units 2 and 15 that appeared to be ephemeral in nature, with water levels dropping dramatically in the summer months. As such, potential for turtle habitat in these areas is considered low.

Terrestrial Crayfish

The presence of mud "chimneys" created by a semi-terrestrial crayfish species (*Fallicambarus fodiens* or *Cambarus diogenes*) were observed during field investigations in the wetland portions of the subject property where soil was moist but not waterlogged (typically on the fringes of more saturated soils associated with the wetland habitats). Refer to Figure 4, Appendix A for locations.

Lepidoptera and Odonata

Habitat for butterflies / moths and dragonflies / damselflies is highest within the meadow and thicket communities.

Sixteen species of Lepidoptera were observed. One of these, Monarch (*Danaus plexippus*), is a Species at Risk (Endangered COSEWIC, Special Concern COSSARO / SARA (Schedule 1)). Six Monarch adults were observed during fall migration, including a mating pair. Refer to Figure 4, Appendix A for locations. While one of their larvae host plants, Common Milkweed (*Asclepias syriaca*), is present, its abundance is low. No larvae (caterpillars) were observed. Two Lepidoptera are locally significant in the City of Guelph: Monarch, and Wild Indigo Duskywing (*Erynnis baptisiae*), observed on the subject property but with no evidence of breeding.

Seven species of Odonata were observed. None of these are designated under the *Species at Risk Act* (SARA; 2002) or Endangered Species Act (ESA; 2007), or designated locally significant in the City of Guelph.

4.7 SPECIES AT RISK

The NHIC database, MNRF Guelph District and GRCA were consulted for information on local SAR, defined herein as species that are "designated" by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and / or listed under the *Species at Risk Act* (SARA) and species "designated" by the Committee on the Status of Species at Risk in Ontario (COSSARO), including those Endangered, Threatened and Special Concern species listed and regulated under Ontario's *Endangered Species Act* (ESA) 2007.

Through a background review and agency consultation, 28 SAR were identified has having

potential to be present within the study area and surrounding landscape. A SAR habitat suitability evaluation was completed and is summarized in the SAR Screening Table included in Appendix F. Twenty (20) of the identified SAR species were determined to have some potential to occur within the study area. The assessment focused on the 'reasonable likelihood of presence in the study area' based on the 'key habitats used by species' (based on MNRF provided definitions or MNRF website habitat descriptions). Considering findings of surveys, habitat suitability and proposed works, the 'likelihood and magnitude of impacts to species or habitats' was assessed.

For many of the SAR listed in the SAR Screening Table, no suitable habitat is present within the study area, or only a small amount / marginally suitable habitat is present and the likelihood of occurrence is low. The following eight species were identified as having a moderate to high likelihood of being present (five of which were confirmed during field investigations):

- Barn Swallow (Threatened, COSEWIC and COSSARO): Potentially suitable breeding habitat is present within / on buildings within the study area; single individual observed foraging over CUM habitat, but not observed nesting on the subject property.
- Chimney Swift (Threatened, COSEWIC and COSSARO): Potentially suitable breeding habitat is present throughout the local landscape (chimneys associated with both residential and commercial buildings outside of the subject property); two individuals observed foraging over study area.
- Eastern Wood-pewee (Special Concern, COSEWIC and COSSARO): Potentially suitable breeding habitat is present in the forested areas within the study area and subject property; single individual recorded with 'Possible' breeding evidence.
- Wood Thrush (Threatened COSEWIC, Special Concern COSSARO): Potentially suitable breeding habitat is present within the forested areas within study area and subject property; possible migrant observed by Ecoplans during EIS (recorded outside of breeding window) for 66 Eastview Road (Ecoplans, 2013).
- Monarch (Endangered COSEWIC, Special Concern COSSARO): Likely to pass through and / or forage within study area, potential breeding habitat wherever Milkweed or other wildflowers are present; six adults observed during fall migration including one mating pair. No larvae observed.
- Yellow-banded Bumble Bee (Special Concern, COSEWIC and COSSARO): Potential foraging habitat within study area; single individual observed nectaring in the broader study area, more than 200 m outside of the subject property.
- Northern Myotis (Endangered, COSEWIC and COSSARO): foraging habitat exists over open fields / meadows, wetlands and SWM pond) and potential maternity roost habitat exists in forest communities.
- Little Brown Myotis (Endangered, COSEWIC and COSSARO): Potential to roost in buildings within study area, lower potential to roost in forested habitats; may forage over open habitats within study area.

For each SAR species confirmed or potentially using habitats within and immediately adjacent to the study area, the likelihood and magnitude of impacts was identified as 'minimal'. Most of the habitat directly impacted by the proposed development would be used by the identified SAR for foraging or as a stopover during migration. The habitat within the proposed development envelope has no unique SAR habitat attributes that are not widely distributed and abundant in the local landscape, such that any SAR using the habitat within the study are unlikely to be impacted by the proposed development. Furthermore, the most suitable SAR habitat within the study area is contiguous with the City of Guelph NHS described in Section 4.4 and will be retained in full with appropriate setbacks and buffers applied.

4.8 SIGNIFICANT WILDLIFE HABITAT

Significant Wildlife Habitat (SWH) is identified by MNRF or other relevant planning authorities. As outlined in their Significant Wildlife Habitat Technical Guide (OMNR, 2000), SWH is broadly categorized as:

- Seasonal concentration areas (i.e., conifer forests for deer wintering);
- Rare vegetation communities or specialized habitats for wildlife;
- Habitats of species of conservation concern, excluding the habitats of endangered and threatened species;
- Animal movement corridors.

A preliminary SWH screening assessment was conducted and submitted with the TOR (Appendix B). This preliminary assessment has been reviewed and updated based on available secondary sources of information and field data collected as part of current and previous studies. A detailed analysis is included in Appendix G, with key results presented below. The review of potential SWH in the study area has been based on evaluation criteria in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015) as well as the Significant Wildlife Habitat Mitigation Support Tool (MNRF, 2014)

Table 4: Summary of Candidate and Confirmed SWH

Criterion	Assessment	Further Surveys Required	Location
Seasonal Concentration of Animals			
Bat Maternity Colonies	**Candidate**	Not required. No impact with recommended mitigation.	Forested habitats (FOD and SWD) within study area.

Criterion	Assessment	Further Surveys Required	Location
Reptile Hibernaculum	**Confirmed, concentration of 5 or more snakes near a potential hibernaculum**	Not required. No impact with recommended mitigation.	Unit 12
Rare Vegetation Communities or Specialized Habitat for Wildlife			
Amphibian Breeding Habitat (Woodland)	**Candidate, evaluated and not SWH**	Not required. Evaluated and not SWH. No impact with recommended mitigation.	Wetlands / ponds and small vernal pools within all forested habitats classified as FOC, FOD and SWD.
Habitat for Species of Conservation Concern (not including Endangered or Threatened Species)			
Terrestrial Crayfish	**Confirmed, > 15 terrestrial crayfish chimneys observed**	Not required. No impact with recommended mitigation.	Edges of wetlands.
Special Concern and Rare Wildlife Species	**Confirmed** • **Eastern Wood-pewee (SC)** • **Yellow-banded Bumble Bee (SC)** • **Monarch (SC)**	Not required. No net impact with recommended mitigation.	• 1 Eastern Wood-pewee recorded in Unit 15. • 1 Yellow-banded Bumblebee recorded in Unit 28. • 6 adult Monarch butterflies recorded in Units 7a and 8; however, no concentrations of Milkweed to support breeding habitat. General forging habitat will be replicated in buffer and SWM facility; approximately 48ha of suitable forging habitat located in Pollinator Park, 450m east of proposed development.

The majority of the SWH types listed in Table 4 are located within the forested and wetland habitats in the study area and are contiguous with the City of Guelph NHS. These features will be retained in full, with appropriate buffers and setbacks applied, such that no impacts to candidate or confirmed SWH are anticipated.

The only SWH that will be impacted by the proposed development is the Monarch habitat in Units 7a and 8. Monarchs require concentrations of Milkweed to breed (none of which was found within the study area). It is likely that the Monarchs observed by WSP were using the habitat for foraging or just moving through the area for migration. Although portions of this habitat will be

removed due to the proposed the development, similar (and likely better quality) habitat is present throughout the local landscape. As such, because no breeding habitat will be impacted, and suitable foraging habitat is present in the local landscape, the impacts to Monarch habitat within the study area are anticipated to be negligible.

5 DESCRIPTION OF PROPOSED DEVELOPMENT

As input to the development of the Preliminary Site Plan, wetland and woodland limits were delineated (Section 5.1). Environmental management and setback recommendations were then determined (Section 5.2). The Preliminary Site Plan was then refined to implement these recommendations, in an iterative fashion (Section 5.3). A brief description of the proposed stormwater management strategy (per MTE, 2019) is included in Section 5.4; the reader is referred to that report for additional details. The proposed plan layout forms the basis for the impact review and evaluation that is documented in Section 7.0.

5.1 DELINEATION OF WETLAND AND WOODLAND LIMITS

Wetland limits were delineated by WSP and confirmed by GRCA staff during a site visit on July 16, 2018. Limits were surveyed (Figure 3) and used in the preparation of the Preliminary Site Plan.

Woodland dripline limits were delineated by WSP and confirmed by City of Guelph staff during a site visit on July 16, 2018. Limits were surveyed (Figure 3) and used in the preparation of the Preliminary Site Plan.

5.2 DEVELOPMENT OF ENVIRONMENTAL MANAGEMENT / SETBACK RECOMMENDATIONS

Feature limits, setbacks and environmental management recommendations were reviewed and refined through additional field visits, project team liaison, and consideration of grading and servicing requirements. The focal area was the development interface bordering the PSW and Natural Heritage System and the mitigation / protection measures for natural environment features and functions of retained features. The collective review, including agency liaison and commentary, has considered the following objectives:

- Maintenance of groundwater recharge and input to natural areas.
- Protection of surface water quality conveyed to adjacent natural areas through Erosion and Sediment Control (ESC) measures.
- Setback recommendations, based on a combination of: the nature and sensitivity of features to be protected; relevant policy; addressing buffer guidelines from published literature.

- Tree protection measures, including fencing and signage.
- Anticipated preliminary grading and servicing requirements.

These management measures are discussed in Table 5. The Preliminary Site Plan is shown in Figure 3, Appendix A.

Table 5: Environmental Management Recommendations and Rationale

FEATURE	ENVIRONMENTAL MANAGEMENT RECOMMENDATIONS AND RATIONALE
Retained Natural Heritage Features Includes portions of: • Guelph Northeast PSW, • City of Guelph NHS lands (including Significant Woodland, Significant Wetland and Significant Wildlife Habitat)	**Wetland delineation**. A portion of the Guelph Northeast PSW on the subject lands has been delineated, confirmed by the GRCA and surveyed. Wetland limits are shown on Figure 3, Appendix A. **Woodland delineation**. The woodland dripline associated with the Guelph Natural Heritage System has been delineated and surveyed. Dripline limits are shown on Figure 3, Appendix A. **Setbacks**. The PSW and NHS will be retained in full and protected with development **setbacks of 30 m from the surveyed PSW limit, and 10 m from the surveyed woodland dripline**, with the exception of the SWM facility (located within the 30m wetland buffer but no closer than 15m from the delineated wetland; Figure 3, Appendix A). Some minor re-grading within the buffer will also be required to ensure positive drainage at the SWM outlet and for transition sloping adjacent to the most northerly townhouse block. The minor grading encroachment will be re-vegetated per the future buffer planting / management plan. These setbacks are based on ecological quality and sensitivity of the wetland and woodland communities. **Buffer Management and Stewardship**. In addition to the proposed physical setback, several buffer management measures are proposed: • **Permanent fencing**. Recommended at lot / block limits to restrict access and reduce expansion and potential impacts to the woodland / wetland as the result of occupancy related activities. Location to be determined during detailed design. • **Vegetation**: A combination of natural succession with nodal native species plantings is proposed in the buffer zone along the edge of the woodland / wetland and within the area of the SWM facility. These plantings will add habitat diversity, provide a nominal increase in NHS size, increase the effectiveness of the buffer, and provide a net benefit to the woodland. To enhance habitat for Monarch and Yellow-banded Bumblebee, it is recommended that Common Milkweed and nectaring plants be included. • **Environmental Stewardship**. Signage is recommended along the edges of the PSW and NHS. Additional stewardship measures include provision of environmental stewardship information brochures to homeowners. **Groundwater**. Groundwater contours generally flow towards the wetland areas. Groundwater levels indicate a shallow overburden groundwater flow from northeast to southwest of the study area. The WSP hydrogeology report (2019, Appendix H) includes general recommendations for maintenance of water balance (e.g. at-source infiltration). **SWM Facilities**. A dry pond will be provided for stormwater quantity / quality control for the development. This SWM facility is proposed to be located where a cultural meadow currently exists, within the 30 m wetland buffer but outside of the 15m buffer (refer to the Functional Servicing and Storm Water Management Report (MTE, 2019) for location and additional details). The SWM facility will provide

FEATURE	ENVIRONMENTAL MANAGEMENT RECOMMENDATIONS AND RATIONALE
	enhanced (Level 1) water quality treatment and discharge treated water toward the wetland. **Trails**. Conceptual trail locations are shown on Schedule 6 of the Official Plan (March 2018 Consolidation); they abut the limits of the NHS on the subject property and adjacent lands. Based on proximity to sensitive wetland, significant woodland, and required successional native vegetation removal (which currently buffers the wetland), we propose to move the multi-use trail slightly south so that it does not pass through these sensitive natural features, but instead passes through buffer habitat between the woodland and the development. See Figure 3, Appendix A and Appendix J. **Sediment / Erosion Control.** An approved Erosion and Sediment Control (ESC) Plan will be developed as part of detailed design. ESC fencing will be installed at lot / grading limits and abutting the wetland / woodland buffer prior to any site grading. Where the wetland and woodland buffer occur simultaneously, the fencing will be installed along the greater of the two. The fence will be inspected regularly and remain in place until construction is complete. ESC is discussed further in Section 5.5 of this report. **Biological Monitoring**. An annual terrestrial biological monitoring program is recommended. An outline of the monitoring program is provided in Section 8 of this report. It includes fixed plot terrestrial and wetland vegetation monitoring in retained natural areas, breeding amphibian monitoring and breeding bird surveys.

5.3 PROPOSED DEVELOPMENT FABRIC

The general characteristics of the Preliminary Site Plan are as follows:

- **Residential Units**. The development consists of 57 townhouse units in seven blocks.
- **Roads**. Two common element roadways are proposed off Eastview Drive.
- **Amenity Area.** There is one amenity area.
- **Trails**. The proposed trail connection (conforming to the Guelph Trail Master Plan) is located within the 10m woodlot buffer and connects existing trails to the south of the property and informal trails to the north which will become formalized as those properties are developed. Three different proposed trail spurs provide connection to proposed residential parking and proposed park amenity. The trail will be installed primarily on existing grades with spurs constructed within proposed slopes to facilitate connections. The 2.5m wide multi-use trail will be constructed per the layout/detail plans in the Tree Management Plan (WSP, 2019; Appendix J). Construction of the trail requires the removal of group G24 and Tree #1185 as per L-220 (see Appendix A in the Tree Management Plan). Minor field fitting is to occur in order to minimize the impacts of development.
- **Servicing**. Two new connections to the municipal watermain along Eastview Road with backflow prevention are proposed to service the development. The proposed sanitary sewer will be connected to the existing sanitary manhole located southwest of the site in the Eastview Road Right-of-way. A storm sewer system is proposed along the common element roadways within the development. For more information related to development servicing, refer to the Functional Servicing and Stormwater Management Report

(MTE, 2019).

- **Stormwater Management (SWM)**. See Section 5.4 below.
- **Infiltration**. See Section 5.4 below.

A considerable amount of environmental work and project team review has been undertaken to evaluate natural features and to identify areas for protection, associated setbacks, and environmental enhancement opportunities. The plan development has been guided by this iterative process.

The proposed development area is restricted to lands that consist of successional habitat. Adjacent natural features (i.e. Northeast Guelph PSW Complex and Natural Heritage System) will be retained in full and protected with development setbacks and buffer management / mitigation measures.

5.4 STORMWATER MANAGEMENT

This section incorporates information from the Functional Servicing and Stormwater Management Report, prepared by MTE (2019) under separate cover and through discussions with the project team. For additional details, the reader is directed to the MTE report.

SWM Implementation Strategy – Key Components

- **Water Quality** – All water directed through the stormwater pond to the PSW will require Enhanced (Level 1) protection. Enhanced water quality control is used when sensitive habitat will be impacted by the end-of-pipe discharge with increased temperatures and sediment loads. This will be achieved using a Stormceptor unit (Model STC 4000) which is proposed upstream of the dry pond for ease of accessibility for maintenance. The proposed SWM facility is required to provide a 24 to 48 hour drawdown time of the 25mm water quality storm event. This will be confirmed during detailed design.
- **Water Quantity** – Runoff will be collected in swales and the storm sewer network (see infiltration below) and conveyed to the proposed SWM facility (designed as a dry pond) on the north side of the property. The pond will be outside the 15m wetland buffer and 10m dripline, but within the 30m wetland buffer. Flows will be controlled with the installation of an on-line orifice plate on the outlet pipe and a weir at the west side of the pond. Storage volume for the orifice and the weir will be provided within the dry pond. The dry pond will control post development peak flow rates to pre-development rates for the 2, 5, 10, 25, 50 and 100 year storm events, with maximum ponding depth during the 100 year storm event of 0.78m. The outlet for the dry pond will be directed towards the PSW.
- **Water Balance and Infiltration** – A separate storm sewer network will be installed to convey roof runoff from the whole of three townhouse blocks as well as half of the roof area of two other townhouse blocks to two proposed infiltration galleries: one located in amenity space between two buildings close to the southern limit of the site; the other located close to the northeastern limit of the site. Runoff from the remaining roof areas

will be conveyed to the main storm system. The total roof area being conveyed to the galleries is 2,695m^2 and the total landscape area being conveyed to the galleries is 1,720m^2. Based on infiltration of 30mm of runoff depth, this equates to a volume of 132.5m$^{3.}$ The total gallery volume is 523m^3, accounting for a void ration of 35% and a safety factor of 15%.

- On an annual basis, it is estimated that there will be an approximate 24% increase in runoff and an approximate 24% decrease in infiltration and evapotranspiration as a result of the development. However, with the proposed infiltration trench there will only be a 16.5% increase in runoff at the site.
- Annual infiltration is currently 6,357 m^3/year and this will change to 4,147 m^3/year post-development (with no LID), for a net loss infiltration of 2,210 m^3/year. However, the proposed LID will increase infiltration to 6,238 m^3/year post-development, for a net loss of 119 m^3/year.

5.5 EROSION AND SEDIMENT CONTROL (ESC)

The preliminary Erosion and Sediment control measures are outlined in the *Functional Servicing and Stormwater Management Report* (MTE, 2019) and include the following measures:

- ESC fencing will be installed at lot / grading limits and abutting the wetland / woodland buffer prior to any site grading;
- All erosion control measures are to be inspected and monitored by the contractor and repairs are to be completed as required;
- All materials and equipment used for site preparation and project completion should be operated and stored in a manner that prevents any deleterious substance from leaving the site;
- Construction of temporary swales to direct runoff to a sedimentation basin, with rock check dams as required to control velocities;
- Stripping and strategic placement of topsoil stockpiles. Placement of sediment control fencing around all stockpile areas;
- Re-vegetation of completed areas as soon as possible after construction, including those areas not slated for construction, within 60 days of rough grading; and,
- To minimize the amount of mud being tracked onto the road way, a mud mat should be installed at the primary construction entrance.

6 POLICY REVIEW / ASSESSMENT

6.1 FISHERIES ACT (1985)

There are no features which provide a commercial, recreational or aboriginal fishery on the subject property. The project complies with the Fisheries Act and no authorization is required.

6.2 MIGRATORY BIRDS CONVENTION ACT (1994)

Infractions to the MBCA have potential to occur during the construction phase of the project when the land is cleared and grubbed of vegetation, potentially removing nests of migratory birds.

Migratory bird species subject to the MBCA were recorded in the study area. Most are generalist and/or urban-adapted tolerant species and no habitat unique in the local landscape will be impacted by proposed works.

Compliance with the MBCA will be achieved using the following due diligence approach:

Proponent awareness of the MBCA, potential for nesting in the area and potential for impacts to migratory birds, nests and eggs.

i. The study area provides suitable habitat for nesting of woodland-associated and generalist species.

ii. The footprint of the proposed works is limited to disturbed areas, and avoids the sensitive PSW and NHS.

Implementation of the following avoidance and mitigation measures, where possible:

i. Avoiding / minimizing the extent of works (particularly vegetation / potential nesting habitat removal) within the “regional nesting period” for this area.

ii. Avoiding works in key sensitive locations. The footprint of proposed works is restricted to anthropogenically disturbed, tolerant vegetation.

iii. Recommending Best Management Practices (BMPs) during construction to minimize potential indirect impacts to vegetation / potential nesting habitat outside of the direct footprint.

6.3 SPECIES AT RISK ACT (2002)

The project is on non-federal (private) lands and there is no order by Governor in Council; hence SARA only applies to aquatic and migratory bird species / habitat. There is potential habitat for migratory birds subject to SARA within the study area. Habitat suitability and presence / use was evaluated through field inventories and habitat assessments as described in Section 4.

6.3.1.1 *INDIVIDUALS AND RESIDENCES*

Three SARA-listed migratory bird species were recorded in the study area: Barn Swallow (Threatened, Schedule1), Chimney Swift (Threatened, Schedule 1), and Eastern Wood Pewee (Special Concern, Schedule 1). Wood Thrush (Threatened, Schedule 1) was noted in the 66 Eastview EIS (Ecoplans, 2013), however, it was not recorded during field work for the 78-82 Eastview EIS. Refer to Appendix F and Section 4.7 for likelihood and magnitude of impacts as they pertain to these species.

No habitat is present for aquatic SAR species.

6.3.1.2 *CRITICAL HABITAT*

No critical habitat for SARA-listed aquatic or migratory bird species is present within the proposed area of works and none is known on adjacent lands where there is potential for indirect impact.

6.4 ENDANGERED SPECIES ACT (ESA, 2007)

Potentially suitable habitat is present for species afforded protection under the ESA (2007). A SAR habitat suitability evaluation ('screening') for the study area was undertaken in advance of field work. This screening was based on a list of SAR known to occur within the region from review of various sources including: species indicated by MNRF through correspondence; NHIC data available online; MNRF Species at Risk regional species list; and Ontario Reptile and Amphibian Atlas website.

The screening is summarized in Appendix F. In this, we assessed 'reasonable likelihood of presence on the subject property' based on the 'key habitats used by species' (based on MNRF provided definitions or MNRF website habitat descriptions). Considering findings of surveys and habitat suitability, we then assessed 'likelihood and magnitude of impacts to species or habitats'.

We concluded that for most of the listed species, potential presence on the subject property was 'none' or 'minimal' given a lack of suitable or preferred habitat and/or rarity of the species. This was confirmed through field survey results. For these species, the likelihood of impacts was also 'none' or 'minimal'.

For eight species, there was 'moderate' or 'high' potential for habitat use based on one or more of the following factors:

i. the presence of potentially suitable habitat on or in the vicinity of the subject property

ii. the relative commonness of species

iii. known records from the local area, and/or

iv. The habitat requirements are not specific (i.e., they are 'generalists' that use a wide variety of natural and semi-natural habitat types).

During fieldwork, five of these species were confirmed. For these potential / confirmed species, we assessed likelihood of impacts based on field survey results, known records and the proposed

activity / development. Details of these confirmed species can be found in Appendix F and Section 4.6.

For the three SAR species with 'moderate' to 'high' potentially suitable habitat in or adjacent to the development envelope, but not recorded during field surveys, the likelihood and magnitude of impacts is 'minimal', based on one or more of the following factors:

i. sensitive natural features are being retained with a buffer

ii. the small size and/or low quality of habitat;

iii. limit of potential impacts to non-critical habitat (e.g., non-specific foraging habitat for breeding birds, but not breeding habitat itself);

iv. presence of abundant and generally much larger / higher quality habitat in the local landscape;

v. low likelihood of occurrence / confirmed absence;

vi. mitigation / protection measures such as retention of suitable habitat within the property, encounter protocols, exclusion fencing or timing windows to avoid sensitive periods.

6.5 PROVINCIAL POLICY STATEMENT (MMAH 2014)

Based on the field survey program, background information and in consideration of relevant guidance documents, a brief assessment of each feature listed under section 2.1 of the PPS is provided below:

1. Significant wetlands in Ecoregions 5E, 6E and 7E

A portion of the Guelph Northeast *Provincially Significant Wetland* (PSW) Complex is present on the Subject Property. The limit of the PSW has been verified by GRCA.

2. Significant coastal wetlands.

Not applicable.

3. Significant wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E1.

Not applicable.

4. Significant woodlands in Ecoregions 6E and 7E.

Schedule 4C of the City of Guelph Official Plan (March 2018 Consolidation) identifies *Significant Woodlands* on the Subject Lands. Woodland limits were refined based on ELC surveys and in consideration of the significant woodland designation criteria provided in Official Plan (March 2018 Consolidation).

5. Significant valleylands in Ecoregions 6E and 7E.

There are no significant valleylands on the subject property (per Schedule 4D of Official Plan March 2018 Consolidation).

6. Significant wildlife habitat.

No Significant Wildlife Habitat (SWH) is currently identified on the subject property (per Schedule 4E of Official Plan March 2018 Consolidation). See Section 4.8 and Appendix G for an analysis of Significant Wildlife Habitat potential on the subject property.

We have undertaken a review of potential SWH in the study area based on evaluation criteria in the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF, 2015), using available secondary sources of information and field data collected as part of the current study. A detailed analysis is included in Section 4.8 and Appendix F, with the following key results:

In total, two Candidate (Bat Maternity Colonies and Amphibian Breeding Habitat (Woodland)) and three Confirmed (Reptile Hibernaculum, Terrestrial Crayfish and Special Concern and Rare Wildlife Species) SWH types were recorded. With the proposed works, including recommended protection, mitigation and BMPs described herein, no impacts are anticipated to these SWH features or their ecological functions.

7. Significant areas of natural and scientific interest.

None is present on or adjacent to the property.

8. Coastal wetlands in Ecoregions 5E, 6E and 7E1 that are not subject to policy 2.1.4(b).

Not applicable.

9. Fish Habitat.

Fish habitat is not present on the subject property or in the broader study area, per Schedule 4B of the Official Plan (March 2018 Consolidation).

10. Habitat of Endangered and Threatened species

Two *Endangered* or *Threatened* SAR were recorded within the study area: Barn Swallow (*Hirundo rustica*), and Chimney Swift (*Chaetura pelagica*). We conclude that there is no habitat subject to the Endangered Species Act (ESA) potentially impacted by the proposed development and no impacts to individuals or habitat with implementation of recommended mitigation and protection measures.

Refer to Section 4.78 and Appendix F for additional discussion.

11. Adjacent Lands

Lands adjacent to significant features have been considered in the current study, with potential

impacts to their ecological features and functions addressed in Section 7 of the current report. With recommended mitigation and enhancement measures identified herein, we conclude that implementation of the proposed works can be undertaken with no net negative impacts to natural heritage features associated with the natural heritage system or their ecological functions.

6.6 CITY OF GUELPH OFFICIAL PLAN (MARCH 2018 CONSOLIDATION)

The current scoped EIS has been prepared to address all relevant policies within the Official Plan. Based on field surveys and analyses discussed herein, we have confirmed the Significant Wetland and Significant Woodland designations and limits (with minor modification), as mapped on Schedule 4A and 4C of the Official Plan (March 2018 Consolidation). The limits of both natural features were field staked, surveyed and approved by staff of the GRCA and City of Guelph.

The proposed development and scoped EIS complies with relevant policies of the Official Plan as follows:

- It achieves the objectives stated in Section 4.1 by:
    - Implementing a systems approach that will help ensure that the diversity and connectivity of natural features in the city, and the long-term ecological function and biodiversity of the Natural Heritage System is maintained and improved where possible.
    - Identifying Significant Natural Areas for long term protection.
    - Protecting endangered and threatened species.
    - Providing compatible development and activities that do not negatively impact the natural heritage features and areas, and their ecological or hydrologic functions now and in the long run.
    - Protecting and enhancing tree canopy cover while providing for meadow habitat at appropriate locations to support biodiversity.
    - Ensuring that the criteria identifying the Natural Heritage System is applied in a transparent manner.
    - Providing a clear mechanism for assessing the potential immediate and long-term impacts of development, site alteration and other activities on the Natural Heritage System (see Section 8 – Monitoring).
    - Seeking to identify opportunities to mitigate against stresses and impacts through ongoing monitoring and ecological management (see Sections 7 and 8).
    - Fostering an appreciation of the Natural Heritage System through distributed homeowner brochures and signage (see Section 7.2.10).
    - Supporting the ongoing monitoring and management of the City's Natural Heritage

System.

- The scoped EIS has been prepared to assess potential impacts of the proposed activities and recommend appropriate setbacks from the natural heritage feature within the adjacent lands, to ensure no negative impacts on natural heritage features (per Section 4.2.1 – General Policies). Some regrading is proposed within the 30m wetland buffer to construct the SWM facility. Some minor re-grading within the buffer will also be required to ensure positive drainage at the SWM outlet and for transition sloping adjacent to the most northerly townhouse block. The minor grading encroachment will be re-vegetated per the future buffer planting / management plan.
- Development and site alteration is not permitted within the PSW (Section 4.1.3.4 of the Official) nor within the Significant Woodland (Section 4.1.3.6 of the Official Plan).
- The minimum buffer widths for the natural heritage features (PSW and Significant Woodland) have been incorporated into the Conceptual Site Plan (Figure 3, Appendix A), per Table 4.1 of the Official Plan. Development and / or site alteration is not proposed within the minimum buffer width.
- Per Section 4.1.3.4 of the Official Plan, the proposed location of the stormwater management facility is a minimum of 15m from the verified limits of the PSW, and the development plan contains low impact development measures to the extent possible outside of the proposed buffer.
- A recommended multi-use trail has been proposed through the subject property (see Section 4.4.2), along the perimeter of the Natural Heritage System, that would link westerly to Carter Drive and easterly to an existing city trail, consistent with Schedule 6 of the City's Official Plan.

6.7 GRAND RIVER CONSERVATION AUTHORITY REGULATION (ONT. REG. 150/06)

Portions of the subject property are 'Regulated' by the GRCA under Ontario Regulation 150/06 of the Conservation Authorities Act. Within the subject property, this regulation is in relation to lands adjacent to PSW wetlands.

6.7.1 WETLAND POLICY

GRCA's "*Policies for the Administration of the Development, Interference with Wetland and Alterations to Shorelines and Watercourses Regulation*" (2015) and *Wetlands Policy* (2008) were reviewed to confirm compliance with Ontario Regulation 150/06. This will be achieved through the following:

- PSW wetland will be retained in full with development setbacks of at minimum 30 m. Note that it has been proposed that the SWM facility be located within the established wetland

buffer, a minimum distance of 15m from the PSW, consistent with Section 4.1.3.4 of the City of Guelph Official Plan (March 2018 Office Consolidation). Refer to Section 7 for the impact assessment related to the location of the proposed SWM facility. Some minor re-grading within the 15m wetland buffer will also be required to ensure positive drainage at the SWM outlet and within the 10m dripline for transition sloping adjacent to the most northerly townhouse block. The minor grading encroachment will be re-vegetated per the future buffer planting / management plan.

- Hydrogeological inputs to the wetland are generally maintained through the implementation of the proposed SWM facility and infiltration galleries (see Section 5.4). Although there will be an overall net gain to surface runoff to the PSW from the proposed development, the incorporation of LID measures will significantly reduce the runoff produced by the development from 24% (no LIDs) to 16.5% with the installation of the proposed infiltration galleries.
- Annual infiltration with the incorporation of LID measures is 6,238 m^3/year post-development, a net loss of only 119 m^3/year or 2% of current pre-development infiltration.
- Additional mitigation and protection measures are recommended (see Section 7.2), including: fencing, buffer zone management, stewardship and signage (to be finalized at detailed design).

7 IMPACT REVIEW AND MITIGATION EVALUATION

7.1 IMPACT OVERVIEW

This section reviews potential impacts or condition changes to natural environmental features on or bordering the subject property, based on direct activities (e.g. construction activities such as clearing and grading) or indirect activities (e.g. occupancy activities such as dumping of waste material, creation of indiscriminate trails, accessing sensitive natural features off the proposed multi-use trail). As previously noted, the proposed development envelope is restricted to culturally modified communities, so direct impacts to natural environment features are negligible. The primary concerns relate to potential indirect impacts to retained natural environmental features on adjacent lands, including PSW and NHS features. Potential indirect impacts include, for example, construction-related impacts to retained woodlands and wetlands, as well as post-development occupancy activities.

Two primary natural environment factors are discussed: wildlife and vegetation. In Table 6, each factor is reviewed in terms of potential effects, proposed mitigation and residual effects. The identified mitigation measures will be refined, as required, during detailed design.

7.2 OVERVIEW OF MITIGATION MEASURES

Specific mitigation measures are identified for each evaluation factor in Table 6. Several mitigation measures are common to the two natural environment evaluation factors, including: ESC plan; fencing; stewardship; spills management / best management practices during construction; and monitoring. Other measures are specific to certain factors. An overview of the common mitigation measures is provided below.

7.2.1 DEVELOPMENT SETBACKS AND BUFFERS

Setbacks: The following development setbacks are recommended:

i. PSW wetland limit + 30 m

ii. Woodland limit + 10 m

These are described in Table 3 and Section 5.2 of this report.

Buffer Management: In addition to the recommended setbacks, the following buffer management measures are proposed:

i. Permanent fencing and signage at rear lot / block limits (location to be confirmed at detailed design)

ii. Ecological enhancement of the intervening buffer areas (within the development setback zones) and proposed SWM facility, as discussed in Section 5.2

iii. Maintenance of hydrogeological inputs to receiving areas (PSW wetland), and

iv. Restricted access. In addition to permanent fencing at lot limits, no new trails are proposed within the wetland or the significant woodland in recognition of the sensitive nature of the features. Instead the proposed multi-use trail will be routed around these features, within the buffer zone, as discussed in Section 5.3.

7.2.2 ENVIRONMENTAL ENHANCEMENT AREAS

Buffer area management will provide a total of approximately 0.4 ha of ecological enhancement area within the subject lands.

Subject to confirmation or refinement at detailed design, these enhancements are anticipated to include a combination of natural succession, supplemented with nodal native species plantings, with the following objectives: establishing native species in disturbed areas before non-native species can become established; providing additional supplementary habitat for wildlife; retain suitable habitat for wildlife species; and increasing woodland edge density to reduce impacts from development (i.e. increased sun / wind, potential for invasive species spread and indiscriminate trail creation). These areas may also incorporate vegetation compensation plantings for any tree removals, pending a future Vegetation Compensation Plan. Plans are to be prepared as part of the Environmental Implementation Report (EIR).

7.2.3 EROSION & SEDIMENT (ESC) CONTROL PLAN

This strategy will mitigate impacts on vegetation, wildlife and wildlife habitat and wetland resources by implementing ESC fencing at grading limits, preventing sedimentation in adjacent natural features. It is anticipated that the ESC Plan will be prepared as a condition of approval, and approved by the GRCA and City of Guelph. General comments on erosion and sediment control are included in the Functional Servicing and SWM report (MTE, 2019). Key elements of the preliminary ESC Plan include the following:

a) ESC facilities are to be installed prior to grading operations.

b) regular site inspection and maintenance to ensure the controls are working properly.

c) measures to prevent any deleterious substances from leaving the site (e.g., diversion berms, temporary sediment control basins, temporary paige wire fencing and silt fencing)

d) erosion control berms/swales in critical areas to divert flows to temporary storage locations

e) temporary rock check dams in swales

f) strategic placement of topsoil stockpiles and use of ESC fencing around all stockpiles

g) timely re-vegetation of exposed soils

h) and construction entrance features to minimize the off-site transport of sediment from construction vehicles.

7.2.4 SWM STRATEGY

The proposed SWM strategy (MTE, 2019) will mitigate impacts to the wetland, vegetation and wildlife habitat by controlling post-development flows (to reduce sedimentation and erosion potential in the adjacent wetland and natural area) and treating stormwater runoff (to reduce potential for degradation of water quality to Guelph Northeast PSW). The proposed SWM facility outlet will be located outside of the 15m wetland buffer and 10m dripline and flows will be controlled via an on-line orifice plate on the outlet pipe and weir at the west side of the pond. Storm flow discharging into the buffer will mimic pre-development conditions. The post-development flow will not exceed pre-development flows up to the 100-year storm, therefore the proposed outlet will not negatively impact the existing vegetation, soils or wildlife habitat. Minimal grading at the outlet to ensure positive flow will prevent ponding of water outside of the wetland. See Section 5.4 for further discussion.

7.2.5 HYDROGEOLOGY / INFILTRATION

Maintenance of the existing hydrological regime (i.e., flow direction and volume) will protect the features and ecological functions of the receiving PSW.

The hydrogeology report (WSP, 2019) has been provided in Appendix H of this report. Below is an excerpt of Section 4 – Conclusions and Recommendations:

- Based on the Guelph Permeameter testing this site's shallow silty sand unit has an unsaturated conductivity of approximately 9.36×10^{-6} m/s. It is interpreted that surface water flow at the site is to the north, towards a tributary to the Speed River. Based on the water balance for this site, there will be an approximate 24% increase in runoff following construction of the proposed development from the existing conditions of the site (with no LID measures).
- Proposed Low Impact Developments (LIDs) will reduce the anticipated runoff increase at this site. Two proposed infiltration galleries will significantly reduce the runoff produced by the development to an increase of 16.5%. These galleries will also increase infiltration by an amount of 2,091 m^3/year, for an overall net loss of 119 m^3/year post-development, or 2% of pre-development infiltration.
- Additionally, it is recommended that bioretention LIDs be considered at the site to further decrease the runoff via increased evapotranspiration and infiltration.

7.2.6 TEMPORARY AND PERMANENT FENCING

Temporary vegetation protection / wildlife fencing (which may be combined with ESC fencing) is recommended to prevent damage to retained natural areas. This fencing will also deter wildlife (specifically reptiles and amphibians) from entering the construction site. Permanent fencing at development limits abutting the NHS is recommended to prevent uncontrolled access and occupancy-related 'spreading' into these sensitive areas.

7.2.7 TRAILS

Construction of the multi-use trail will require minor field fitting at a subsequent stage of development to minimize the impact of development. In addition, permanent fencing at rear lot / block limits (location of fencing to be confirmed at detailed design) and signage along the multi-use trail are proposed to limit indiscriminate access to the natural features and educate pedestrians of their sensitivity.

7.2.8 TREE INVENTORY AND MANAGEMENT PLAN

The Tree Management Plan (WSP, 2019) has been provided in Appendix J of this report. Conclusions and recommendations are summarized briefly below. For a complete list of recommendations / requirements, refer to Section 5 and 6 of the Tree Management Plan (WSP, 2019):

- Prior to the commencement of tree removals, all limits of the locations of the tree preservation fencing must be clearly staked in the field and approved by a third party environmental consultant.
- All removals must be felled into the work area, removed from the site and brush chipped.
- Tree protection fencing must be constructed and installed as per the details on the approved Tree Inventory and Management Plan.
- Areas within the tree preservation zone are not to be used for any type of storage.
- No grade changes shall occur within tree preservation zone unless approved as part of the Tree Inventory and Management Plan report.
- Pruning Practices are to be followed per Section 5.2 of the Tree Inventory and Management Plan.
- Tree preservation measures, including the establishment of a Tree Protection Zone (TPZ) shall apply to the individual trees denoted for preservation of the Tree Inventory and Management Plan, as well as all vegetated areas noted for retention.
- Trees located within the project area that are to be preserved will have tree protection fencing installed at the dripline plus 1 metre to establish a tree protection zone.

7.2.9 OTHER CONTSTRUCTION BEST MANAGEMENT PRACTICES

Other construction best management practices to minimize ecological impacts include:

- Refueling and equipment washing at least 30 m away from the woodland and wetland
- Prepare a Spills Management Plan and keep on site
- No stockpiling or storage of construction materials or soils within or immediately adjacent to the woodland / wetland buffer.
- No tree removals during the active bird breeding / bat roosting season of April 1 to September 30.

7.2.10 STEWARDSHIP

Maintaining natural areas adjacent to residential development provides opportunities for passive recreation but also requires stewardship by the public. Public awareness of the need for such stewardship is important and environmental education is an important tool in achieving this objective.

Homeowner Brochure. Provision of a brief environmental brochure to homeowners is recommended as an educational tool. WSP has prepared homeowner brochures for many residential developments. The purpose of the brochure is to inform residents about the environmental features bordering the subject property and how they can be responsible stewards of these natural resources. The overall philosophy of living with nature would be highlighted, incorporating, as an example, the following: importance of LIDs and their role in the protection of adjacent natural areas, proper handling of landscape waste and composting; control and potential impacts of fertilizers and herbicides / pesticides, de-icing salts and automotive cleaning residues and disposal of toxic substances in the storm sewer system; protection of soil and vegetation in the natural areas; explanation of the importance of saplings and native ground flora; pet implications and control; and invasive plant spread from landscaped areas.

It is recommended that the brochure be provided with the purchase documents, and made available at the sales trailer or at the City of Guelph. The brochure should be part of the property sale documentation as well, to ensure that next generation purchasers are informed about environmental stewardship.

Signage. Signage identifying the presence of ‘sensitive natural areas’ is recommended at regular intervals along the edge of the natural heritage system and proposed multi-use trail.

Table 6: 78-82 Eastview OPA / Zone Change Potential Impacts to the Natural Environment

FEATURE SIGNIFICANCE AND SENSITIVITY	POTENTIAL NATURAL ENVIRONMENT IMPACTS	MITIGATION MEASURES	RESIDUAL EFFECTS
Vegetation			
Vegetation resources. The subject property is composed of culturally modified communities, wetlands and woodlands. **Designated Areas**. On the subject property, there are several overlapping designations for the natural area: o PSW o Significant Woodland o Significant Wildlife Habitat **Plant Species of Conservation Concern:** o Three species considered significant in Wellington County (Hop Sedge (*Carex lupulina*), Mountain Ash (*Sorbus americana*), Rough-leaved Goldenrod (*Solidago patula*). These were identified during fieldwork for the 66 Eastview EIS, and of these, only Rough-leaved Goldenrod was on the subject property. These species were not located during fieldwork for the 78-82 Eastview EIS. The portions of NHS on the subject property and adjacent lands have a high ecological significance and sensitivity, as recognized by the various natural heritage designations.	**Direct Impacts**. Removal of ~2 ha of culturally modified communities including two former residences and grounds, meadow and thicket and cultural woodland (Veg. Units 3, 6, 7a, 9) **Indirect Impacts**. There is potential for indirect impacts to vegetation as the result of construction, changes in adjacent land use, changes to hydrology / hydrogeology and occupancy related activities. • **Edge Effects**. Vegetation dieback at the edge of retained woodlands can result in exposure of the less disturbed treed areas to additional sunlight and invasive plant species which can lead to trunk damage (sunscald), increased drying and localized changes in ground flora (e.g. increase in exotic / invasive species). • **Construction-related Impacts (short-term), including**: damage to vegetation outside the work zone; sedimentation; spills of contaminants; root pruning; damage to limbs; and soil compaction. • **Hydrology / hydrogeology**. Retained vegetation might be impacted by changes to hydrology / hydrogeology. For example, wetlands that receive surface / groundwater from the future developed area can be stressed if inputs are changed (e.g. surface water vol./flow direction; reduced infiltration; changed groundwater flow direction). • **Occupancy-related Impacts**. These may include: woodland and wetland edge effects (e.g. invasive species proliferation); trail creation and natural feature access off of proposed multi-use trail; vandalism; refuse/vegetation dumping; effects of salt spray from road maintenance.	**Direct Impacts** to be mitigated by: • Installing temporary Vegetation Protection Fencing prior to any site grading to delineate the work zone and prevent direct damage to adjacent retained vegetation (i.e. mechanical damage, root damage, soil compaction). This fencing will remain until construction is complete. **Indirect Impacts** to be mitigated by: • **Permanent Fencing**. To be installed along the NHS - development interface. This prevents intrusion, uncontrolled dumping and 'spreading' into the retained natural area edge. • **Buffer Management**. The proposed buffer between the development footprint and the retained natural area (minimum PSW + 30 m, woodland + 10 m) will be managed to provide a more protective edge and reduce potential for occupancy-related impacts such as uncontrolled access and 'spread' (e.g. managed natural succession and native species cluster / nodal plantings). • **Sediment / Erosion Control Plan**. To prevent sedimentation of off-site retained vegetation, ESC fencing will be installed prior to site grading and maintained throughout construction. • **Hydrology / Hydrogeology**. An effort has been made to maintain post-development surface and groundwater water inputs to retained natural areas through a combination of passive infiltration of pervious areas, infiltration galleries, passive runoff and surface runoff via the SWM facility (dry pond). • **Implementation of Best Management Practices**. See Section 7.2.9 • **Stewardship**. An integrated stewardship approach is proposed, with signage at the woodlot limits and along the multi-use trail; brochures; and fencing at development limits. • **Tree Protection**. Trees identified for retention will be protected to ensure that they provide a viable long-term amenity to residents. A Tree Compensation Plan will be completed in subsequent design stages. • **Monitoring**. Potential long-term impacts to retained natural areas will be assessed using an annual biological monitoring program.	Residual impacts to vegetation are anticipated to be minor, with proper implementation of mitigation, stewardship and monitoring measures, considering: • Provincially significant wetlands and Regionally significant woodlands will be retained in full and protected with development setbacks • Recommended woodland development setbacks will provide good dripline and root zone protection. These setbacks, coupled with buffer zone management, will improve edge integrity by establishing a thicker, more diverse edge. • Edge effects are already present in the woodland due to the anthropogenic land use history and ongoing development / occupancy related effects. Given the increased development in the broader landscape, some increase in exotic and invasive species is likely. The intent is to reduce this to the extent possible. • The permanent fencing, and signage / stewardship brochure will help to reduce any secondary effects on woodland and PSW integrity following area development and occupancy. • With the implementation of the recommended SWM implementation strategy, no substantive changes in wetland vegetation diversity resulting from hydrogeological changes are anticipated in the adjacent PSW areas. • Residual impacts from construction are anticipated to be negligible, with implementation of recommended vegetation protection fencing, ESC fencing and a spills management plan.

FEATURE SIGNIFICANCE AND SENSITIVITY	POTENTIAL NATURAL ENVIRONMENT IMPACTS	MITIGATION MEASURES	RESIDUAL EFFECTS
Wildlife			
• The subject property provides habitat for a range of common, urban-adapted, semi-natural, generalist species as well as some more specialized species. • Amphibian breeding habitat was confirmed in the wetland communities associated with the PSW • Two candidate and three confirmed SWH types were recorded in the wetland and woodland habitats • The large natural area complex extends beyond the subject property and provides some more specialized habitat for wetland and woodland associated species. • Three SAR were recorded within the study area. Chimney Swift (two individuals) were observed foraging overhead; any potential nesting habitat would be associated with the NHS woodland or off-site buildings. Barn Swallow (one individual) was recorded foraging and no nesting habitat is present in the development envelope. Eastern Wood-pewee (one individual) was heard calling in the forest. Wood Thrush was recorded in the 66 Eastview EIS (Ecoplans, 2013), but was not recorded during fieldwork for 78-82 Eastview. • Sixteen bird species considered Significant in the City of Guelph were recorded.	Potential impacts on wildlife habitat are similar to those discussed for vegetation (i.e. direct / indirect impacts to habitat – removals, occupancy related effects etc.). Some additional occupancy-related effects are specific to wildlife (e.g. pet predation, influence of increased pedestrian activity / house proximity to wildlife habitats). **Direct impacts**. Loss of wildlife habitat is restricted to culturally modified communities. o **Movement opportunities**. Negligible impact – no defined wildlife movement areas occur across the development envelope and there is no direct impact to movement within the NHS o **Habitat for wildlife species of concern**. No critical habitat for SAR or locally significant wildlife will be directly impacted. o **SWH**. No candidate or confirmed SWH types will be directly impacted, with the exception of Monarch. However, only forging habitat will be impacted (breeding habitat not present) and suitable habitat is abundant throughout the local landscape (i.e. Pollinator Park) and will be replicated in the retained buffer and SWM facility. **Indirect Impacts**. There is potential for indirect impacts to wildlife habitats on adjacent lands as a result of construction, changes to hydrology / hydrogeology and occupancy related activities. o **Construction-related impacts**. These are generally limited to temporary disturbances to edge habitats during construction. Potential for sedimentation and contamination are addressed by ESC controls and SWM measures. o **Hydrology / hydrogeology**. As above, retained off-site habitats may be impacted by changes to hydrological / hydrogeological inputs. This is particularly important for wetlands. o **Occupancy-related impacts**. These may include pet predation; woodland edge effects; access to natural feature off proposed multi-use trail and other degradation of wildlife habitat.	Retention and protection of vegetation resources in adjacent natural areas (as discussed above) will also protect wildlife habitat. Specific mitigation measures are as follows: • **Enhancement of NHS habitat**. With the proposed protection and improved buffering (e.g. native species plantings, improved edge), the retained NHS habitat on the property will be enhanced relative to the current condition. This will provide benefit to wildlife, including more sensitive species. • **Movement opportunities**. Based on field surveys, there is no evidence of defined movement areas for wildlife across the development envelope. Local wildlife movement opportunities within and between retained natural areas outside of the proposed development envelope will be maintained through the proposed protection and mitigation measures. • **Habitat for wildlife species of concern and SWH**. Measures are proposed to protect retained habitat, including ESC controls; maintenance of hydrological inputs; fencing / restricted access; encounter protocols for species of concern and stewardship initiatives (e.g. signage, homeowner brochures). • **Vegetation Removals**. Avoiding / minimizing the extent of works (particularly vegetation / potential nesting habitat removal) within the "regional nesting period" for this area in order to minimize impacts to avian habitat. Additionally, avoid / minimize removal of treed habitat during the active season for bats (April 1 – September 30). • **Erosion & Sediment Controls and the SWM system** are designed to reduce the potential for sedimentation or contamination of adjacent areas. • **Maintenance of hydrology**. Direction and volume of surface flows will be maintained / increased post-construction. • **Occupancy-related impacts**. Occupancy related impacts to wildlife and wildlife habitat will be mitigated by a combination of measures: fencing at the development limit to restrict access and prevent 'spreading' and; stewardship initiatives (signage along proposed multi-use trail, homeowner brochure). The intent is to restrict access to sensitive areas and inform local residents about the sensitivity of adjacent natural areas. • **Monitoring**. Potential impacts to wildlife / wildlife habitats will be assessed using the annual biological monitoring program.	Residual impacts to wildlife and wildlife habitat resulting from development on the subject property are anticipated to be negligible considering: • The proposed development is restricted to culturally modified communities that provide a small amount of habitat primarily for common, tolerant wildlife species. • There will be no loss of important habitat for SAR or locally significant / area sensitive species • There is no direct impact to sensitive wildlife habitats, including SWH associated with the PSW and significant woodland. • There will be improved buffering of retained natural areas (an enhancement over the current condition). The proposed setbacks, coupled with buffer zone management, will improve edge integrity by establishing a thicker, more diverse edge. • Additional measures are proposed to reduce potential for indirect impacts to offsite wildlife habitat (i.e. ESC control, SWM treatment of contaminants, maintenance of hydrological inputs to dependent features, buffering of sensitive areas). • Stewardship measures are proposed to raise awareness of the sensitivity of adjacent natural areas and reduce potential for occupancy-related impacts. However, in any populated area there is potential for intrusion and damage to natural areas and less tangible effects of occupancy on breeding birds. Population changes in breeding birds are inevitably related to the approved transformation of the broader landscape in the City. Changes can also be affected by factors outside the City (e.g. alteration/loss of wintering habitat, severe climatic conditions during migration activity, and changes in migratory stopover habitat). Hence, it must be recognized that shifts in wildlife composition may be inevitable over time, and in fact have probably already occurred with changes in the landscape.

8 MONITORING

Typical during-construction monitoring is recommended (e.g. ESC fencing and SWM facility inspection). In addition, implementation of an annual Biological Monitoring program is proposed. This includes vegetation and wildlife monitoring, focusing on adjacent lands (e.g. PSW and NHS features). The Biological Monitoring program is outlined in Section 8.1.3 of this report. It is intended that the program would be finalized as a condition of approval.

This integrated monitoring approach will help to identify issues of concern and recommend strategies to address problems in a timely manner.

8.1 MONITORING PROGRAM

A monitoring program is proposed entailing three stages: Pre-Construction, During-Construction and Post-Construction. Pre-Construction monitoring identifies the baseline conditions against which subsequent monitoring can be compared. During-Construction monitoring will ensure that environmental protection and erosion controls implemented during construction are in good working order and are performing as expected. Post-Construction monitoring includes SWM monitoring; monitoring of landscape planting survivorship; and biological monitoring of retained natural areas.

Duration of monitoring and additional monitoring program details are to be confirmed as a condition of Draft Plan approval.

8.1.1 DURING CONSTRUCTION - GRADING AND SERVICING

Monitoring should consist of the following activities that are the responsibility of the developer:

i. Periodic inspection of the temporary sediment storage locations and other erosion control works;

ii. Inspection of the temporary sediment storage locations after significant rainfall events or weekly, whichever is shorter;

iii. Inspection of vegetation protection fencing and sediment control fencing to ensure that it is in good repair;

iv. Removal of construction debris that may accumulate along, and damage, the above fencing;

v. Implementation of remedial measures, where required, as quickly as possible (e.g. erosion stabilization; repair / replacement of damaged / fallen fencing; pruning, fertilization or irrigation of retained trees).

Regular monitoring reports will be prepared to document the performance of the erosion and

sediment control measures, addressing: 1) integrity and effectiveness of controls; 2) condition of temporary sediment storage locations; and 3) any recommendation for action or additional monitoring.

On completion of construction, the Engineering Consultant will submit a Letter of Certification to the City and the GRCA indicating that all drainage works have been constructed in accordance with Engineering Drawings.

8.1.2 AFTER CONSTRUCTION – SWM AND LANDSCAPE PLANTING MONITORING

The developer will monitor the operation of the constructed SWM facilities for a period of 2 years[2] after initial acceptance of underground services by the City of Guelph. Thereafter, monitoring responsibility would be transferred to the City of Guelph, if longer term monitoring were to be implemented.

Monitoring of the SWM discharge toward the PSW is recommended to ensure that identified targets / objectives are being met. It is intended that details for SWM outlet monitoring are to be finalized as a condition of registration.

The landscape plantings around the SWM pond and in enhancement areas are to be monitored and replaced as necessary, for a period of 2 years.

8.1.3 PRE-, DURING- AND POST-CONSTRUCTION BIOLOGICAL MONITORING

An annual biological monitoring program is proposed, with a focus on the PSW / NHS. The program includes a general overview of vegetation; fixed plot vegetation monitoring and edge community assessment; and a breeding bird survey. This monitoring is will continue for 2 years post-construction, or as stipulated in a condition of draft plan approval. The monitoring is the responsibility of the developer / proponent.

i. The **general overview** will include comments on: vegetation condition / vigor; presence of damaged, diseased, or hazard stems, and hazard trees requiring attention; proliferation of invasive species; areas of trampled or cut vegetation, rubbish disposal, and / or sediment deposition; and evidence of any erosion problems and / or informal trail development. Remedial work should be undertaken as required based on the monitoring review.

ii. **Vegetation Plot Monitoring**. The approach includes fixed point photo-monitoring, a quantitative / qualitative species assessment within plots and general comments on vegetation within the vicinity of the plot. WSP has implemented this type of monitoring at numerous sites across Waterloo Region over the past 20 years.

iii. **Amphibian Calling Survey**. It is recommended that the amphibian calling surveys completed as part of this EIS (see Section 4.6.2.2) be continued annually for 2 years post-

[2] Or a program duration to be determined as a condition of draft plan approval

construction.

iv. **Breeding Bird Survey**. An annual breeding bird survey of adjacent retained areas in the NHS will be included in the biological monitoring program and continued for 2 years post-construction.

It is intended that this outline of the biological monitoring program will be refined and finalized as a condition of Draft Plan approval.

9 CONCLUSIONS AND RECOMMENDATIONS

Based on this review, we conclude that the OPA / Zoning Change for the 78-82 Eastview property, as proposed, can be undertaken while protecting key environmental features. This conclusion reflects the following considerations:

i. There is no intrusion into the PSW / NHS. These features are retained in full and protected with setbacks, buffer enhancement, fencing, signage and stewardship measures. There will be some minor encroachments into the 30 m buffer to accommodate some grading and construction of the SWM facility.

ii. There is no intrusion into the significant woodland. The feature and functions will be maintained with protected setbacks, buffer enhancement, fencing signage and stewardship measures.

iii. The final SWM implementation strategy will generally maintain water balance and existing hydrological / hydrogeological regimes (approximately 16.5% increase in runoff with implementation of proposed infiltration galleries), ensuring long-term protection of wetlands and groundwater.

iv. Annual infiltration is currently 6,357 m^3/year and this will change to 6,238 m^3/year post-development (with the implementation of proposed LID measures), for a net loss of 119 m^3/year.

v. Environmental stewardship measures are identified for the long-term protection of the woodland and PSW and other retained features adjacent to the property.

vi. The recommended monitoring program will: assess the operation of the SWM and drainage measures; and assess the health of retained natural areas as development and occupancy proceeds.

vii. It is concluded that the conceptual development design measures, as well as environmental management and setback / buffer implementation, conform to the environmental management and mitigation principles identified in the relevant planning studies and policies outlined in the Official Plan (March 2018 Consolidation).

viii. Environmental stewardship and education continue to be key management measures for developments bordering natural areas. These initiatives, coupled with the other mitigation measures reviewed in this document, provide the first line of defense in reducing natural feature effects and condition changes. It is recognized that even with these measures in place, some impact on natural areas from the influx of new residents to the area is inevitable; the intent is to reduce that risk to the extent possible.

To ensure that environmental protection and mitigation is properly managed during site development the following recommendations/actions are identified:

i. An ESC Plan will be prepared and submitted to the GRCA and the City of Guelph for review and approval prior to any grading and site alteration.

ii. Vegetation and silt protection measures will be implemented as required (e.g. diversion berms, temporary sediment control basins, temporary paige wire fencing and silt fencing) and maintained prior to and throughout construction.

iii. Permanent fencing is recommended along the interface between development and the NHS to avoid indiscriminate access to natural features.

iv. Proposed trail links avoid sensitive areas (provincially significant wetland, significant woodland) and reduce vegetation removal. Signage is recommended along proposed multi-use trail to inform pedestrians of environmental sensitivities.

v. The monitoring approach identified in Section 8 is recommended to ensure that various mitigation and design measures are maintained and operating during construction.

vi. An Environmental brochure should be prepared and provided to new residents addressing environmental stewardship issues reviewed in this report.

vii. An environmental inspector should conduct site checks prior to and periodically during construction to ensure that protection and mitigation measures are properly implemented and to identify if any remedial measures are required.

Recommendations for future work:

i. A Tree Compensation Plan is to be completed at subsequent stage, and included with future application submission.

All of which is respectfully submitted by,

WSP

Chris Lorenz, M.Sc.

Ecologist / Project Manager

Rebecca Hay, M.Sc.

Senior Ecologist / Project Manager

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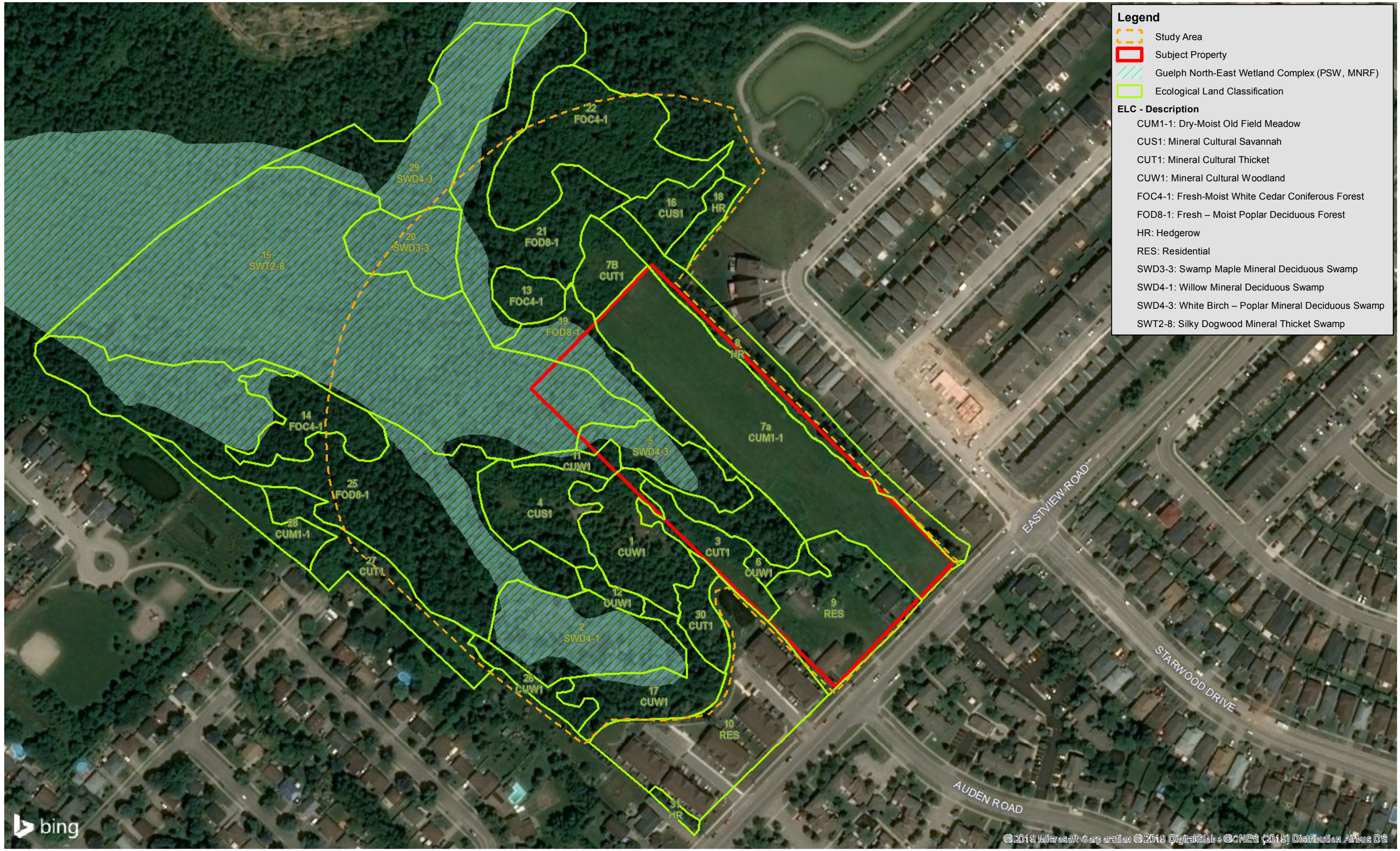
APPENDIX

A FIGURES



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WSP

78 - 82 EASTVIEW ROAD, GUELPH

Ecological Land Classification and Provincially Significant Wetland

0 25 50
metres
1:2,250

N

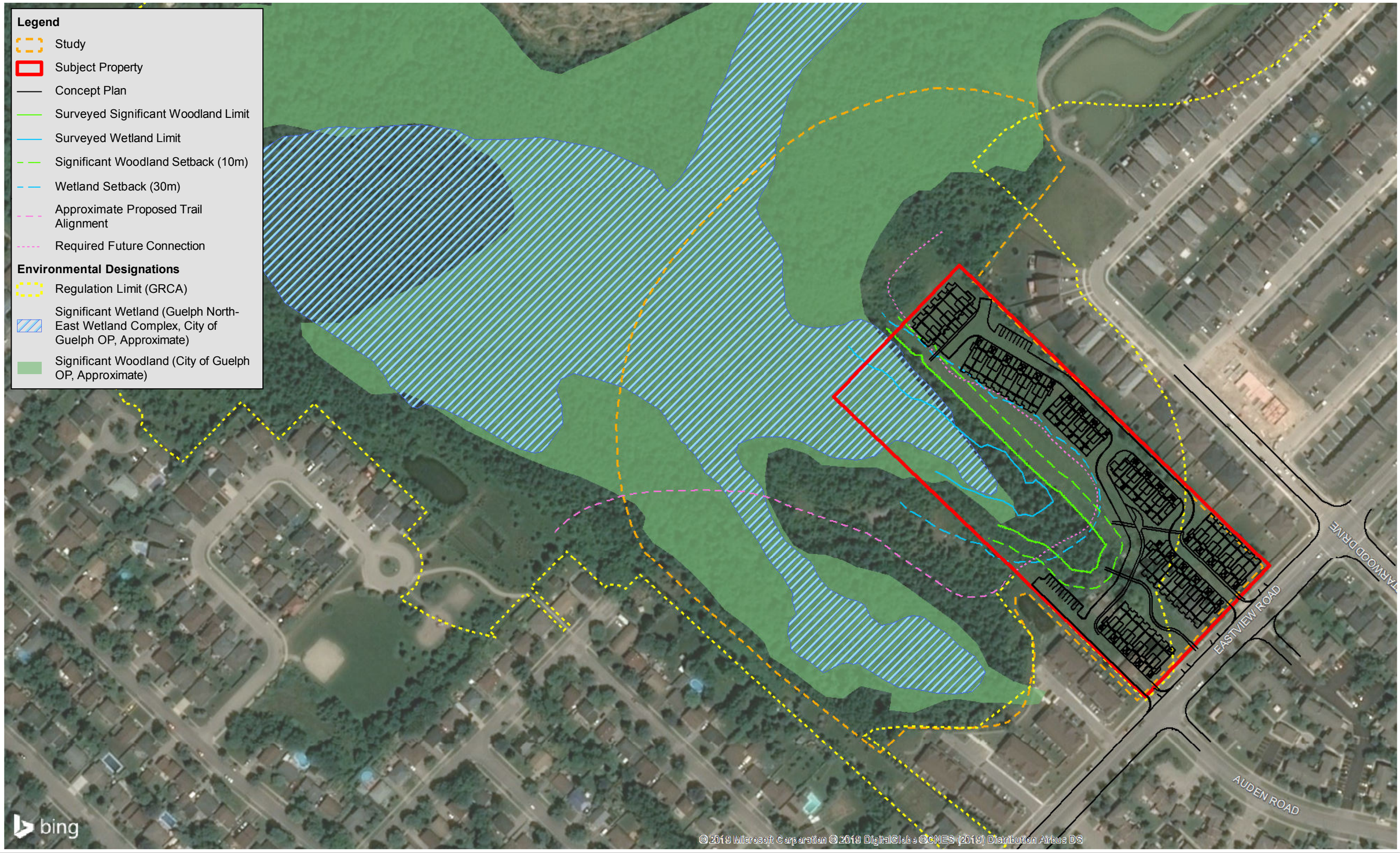
Date: March 2019
Project No: 17M-01526-00
Figure No: 1

Legend

- Study
- Subject Property
- Concept Plan
- Surveyed Significant Woodland Limit
- Surveyed Wetland Limit
- Significant Woodland Setback (10m)
- Wetland Setback (30m)
- Approximate Proposed Trail Alignment
- Required Future Connection

Environmental Designations

- Regulation Limit (GRCA)
- Significant Wetland (Guelph North-East Wetland Complex, City of Guelph OP, Approximate)
- Significant Woodland (City of Guelph OP, Approximate)



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WSP

78 - 82 EASTVIEW ROAD, GUELPH
Environmental Designations

0 25 50
metres
1:2,200

N

Date: March 2019
Project No: 17M-01526-00
Figure No: 2

Legend

- Study Area
- Subject Property
- Concept Plan
- Surveyed Significant Woodland Limit
- Surveyed Wetland Limit
- Significant Woodland Setback (10m)
- Wetland Setback (30m)
- Proposed Trail

EASTVIEW ROAD

STARWOOD DRIVE

AUDEN ROAD

bing

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78 - 82 EASTVIEW ROAD, GUELPH

Conceptual Site Plan and Environmental Setbacks

0 25 50
metres
1:2,250

N

Date: March 2019
Project No: 17M-01526-00
Figure No: 3

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78 - 82 EASTVIEW ROAD, GUELPH
Wildlife Survey Locations and Key Findings

0 25 50
metres
1:2,250

N

Date: March 2019
Project No: 17M-01526-00
Figure No: 4

APPENDIX

B TERMS OF REFERENCE

TERMS OF REFERENCE

TO: Adele Labbe, City of Guelph

Nathan Garland, Grand River Conservation Authority

CC: Muzzamil Dewan, Exquisite Development

FROM: Chris Lorenz, WSP Group Limited

SUBJECT: **Revised Terms of Reference – Environmental Impact Study, 78-82 Eastview Road, Guelph Ontario**

DATE: **May 1, 2018**

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1. INTRODUCTION

WSP Group Canada Limited has been retained by Exquisite Developments (2589615 Ontario Inc.) to complete a Scoped Environmental Impact Study (EIS) for a proposed residential re-development at 78 and 82 Eastview Road, Guelph Ontario (the *subject property*). The *study area* for the EIS will encompass the subject property and natural feature(s) within ~120 m of the subject property. The approximate limits of the subject property and study area is shown on Figure 1.

The subject property encompasses approximately 3.25 ha and is bounded by Eastview Road to the south, residential properties fronting onto Starwood Drive to the East and is primarily bounded by a large natural area to the west and north. A small residential development is located adjacent to the southwest limit of the property at 66 Eastview Road.

The subject property is located near the eastern edge of Guelph; primarily residential development surrounds the subject property to the south and west. A large natural area extends to the north of the subject property and includes the Guelph North-East Wetland Complex Provincially Significant Wetland and Significant Woodland. Immediately to the east of the proposed development is a recently completed residential development, the closed Eastview Road Landfill and Eastview Community Park. Beyond these features to the north and east is rural lands dominated by agriculture and rural residential.

The natural heritage feature(s) partially contained within and adjacent to the subject property are identified as Significant under the City of Guelph Official Plan (March 2018 Consolidation), triggering the requirement for an EIS for development to occur on lands adjacent to these features (City of Guelph, 2017). The natural area includes Provincially and Locally Significant Wetland and Significant Woodland; habitat for a variety of species including avifauna,

herpetofauna, mammals and insects is present in association with these features and adjacent culturally derived land cover types – cultural meadow, hedgerow, individual and small tree groupings. Impermeable surface are limited to existing driveways and building footprints under existing conditions. Three primary buildings are present on the site: two former residences and a large shed / workshop. Smaller outbuildings (sheds) are also present.

Based on existing topographic information (GRCA 2015), there is no evidence of significant grading or filling activities on the subject property (i.e. no unusual abrupt edges or slopes). It is anticipated that this was done to accommodate agriculture. Some grading and /or filling occurred on 82 Eastview in 2006 in the southern portion of the property; evidence can be seen in historic airphotos. Refined topographic information and detailed site work will review any potential areas of grading. No brownfield contamination is known to be present on the properties, however a portion of the subject property is within the Landfill Constraint Area for the closed Eastview Road Landfill Site (Guelph OP Consolidation (2018), Schedule 3).

These Terms of Reference (TOR) provide background information on the subject property and outline the steps required to complete the EIS. An EIS is required under City of Guelph Official Plan when development is proposed on lands adjacent to a significant natural heritage feature or the Natural Heritage System.

2. PLANNING CONTEXT AND HISTORY

2.1. Preliminary Development Description

On the Land Use Plan (Guelph OP Consolidation (2018), Schedule 2), the subject property is identified as *General Residential* and *Significant Natural Area*. City of Guelph Zoning maps identify the subject property as *Residential* (R.1B) and *Urban Reserve* (UR). A portion of the property is identified as having 'Locally Significant Wetlands, Significant Woodlands, Natural Corridor or Linkage'.

The proposed development requires the subject property to be rezone the lands outside the natural area from its current zoning of Residential Single Detached (R.1B) and Urban Reserve (UR) to Residential Townhouse Zones (R.3A) to allow for the development of approximately 63 townhouse units with an internal condominium road. Stormwater management facilities are anticipated to be required to accommodate the development. As noted in the Environmental Implementation Report for 66 Eastview Road (MMM 2013), there is a planned trail route leading from Carter Park to Eastview Park as noted in the Guelph Trail Master Plan and the City's Official Plan (OPA 48 – Schedule 8). As part of the EIS, the proposed trail design will be refined to include further construction detail, mitigation to implementation impacts, and integration into the existing landscape (see Section 4.4.10 for further detail).

Lands immediately to the east and west along Eastview Road are zoned residential and have recently been developed. The large natural feature to the north of the subject property and

extending across the northern portion of adjacent properties is zoned as *Significant Natural Area* as part of the City of Guelph *Natural Heritage System*.

2.2. Legislation, Regulations, Policies & Guidance Documents

Consideration and compliance with appropriate environmental legislation, regulations and policies will be addressed through the EIS, including:

- Endangered Species Act (ESA) (2007)
- Provincial Policy Statement (2014)
- Grand River Conservation Authority's consolidated policies for Implementing the Development, Interference With Wetlands and Alternation to Shorelines and Watercourses Regulation (Ontario Regulation 150 / 06)
- Grand River Conservation Authority Wetlands Policy – GRCA 2003, amended 2008
- City of Guelph Official Plan Consolidation – March 2018
- City of Guelph Guidelines for the Preparation of Environmental Impact Studies (2017)
- Grand River Conservation Authority Environmental Impact Study Guidelines and Submission Standards for Wetlands (2005)

Guidance documents used in the assessment of feature form and function will include, as appropriate, but not be limited to:

- Natural Heritage Resource Manual (2010)
- Significant Wildlife Habitat Technical Guide (2000) and Criterion Schedules for Ecoregion 6E (2015)
- Significant Wildlife Habitat Mitigation Support Tool (2014)
- City of Guelph Official Plan Consolidation – March 2018

3. NATURAL ENVIRONMENT OVERVIEW

3.1. Planning History and Past Reports

The subject property has some planning history, with re-development considered by previous owners. As a result, the following work and studies have been undertaken that provide information for the subject property and adjacent natural heritage features:

- Scoped Environmental Impact Study prepared for 66 Eastview Road, Guelph ON (Ecoplans | MMM Group Limited, 2013)

- Addendum to the Scoped Environmental Impact Study prepared for 66 Eastview Road, Guelph ON (Ecoplans | MMM Group Limited, 2014)
- Scoped Hydrogeology Study Report prepared for 66, 78 and 82 Eastview Road, Guelph ON (LVM 2012)
- Preliminary Geotechnical Investigations Report prepared for 66, 78 and 82 Eastview Road, Guelph ON (LVM 2012)
- Preliminary Geotechnical Investigations for Proposed Subdivision Development at 82 Eastview Road, Guelph, ON (GeoPro Consulting Limited, December 2016)
- Preliminary Geotechnical Investigations for Proposed Subdivision Development at 78 Eastview Road, Guelph, ON (GeoPro Consulting Limited, September 2017)
- Groundwater and Soil Sampling and Analysis – 78 & 82 Eastview Road, Guelph, ON (Premier Environmental Services Inc., August 2017)

Ecological surveys, hydrogeological and geotechnical study were completed in support of the EIS on 66 Eastview that encompassed the current subject property (78 and 82 Eastview) and adjacent natural heritage features.

In addition to these studies, several studies and reports were prepared that addressed the 66 Eastview property and other adjacent lands, including:

- Environmental Implementation Report prepared for 66 Eastview Road, Guelph ON (MMM Group Limited, 2014)
- Addendum to the Implementation Report prepared for 66 Eastview Road, Guelph ON (MMM Group Limited, 2014)
- Stormwater Management Report prepared for 66 Eastview Road, Guelph ON (MTE 2014)
- Landscape Plans prepared for 66 Eastview Road, Guelph ON (Catherine H Kirk, 2013)
- Arborist Report and Tree Management Plan prepared for 66 Eastview Road, Guelph ON (MMM 2014)
- Environmental Monitoring Reports prepared for 66 Eastview, Guelph ON (MMM / WSP)
- Grange Hill Phase 7 EIS (Dougan and Associates, 2006) and EIR (Aboud and Associates, 2011)

Information and recommendations from these could provide information useful to the current EIS at 78 and 82 Eastview Road. Confirmation of approval to use the information contained in these reports is required (i.e. that they are publicly available or obtain owners' permission).

3.2. Information Sources

In addition to studies and reports prepared that provide information pertinent to the subject property and legislation, regulations and guidelines identified above, other secondary source resources have been or will be consulted through the EIS process, including:

- Relevant legislation, regulations, and guidelines identified above
- Past reports for adjacent properties, as available
- Natural Heritage Information Centre (NHIC) (reviewed) - Significant Areas and Species at Risk
- Species at Risk range maps & habitat descriptions
- Land Information Ontario – feature and base mapping
- Ministry of Natural Resources Information Request (submitted)
- Grand River Conservation Authority Information Request (submitted)
- Species at Risk Regional Lists (MNRF) and range maps (reviewed)
- Clythe Creek Subwatershed Overview, 1998
- City of Guelph Natural Heritage Strategy (Phase 2): Terrestrial Inventory & Natural Heritage System, 2009
- GRCA GRIN Mapping (Regulation, wetlands, watercourses)
- Ontario Breeding Bird Atlas
- Ontario Reptile and Amphibian Atlas

3.3. Existing Designations

The majority of the subject property is *Regulated* by the Grand River Conservation Authority (GRCA) under Ontario Regulation 150/06 and is understood as being adjacent lands to a wetland feature regulated by the Authority (GRCA 2016). Under the City of Guelph Official Plan Consolidation (March 2018), portions of the subject property are contained within the Guelph Natural Heritage System and are designated as a *Significant Natural Area* (Guelph OP Consolidation, Schedule 4). The *Significant Natural Area* has been identified based on the following features: Provincially Significant and Locally Significant wetland (Guelph OP Consolidation, Schedule 4A) and Significant Woodland (Guelph OP Consolidation, Schedule 4C). No surface water features, fish habitat (Guelph OP Consolidation, Schedule 4B), or regulated watercourses (GRCA 2016) are identified as being present on the subject property. No Areas of Natural and

Scientific Interest (ANSIs), Significant Valleylands or Significant Landforms are identified as being present on the subject property (Guelph OP Consolidation, Schedule 4A, 4D).

3.4. Terrestrial Overview

Vegetation communities on the subject properties include a mix of natural and culturally derived or influenced communities, including: Cultural Meadow (CUM1-1), Cultural Woodland (CUW1), Dry-Fresh Poplar Deciduous Forest (FOD3-1), White birch – Poplar Mineral Deciduous Swamp (SWD4-3) and Silky Dogwood Mineral Thicket Swamp (SWT2-8) (MMM 2013). The area of development interest includes areas of cultural meadow and existing residential development. Scattered trees and tree groupings are also present on the subject property.

A preliminary site visit was conducted on August 28, 2017 to review the wetland limit compared to the limit established during the 2013 EIS for 66 Eastview. No notable changes to the feature limit were identified.

No Species at Risk plants are known to occur on the subject property based on existing information. One of three species considered significant in Wellington County recorded during the 2013 EIS was recorded on the subject property (Rough-leaved Goldenrod [*Solidago patula*]).

A total of 28 bird species were observed during the 2013 EIS for 66 Eastview. Four Species at Risk / Species of Conservation Concern birds were identified: Chimney Swift (Threatened: ESA, SARA) and Barn Swallow (Threatened: ESA), Eastern Wood-pewee (Special Concern: ESA) and Wood Thrush (Special Concern: ESA). One additional species considered significant by the City of Guelph and one Area Sensitive Species (MNRF) were also recorded: Northern Flicker and White-breasted Nuthatch.

An updated NHIC search did not identify any new species observations in the vicinity of the subject property. A request has been submitted to the Ministry of Natural Resources to confirm the list of Species at Risk to be screened through the current Scoped EIS. Species anticipated to occur based on range and habitats present has been considered in the development of the current Terms of Reference.

3.5. Aquatic Overview

No fish habitat of aquatic features are known to occur on the subject property.

4. EIS APPROACH AND METHODOLOGY

The proposed scope of work for the EIS, as outlined below, is based on available background information, preliminary site review information, requirements / guidance found in the City of Guelph Guidelines for the Preparation of Environmental Impact Studies Version 1 (2017), GRCA Environmental Impact Study Guidelines and Submission Standards for Wetland (2005) and the Pre-Consultation Summary provided by the City of Guelph dated August 15, 2017.

Field data collection for the EIS prepared for 66 Eastview occurred in 2010 and 2012. It is generally accepted that field data greater than 5 years old will require field verification. A preliminary site walk was undertaken on August 28, 2017 to review current field conditions compared to those documented in the 2013 EIS. Feature limits and general site conditions appear to be consistent (no significant changes to feature limits or to vegetation communities). The scope of work for the current EIS will focus around verifying results of this earlier work and updating it as required to inform the current application.

4.1. Development Proposal

The following will be included within the EIS report:

- Description of the proposed development
- A site plan of the subject property and the proposed development
- An outline of the current land use designation and zoning and the proposed zoning
- A summary of the recommended stormwater management solution(s) for the development

Where possible, historic and present land uses will also be generally described, including, but not limited to:

- Grading / filling activities
- Easements or restrictions
- Relevant historic uses that may influence current and future conditions

4.2. Natural Features of Concern

A list and description of all natural areas onsite and immediately adjacent to the subject property, including any natural area designations as defined by the City of Guelph, GRCA, MNRF, etc., will be provided. A general location aerial photograph will be provided that identifies the subject property, proposed development and natural areas both onsite and on the adjacent lands.

4.3. Municipal and Agency Requirements

The consultant / applicant will outline and briefly describe the relevant federal, provincial, municipal and agency legislation and policies related to the natural areas and designations that will be applied to this development.

4.4. Biophysical Inventory

4.4.1. *Geology and Soils*

Geology and soils will be characterized using available resources such as Ontario Geologic Survey online mapping, physiographic mapping (e.g. Chapman and Putnam) and information available through the Geotechnical report prepared for 66 Eastview that included the subject properties for borehole testing.

4.4.2.*Hydrology and Hydrogeology*

A review of hydrogeological conditions will be undertaken by qualified professionals using existing information available both on and nearby the subject property; information from this review will be integrated into the EIS, as appropriate.

Information used to inform the review will include geological and soils information, the preliminary geotechnical investigations for the proposed development at 78 and 82 Eastview Road, the groundwater and soil sampling and analysis report prepared for 78 and 82 Eastview Road, the geotechnical and hydrogeological report prepared for 66 Eastview Road, and monitoring data (as available for use) from 66 Eastview and the nearby Closed Eastview landfill site.

Information from these sources provides for a detailed understanding of the site conditions and groundwater surface-water interactions for the wetland present adjacent to the subject property.

Additional field work will be completed as required to fill in data gaps. This could include site-specific boreholes and piezometer information, as appropriate. A Guelph permeameter test following the CVC/TRCA LID manual will be undertaken and provided to inform the zoning bylaw amendment.

No surface water hydrology work is identified as there are no identified watercourses. Wetland hydrology is addressed above and biological interactions are discussed below. Catchment area and stormwater requirements will be addressed through the Stormwater Management Plan developed separately. Results and recommendations of the Stormwater Management Plan will be integrated into the EIS, as appropriate.

4.4.3. *Aquatic and Fish Habitat*

No aquatic or fish habitat field work or program is identified. There are no known surface water features (watercourses, ponds) within the subject property.

4.4.4.*Terrestrial Vegetation*

Ecological Land Classification (ELC) mapping and community information is available through the EIS prepared for 66 Eastview Road, Guelph ON. ELC communities within the study area will be confirmed and revised, as appropriate through in-season field investigations using the Ecological Land Classification for Southern Ontario (Lee et al, 1998; 2008 where required to

match type). Where possible, vegetation communities will be identified to Vegetation Type and Ecosite where appropriate for the community present. Soils will be examined to support the ecological land classification. ELC work will consider Lepidoptera ad Odonata habitat characterization and will identify areas with concentrations of milkweed for habitat associated with Monarch.

Two botanical visits are recommended to confirm and update vegetation species lists collected through the previous EIS. Fall botanical field work will occur in 2017, an early summer survey will be undertaken in 2018 (June-August). In addition, a single visit is recommended during pre-leaf-on conditions to assess spring ephemerals within the study area.

Documentation will include a description of each Vegetation Type, with dominant ELC element ranking and an assessment of community condition. The vascular plant list will present the national, provincial, regional/local and SAR status of species recorded. The EIS will assess the data relative to City policies for Habitat for Significant Species. The locations of SAR, rare or uncommon species of plants will be documented using GPS and mapped where relevant / feasible. Consideration will be given to the protection of SAR location data where sensitivity is required in revealing the locations. Locations for these species, if identified will be communicated to the City of Guelph, GRCA and MNRF, as appropriate, but not mapped in the publicly available report.

Feature limits (wetland and forest) were flagged and confirmed through the EIS at 66 Eastview, including portions that occur on and impact the subject property. Based on a site review conducted on August 28, 2017, limits of the features have not changed from what is shown in the EIS. Considering the timing is just at the 5 year currency limit and the site review indicates no change to the edges, we recommend that the limits be retained and that re-flagging is not required. WSP will accompany City employees during the summer of 2018 to delineate the dripline of the woodland on the property. A figure from the 66 Eastview EIS showing feature limits is attached for reference.

4.4.5. *Wildlife and Wildlife Habitat*

Wildlife habitat assessment, general wildlife and breeding bird surveys were undertaken as part of the EIS for 66 Eastview. This information will be confirmed and updated for the subject property through in-season surveys.

Amphibian Calling Surveys will be conducted at potential breeding habitat within 50m of the study area in accordance with Marsh Monitoring Program (MMP) protocols. A single reconnaissance survey will be undertaken to assess potential breeding habitat during late winter / early spring 2018.

Breeding Bird Surveys will be conducted in accordance with Ontario Breeding Bird Atlas (OBBA) standards, including two surveys conducted at least 10 days apart between late May and early

July, 2018. The surveys will be conducted in either the early morning and / or early evening depending on the habitat and potential species present.

Two Yellow-banded bumblebee surveys will be conducted within the study area in accordance with appropriate methodologies (to be confirmed with the MNRF) during mid-to-late summer, 2018.

Two winter raptor surveys will be conducted within the study area and in the open habitat to the east of the site at the Eastview Landfill to search for evidence of roosting within and adjacent the study area. Woodland raptor nesting surveys will be undertaken concurrently with spring surveys during the leaf-off period.

Snake habitat / potential hibernacula will be assessed generally during terrestrial field surveys. An area search for snake emergence will be undertaken during the spring and appropriate weather conditions to note the emergence / presence / absence of snakes within the study area. An emergence survey will be completed during the area search following the Milksnake methodology developed by Guelph District MNRF to thoroughly assess snake presence/absence on the subject property.

A review of habitat and updated general wildlife assessment to confirm or update existing information will be collected. This includes documentation of all direct and indirect wildlife observations of birds, amphibians, mammals, reptiles and / or insects. These surveys will be completed concurrently with vegetation characterization surveys and breeding bird surveys (spring /summer 2018).

Please refer to the attached preliminary Significant Wildlife Habitat screening table for an assessment of potential Significant Wildlife Habitat to be re-confirmed or evaluated through the EIS. The following SWH is present or has the potential to be present and will be considered through the EIS:

- Seasonal Concentration Areas of Animals:
    - Bat Maternity Colonies
    - Reptile Hibernaculum
    - Migratory Butterfly
- Specialized Habitat for Wildlife:
    - Woodland Raptor Nesting Habitat
    - Woodland Area Sensitive Bird Breeding Habitat
    - Raptor Wintering Area (refer above for proposed surveys)
- Habitat for Species of Conservation Concern (excludes Threatened / Endangered Species)

- Shrub / early successional Bird Breeding Habitat
- Terrestrial Crayfish
- Special Concern or Rare Wildlife Species (e.g. Monarch Butterfly)

4.4.6. *Species at Risk*

A preliminary list of Species at Risk with potential to occur on or immediately adjacent to the subject property has been developed to identify potential species specific survey(s). A summary of species with potential to occur and recommended surveys to address are provided below.

There are no aquatic features (watercourses, etc.) present on the subject property. There is no potential habitat for aquatic SAR on the subject property.

No vegetation SAR are known to occur on the property based on detailed field work completed during earlier study. The proposed in-season botanical inventory will confirm this or provide an opportunity to record any SAR present on the subject property.

As identified in the terrestrial overview above, several SAR and Species of Conservation Concern were recorded in the vicinity of the subject property. These include:

- Chimney Swift (*Chaetura pelagica*) – Threatened (SARO)
  - Observed foraging. No suitable nesting habitat is known to occur on the subject property.
  - Wildlife habitat assessment will review habitat potential for this species.
  - Based on previous information, targeted surveys for this species have not been included in the current scope of work.
- Barn Swallow (*Hirundo rustica*) – Threatened (SARO)
  - Observed foraging. No nesting habitat is known to occur on the subject property.
  - Wildlife habitat assessment will review habitat potential for this species.
  - Breeding bird surveys will detect presence of this species and use of the subject property. Buildings / structures will be reviewed for nesting, if / as appropriate.
- Eastern Wood-pewee (*Contopus virens*) – Special Concern (SARO)
  - Breeding bird surveys will capture species, if present.
- Wood Thrush (*Hylocichla mustelina*) – Special Concern (SARO)
  - Breeding bird surveys will capture species, if present

The wildlife habitat assessment will specifically consider these and habitat potential for other SAR species on and immediately adjacent to the subject property. Additional wildlife species of interest include:

- Eastern Meadowlark (*Sturnella magna*)
- Bobolink (*Dolichonyx oryzivorus*)
- Species at Risk Bats (Little Brown myotis, Tri-coloured bat, Northern myotis)

Eastern Meadowlark and Bobolink are easily detected during breeding bird surveys. If observed, or habitat of appropriate type and size is identified, a third visit per MNRF surveys guidelines for these species can be undertaken, if required. Habitat suitability for these species will be assessed.

Habitat for Species at Risk bats will primarily be associated with existing natural features (i.e. forested areas) on the subject property and adjacent lands. These areas will be protected in full with appropriate buffers applied. In consideration of this, targeted acoustic or visual exit surveys are not included in the current scope of work. Presence and relative abundance of cavity trees will be documented through the habitat assessment to inform the impact assessment and potential presence of this species.

The NHIC database was consulted and no additional Species at Risk records were identified. A request to confirm SAR species to be screened for through the EIS has been submitted to MNRF to ensure a comprehensive list is considered; based on our knowledge of the site, no other species at risk are anticipated to occur on the subject property.

A screening assessment table will be prepared for all species known to occur in the area, including comments on the habitat potential and potential impacts of the proposed development on the species to ensure a comprehensive review of Species at Risk and habitat that occurs on the subject property.

4.4.7. Natural Hazards

There are no surface water features known to occur on the subject property; no flood mapping or modeling is identified as required for the subject property.

There are no valleylands, steep or overstep slopes that are anticipated to require Top of Bank staking or trigger additional technical studies.

4.4.8. *Connectivity and Ecological Linkages*

There are no Ecological Corridors or Linkages identified as connecting to or across the subject property (Guelph OP Consolidation, Schedule 4; Clythe Creek Subwatershed Overview).

No significant opportunities for connectivity or linkages have been identified through preliminary review of the subject property. No specialized studies are recommended. General consideration will be given to connectivity through the EIS.

4.4.9. Tree Inventory and Preservation Plan

Certified ISA arborists will complete the tree inventory for all individual trees and hedgerows on site and all trees along the feature edge, particularly those whose driplines are within 6m of any proposed development (including the trail alignment through the property) that are 10cm DBH or larger. Tree management recommendations, a removals plan, and a compensation planting plan (as required) will be prepared. Consistent with the City's Official Plan, opportunities for the protection, enhancement and restoration of trees forming part of the City's Urban Forest will be identified.

4.4.10. Trails

WSP OALA Landscape Architects will review the desired trail alignment as indicated in the EIR for 66 Eastview and the 78 & 82 proposal. As part of the EIS, the trail design will be refined to include further construction detail, mitigation to implementation impacts, and integration into the existing landscape. This will include all items as identified in the Staff Report and internal memo related to the Terms of Reference for 78 &82 Eastview EIS;

- Trail detail – surfacing and width
- New points of connection, closure of existing undesired 'ad-hoc' connection.
- Tree/vegetation management, including recommendations for hazard tree removal, invasive removal, debris clean-up.
- Design and locating of wayfinding signage.

4.5. Evaluation of Significance

The EIS will evaluate the form and function of the biophysical resources, including natural heritage features, to evaluate their significance in the context of the subject property and the local landscape. Significance will be determined in accordance with appropriate guidance documents, policies and legislation, as outlined in Section 2.2 of this Terms of Reference.

Buffers and set-backs will be developed in the context of feature / hazard significance, common and best practice to ensure the appropriateness of the recommendation(s) in the protection of existing features and functions. While the City's OP includes policies for minimum buffers, the establishment of larger buffers will be considered in a buffer analysis, reflecting feature / hazard significance and City OP policies.

4.6. Opportunities and Constraints

Field survey results, in addition to background information, supporting technical information and relevant information provided by agencies will inform the identification of potential significant environmental issues / constraints to development. Constraint areas will include those features and functions identified as *Significant* through the EIS.

Areas which are currently anthropogenic and / or less sensitive and do not contain significant species, habitats, or functions will be identified as areas of opportunity for the proposed development.

Opportunities and constraints mapping will be prepared as input to the development layout, with the objective of avoiding and reducing impacts to environmental features and functions. Feature boundaries will be clearly delineated and recommended buffers/setbacks shown.

4.7. Evaluation of Alternative Options / Measures

Where possible, alternative options and measures may be explored to avoid impacts to natural features. Where not possible / practical, impact mitigation measures will be recommended. Design options may exist such in areas of stormwater management (e.g. Low Impact Design (LID) technologies utilizing a treatment train approach to assist with achieving a water balance for the site and maintaining infiltration and recharge functions), lighting, road design and placement. The EIS will provide support for the location of the SWM pond in the context of the hydrological and ecological functions of the site. Alternative measures in mitigation could include landowner brochures, signage, environmentally sensitive landscape design (e.g. native species), etc. Alternative options or measures discussed through the design process will be documented in the EIS.

4.8. Impact Assessment, Mitigation & Enhancement

Site-specific consideration of impacts and mitigation measures will be provided. This will be undertaken through review of the proposed development including the development layout, details of the construction, grading plans, functional service plans, and stormwater management plans in relation to the existing conditions on the subject property - to identify site specific potential impacts. This includes existing natural heritage, hydrogeological, and hydrological components, as appropriate. Potential impacts will be determined based on the direct, indirect, induced and cumulative effects of the proposed development.

Recommendations with regard to mitigation of impacts (e.g., storm water management – placement and discharge location(s), setbacks, buffers, sediment/erosion control, surface and groundwater management - including demonstration of water balance on a catchment/sub-

catchment basis, etc.) will also be made. These will include measures to avoid or minimize impacts on natural heritage features and functions including any regionally or provincially significant flora or fauna. Recommendations for enhancement / restoration opportunities (where applicable) and monitoring to evaluate mitigation and protection measures will also be provided.

4.9. Monitoring Recommendations

The EIS will provide recommendations for an environmental monitoring program (biological, hydrogeological), as appropriate. The monitoring program will be developed to focus on key features and functions that have the highest potential to be impacted by the development (e.g. wetland). An integrated monitoring program will be used, where applicable, to ensure that each monitoring component contributes to answering the question of whether the development is altering the natural system.

4.10. Recommendations and Conclusions

Recommendations and Conclusions will be provided in the EIS to summarize key outcomes of the characterization work and recommendations that are to be implemented through construction and post-construction conditions. Determination for the requirement of an Environmental Implementation Report (EIR) will be made and documented in this section of the EIS.

Prepared and Submitted by:

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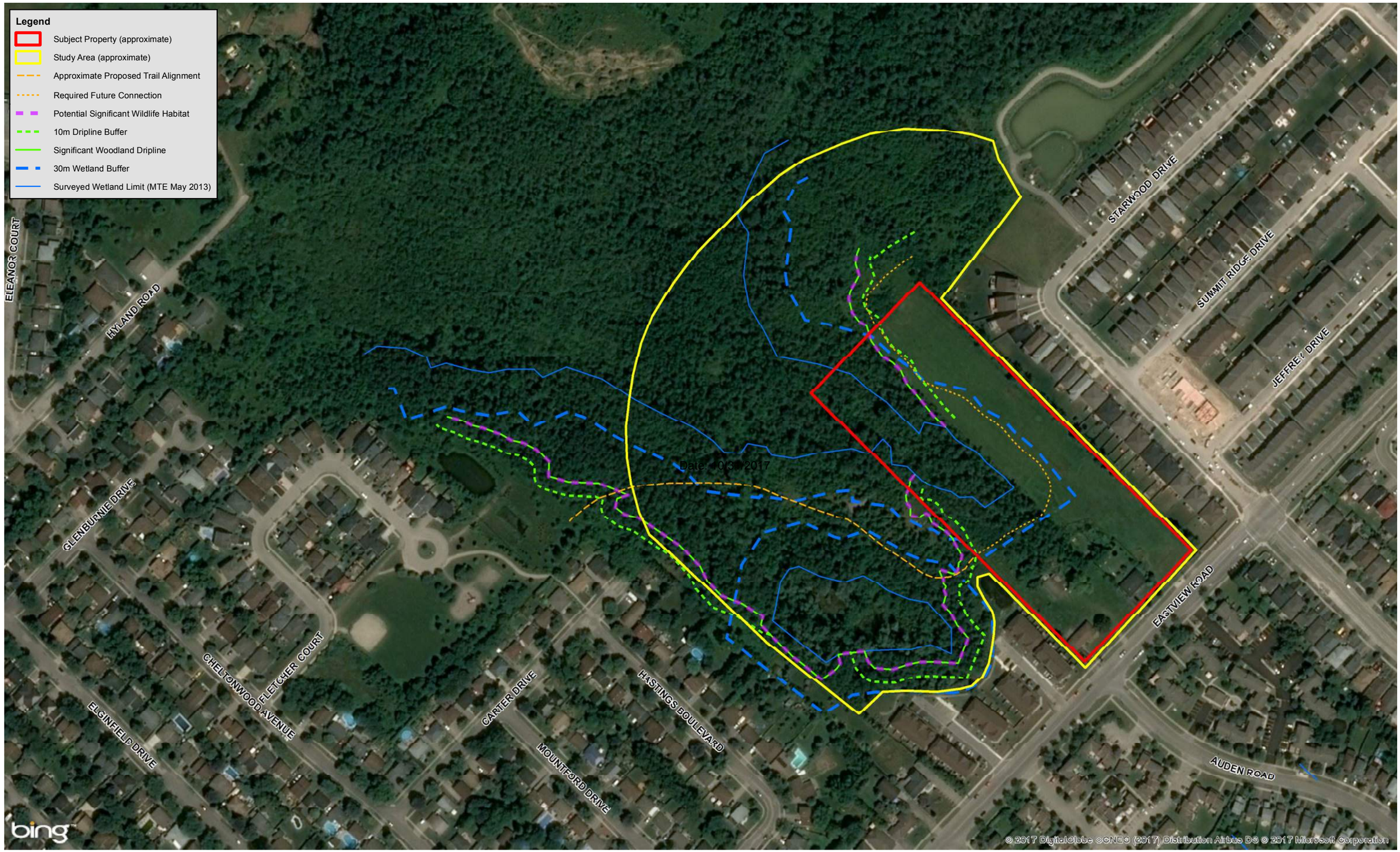

wsp

Natural Heritage Feature Limits, Buffers
78 and 82 Eastview Road - Guelph

0 25 50 75 metres
1:2,500

N

Date: October 2017
Project No: 17M-01526-00
Figure No:

Appendix B: **EIS Terms of Reference Checklist**

Applicant: Exquisite Developers Inc.
Phone: 647 · 533 · 8780
Email: mdewan@exquisitedevelopers.ca
Address: 2494 Meadowridge Dr. Oakville ON L6H 7R4

Consultant: WSP Canada Limited.
Phone: 519 · 904 · 1770
Email: Kristen.Harrison@wsp.com
Address: 582 Lancaster St. W. Kitchener ON N2K 1M3

Development Application Address:
78 and 82 Eastview Road, Guelph ON.

Reporting Standard

- ☑ 8½ by 11 paper, double-sided.
- ☑ A title page that includes: the name of the applicant, address of the subject property, lists the principal author of the report, the consulting firm, and the date the report was completed.
- ☑ Provide contact information for the principle author of the report (refer to last page of document)

Content

The following is a checklist of all the potential sections that may need to be addressed as part of an EIS. However, depending on the scope and scale of the proposed development and/or site alteration, as well as the nature and extent of natural heritage features and areas to be considered, not all elements will necessarily be required.

Components not included in the Terms of Reference, with a rationale for their exclusion, should be marked as "N/A".

Introduction

- ☑ Description of subject property (natural features and areas, land cover, existing hard surfaces or buildings)
- ☑ Description of the type and scale of the development proposal (including any required servicing, infrastructure upgrades or stormwater facilities, existing or proposed trails)
- ☑ Describe the historical and present uses of the subject property:
  - ☑ grading/filling activities
  - ☑ brownfield contamination
- ☑ Description of the site context/study area and the subject property's relationship to the surrounding landscape
- ☑ Include map(s) of the development location, subject property and study area
  - ☑ Orthographic map with known natural heritage features/areas overlaid

Planning Context (may be included in the Introduction)

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

Background Review
(may be included in the Characterization of the Natural Environment)

- ☑ Identify relevant information from existing studies, plans, databases and other sources to be analyzed as part of the EIS (see Appendix A for examples)

NOTE: Natural heritage records are generally considered in need of field verification after a period of five years

Characterizing the Natural Environment: Approach and Methodology

- ☑ Detailed study methods for studying natural heritage features and areas, wildlife habitat and Species at Risk (including time of year, level of searcher effort, etc.)
- ☑ Identify and describe the approach and methods to be used to assess the natural environment of the subject property and the adjacent lands for:
  - ☑ Geology and Soils
  - ☑ Hydrology and Hydrogeology
  - ☑ Aquatic and Fish Habitat
  - ☑ Terrestrial Vegetation (including wetlands)
    - ◇ Vegetation Communities (Ecological Land Classification)
    - ◇ Plants
  - ☑ Wildlife
  - ☑ Natural Hazards
  - ☑ Connectivity and Ecological Linkages
- ☑ Identify whether there are potential natural heritage features and areas that do not need to be assessed, and provide a rationale for their exclusion
- ☑ Include completed "Screening for Known or Candidate Wildlife Habitat," (see Appendix F) → used WSP standard SWH table in lieu. comprehensive prelim assessment.
- ☑ Include map(s) showing locations for field studies (i.e. points, plots, transects) n/a wandering transects for avians. Veg covers area as shown.

Data Analysis: Approach and Methodology

- ☑ Evaluation of Significance and Natural Hazards—identify that the following is in scope and any known analysis that will need to be included
  - ○ Assess the various natural heritage features and areas against the appropriate policies and guidelines to determine significance:
  - ○ Assess the various natural heritage features and areas against the appropriate policies and guidelines related to natural hazards:
  - ○ Assessment of appropriate buffers and/or setbacks;
- ☑ Natural Heritage and Natural Hazard Opportunities and Constraints—identify that it is in scope
- ☑ Environmental Policy Analysis (confirmation of policies and legislation to be addressed)
- ☑ Impact Assessment—identify that the scope includes
  - ○ Direct Impacts
  - ○ Indirect Impacts
  - ○ Induced Impacts
  - ○ Cumulative Impacts
- ☑ Evaluation of Alternative Options/Measures—establish key analysis points to be addressed in the EIS
- ☑ Recommended Mitigation Measures (including avoidance, enhancement, restoration, compensation, outreach, education and stewardship)

Monitoring

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

Recommendations and Conclusion

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

APPENDIX

C FIELD CHRONOLOGY

Date	Staff	Task	Veg / Flora		Avifauna		Amphibians	Other	Species at Risk		Coverage / Units	Weather Conditions
			ELC / Botanical	Feature Delineation	Breeding Bird	Winter Raptors	Calling	General Wildlife	Bats	Bees		
2017												
August 28, 2017	LW	Field review of existing wetland line (2013 EIS); SAR Habitat Assessment		3					1			N/A
October 18, 2017	LW	ELC (partial), Fall Botany	3								78 and 82 Eastview	N/A
2018												
February 12, 2018	SL	Winter Raptor Survey #1, Migrant/Supplemental Birds				3					78 and 82 Eastview, Pollinator Park	ST: 9:25; ET; 12:15; AirTemp Start: 9; AirTemp End: 6; Sky Start: 0, End: 1; Wind Start: 1, End: 1
March 5, 2018	SL	Winter Raptor Survey #2, Migrant/Supplemental Birds				3					78 and 82 Eastview, Pollinator Park	ST: 9:25; ET; 12:15; AirTemp Start: 2; AirTemp End: 5; Sky Start: 0, End: 1; Wind Start: 0, End: 1
April 22, 2018	CL	Amphibian Breeding Habitat, Winter Raptor Survey, Snake Habitat Assessment (78 Eastview only)						1.5			all of 78 Eastview and PSW to north; No raptor nest found / observed within study area	AirTemp Start: 16; AirTemp End: 16; Sky Start: 0, End: 0; Wind Start: 0, End: 0
April 23, 2018	CL, KL	Amphibian Calling Survey #1					2				A1-A5	ST: 8:45; ET; 9:30; AirTemp Start: 11; AirTemp End: 11; RH Start: 30%; RH End: 30%; Sky Start: 1, End: 2; Wind Start: 2, End: 2
April 27, 2018	LW	Raptor Nesting, Bat Cavity Trees, Snake Habitat Assessment, Amphibian Breeding Habitat, General Wildlife Assessment/SAR Habitat Assessment, Migrant/Supplemental Birds, Significant Wildlife Habitat Assessment						4.5	2		Whole study area (120m from subject property)	ST: 8:30; ET; 15:00; AirTemp Start: 7; AirTemp End: 16; Sky Start: 1, End: 1; Wind Start: 1, End: 2
May 9, 2018	CL, KL	Amphibian Calling Survey #2					2				A1-A5	ST: 9:10; ET; 9:55; AirTemp Start: 17.5; AirTemp End: 17; RH Start: 58%; RH End: 60%; Sky Start: 1, End: 1; Wind Start: 2, End: 0
May 14, 2018	LW	ELC (partial), Spring Vegetation, Snake Habitat Assessment, General Wildlife Assessment/SAR Habitat , Migrant/Supplemental Birds, Significant Wildlife Habitat Assessment	5.5					2			Whole study area (120m from subject property)	ST: 7:30; ET; 15:00; AirTemp Start: 13; AirTemp End: 18; Sky Start: 0, End: 0; Wind Start: 1, End: 1
May 28, 2018	SL	Breeding Bird Survey #1, Migrant/Supplemental Birds, Significant Wildlife Habitat Assessment			2.5						PC1-PC3	ST: 6:15; ET; 8:50; AirTemp Start: 17; AirTemp End: 22; Sky Start: 0, End: 0; Wind Start: 0, End: 1

Date	Staff	Task	Veg / Flora		Avifauna		Amphibians	Other	Species at Risk		Coverage / Units	Weather Conditions
			ELC / Botanical	Feature Delineation	Breeding Bird	Winter Raptors	Calling	General Wildlife	Bats	Bees		
June 12, 2018	SL	Breeding Bird Survey #2, Migrant/Supplemental Birds, Significant Wildlife Habitat Assessment			2.5							ST: 6:15; ET; 8:45; AirTemp Start: 11; AirTemp End: 17; Sky Start: 0, End: 0; Wind Start: 0, End: 1
June 18, 2018	CL, KL	Amphibian Calling Survey #3					2				A1-A5	ST: 9:34; ET; 10:12; AirTemp Start: 22; AirTemp End: 21; RH Start: 83%; RH End: 85%; Sky Start: 1, End: 1; Wind Start: 2, End: 2
July 9, 2018	LW, RH	Woodland and Wetland Delineation		6.5								N/A
July 16, 2018	LW, RH	Woodland and Wetland Delineation - Site Walk with Regulatory Agencies		7.5								N/A
July 30, 2018	LW	ELC (finish), Summer Botany, Terrestrial Crayfish Habitat Assessment, Lepidoptera and Odonata Habitat Assessment, Monarch Habitat Assessment (milkweed concentrations), Significant Wildlife Habitat Assessment	3								Whole study area (120m from subject property)	AirTemp Start: 27; AirTemp End: 27; Sky Start: 1, End: 1; Wind Start: 1, End: 1
July 31, 2018	LW	ELC (finish), Summer Botany, Terrestrial Crayfish Habitat Assessment, Lepidoptera and Odonata Habitat Assessment, Monarch Habitat Assessment (milkweed concentrations), Significant Wildlife Habitat Assessment	2.5								Whole study area (120m from subject property)	AirTemp Start: 27; AirTemp End: 27; Sky Start: 1, End: 1; Wind Start: 1, End: 1
August 9, 2018	LW	Yellow-banded Bumblebee Survey, Lepidoptera and Odonata Habitat Assessment, Monarch Habitat Assessment (milkweed concentrations)								5	78 and 82 Eastview properties	ST: 9:00; ET; 12:00; AND ST: 14:30; ET; 16:30 AirTemp Start: 18; AirTemp End: 27; Sky Start: 2, End: 1; Wind Start: 2, End: 2
August 10, 2018	LW	Yellow-banded Bumblebee Survey, Lepidoptera and Odonata Habitat Assessment, Monarch Habitat Assessment (milkweed concentrations)								1	78 and 82 Eastview properties	ST: 9:00; ET; 10:00; AirTemp Start: 20; AirTemp End: 21; Sky Start: 0, End: 0; Wind Start: 2, End: 2
Total # field dates	15		**3**	**2**	**2**	**2**	**3**	**3**	**1**	**2**		
Total # hours	50		**11**	**14**	**5**	**6**	**6**	**8**	**2**	**6**		

APPENDIX

D VASCULAR PLANT SPECIES LIST

SCIENTIFIC_NAME	COMMON_NAME	CC[1]	CW[1]	G_RANK[3]	S_RANK[4]	COSEWIC[5]	SARA STATUS[6]	SARA SCHEDULE[6]	SARO[7]	REGIONAL RARITY (Dougan 2009)[8]
Acer negundo	Manitoba Maple	0	-2	G5	S5					
Acer platanoides	Norway Maple	*	5	GNR	SNA					
Acer saccharum	Sugar Maple	4	3	G5	S5					
Acer x freemanii	Freeman's Maple			GNA	SNA					
Achillea millefolium	Common Yarrow	*	3	G5	SNA					
Aegopodium podagraria	Goutweed	*	0	GNR	SNA					
Agrimonia gryposepala	Hooked Agrimony	2	2	G5	S5					
Agrostis sp.	Bentgrass sp.									
Alliaria petiolata	Garlic Mustard	*	0	GNR	SNA					
Amelanchier sp.	Serviceberry sp.									
Anemonastrum canadense	Canada Anemone	3	-3	G5	S5					
Anemone virginiana var. virginiana	Tall Anemone	4	5	G5T5	S5?					
Antennaria sp.	Pussytoes Species									
Apocynum cannabinum var. cannabinum	Hemp Dogbane	3	0	G5T5	S5					
Aralia nudicaulis	Wild Sarsaparilla	4	3	G5	S5					
Arctium lappa	Great Burdock	*	0	GNR	SNA					
Arctium minus	Common Burdock	*	5	GNR	SNA					
Asclepias syriaca	Common Milkweed	0	5	G5	S5					
Betula papyrifera	Paper Birch	2	2	G5	S5					
Bidens frondosa	Devil's Beggarticks	3	-3	G5	S5					
Boehmeria cylindrica	False Nettle	4	-5	G5	S5					
Carduus nutans ssp. nutans	Nodding Thistle	*	5	GNRTNR	SNA					
Carex aurea	Golden Sedge	4	-4	G5	S5					
Carex flava	Yellow Sedge	5	-5	G5	S5					
Carex gracillima	Graceful Sedge	4	3	G5	S5					
Carex granularis	Limestone Meadow Sedge	3	-4	G5	S5					
Carex interior	Inland Sedge	6	-5	G5	S5					
Carex rosea	Rosy Sedge	5	5	G5	S5					
Carex sp.	Sedge sp.									
Carex spicata	Spiked Sedge	*	5	GNR	SNA					
Carex stipata	Awl-fruited Sedge	3	-5	G5	S5					
Carex vulpinoidea	Fox Sedge	3	-5	G5	S5					
Celtis occidentalis	Common Hackberry	8	1	G5	S4					R-C
Centaurea sp.	Knapweed sp.									
Cerastium fontanum	Common Mouse-ear Chickweed	*	3	GNR	SNA					
Chenopodium album	Common Lamb's-quarters	*	1	G5	SNA					

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Circaea canadensis	Broad-leaved Enchanter's Nightshade	3	3	G5T5	S5					
Cirsium arvense	Canada Thistle	*	3	GNR	SNA					
Cirsium vulgare	Bull Thistle	*	4	GNR	SNA					
Convolvulus arvensis	Field Bindweed	*	5	GNR	SNA					
Cornus alternifolia	Alternate-leaved Dogwood	6	5	G5	S5					
Cornus obliqua	Silky Dogwood	5	-4	G5T5	S5					
Cornus sericea	Red-osier Dogwood	2	-3	G5	S5					
Dactylis glomerata	Orchard Grass	*	3	GNR	SNA					
Danthonia spicata	Poverty Oatgrass	5	5	G5	S5					
Daucus carota	Wild Carrot	*	5	GNR	SNA					
Dipsacus fullonum	Common Teasel	*	5	GNR	SNA					
Dryopteris carthusiana	Spinulose Wood Fern	5	-2	G5	S5					
Echium vulgare	Common Viper's Bugloss	*	5	GNR	SNA					
Elymus repens	Quackgrass	*	3	GNR	SNA					
Epilobium sp.	Willowherb sp.									
Epipactis helleborine	Broad-leaved Helleborine	*	5	GNR	SNA					
Equisetum arvense	Field Horsetail	0	0	G5	S5					
Erigeron annuus	Annual Fleabane	0	1	G5	S5					
Erigeron canadensis	Canada Horseweed	0	1	G5	S5					
Erigeron sp.	Fleabane sp.									
Erigeron strigosus	Rough Fleabane	0	1	G5	S5					
Erythronium americanum	Yellow Trout Lily	5	5	G5	S5					
Eupatorium perfoliatum	Common Boneset	2	-4	G5	S5					
Euphorbia sp.	Spurge sp.									
Euthamia graminifolia	Grass-leaved Goldenrod	2	-2	G5	S5					
Eutrochium maculatum var. maculatum	Spotted Joe Pye Weed	3	-5	G5T5	S5					
Fragaria virginiana ssp. virginiana	Wild Strawberry	2	1	G5T5	S5					
Frangula alnus	Glossy Buckthorn	*	-1	GNR	SNA					
Fraxinus pennsylvanica	Green Ash	3	-3	G5	S4					
Galium palustre	Common Marsh Bedstraw	5	-5	G5	S5					
Geranium robertianum	Herb-Robert	*	5	G5	S5					
Geum sp.	Avens sp.									
Geum urbanum	Wood Avens	*	5	G5	SNA					
Glechoma hederacea	Ground-ivy	*	3	GNR	SNA					
Glyceria striata	Fowl Mannagrass	3	-5	G5	S5					
Hieracium sp.	Hawkweed sp.									

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Hydrophyllum virginianum	Virginia Waterleaf	6	-2	G5	S5					
Hypericum perforatum	Common St. John's-wort	*	5	GNR	SNA					
Impatiens capensis	Spotted Jewelweed	4	-3	G5	S5					
Impatiens glandulifera	Purple Jewelweed	*	-3	GNR	SNA					
Juglans nigra	Black Walnut	5	3	G5	S4?					
Juncus tenuis	Path Rush	0	0	G5	S5					
Lactuca sp.	Lettuce sp.									
Lamium maculatum	Spotted Dead-nettle	*		GNR	SNA					
Lapsana communis	Common Nipplewort	*	5	GNR	SNA					
Leersia oryzoides	Rice Cutgrass	3	-5	G5	S5					
Leonurus cardiaca	Common Motherwort	*	5	GNR	SNA					
Leucanthemum vulgare	Oxeye Daisy	*	5	GNR	SNA					
Ligustrum vulgare	European Privet	*	1	GNR	SNA					
Linaria vulgaris	Butter-and-eggs	*	5	GNR	SNA					
Lonicera tatarica	Tatarian Honeysuckle	*	3	GNR	SNA					
Lotus corniculatus	Garden Bird's-foot Trefoil	*		GNR	SNA					
Lycopus uniflorus	Northern Water-horehound	5	-5	G5	S5					
Malus pumila	Common Apple	*	5	G5	SNA					
Malva neglecta	Dwarf Mallow	*	5	GNR	SNA					
Matteuccia struthiopteris	Ostrich Fern	5	-3	G5	S5					
Medicago lupulina	Black Medick	*	1	GNR	SNA					
Melilotus albus	White Sweet-clover	*	3	G5	SNA					
Oenothera biennis	Common Evening Primrose	0	3	G5	S5					
Onoclea sensibilis	Sensitive Fern	4	-3	G5	S5					
Oxalis stricta	European Wood-sorrel	0	3	G5	S5					
Panicum sp.	Panicgrass sp.									
Parthenocissus vitacea	Thicket Creeper	3	3	G5	S5					
Persicaria maculosa	Spotted Lady's-thumb	*	-3	G3G5	SNA					
Phalaris arundinacea var. arundinacea	Reed Canarygrass	0	-4	GNR	S5					
Phleum pratense	Common Timothy	*	3	GNR	SNA					
Picea glauca	White Spruce	6	3	G5	S5					
Pilea sp.	Clearweed sp.									
Pinus strobus	Eastern White Pine	4	3	G5	S5					
Pinus sylvestris	Scots Pine	*	5	GNR	SNA					
Plantago lanceolata	English Plantain	*	0	G5	SNA					
Plantago major	Common Plantain	*	-1	G5	SNA					

SCIENTIFIC_NAME	COMMON_NAME	CC[1]	CW[1]	G_RANK[3]	S_RANK[4]	COSEWIC[5]	SARA STATUS[6]	SARA SCHEDULE[6]	SARO[7]	REGIONAL RARITY (Dougan 2009)[8]
Poa compressa	Canada Bluegrass	0	2	GNR	SNA					
Poa pratensis ssp. pratensis	Kentucky Bluegrass	0	1	G5T5	SNA					
Populus balsamifera	Balsam Poplar	4	-3	G5	S5					
Populus deltoides ssp. deltoides	Eastern Cottonwood	4	-1	G5T5	S5					
Populus tremuloides	Trembling Aspen	2	0	G5	S5					
Potentilla recta	Sulphur Cinquefoil	*	5	GNR	SNA					
Prunella vulgaris ssp. lanceolata	Lance-leaved Self-heal	5	5	G5T5	S5					
Prunus serotina	Black Cherry	3	3	G5	S5					
Prunus virginiana	Chokecherry	2	1	G5	S5					
Ranunculus acris	Common Buttercup	*	-2	G5	SNA					
Reynoutria japonica	Japanese Knotweed	*	3	GNR	SNA					
Rhamnus cathartica	European Buckthorn	*	3	GNR	SNA					
Ribes americanum	American Black Currant	4	-3	G5	S5					
Robinia pseudoacacia	Black Locust	*	4	G5	SNA					
Rosa multiflora	Multiflora Rose	*	3	GNR	SNA					
Rubus idaeus ssp. strigosus	North American Red Raspberry	0	-2	G5T5	S5					
Rubus occidentalis	Black Raspberry	2	5	G5	S5					
Rubus pubescens	Dwarf Raspberry	4	-4	G5	S5					
Rudbeckia hirta	Black-eyed Susan	0	3	G5	S5					
Rumex crispus	Curly Dock	*	-1	GNR	SNA					
Salix alba	White Willow	*	-3	G5	SNA					
Salix amygdaloides	Peach-leaved Willow	6	-3	G5	S5					
Salix discolor	Pussy Willow	3	-3	G5	S5					
Salix eriocephala	Cottony Willow	4	-3	G5	S5					
Salix purpurea	Purple Willow	*	-3	G5	SNA					
Sambucus canadensis	Common Elderberry	5	-2	G5T5	S5					
Scirpus pendulus	Hanging Bulrush	3	-5	G5	S5					
Silphium perfoliatum	Cup Plant	9	-2	G5	S2					
Sisyrinchium montanum var. montanum	Strict Blue-eyed-grass	4	-1	G5T5	S5					
Solanum dulcamara	Climbing Nightshade	*	0	GNR	SNA					
Solidago altissima var. altissima	Eastern Tall Goldenrod	1	3	GNR	S5					
Solidago canadensis var. canadensis	Canada Goldenrod	1	3	G5T5	S5					
Solidago gigantea	Giant Goldenrod	4	-3	G5	S5					
Solidago juncea	Early Goldenrod	3	5	G5	S5					
Solidago nemoralis ssp. nemoralis	Gray-stemmed Goldenrod	2	5	G5T5	S5					
Solidago rugosa ssp. rugosa	Northern Rough-stemmed Goldenrod	4	-1	G5T5	S5					

SCIENTIFIC_NAME	COMMON_NAME	CC[1]	CW[1]	G_RANK[3]	S_RANK[4]	COSEWIC[5]	SARA STATUS[6]	SARA SCHEDULE[6]	SARO[7]	REGIONAL RARITY (Dougan 2009)[8]
Solidago sp.	Goldenrod sp.									
Sonchus arvensis ssp. arvensis	Field Sow-thistle	*	1	GNRTNR	SNA					
Sorbus aucuparia	European Mountain-ash	*	5	G5	SNA					
Sorbus sp.	Mountain-ash sp.		0							
Symphyotrichum ericoides var. ericoides	White Heath Aster	4	4	G5T5	S5					
Symphyotrichum lateriflorum var. lateriflorum	Calico Aster	3	-2	G5T5	S5					
Symphyotrichum novae-angliae	New England Aster	2	-3	G5	S5					
Syringa vulgaris	Common Lilac	*	5	GNR	SNA					
Tanacetum vulgare	Common Tansy	*	5	GNR	SNA					
Taraxacum officinale	Common Dandelion	*	3	G5	SNA					
Thuja occidentalis	Eastern White Cedar	4	-3	G5	S5					
Thymus praecox	Creeping Thyme	*		GNR	SNA					
Tilia americana	Basswood	4	3	G5	S5					
Trifolium hybridum	Alsike Clover	*	1	GNR	SNA					
Trifolium pratense	Red Clover	*	2	GNR	SNA					
Trifolium repens	White Clover	*	2	GNR	SNA					
Tussilago farfara	Coltsfoot	*	3	GNR	SNA					
Ulmus americana	White Elm	3	-2	G5	S5					
Ulmus rubra	Slippery Elm	6	0	G5	S5					
Verbascum thapsus	Common Mullein	*	5	GNR	SNA					
Veronica officinalis	Common Speedwell	*	5	G5	SNA					
Viburnum lentago	Nannyberry	4	-1	G5	S5					
Viburnum opulus ssp. opulus	Cranberry Viburnum	*	0	GNR	SNA					
Vicia cracca	Tufted Vetch	*	5	GNR	SNA					
Vinca minor	Lesser Periwinkle	*	5	GNR	SNA					
Viola sp.	Violet sp.									
Vitis riparia	Riverbank Grape	0	-2	G5	S5					

PLANT LIST LEGEND

Scientific Name, Common Name, and Family
Based on Vascan (Dec. 2017) and NHIC (Apr. 18, 2017)

Vascan: http://data.canadensys.net/vascan/search
NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

[1] Coefficient of Conservatism, Coefficient of Wetness, Weediness, and Physiology/Habit
Oldham, M. J., W. D. Bakowsky and D. A. Sutherland. 1995. Floristic Quality Assessment System for Southern Ontario. Natural Heritage Information Centre, Ministry of Natural Resources. Peterborough, Ontario.

CC: Coefficient of Conservatism. Rank of 0 to 10 based on plants degree of fidelity to a range of synecological parameters: (0-3) Taxa found in a variety of plant communities; (4-6) Taxa typically associated with a specific plant community but tolerate moderate disturbance; (7-8) Taxa associated with a plant community in an advanced successional stage that has undergone minor disturbance; (9-10) Taxa with a high fidelity to a narrow range of synecological parameters.
CW: Coefficient of Wetness. Value between 5 and –5. A value of –5 is assigned to Obligate Wetland (OBL) and 5 to Obligate Upland (UPL), with intermediate values assigned to the remaining categories.
Weediness: Assigned to all non-native species and range from -1 (low impact of the species on natural areas) to -3 (high impact of the species on natural areas).
Habit: Physiology/Habit. The growth form of the species (e.g. forb, shrub, tree).

[2] OWES Wetland Plant List
Ontario Ministry of Natural Resources. 2013. Ontario Wetland Evaluation System Southern Manual. 3rd Edition, Version 3.3; Ontario Ministry of Natural Resources. 2013. Ontario Wetland Evaluation System Northern Manual. 1st Edition, Version 1.3

Species presence or absence from the Ontario Wetland Evaluation System (OWES) Wetland Plant List.
Codes are defined as follows:
X: Present on the list

[3] G-Rank (Global)
Global Status from Nature Serve (via NHIC, 2017)
Nature Serve: http://explorer.natureserve.org/
NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

Global (G) Conservation Status Ranks
G1: Extremely rare – usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2: Very rare – usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3: Rare to uncommon – usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4: Common – usually more than 100 occurrences; usually not susceptible to immediate threats.
G5: Very common – demonstrably secure under present conditions.
G#G#: Range Rank – A numeric range rank (e.g., G2G3, G1G3) is used to indicate the range of uncertainty about the exact status of a taxon or ecosystem type. Ranges cannot skip more than two ranks (e.g., GU should be used rather than G1G4).
GU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends. NOTE: Whenever possible (when the range of uncertainty is three consecutive ranks or less), a range rank (e.g., G2G3) should be used to delineate the limits (range) of uncertainty.
GNR: Unranked – Global rank not yet assessed
GNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
?: Inexact Numeric Rank – Denotes inexact numeric rank; this should not be used with any of the Variant Global Conservation Status Ranks or GX or GH.
Q: Questionable taxonomy that may reduce conservation priority – Distinctiveness of this entity as a taxon or ecosystem type at the current level is questionable; resolution of this uncertainty may result in change from a species to a subspecies or hybrid, or inclusion of this taxon or type in another taxon or type, with the resulting taxon having a lower priority (numerically higher) conservation status rank. The “Q” modifier is only used at a global level and not at a national or subnational level.
C: Captive or Cultivated Only – Taxon or ecosystem at present is presumed or possibly extinct or eliminated in the wild across their entire native range but is extant in cultivation, in captivity, as a naturalized population (or populations) outside their native range, or as a reintroduced population or ecosystem restoration, not yet established. The “C” modifier is only used at a global level and not at a national or subnational level. Possible ranks are GXC or GHC. This is equivalent to “Extinct” in the Wild (EW) in IUCN’s Red List terminology (IUCN 2001).

[4] S-Ranks (Provincial)
Provincial Status from the NHIC (2017)
NHIC: http://www.sse.gov.on.ca/sites/MNR-PublicDocs/EN/ProvincialServices/Ontario_Vascular_Plants.xlsx

Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

Provincial/Sub-national (S) Conservation Status Ranks
S1: Critically Imperiled – Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2: Imperiled – Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.

S3: Vulnerable – Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4: Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5: Secure – Common, widespread, and abundant in the nation or state/province.
S#S#: Range Rank – A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SX: Presumed Extirpated – Species or community is believed to be extirpated from the nation or state/province. Not located despite intensive searches of historical sites and other appropriate habitat, and virtually no likelihood that it will be rediscovered.
SH: Possibly Extirpated (Historical) – Species or community occurred historically in the nation or state/province, and there is some possibility that it may be rediscovered. Its presence may not have been verified in the past 20-40 years. A species or community could become NH or SH without such a 20-40 year delay if the only known occurrences in a nation or state/province were destroyed or if it had been extensively and unsuccessfully looked for. The NH or SH rank is reserved for species or communities for which some effort has been made to relocate occurrences, rather than simply using this status for all elements not known from verified extant occurrences.
SE: Species is considered exotic in Ontario
SNR: Unranked – Nation of state/province conservation status not yet assessed.
SU: Unrankable – Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA: Not Applicable – A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
?: Inexact or Uncertain - Denotes inexact or uncertain numeric rank.

[5] COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
The federal review process is implemented by COSEWIC (Status as of Feb. 2018)

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) is an independent advisory panel to the Minister of Environment and Climate Change Canada that meets twice a year to assess the status of wildlife species at risk of extinction.
https://www.canada.ca/en/environment-climate-change/services/committee-status-endangered-wildlife.html

COSEWIC Conservation Status Ranks
EXT: Extinct – A species that no longer exists.
EXP: Extirpated – A species no longer existing in the wild in Canada, but occurring elsewhere.
END: Endangered – A species facing imminent extirpation or extinction.
THR: Threatened – A species likely to become endangered if limiting factors are not reversed.
SC: Special Concern (formerly vulnerable) – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
NAR: Not At Risk – A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
DD: Data Deficient (formerly Indeterminate) – Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

Implied COSEWIC Status Notations (Status Due to Taxonomic Relationships)
Value (Flagged Value) – The taxon itself is not named in the Canadian Species at Risk list, however, it does have status as a result of its taxonomic relationship to a named entity. For example, if a species has a COSEWIC status of "threatened", then by default, all of its recognized subspecies that occur in Canada also have a threatened status. The subspecies in this example would have the value "T(2)" under COSEWIC. Likewise, if all of a species' infraspecific taxa occurring in Canada have the same COSEWIC status, then that status appears in the entry for the "full" species as well. In this case, if the species name is not mentioned in the Canadian Species at Risk list, the status appears with a flag (2) in NatureServe Explorer.

Value, Value: (Combination values with flags) – The taxon itself is not named in the Canadian Species at Risk list, however, all of its infraspecific taxa occurring in Canada do have status but two or more of the taxa do not have the same status. In this case, a combination of statuses shown with a flag (7) indicates the statuses that apply to infraspecific taxa or populations within this taxon.
PS: Indicates "partial status" – in only a portion of the species' range in Canada. Typically indicated for a "full' species where at least one but not all of a species' infraspecific taxa or populations has COSEWIC status.
PSvalue: Indicates "partial status" – status in only a portion of the species' range. The value of that status appears because the entity with status (usually a population defined by geopolitical boundaries within Canada) does not have an individual entry in NatureServe Explorer. Information about the entity with status can be found in reports for the associated species.

[6] SARA (Species at Risk Act) Status and Schedule
Federal status from the Government of Canada's Species at Risk Public Registry (Status as of Feb. 2018)
http://www.registrelep-sararegistry.gc.ca/

The Act establishes Schedule 1, as the official list of species at risk in Canada. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed species are implemented.
SARA Conservation Status Ranks
EXT: Extinct – A species that no longer exists.
EXP: Extirpated – A species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END: Endangered – A species that is facing imminent extirpation or extinction.
THR: Threatened – A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC: Special Concern – A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
The Act establishes Schedule 1 as the official list of species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern. Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Species at Risk.

[7] SARO (Species at Risk in Ontario)

Provincial status from MNRF (Status as of Feb. 2018)
https://www.ontario.ca/environment-and-energy/species-risk-ontario-list

The provincial review process is implemented by the MNR's Committee on the Status of Species at Risk in Ontario (COSSARO). COSSARO is an independent advisory panel to the Ontario Ministry of Natural Resources and Forestry that assesses the status of species at risk of extinction.

MNRF Conservation Status Ranks
EXT: Extinct – A species that no longer exists anywhere.
EXP: Extirpated – A species that no longer exists in the wild in Ontario but still occurs elsewhere.
END: Endangered – A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act (ESA).
THR: Threatened – A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
SC: Special Concern (formerly Vulnerable) – A species with characteristics that make it sensitive to human activities or natural events.
NAR: Not at Risk – A species that has been evaluated and found to be not at risk.
DD: Data Deficient (formerly Indeterminate) – A species for which there is insufficient information for a provincial status recommendation.

[8] Regional Status

City of Guelph
Dougan & Associates 2009. Significant Plant List for Wellington County. City of Guelph Natural Heritage Study, Appendix A.

Codes are defined as follows:
R-A: Included based on "rare" status (i.e. occurrence at between 1 and 10 natural sites in the County) in the Flora of Wellington County (Anderson and Frank 2004, unpublished) and subsequent revisions by A. Anderson over 2005-2008).
R-B: Added as a plant record from post-1990 environmental studies within Guelph with global and /or provincial significance.
R-C: Added based on records provided by Mike Oldham (NHIC) for Wellington County in 2005, verification of records in OAC herbarium (Jan.-Feb. 2008) and supplementary review by Mike Oldham Dec. 2007 - Feb. 2008.
R-D: New record for Wellington County (observed during field work conducted by Dougan & Associates 2005-2006).

APPENDIX

E WILDLIFE SPECIES LIST

Common Name	Scientific Name	GRANK[1]	SRANK[2]	COSEWIC[3]	MNRF[4]	SARA Status[5]	Schedule[5]	City of Guelph[6]	Area Sensitive Birds - Ecoregion 6E	Protected Under MBCA	28-May-18		12-Jun-18		Overall Site		Comments
											Number	Highest BE	Number	Highest BE	Highest Abundance	Highest Breeding Status	
Birds																	
American Crow	*Corvus brachyrhynchos*	G5	S5B								4	X	2	H	4	POSS	
American Goldfinch	*Spinus tristis*	G5	S5B							Y	7	S	14	T	14	PROB	
American Redstart	*Setophaga ruticilla*	G5	S5B					5		Y	5	S	7	T	7	PROB	
American Robin	*Turdus migratorius*	G5	S5B							Y	6	S	7	T	7	PROB	
American Woodcock	*Scolopax minor*	G5	S4B							Y						OBS	1 individual observed during wildlife survey
Baltimore Oriole	*Icterus galbula*	G5	S4B					5		Y			1	S	1	POSS	
Barn Swallow	*Hirundo rustica*	G5	S4B	THR	THR	THR	1	1		Y			1	X	1	OBS	1 individual observed foraging over field
Belted Kingfisher	*Megaceryle alcyon*	G5	S4B					5								OBS	1 individual observed during July 30 ELC survey
Black-capped Chickadee	*Poecile atricapillus*	G5	S5							Y	5	S	9	T	9	PROB	
Blue Jay	*Cyanocitta cristata*	G5	S5								7	S	3	T	7	PROB	
Canada Goose	*Branta canadensis*	G5	S5							Y			40	X	40	OBS	flock observed flying over study area
Carolina Wren	*Thryothorus ludovicianus*	G5	S4					5		Y	1	S	1	T	1	PROB	
Cedar Waxwing	*Bombycilla cedrorum*	G5	S5B							Y	4	S	6	T	6	PROB	
Chimney Swift	*Chaetura pelagica*	G5	S4B,S4N	THR	THR	THR	1	1		Y			2	X	2	OBS	observed foraging over southwest corner of study area
Chipping Sparrow	*Spizella passerina*	G5	S5B							Y	1	S			1	POSS	
Common Grackle	*Quiscalus quiscula*	G5	S5B								17	H	15	T	17	PROB	
Common Raven	*Corvus corax*	G5	S5					5								OBS	1 individual flyover during February 12 winter raptor survey
Common Yellowthroat	*Geothlypis trichas*	G5	S5B							Y	1	S	2	T	2	PROB	
Dark-eyed Junco	*Junco hyemalis*	G5	S5B					5		Y						OBS	11 individuals observed during winter raptor surveys
Downy Woodpecker	*Picoides pubescens*	G5	S5							Y	1	S	1	T	1	PROB	
Eastern Towhee	*Pipilo erythrophthalmus*	G5	S4B					5		Y	1	S			1	POSS	
Eastern Wood-pewee	*Contopus virens*	G5	S4B	SC	SC	SC	1	5		Y			1	S	1	POSS	
European Starling	*Sturnus vulgaris*	G5	SNA								3	H	6	T	6	PROB	
Gray Catbird	*Dumetella carolinensis*	G5	S4B							Y	3	H	5	T	5	PROB	
Great Blue Heron	*Ardea herodias*	G5	S4					5		Y			1	X	1	OBS	flyover
Great Crested Flycatcher	*Myiarchus crinitus*	G5	S4B							Y	1	S			1	POSS	
Green Heron	*Butorides virescens*	G5	S4B					5		Y	1	X			1	OBS	flyover
Hairy Woodpecker	*Picoides villosus*	G5	S5					5		Y						OBS	1 individual observed during fall ELC survey
House Finch	*Carpodacus mexicanus*	G5	SNA							Y			1	S	1	POSS	
House Sparrow	*Passer domesticus*	G5	SNA								4	S	4	T	4	PROB	
House Wren	*Troglodytes aedon*	G5	S5B							Y	2	S	2	T	2	PROB	
Indigo Bunting	*Passerina cyanea*	G5	S4B							Y						OBS	1 individual observed during May 14 ELC survey
Killdeer	*Charadrius vociferus*	G5	S5B,S5N							Y						OBS	1 individual observed during April 27 wildlife survey
Mallard	*Anas platyrhynchos*	G5	S5							Y	5	H	6	T	6	PROB	
Mourning Dove	*Zenaida macroura*	G5	S5							Y	3	S	4	T	4	PROB	
Northern Cardinal	*Cardinalis cardinalis*	G5	S5							Y	6	S	3	T	6	PROB	
Northern Flicker	*Colaptes auratus*	G5	S4B					5		Y	1	S	3	T	3	CONF	1 active nest (nest entry, young calling) was observed during May 14 ELC survey
Osprey	*Pandion haliaetus*	G5	S5B													OBS	1 individual flyover during April 27 wildlife survey
Pileated Woodpecker	*Dryocopus pileatus*	G5	S5					5		Y	1	H			1	POSS	
Red-bellied Woodpecker	*Melanerpes carolinus*	G5	S4					5		Y	1	S			1	POSS	
Red-eyed Vireo	*Vireo olivaceus*	G5	S5B							Y	2	S	1	T	2	PROB	
Red-tailed Hawk	*Buteo jamaicensis*	G5	S5													OBS	2 individuals observed during winter raptor survey
Red-winged Blackbird	*Agelaius phoeniceus*	G5	S4								7	S	5	T	7	PROB	
Ring-billed Gull	*Larus delawarensis*	G5	S5B,SZN					5		Y			1	X	1	OBS	flyover
Ruffed Grouse	*Bonasa umbellus*	G5	S4													OBS	1 individual observed during April 27 wildlife survey
Song Sparrow	*Melospiza melodia*	G5	S5B							Y	4	S	3	T	4	PROB	
Turkey Vulture	*Cathartes aura*	G5	S5B													OBS	2 individuals observed flying over study area during April 27 wildlife survey
Warbling Vireo	*Vireo gilvus*	G5	S5B							Y	1	S			1	POSS	
Wild Turkey	*Meleagris gallopavo*	G5	S5													OBS	1 individual observed on April 27

Common Name	Scientific Name	GRANK[1]	SRANK[2]	COSEWIC[3]	MNRF[4]	SARA Status[5]	Schedule[5]	City of Guelph[6]	Area Sensitive Birds - Ecoregion 6E	Protected Under MBCA	28-May-18		12-Jun-18		Overall Site		Comments
											Number	Highest BE	Number	Highest BE	Highest Abundance	Highest Breeding Status	
Wood Duck	*Aix sponsa*	G5	S5							Y						OBS	pair observed during May 14 ELC survey
Yellow Warbler	*Setophaga petechia*	G5	S5B							Y	1	S			1	POSS	
Yellow-bellied Sapsucker	*Sphyrapicus varius*	G5	S5B					5	X	Y							1 individual (feeding evidence) on April 27 and May 14
Total No. of Species	**52**			**3**	**3**	**3**	**3**	**15**	**1**		**30**		**30**		**38**		
Mammals																	
Coyote	*Canis latrans*	G5	S5										4	OBS		OBS	
Eastern Cottontail	*Sylvilagus floridanus*	G5	S5										4	OBS		OBS	
Grey Squirrel	*Sciurus carolinensis*	G5	S5								6	OBS				OBS	
Raccoon	*Procyon lotor*	G5	S5													OBS	
Red Squirrel	*Tamiasciurus hudsonicus*	G5	S5													OBS	
White-tailed Deer	*Odocoileus virginianus*	G5	S5								1	OBS				OBS	
Total No. of Species	**6**																
Herpetofauna																	
American Toad	*Anaxyrus americanus*	G5	S5													OBS	
Eastern Gartersnake	*Thamnophis sirtalis sirtalis*	*G5T5*	S5													OBS	
Gray Treefrog	*Hyla versicolor*	G5	S5								1	VOC				VOC	
Green Frog	*Lithobates clamitans*	G5	S5								1	OBS				OBS	
Northern Leopard Frog	*Lithobates pipiens*	G5	S5	NAR	NAR						1	OBS				OBS	
Spring Peeper	*Pseudacris crucifer*	G5	S5													OBS	
Wood Frog	*Lithobates sylvaticus*	G5	S5													VOC	
Total No. of Species	**7**																
Insects																	
Black Swallowtail	*Papilio polyxenes*	G5	S5													OBS	
Cabbage White	*Pieris rapae*	G5	SNA													OBS	
Carrot Seed Moth	*Sitochroa palealis*															OBS	
Clouded Sulphur	*Colias philodice*	G5	S5													OBS	
Common Eastern Bumblebee	*Bombus impatiens*															OBS	
Common Green Darner	*Anax junius*	G5	S5													OBS	
Common Ringlet	*Coenonympha tullia*	G5	S5													OBS	
Common Whitetail	*Plathemis lydia*	G5	S5													OBS	
Common Wood-Nymph	*Cercyonis pegala*	G5	S5													OBS	
Eastern Forktail	*Ischnura verticalis*	G5	S5													OBS	
Eastern Tailed Blue	*Everes comyntas*	G5	S5													OBS	
European Praying Mantis	*Mantis religiosa*															OBS	
Honey Bee	*Apis mellifera*															OBS	
Hummingbird Clearwing Moth	*Hemaris thysbe*															OBS	
Japanese Beetle	*Popillia japonica*															OBS	
Lance-tipped Darner	*Aeshna constricta*	G5	S5													OBS	
Lucerne Moth	*Nomophila nearctica*															OBS	
Monarch	*Danaus plexippus*	G5	S2N,S4B	END	SC	SC	1	4							6	OBS	6 adults observed during fall migration, including a mating pair.
Northern Amber Bumblebee	*Bombus borealis*															OBS	
Question Mark	*Polygonia interrogationis*	G5	S5													OBS	
Red-belted Bumblebee	*Bombus rufocinctus*	G4G5	S4													OBS	

Common Name	Scientific Name	GRANK[1]	SRANK[2]	COSEWIC[3]	MNRF[4]	SARA Status[5]	Schedule[5]	City of Guelph[6]	Area Sensitive Birds - Ecoregion 6E	Protected Under MBCA	28-May-18		12-Jun-18		Overall Site		Comments
											Number	Highest BE	Number	Highest BE	Highest Abundance	Highest Breeding Status	
Red Admiral	*Vanessa atalanta*	G5	S5													OBS	
Red-spotted Purple	*Limenitis arthemis astyanax*	G5T5	S5													OBS	
Sanderson Bumblebee cf	*Bombus cf sandersoni*	G4G5	S4S5													OBS	
Seven-spotted Lady Beetle	*Coccinella septempunctata*															OBS	
Slender Spreadwing	*Lestes rectangularis*	G5	S5													OBS	
Snowberry Clearwing Moth	*Hemaris diffinis*															OBS	
Thistle Long-horned Beetle	*Melissodes desponsus*															OBS	
Twelve-spotted Skimmer	*Libellula pulchella*	G5	S5													OBS	
Unarmed Leafcutter Bee	*Megachile inermis*															OBS	
Viceroy	*Limenitis archippus*	G5	S5													OBS	
White-faced Meadowhawk	*Sympetrum obtrusum*	G5	S5													OBS	
Wild Indigo Duskywing	*Erynnis baptisiae*	G5	S4					5							1	OBS	Recorded during bumblebee survey, Aug 9
Yellow-banded Bumblebee	*Bombus terricola*	GU	S5	SC	SC		No schedule								1	OBS	Vegetation Unit 28, 1 individual nectaring on Knapweed
Total No. of Species	**34**																

Glossary

[1]G-Rank (global)
Global ranks are assigned by a consensus of the network of Conservation Data Centres (CDCs), scientific experts, and the Nature Conservancy to designate a rarity rank based on the range-wide status of a species, subspecies, or variety.

G1 Extremely rare - usually 5 or fewer occurrences in the overall range or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.
G2 Very rare - usually between 5 and 20 occurrences in the overall range or with many individuals in fewer occurrences; or because of some factor(s) making it vulnerable to extinction.
G3 Rare to uncommon - usually between 20 and 100 occurrences; may have fewer occurrences, but with a large number of individuals in some populations; may be susceptible to large-scale disturbances.
G4 Common - usually more than 100 occurrences; usually not susceptible to immediate threats.
G5 Very common - demonstrably secure under present conditions.

[2]S-Ranks (provincial)
Provincial (or Subnational) ranks are used by the Natural Heritage Information Centre (NHIC) to set protection priorities for rare species and natural communities. These ranks are not legal designations. Provincial ranks are assigned in a manner similar to that described for global ranks, but consider only those factors within the political boundaries of Ontario.

S1 Critically Imperiled - Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2 Imperiled - Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3 Vulnerable - Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4 Apparently Secure - Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5 Secure - Common, widespread, and abundant in the nation or state/province.
S#S# Range Rank - A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).
SAN Non-breeding accidental.
SE Exotic - not believed to be a native component of Ontario's fauna.
SZN Non-breeding migrants/vagrants.
SZB Breeding migrants/vagrants.

[3]COSEWIC (Committee on the Status of Endangered Wildlife in Canada)
(federal status from COSEWIC April 2014)

EXT Extinct - A species that no longer exists.
EXP Extirpated - A species no longer existing in the wild in Canada, but occurring elsewhere.
END Endangered - A species facing imminent extirpation or extinction.
THR Threatened - A species likely to become endangered if limiting factors are not reversed.
SC Special Concern (formerly vulnerable) - A species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
NAR Not At Risk - A species that has been evaluated and found to be not at risk of extinction given the current circumstances.
DD Data Deficient (formerly Indeterminate) - Available information is insufficient to resolve a species' eligibility for assessment or to permit an assessment of the species' risk of extinction.

[4]OMNRF (Ontario Ministry of Natural Resources and Forestry)

EXT Extinct - A species that no longer exists anywhere in the world.
EXP Extirpated - A species that lives somewhere in the world, lived at one time in the wild in Ontario, but no longer lives in the wild in Ontario.
END Endangered - A species that is facing imminent extinction or extirpation.
THR Threatened - A species that is likely to become endangered if steps are not taken to address factors threatening to lead to its extinction or extirpation.
SC Special Concern – A species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

[5]SARA (Species at Risk Act) Status and Schedule
The Act establishes Schedule 1, as the official list of wildlife species at risk. It classifies those species as being either Extirpated, Endangered, Threatened, or a Special Concern. Once listed, the measures to protect and recover a listed wildlife species are implemented.

EXT Extinct - A wildlife species that no longer exists.
EXP Extirpated **-** A wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.

END Endangered - A wildlife species that is facing imminent extirpation or extinction.
THR Threatened - A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC Special Concern - A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

Schedule 1: is the official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2: species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3: species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.

The Act establishes Schedule 1 as the official list of wildlife species at risk. However, please note that while Schedule 1 lists species that are extirpated, endangered, threatened and of special concern, the prohibitions do not apply to species of special concern.

Species that were designated at risk by COSEWIC prior to October 1999 (Schedule 2 & 3) must be reassessed using revised criteria before they can be considered for addition to Schedule 1 of SARA. After they have been assessed, the Governor in Council may on the recommendation of the Minister, decide on whether or not they should be added to the List of Wildlife Species at Risk.

[6] Regional Status

City of Guelph
City of Guelph. 2012. Locally Significant Species List: Significant Wildlife List (http://guelph.ca/wp-content/uploads/LocallySignificantSpeciesListCityofGuelphJune2014.pdf).

1: Provincially Threatened and Endangered
2: Natural Heritage Information Centre (MNR) S1, S2, S3
3: Globally Significant (G1, G2, G3) and/or Federally Endangered or Threatened (but not also #1)
4: Federally or Provincially Special Concern (COSEWIC or COSSARO)
5: Locally Significant (not also meeting any of the above)
*: Nomenclature Update
**: Species considered extirpated in Wellington County by A. Anderson
***: On City of Guelph NHS Significant Species List, but not Frank & Anderson's Wellington Flora Rare Plant List 2009

[7] MNR Significant Wildlife Habitat Technical Guide Area Sensitive Species
Area Sensitivity is defined as species requiring large areas of suitable habitat in order to sustain population numbers
From: Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. Fish and Wildlife Branch, Wildlife Section. Science Development and Transfer Branch, Southcentral Science Section. 151pp. + appendices.

Ontario Breeding Bird Atlas - Breeding Evidence Codes

OBSERVED
X Species observed in its breeding season (no breeding evidence).

POSSIBLE
H Species observed in its breeding season in suitable nesting habitat.
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season.

PROBABLE
P Pair observed in suitable nesting habitat in nesting season.
T Permanent territory presumed through registration of territorial behaviour (song, etc.) on at least two days, a week or more apart, at the same place.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation.
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult.
B Brood Patch on adult female or cloacal protuberance on adult male.
N Nest-building or excavation of nest hole.

CONFIRMED

DD	Distraction display or injury feigning.
NU	Used nest or egg shells found (occupied or laid within the period of the survey).
FY	Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight.
AE	Adult leaving or entering nest sites in circumstances indicating occupied nest.
FS	Adult carrying fecal sac.
CF	Adult carrying food for young.
NE	Nest containing eggs.
NY	Nest with young seen or heard.

APPENDIX

F SAR SCREENING TABLE

Species At Risk Designations	
ENDANGERED	
THREATENED	
SPECIAL CONCERN	
EXTIRPATED	

Species	ESA Status and Regional Occurrence	ESA Protection	Source of Record	Key Habitats Used By Species in Ontario	Reasonable Likelihood of Presence in Study Area	Surveys Undertaken	Field Survey Results	Likelihood and Magnitude of Impacts to Species and/or Habitats
Amphibians								
Jefferson Salamander (*Ambystoma jeffersonianum*)	**Known to Occur**	Species Protection and Habitat Regulation	MNRF City of Guelph List (2017)	Inhabit deciduous and mixed deciduous forests with suitable breeding areas which generally consist of ephemeral (temporary) bodies of water that are fed by spring runoff, groundwater, or springs.	None - no suitable habitat present	General wildlife surveys undertaken throughout spring and summer of 2018	No observations	None - No suitable habitat and no known records within study area.
Birds								
Bald Eagle (*Haliaeetus leucocephalus*)	**Known to Occur**	N/A	MNRF City of Guelph List (2017)	Prefers deciduous and mixed-deciduous forest; and habitat close to water bodies such as lakes and rivers; They roost in super canopy trees such as Pine.	None - no suitable habitat present, may pass over study area occassionally	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	None - No suitable habitat and no known records within study area.
Bank Swallow *(Riparia riparia)*	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph (2017)	It nests in a wide variety of naturally and anthropogenically created vertical banks, which often erode and change over time including aggregate pits and the shores of large lakes and rivers.	Minimal - no suitable habitat present, may occur as a foraging visitant.	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	Minimal - Unlikely to be impact as foraging visitant and no suitable nesting habitat recorded within study area.
Barn Swallow *(Hirundo rustica)*	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017); Ecoplans (2013)	Prefers farmland; lake/river shorelines; wooded clearings; urban populated areas; rocky cliffs; and wetlands. They nest inside or outside buildings; under bridges and in road culverts; on rock faces and in caves etc.	High - likely to occur as foraging vistant in fields within study area. Potential nesting habitat on buildings and structures.	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	Confirmed. Foraging individual observed over cultural meadow habitat (Vegetation Unit Unit 7a)	Minimal - Unlikely to be impacted as foraging visitant and though potential nesting habitat exists, no nests were observed. Impacts to potential nesting habitat can be mitigated by removing strucutres outside of the breeding bird window.
Bobolink (*Dolichonyx oryzivorus*)	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017)	Generally prefers open grasslands and hay fields. In migration and in winter uses freshwater marshes and grasslands.	None - no suitable habitat present	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	None - No suitable habitat and no known records within study area.
Canada Warbler (*Cardellina canadensis*; formerly *Wilsonia canadensis*)	**Suspected to Occur**	N/A	MNRF City of Guelph List (2017)	Generally prefers wet coniferous, decediuous and mixed forest types, with a dense shrub layer. Nests on the ground, on logs or hummocks, and uses dense shrub layer to conceal the nest.	Minimal - some potential to occur as a migrant in the vicinity of the study area in PSW areas; no suitable breeding habitat (lack of large forested areas with mixed-coniferous-deciduous vegetation and interior habitat)	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	Minimal - Unlikely to be impacted as migrant visitant and no suitable nesting habitat recorded within study area.
Chimney Swift (*Chaetura pelagica*)	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017); Ecoplans (2013)	Historically found in deciduous and coniferous, usually wet forest types, all with a welldeveloped, dense shrub layer; now most are found in urban areas in large uncapped chimneys.	High - likely to occur as foraging vistant within study area. Unlikely to nest within study area given the availability of chimneys in the local landscape.	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	Confirmed. 2 individuals observed foraging over Vegetation Unit 17.	Minimal - Unlikely to be impacted as foraging visitant and no suitable nesitng habitat observed within study area.
Common Nighthawk (*Chordeiles minor*)	**Known to Occur**	N/A	MNRF City of Guelph List (2017)	Generally prefer open, vegetation-free habitats, including dunes, beaches, recently harvested forests, burnt-over areas, logged areas, rocky outcrops, rocky barrens, grasslands, pastures, peat bogs, marshes, lakeshores, and river banks. This species also inhabits mixed and coniferous forests. Can also be found in urban areas (nest on flat roof-tops).	Minimal - some potential to occur as a migrant or foraging vistant, no suitable nesting habitat observed	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	Minimal - Unlikely to be impacted as migrant or foraging visitant and no suitable nestign habitat observed within study area.
Eastern Meadowlark (*Sturnella Magna*)	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017)	Generally prefers grassy pastures, meadows and hay fields. Nests are always on the ground and usually hidden in or under grass clumps.	Minimal - some potential to occur as a foraging visitant, no suitable nesting habitat observed. Although open CUM habitat is present, this area is mown and does not provide suitable habitat at this time.	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	Minimal - Unlikely to be impacted as foraging visitant and no suitable nesitng habitat observed within study area. Habitat may become suitable in future years if mowing of CUM area ceases and succession is allowed to take place.

Eastern Wood-Pewee (*Contopus virens*)	**Known to Occur**	N/A	MNRF City of Guelph List (2017); Ecoplans (2013)	Associated with deciduous and mixed forests. Witin mature and intermediate age stands it prefers areas with little understory vegetation as well as forest clearings and edges.	High - likely to occur as foraging visitant, potential breeding habitat is present in forested habitats within study area.	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	Confirmed. Single individual recorded with 'Possible' breeding evidence	Minimal - no suitable habitat is present within development envelope
Golden-winged Warbler *(Vermivora chrysoptera)*	**Suspected to Occur**	N/A	MNRF City of Guelph List (2017)	Generally prefer areas of early successional vegetation, found primarily on field edges, hydro or utility right-of-ways, or recently logged areas.	Minimal - no suitable habitat present (large areas of successional vegetation) within study area and no known records within study area. Some potential to occur as a migrant or foraging visitant.	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	Minimal - Unlikely to be impacted as migrant or foraging visitant and no suitable nesting habitat observed within study area.
Red-Headed Woodpecker *(Melanerpes erythrocephalus)*	**Suspected to Occur**	N/A	MNRF City of Guelph List (2017)	Generally prefer open oak and beech forests, grasslands, forest edges, orchards, pastures, riparian forests, roadsides, urban parks, golf courses, cemeteries, as well as along beaver ponds and brooks.	None - no suitable nesting habitat observed (open woodlands and large scattered trees)	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	None - No suitable habitat and no known records within study area.
Wood Thrush (*Hylocichla mustelina*)	**Suspected to Occur**	N/A	MNRF City of Guelph List (2017); Ecoplans (2013)	Nests mainly in second-growth and mature deciduous and mixed forests, with saplings and well-developed understory layers. Prefers large forest mosaics, but may also nest in small forest fragments.	High - potential breeding habitat is present in forested habitats within and adjacent to study area. Observed as as possible migrant by Ecoplans during EIS for adjacent property.	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	Minimal - no suitable habitat is present within development envelope
Yellow-breasted Chat *(Icteria virens)*	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017)	Generally prefer dense thickets around wood edges, riparian areas, and in overgrown clearings.	None - no suitable habitat present, current breeding range in Ontario is highly limited.	Breeding Bird and general habitat surveys (May 28 and June 12, 2018)	No observations	None - No suitable habitat and no known records within study area.
Insects								
Monarch Butterfly *(Danaus plexippus)*	**Known to Occur**	N/A	MNRF City of Guelph List (2017)	Exist primarily wherever milkweed and wildflowers exist; abandoned farmland, along roadsides, and other open spaces.	High - likely to pass through and / or forage in CUM or other open areas throughout study area, some potential for breeding wherever Milkweed or other wildlflowers are present throughout study area.	General wildlife surveys undertaken throughout spring and summer of 2018	Confirmed. Numerous adults observed during fall migration, including a mating pair. No larvae observed.	Minimal - limited Milkweed (larvae host plant) present within development envelope. Nectaring plants for adults are present within the larger landscape.
Rusty-patched Bumble Bee *(Bombus affinis)*	**Formerly Occurred and May Still Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017)	Generally inhabits a range of diverse habitats including mixed farmland, sand dunes, marshes, urban and wooded areas. It usually nests underground in abandoned rodent burrows.	Minimal - suitable habitat is present, however no recent records and species has experienced significant declines in Ontario.	Bumble Bee surveys (August 9 and 10, 2018) and general wildlife surveys	No observations	Minimal - No known records within the study area. Nectaring plants for adults are present within the larger landscape.
Yellow-banded Bumblebee (*Bombus terricola*)	**Known to Occur**	N/A	MNRF City of Guelph List (2017)	Generally inhabits a range of diverse habitats including mixed farmland, sand dunes, marshes, urban and wooded areas. It usually nests underground in abandoned rodent burrows.	Moderate - suitable habitat is present throughout study area, known from nearby Pollinator Park	Bumble Bee surveys (August 9 and 10, 2018) and general wildlife surveys	One adult observed in Vegetation Unit 28	Minimal - No osbervations observed within the development envelope. Nectaring plants for adults are present within the larger landscape.
West Virginia White *(Pieris virginiensis)*	**Historically Known to Occur**	N/A	MNRF City of Guelph List (2017)	Generally prefer moist, deciduous woodlands. The larvae feed only on the leaves of the two-leaved toothwort (Cardamine diphylla), which is a small, spring-blooming plant of the forest floor.	Minimal - deciduous forest present on site, however vegetation community type unlikely to support host plant.	Botanicial inventories, General wildlife surveys undertaken throughout spring and summer of 2018	No observations	None - No suitable habitat and no known records within study area.
Mammals								
Eastern Small-footed Myotis *(Myotis leibii)*	**Known to Occur**	Species and General Habitat Protection	Bat Conservation International distribution maps	In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. In the winter, these bats hibernate, most often in caves and abandoned mines. They seem to choose colder and drier sites than similar bats and will return to the same spot each year. (MNRF website, 2018)	Minimal - low potential for this species to occur throughout study area as foraging visitant (generally less common than other bat species in Southern Ontario), low potential for maternity roost habitat in forested areas or buildings (preferred habitat in cliff faces or exposed rock outcrops)	Habitat suitability surveys	No observations (acoustic monitoring / exit surveys not conducted)	Minimal - Temporary disturbance / very minor removal of treed habitat in the hedgerow, including two identified cavity trees. Unlikely to impact any foraging individuals and potential roosting habitat will remain available throughout the study area following construction. Additional mitigation through timing of tree removals (i.e., none within the active season April 1 - September 30)
Little Brown Myotis *(Myotis lucifugus)*	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017)	Overwintering habitat: Caves and mines that remain above 0 Maternal Roosts: Often associated with buildings (attics, barns etc.). Occasionally found in trees (25-44 cm dbh).	Moderate - may occur as a foraging visitant (suitable foraging habitat over meadow habitat), potential for maternity roosting in forest habitat with cavity trees / loose bark as well as existing buildings	Habitat suitability and cavity tree surveys	No observations (acoustic monitoring / exit surveys not conducted)	Minimal - Temporary disturbance / very minor removal of treed habitat in the hedgerow, including two identified cavity trees. Unlikely to impact foraging individuals, and abundant suitable roosting habitat will remain available throughout the study area following construction. Additional mitigation through timing of tree removals (i.e., none within the active season April 1 - September 30).

Northern Myotis ***(Myotis septentrionalis)***	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017)	Overwintering habitat: Caves and mines that remain above 0 Maternal Roosts: Often asssociated with cavities of large diameter trees (25-44 cm dbh). Occasionally found in structures (attics, barns etc.)	Moderate - may occur as a foraging visitant (suitable foraging habitat over meadow habitat), potential for maternity roosting in forest habitat with cavity trees, lower potential for roosting habitat in existing buildings	Habitat suitability and cavity tree surveys	No observations (acoustic monitoring / exit surveys not conducted)	Minimal - Temporary disturbance / very minor removal of treed habitat in the hedgerow, including two identified cavity trees. Unlikely to impact foraging individuals, and abundant suitable roosting habitat will remain available throughout the study area following construction. Additional mitigation through timing of tree removals (i.e., none within the active season April 1 - September 30).
Tri-coloured Bat ***(Perimyotis subflavus)***	**Known to Occur**	Species and General Habitat Protection	Bat Conservation International distribution maps	Overwintering habitat: Caves and mines that remain above 0. Maternal Roosts: Forests with cavity trees or clumps of dead leaves, and buildings.	Minimal - low potential to occur as foraging visitant and low potential for maternity roost habitat in forest and buildings (uncommon and localized distribution in Ontario, COSEWIC 2013).	Habitat suitability and cavity tree surveys	No observations (acoustic monitoring / exit surveys not conducted)	Minimal - Temporary disturbance / very minor removal of treed habitat in the hedgerow, including two identified cavity trees. Unlikely to impact foraging individuals, and abundant suitable roosting habitat will remain available throughout the study area following construction. Additional mitigation through timing of tree removals (i.e., none within the active season April 1 - September 30).
Plants								
Butternut ***(Juglans cinerea)***	**Known to Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017)	Generally grows in rich, moist, and well-drained soils often found along streams. It may also be found on well-drained gravel sites, especially those made up of limestone. It is also found, though seldomly, on dry, rocky and sterile soils. In Ontario, the Butternut generally grows alone or in small groups in deciduous forests as well as in hedgerows.	Minimal - some potential to occur in hedgerows.	ELC and botanical inventories	No observations	None - No known records within study area.
Reptiles								
Blanding's Turtle ***(Emydonidea blandingii)***	**Formerly Occurred and May Still Occur**	Species and General Habitat Protection	MNRF City of Guelph List (2017)	Generally occur in freshwater lakes, permanent or temporary pools, slow-flowing streams, marshes and swamps. They prefer shallow water that is rich in nutrients, organic soil and dense vegetation. Adults are generally found in open or partially vegetated sites, and juveniles prefer areas that contain thick aquatic vegetation including sphagnum, water lilies and algae. They dig their nest in a variety of loose substrates, including sand, organic soil, gravel and cobblestone. Overwintering occurs in permanent pools that average about one metre in depth, or in slow-flowing streams.	None - no suitable habitat present and no known records in study area	General wildlife surveys undertaken throughout spring and summer of 2018	No observations	None - No suitable habitat and no known records within study area.
Eastern Ribbonsnake ***(Thamnophis sauritus)***	**Known to Occur**	N/A	MNRF City of Guelph List (2017)	Generally occur along the edges of shallow ponds, streams, marshes, swamps, or bogs bordered by dense vegetation that provides cover. Abundant exposure to sunlight is also required, and adjacent upland areas may be used for nesting.	Minimal - some potential to occur along edges of wetlands within study area.	Snake habitat assessment and general wildlife surveys undertaken throughout spring and summer of 2018	No observations	None - Limited suitable habitat present within study area, no suitable habitat within development envelope.
Milksnake ***(Lampropeltis triangulum)***	**Known to Occur**	N/A	MNRF City of Guelph List (2015)	Generally occur in rural areas, where it is most frequently reported in and around buildings, especially old structures. It is also found in a wide variety of habitats, from prairies, pastures, and hayfields, to rocky hillsides and a wide variety of forest types. They must also be in proximity of water, and suitable locations for basking and egg-laying.	Minimal - some potential to occur in and around buildings, forest and wetland habitat within study area	Snake habitat assessment and general wildlife surveys undertaken throughout spring and summer of 2018	No observations	Mimimal - some potential to be impacted if passing through construction areas adjacent to buildings and forest habitat within study area, potential impacts can be mitigated through use of temporary wildlife fencing during construction.

Snapping Turtle ***(Chelydra serpentina)***	**Known to Occur**	N/A	MNRF City of Guelph List (2017)	Generally inhabit shallow waters where they can hide under the soft mud and leaf litter. Nesting sites usually occur on gravely or sandy areas along streams. Snapping Turtles often take advantage of man-made structures for nest sites, including roads (especially gravel shoulders), dams and aggregate pits.	None - no suitable habitat present and no known records in study area	General wildlife surveys undertaken throughout spring and summer of 2018	No observations	None - No suitable habitat and no known records within study area.

APPENDIX

G SWH ASSESSMENT TABLE

This evaluation is based on the Significant Wildlife Habitat Ecoregion Criteria Schedules for Ecoregion 6E (MNRF January 2015). The following text and tables are from that document, but include an additional 'evaluation' column, with discussion of site-specific attributes within the 78 and 82 Eastview Road study area.

In this evaluation:

- Criteria where Candidate Habitat was identified is shaded green
- Criteria where Confirmed Habitat was identified is shaded blue

SCHEDULE 6E: IDENTIFICATION OF Significant Wildlife Habitat

This schedule is designed to provide the recommended criteria for identifying Significant Wildlife Habitat (SWH) within Ecoregion 6E [ccxvi]. Tables 1.1 through 1.4 within the Schedules provide guidance for SWH designation for the four categories of SWH outlined in the Significant Wildlife Habitat Technical Guide and its Appendices [cxlviii], [cxlix]. Table 1.5 contains and provides descriptions for exceptions criteria for ecoregional SWH which will be identified at an ecodistrict scale [ccxvi]. Exceptions occur when criteria for a specific habitat are different within an ecodistrict compared to the remainder of an ecoregion or if a habitat only occurs within a restricted area of the ecoregion.

The schedules, including description of wildlife habitat, wildlife species, and the criteria provided for determining SWH, are based on science and expert knowledge. The ELC Ecosite codes are described using the Ecological Land Classification (ELC) for Southern Ontario [lxxviii]. The information within these schedules will require periodic updating to keep pace with changes to wildlife species status in the Species at Risk in Ontario (SARO) list, or as new scientific information pertaining to wildlife habitats becomes available. Therefore, MNRF will occasionally need to review and update these schedules and provide addenda. A reference document for all SWH is found after the schedules and includes citations for all ecoregional schedules. Each citation used to assist with the criteria for SWH will be indicated by a roman numeric symbol. Where no reference exists, MNRF expert opinion was used for determination of criteria, this symbol "Ⓔ" represents when MNRF expert opinion was utilized to develop defining criteria.

Criteria For Significant Wildlife Habitat in Ecoregion 6E

1. 1 SEASONAL CONCENTRATION AREAS OF ANIMALS

Seasonal concentration areas are areas where wildlife species occur annually in aggregations at certain times of the year. Such areas are sometimes highly concentrated with members of a given species, or several species, within relatively small areas. In spring and autumn, migratory wildlife species will concentrate where they can rest and feed. Other wildlife species require habitats where they can survive winter. Examples of seasonal concentration areas include deer wintering areas, breeding bird colonies and hibernation sites for reptiles, amphibians and some mammals
cxlviii. Table 1.1 outlines what wildlife habitats and defining criteria that are considered for seasonal concentration areas within Ecoregion 6E.

Table 1.1 Seasonal Concentration Areas of Animals.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
1. Waterfowl Stopover and Staging Areas (Terrestrial) **<u>Rationale;</u>** Habitat important to migrating waterfowl.	American Black Duck American Wigeon Blue-winged Teal Gadwall Green-winged Teal Mallard Northern Pintail Northern Shoveler Wood Duck	CUM1 CUT1 Plus evidence of annual spring flooding from melt water or run-off within these Ecosites.	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]. <u>Information Sources</u> • 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 • 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Ⓔ or more individuals required. • The flooded field ecosite habitat plus a 100-300m radius, dependant on local site conditions and adjacent land use is the significant wildlife habitat . • 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). • SWH MiSTIndex #7 provides development effects and mitigation measures.	No suitable candidate habitat is present (CUM / CUT areas in the study area are limited in size and highly disturbed). Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work in April-August 2018. • Two of the listed species (Wood Duck and Mallard) were recorded in small numbers (less than 6 individuals). **Conclusion: no candidate or confirmed SWH is present**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
2. Waterfowl Stopover and Staging Areas (Aquatic) **<u>Rationale:</u>** 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.	American Black Duck American Wigeon Black Scoter Blue-winged Teal Brant Bufflehead Cackling Goose Canada Goose Canvasback Common Goldeneye Common Merganser Gadwall Greater Scaup Green-winged Teal Hooded Merganser Lesser Scaup Long-tailed Duck Northern Pintail Northern Shoveler Red-breasted Merganser Redhead Ring-necked duck Ruddy Duck Ruddy Duck Snow Goose Surf Scoter White-winged Scoter	MAS1 MAS2 MAS3 SAF1 SAM1 SAS1 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) <u>Information Sources</u> • 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Ⓔ or more of listed species for 7 daysⒺ, results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[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). • SWH MIST[cxlix] Index #7 provides development effects and mitigation measures.	Although some candidate habitat ELC types are present (SWD), they occupy small areas within the primarily wooded areas of the study area and have no potential for significant waterfowl use. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work from April-August 2018. The following listed species were recorded: • Canada Goose (total of ~40 individuals observed flying over study area) **Conclusion: no candidate or confirmed SWH is present.**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
3. Shorebird Migratory Stopover Area **<u>Rationale;</u>** High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	American Golden-Plover Baird's Sandpiper Black-bellied Plover Dunlin Greater Yellowlegs Hudsonian Godwit Least Sandpiper Lesser Yellowlegs Marbled Godwit Pectoral Sandpiper Purple Sandpiper Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Semipalmated Plover Semipalmated Sandpiper Short-billed Dowitcher Solitary Sandpiper Spotted Sandpiper Stilt Sandpiper White-rumped Sandpiper	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 MAM1 MAM2 MAM3 MAM4 MAM5 SDO1 SDS2 SDT1	• 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. <u>Information Sources</u> • 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 Centre (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000[í] 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[í] 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] • SWH MiST[cxlix] Index #8 provides development effects and mitigation measures.	No suitable candidate habitat is present. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work in April-August 2018. • None of the listed species was recorded **Conclusion: no candidate or confirmed SWH is present**
4. Raptor Wintering Area **<u>Rationale;</u>** Sites used by multiple species, a high number of individuals and used annually are most significant	American Kestrel Northern Harrier Red-tailed Hawk Rough-legged Hawk Snowy Owl **<u>Special Concern:</u>** Bald Eagle Short-eared Owl	<u>Hawks/Owls:</u> 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. <u>Bald Eagle:</u> 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 > 20 ha [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 available for roosting[cxlix] <u>Information Sources</u>: • OMNRF Ecologist or Biologist • Naturalist clubs • Natural Heritage Information Centre (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Results of Christmas Bird Counts • Reports and other information available from Conservation Authorities.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One of more Bald Eagles or; At least10 individuals and two of the listed hawk/owl species[Ê] • 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[Ê]. • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area[Ê] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWH MiST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	The woodland associated with the Guelph North-East Complex PSW and adjacent fields within Pollinator Park meet the ELC habitat type and size criteria. The upland (CUM, CUT, CUS and CUW) ELC habitat types within the study area are small and do not meet the habitat criteria to be defined as candidate habitat. The open field habitat within the study area is mown, had significant snow accumulation and was not windswept due to surrounding features (woodland and residential development). Targeted winter raptor surveys were undertaken on two dates (February 12 and March 5, 2018). The following listed species were recorded: • Red-tailed Hawk (2 individuals) **Conclusion: no candidate or confirmed SWH is present within the study area**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
5. Bat Hibernacula **Rationale;** Bat hibernacula are rare habitats in all Ontario landscapes.	Big Brown Bat Tri-coloured 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 as SWH • 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 Ⓔ. • The area includes 200m radius around the entrance of the hibernaculum , , Ⓔ for most 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 “Bats and Bat Habitats: Guidelines for Wind Power Projects”[ccv]. • SWHMiST[cxlix] Index #1 provides development effects and mitigation measures.	No candidate habitat types are present. **Conclusion: no candidate or confirmed SWH is present**
6. 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 buildlings[xxii, 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 Ⓔ >5 Adult Female Silver-haired Bats Ⓔ • The area of the habitat includes the entire woodland or a forest stand ELC Ecosite or an Ecoelement containing the maternity colonies Ⓔ. • 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.	Suitable ecosite types are present within the study area. A cavity tree assessment was completed on April 27, 2018.. Acoustic surveys were not completed as the forested habitat will be retained in full, with appropriate buffers and setbacks applied. **Conclusion: candidate SWH is present**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
7. Turtle Wintering Areas **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. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF Ecologist or Biologist • Field Naturalist clubs • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant[í]. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant[í]. • 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. – May) [cvii]. Congregation of turtles is more common where wintering areas are limited and therefore significant [cix, cx, cxi, cxii]. • Congregation of turtles is more common where wintering areas are limited and therefore significant [cix, cx, cxi,cxii]. • SWH MiST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	Suitable habitat not present within study area. **Conclusion: no candidate or confirmed SWH is present**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
8. Reptile Hibernaculum **<u>Rationale;</u>** Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant.	**<u>Snakes:</u>** Eastern Gartersnake Northern Brownsnake Northern Red-bellied Snake Northern Ring-necked Snake Northern Watersnake Smooth Green Snake **<u>Special Concern:</u>** Eastern Ribbonsnake Milksnake **<u>Lizard:</u>** **<u>Special Concern</u>** (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite in central Ontario other than very wet ones. Talus, Rock Barren, Crevice, 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. For Five-lined Skink, ELC Community Series of FOD and FOM and Ecosites: FOC1 FOC3	• For snakes, hibernation takes place in sites located below frost lines in burrows, rock crevices and other natural or naturalized locations. The existence of features that go below frost line; such as rock piles or slopes, old stone fences, and abandoned crumbling foundations assist in identifying candidate SWH. • Areas of broken and fissured rock are particularly valuable since they provide access to subterranean sites below the frost line, , , , . • 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. • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures . <u>Information Sources</u> • 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 Conservation Authorities. • Field Naturalist Clubs • University herpetologists • Natural Heritage Information Centre (NHIC) • OMNRF ecologist or biologist may be aware of locations of wintering skinks	Studies confirming: • Presence of snake hibernacula used by a minimum of five individuals of a snake sp. <u>or</u>; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. <u>or</u>; 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)[cxlviii] . • <u>Note</u>: If there are Special Concern Species present, then site is SWH • <u>Note</u>: 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 the feature in which the hibernacula is located plus a 30 m buffer is the SWH[cxlviii] • SWHMiST[cxlix] Index #13 provides development effects and mitigation measures for snake hibernacula. • Presence of any active hibernaculum for skink is significant. • SWHMiST [cxlix] Index #37 provides development effects and mitigation measures for five-lined skink wintering habitat.	Targeted snake emergence surveys were undertaken in spring 2018, with supplemental observations during other fieldwork site visits. Congregation of 6 Eastern Gartersnakes observed near a potential hibernaculum on a warm sunny day in spring. **Conclusion: confirmed SWH is present** **No adverse impacts to Reptile Hibernaculum are anticipated with the implementation of recommended mitigation and protection measures.** **The ecosite in which the Reptile Hibernaculum was recorded will be retained in full with appropriate setbacks and buffers applied.**
9. Colonially -Nesting Bird Breeding Habitat (Bank and Cliff) **<u>Rationale:</u>** 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 [cxcix].	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. <u>Information Sources</u> • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas • Bird Studies Canada; NatureCounts <u>http://www.birdscanada.org/birdmon/</u> • Field Naturalist Clubs.	Studies confirming: • Presence of 1 or more nesting sites with 8or 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 • 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	No suitable candidate habitat is present in the study area. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work in April-August 2018. None of the listed species were recorded. **Conclusion: no candidate or confirmed SWH is present**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
10. 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.	Black-crowned Night-Heron Great Blue Heron Great Egret Green Heron	SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1 SWM2 SWM3 SWM5 SWM6	• 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 Conservation Authorities. • MNRF District Offices. • Field Naturalist Clubs	Studies confirming: • Presence of 5[i] or more active nests of Great Blue Heron or other listed species. • 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 heronries are to 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.	There is no known, regularly used colonially-nesting bird breeding habitat present. Potential candidate habitat in the SWD vegetation units were evaluated; in addition, other treed areas (which do not meet the ecosite criteria, but may be suitable for nesting) were also evaluated. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work from April-August 2018. The following listed species were recorded: • Great Blue Heron – 1 individual recorded as flyover, with no breeding evidence or nests observed. • Green Heron – 1 individual recorded as flyover, with no breeding evidence or nests observed. **Conclusion: no candidate or confirmed SWH is present**
11. 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.	Brewer's Blackbird Caspian Tern Common Tern Great Black-backed Gull Herring Gull Little Gull Ring-billed Gull	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) CUM CUT CUS MAS1-3; MAM1-6;	• 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, rare/colonial species records. • Canadian Wildlife Service. • Reports and other information available from Conservation Authorities. • 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 or Ring-billed Gulls, >5 active nests for Common Tern or >2 active nests for Caspian Tern Ⓔ. • Presence of 5 or more pairs for Brewer's Blackbird Ⓔ. • Any active nesting colony of one or more Little Gull, and Great Black-backed Gull is significant Ⓔ. • The edge of the colony and a minimum 150m radius area of habitat, or the extent of the ELC ecosites containing the colony or any island <3.0ha with a colony is the SWH [cc,cvii] • 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[cxiix]Index #6 provides development effects and mitigation measures.	There is no known, regularly used colonially-nesting bird breeding areas and no candidate habitat is present. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work from April-August 2018. The following listed species were recorded: • Ring-billed Gull – 1 individual recorded as flyover, with no breeding evidence or nests observed. **Conclusion: no candidate or confirmed SWH is present**

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
12. 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 site for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 10 ha in size with a combination of field and forest habitat present, and will be located within 5 km of Lake Ontario [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 • OMNRF (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 Red Admiral's is to be considered significant.Í • SWHMiST [cxlix] Index #16 provides development effects and mitigation measures.	No suitable candidate habitat is present. Study area is not within 5 km of Lake Erie or Lake Ontario. **Conclusion: no candidate or confirmed SWH is present**.
13. 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.ec.gc.ca/nature/default.asp?lang=En&n=421B7A9D-1 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 >10 haÍ in size and within 5 km [iv, v, vi, vii, viii, ix, x, xi, xii, xiii, xiv, xv] of Lake Ontario. • If multiple woodlands are located along the shoreline those Woodlands <2km from Lake 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 are Candidate SWH [cxlviii]. Information Sources • Bird Studies Canada • Ontario Nature • Local birders and field naturalist club • Ontario Important Bird Areas (IBA) Program	Studies confirm: • Use of the woodlot by >200 birds/day and with >35 spp with at least 10 bird spp. recorded on at least 5 different survey datesÍ. This abundance and diversity of migrant bird species is considered above average and significant. • Studies should be completed during spring (Apr./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.	No suitable candidate habitat is present. Study area is not within 5 km of Lake Erie or Lake Ontario. **Conclusion: no candidate or confirmed SWH is present**.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
14. Deer Yarding Areas **<u>Rationale:</u>** Winter habitat for deer is considered to be the main limiting factor for northern deer populations. In winter, deer congregate in "yards" to survive severe winter conditions. Deer yards typically have a long history of annual use by deer, yards typically represent 10-15% of an areas summer range.	White-tailed Deer	Note: OMNRF to determine this habitat. ELC Community Series providing a thermal cover component for a deer yard would include; FOM, FOC, SWM and SWC. Or these ELC Ecosites; CUP2 CUP3 FOD3 CUT	• Deer yarding areas or winter concentration areas (yards) are areas deer move to in response to the onset of winter snow and cold. This is a behavioural response and deer will establish traditional use areas. The yard is composed of two areas referred to as Stratum I and Stratum II. Stratum II covers the entire winter yard area and is usually a mixed or deciduous forest with plenty of browse available for food. Agricultural lands can also be included in this area. Deer move to these areas in early winter and generally, when snow depths reach 20 cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30 cm snow depth. In mild winters, deer may remain in the Stratum II area the entire winter. • The Core of a deer yard (Stratum I) is located within the Stratum II area and is critical for deer survival in areas where winters become severe. It is primarily composed of coniferous trees (pine, hemlock, cedar, spruce) with a canopy cover of more than 60% [cxciv]. • OMNRF determines deer yards following methods outlined in "Selected Wildlife and Habitat Features: Inventory Manual" [cxcv] • Woodlots with high densities of deer due to artificial feeding are not significant. <u>Information Sources</u> • MNRF District Offices • LIO/NRVIS	No Studies Required: • Snow depth and temperature are the greatest influence on deer use of winter yards. Snow depths > 40cm for more than 60 days in a typically winter are minimum criteria for a deer yard to be considered as SWH. [lvi,lvii,lviii,lix,lx, ©] • Deer Yards are mapped by OMNRF District offices. Locations of Core or Stratum 1 and Stratum 2 Deer yards considered significant by OMNRF will be available at local MNRF offices or via Land Information Ontario (LIO). • Field investigations that record deer tracks in winter are done to confirm use (best done from an aircraft). Preferably, this is done over a series of winters to establish the boundary of the Stratum I and Stratum II yard in an "average" winter. MNRF will complete these field investigations. [cxcv] • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST [cxlix] Index #2 provides development effects and mitigation measures.	Study area is not identified by MNRF as a Deer Yarding Area. **Conclusion: no candidate or confirmed SWH is present**.

Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
15. Deer Winter Congregation Areas **<u>Rationale:</u>** Deer movement during winter in the southern areas of Eco-region 6E 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 much smaller than 50 ha may also be used.	• Woodlots will typically be >100 ha in sizeⒺ. Woodlots <100ha may be considered as significant based on MNRF studies or assessment. • Deer movement during winter in the southern areas of Ecoregion 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands. • If deer are constrained by snow depth refer to the Deer Yarding Area habitat within Table 1.1 of this Schedule. • 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 . • Woodlots with high densities of deer due to artificial feeding are not significantⒺ. • <u>Information Sources</u> • 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 Í.. • 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]. • If a SWH is determined for Deer Wintering Area or if a proposed development is within Stratum II yarding area then Movement Corridors are to be considered as outlined in Table 1.4.1 of this Schedule. • SWHMiST [cxlix] Index #2 provides development effects and mitigation measures.	Study area is not identified by MNRF as a Deer Winter Congregation Area. Woodlot is not of sufficient size to meet requirements. **Conclusion: no candidate or confirmed SWH is present**.

1.2 RARE VEGETATION COMMUNITIES OR SPECIALIZED HABITAT FOR WILDLIFE

1.2.1 Rare Vegetation Communities

Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. When assessing rare vegetation communities, one of the most important criteria is the current representation of the community in the planning area based on its area relative to the total landscape or the number of examples within the planning area. There are a number of criterion used to define rare vegetation communities, however the NHIC uses a system that considers the provincial rank of a species or community type as a tool to prioritize protection efforts. These ranks are not legal designations but have been assigned using the best available scientific information, and follow a systematic ranking procedure developed by The Nature Conservancy (U.S.). The ranks are based on three factors: estimated number of occurrences, estimated community aerial extent, and estimated range of the community within the province:

S1 Extremely rare - usually 5 or fewer occurrences in the province, or very few remaining hectares. **S2 Very rare** - usually between 5 and 20 occurrences in the province, or few remaining hectares. **S3 Rare to uncommon** - usually between 20 and 100 occurrences in the province; may have fewer occurrences, but with some extensive examples remaining.

The setting of criteria for significant wildlife habitat (SWH) has incorporated this ranking system into its process of determining rare vegetation communities and as such, a rare vegetation community is defined to include areas that contain a provincially rare vegetation community and/or areas that contain a vegetation community that is rare within the planning area. SWH Table 1.2.1 contains a listing of rare vegetation communities that are considered SWH for the planning area contained within Ecoregion 6E.

Table 1.2.1 Rare Vegetation Communities.

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Evaluation
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
16. Cliffs 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.	Habitat not present within study area. **Conclusion: no candidate or confirmed SWH is present**.
17. Sand Barren **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. 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 exotics)[l]. • SWHMiST[cxlix] Index #20 provides development effects and mitigation measures.	Habitat not present within study area. **Conclusion: no candidate or confirmed SWH is present**.

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Evaluation
	ELC Ecosite Code	**Habitat Description**	**Detailed Information and Sources**	**Defining Criteria**	
18. Alvar **<u>Rationale;</u>** Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregions 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 CUM2 CUS2 CUT2-1 CUW2 FOC1 FOC2 **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 6EⒺ[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 > 0.5 ha in size [lxxv]. <u>Information Sources</u> • Alvars of Ontario (2000), Federation of Ontario Naturalists . • Ontario Nature – Conserving Great Lakes Alvars. • Natural Heritage Information Centre (NHIC) has location information available on their website. • OMNRF Districts. • Field Naturalist Clubs. • Conservation Authorities.	• Field studies that identify four of the fiveⒺ Alvar Indicator Species [lxxv,cxlix] 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.	Habitat not present within study area. None of the listed indicator species were recorded. **Conclusion: no candidate or confirmed SWH is present**.
19. Old Growth Forest **<u>Rationale;</u>** Due to historic logging practices, extensive old growth forest is rare in the Ecoregion. Interior habitat provided by old growth forests is required by many wildlife species.	Forest Community Series: FOD FOC FOM SWD SWC SWM	Old Growth forests are characterized by heavy mortality or turnover of over-storey trees resulting in a mosaic of gaps that encourage development of a multi-layered canopy and an abundance of snags and downed woody debris.	Woodland areas 30 ha or greater in size or with at least 10 ha interior habitat assuming 100 m buffer at edge of forest Ⓔ. <u>Information Sources</u> • 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 the area containing these trees 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) • The area of forest ecosites combined or an eco-element within an ecosite that contains the old growth characteristics is the SWH. • Determine ELC vegetation types for the forest area containing the old growth characteristics [lxxviii] • SWHMiST[cxlix] Index #23 provides development effects and mitigation measures.	No suitable candidate habitat is present in the study area. **Conclusion: no candidate or confirmed SWH is present.**

Rare Vegetation Community	CANDIDATE SWH			CONFIRMED SWH	Evaluation
	ELC Ecosite Code	Habitat Description	Detailed Information and Sources	Defining Criteria	
20. Savannah **Rationale:** Savannahs are extremely rare habitats in Ontario.	CUS2 TPS1 TPS2 TPW1 TPW2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60% [lxxix], [lxxx, lxxxi, lxxxii, lxxxiii]	No minimum size to site [Í] 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 data available on their website. • OMNRF Districts. • Field Naturalists Clubs. • Conservation Authorities.	Field studies confirm one or more of the Savannah indicator species listed in [lxxv] Appendix N should be present [Í]. Note: Savannah plant spp. list from Ecoregion 6E should be used[cxlviii]. • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMiST[cxlix] Index #18 provides development effects and mitigation measures.	No suitable candidate habitat is present in the study area. **Conclusion: no candidate or confirmed SWH is present.**
21. 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. [lxxix, lxxx, lxxxi, lxxxii, lxxxiii]	No minimum size to site [Í]. 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 information available on their website. • Field Naturalists Clubs. • Conservation Authorities.	Field studies confirm one or more of the Prairie indicator species listed in [lxxv] Appendix N should be present [Í]. Note: Prairie plant spp. list from Ecoregion 6E should be used[cxlviii] • Area of the ELC Ecosite is the SWH. • Site must not be dominated by exotic or introduced species (<50% vegetative cover exotics). • SWHMiST[cxlix] Index #19 provides development effects and mitigation measures.	No suitable candidate habitat is present in the study area. **Conclusion: no candidate or confirmed SWH is present.**
22. 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.	No provincially rare habitats were identified during ELC field work. **Conclusion: no candidate or confirmed SWH is present.**

1.2.2 Specialized Habitat for Wildlife

Some wildlife species require large areas of suitable habitat for their long-term survival. Many wildlife species require substantial areas of suitable habitat for successful breeding. Their populations decline when habitat becomes fragmented and reduced in size[cxlviii]. Specialized habitat for wildlife is a community or diversity-based category, therefore, the more wildlife species a habitat contains, the more significant the habitat becomes to the planning area. The largest and least fragmented habitats within a planning area will support the most significant populations of wildlife. The specialized habitats for wildlife that are considered as SWH are outlined in Table 1.2.2.

Table 1.2.2 Specialized Habitats of Wildlife considered SWH.

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
23. Waterfowl Nesting Area **<u>Rationale;</u>** Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Blue-winged Teal Gadwall Green-winged Teal Hooded Merganser Mallard Northern Pintail Northern Shoveler Wood Duck	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 120 m [cxlix] from a wetland (> 0.5 ha) or a wetland (>0.5ha) and any small wetlands (0.5ha) within 120m or a cluster of 3 or more small (<0.5 ha) wetlands within 120 m of each individual wetland where waterfowl nesting is known to occur [cxlix]. • Upland areas should be at least 120 m 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. <u>Information Sources</u> • 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 Conservation Authorities.	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards[Í], or; • Presence of 10 or more nesting pairs for listed species including Mallards[Í]. • 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 120 m [cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST[cxlix] Index #25 provides development effects and mitigation measures.	No suitable candidate habitat is present in the study area. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work April-August 2018. The following listed species were recorded: • Mallard – 5-6 individuals were observed within the study area, no confirmed nesting sites were identified • Wood Duck – 1 individual was observed within the study area This is less than the 3 nesting pairs required for SWH. **Conclusion: no candidate or confirmed SWH is present.**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
24. Bald Eagle and Osprey Nesting, Foraging and Perching Habitat **<u>Rationale;</u>** Nest sites are fairly uncommon in Eco-region 6E 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 **<u>Special Concern:</u>** 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). <u>Information Sources</u> • Natural Heritage Information Centre (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 and does not represent 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 Conservation Authorities. • 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 300 m radius around the nest or the contiguous woodland stand is the SWH [ccvii], maintaining undisturbed shorelines with large trees within this area is important [cxlviii]. • For a Bald Eagle the active nest and a 400-800 m radius around the nest is the SWH. [cvi, ccvii] Area of the habitat from 400-800m is dependant on sight 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	No suitable candidate habitat is present in the study area. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work April-August 2018. The following listed species were recorded: • Osprey – 1 individual observed flying over site. **Conclusion: no candidate SWH or confirmed SWH is present**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
25. Woodland Raptor Nesting Habitat **Rationale:** Nests sites for these species are rarely identified; these area sensitive habitats are often used annually by these species.	Barred Owl Broad-winged Hawk Cooper's Hawk Northern Goshawk Red-shouldered Hawk Sharp-shinned 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 >30ha with >10ha of interior habitat [lxxxviii, 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 or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada. • Reports and other information available from Conservation Authorities.	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 suitable habitat is the SWH [ccvii]. (the 28 ha habitat area would be applied where optimal habitat is irregularly shaped around the nest) • Barred Owl – A 200m radius around the nest is the SWH [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 mid-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.	Although forested ecosites are present within the study area, this does not meet the minimum size requirement nor the requirements for interior habitat. Targeted breeding bird surveys were undertaken on Two dates (May 28 and June 12, 2018), with supplemental observations during other field work from April-August 2018. None of the listed species were recorded. **Conclusion: no candidate or confirmed SWH is present**
26. Turtle Nesting Areas **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 Species:** 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 Centre (NHIC) • Field Naturalist Clubs	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles[Í] • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[Í]. • 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. • Field investigations should be conducted in prime nesting season typically late spring to early summer. Observational studies observing the turtles nesting is a recommended method. • SWHMiST Index #28 provides development effects and mitigation measures for turtle nesting habitat.	No suitable candidate habitat is present in the study area. No turtles were recorded during field work. **Conclusion: no candidate SWH or confirmed SWH is present**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
27. Seeps and Springs **<u>Rationale:</u>** Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Ruffed Grouse Salamander spp. Spruce Grouse White-tailed Deer Wild Turkey	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 Conservation Authorities and MOE. • Field Naturalists Clubs 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 seeps/springs should be considered SWH. • The area of a ELC forest ecosite or an ecoelement within 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. • SWHMiST Index #30 provides development effects and mitigation measures	No suitable candidate habitat is present in the study area. **Conclusion: no candidate SWH or confirmed SWH is present**
28. Amphibian Breeding Habitat (Woodland) **<u>Rationale:</u>** These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Blue-spotted Salamander Eastern Newt Gray Treefrog Spotted Salamander 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) within or adjacent (within 120m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii] <u>Information Sources</u> • 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 • OMNRF 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 species with at least 20 individuals (adults or eggs masses) or 2 or more of the listed frog species with Call Level Codes of 3Ⓔ. • A combination of observational study and call count surveys 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.	Candidate habitat was identified in the wetlands / ponds which have suitable adjacent forest habitat (FOD, SWD). Amphibian Calling surveys were completed according to the Marsh Monitoring Program protocol, on three survey dates (April 23, May 9 and June 18, 2018), as well as supplemental observations during other surveys in April-August 2018. Three of the listed anuran species was recorded: • Gray Treefrog – Recorded at three locations, calling level 1 to 2, maximum of five individuals recorded. • Spring Peeper – Recorded at four locations, calling level 1 to 3, with only one location having level 3 calling (AC5, SWM pond adjacent to study area). • Wood Frog – Recorded at one location (AC1), calling level 3. Although two species were recorded with call level codes of 3, they were at different locations in the study area and one of the locations (AC5) recorded this species in a SWM pond adjacent to the study area. This does not meet the criteria for confirmed SWH. **Conclusion: candidate SWH was evaluated and no confirmed SWH is present**

Specialized Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria	
29. Amphibian Breeding Habitat (Wetlands) **<u>Rationale;</u>** Wetlands supporting breeding for these amphibian species are extremely important and fairly rare within Central Ontario landscapes.	American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickerel Frog Spotted Salamander Western Chorus Frog	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),supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNRF mapping and could be important amphibian breeding habitats . • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. <u>Information Sources</u> • 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 Conservation Authorities.	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Ⓔ. or; Wetland with confirmed breeding Bullfrogs are significant. • The ELC ecosite wetland area and the shoreline are the SWH. • 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 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.	No suitable candidate habitat is present in the study area. Amphibian Calling surveys were completed according to the Marsh Monitoring Program protocol, on three survey dates (April 23, May 9 and June 18, 2018), as well as supplemental observations during other surveys from April-August 2018. Four of the listed anuran species were recorded: • American Toad (Call Level 1) • Northern Leopard Frog (Call Level 1) • Green Frog (Call Level 1) • Gray Treefrog (Call Level 1-2) Along with suitable candidate habitat not being present in the study area, none of the surveyed locations had 2 or more of the listed species with call levels of 3. **Conclusion: no candidate SWH or confirmed SWH is present**
30. Woodland Area-Sensitive Bird Breeding Habitat **<u>Rationale:</u>** Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Blackburnian Warbler Black-throated Blue Warbler Black-throated Green Warbler Blue-headed Vireo Northern Parula Ovenbird Red-breasted Nuthatch Scarlet Tanager Veery Winter Wren Yellow-bellied Sapsucker **<u>Special Concern:</u>** Canada Warbler Cerulean 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 >30 ha. [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 200 m from forest edge habitat. [clxiv] <u>Information Sources</u> • 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 Conservation Authorities.	Studies confirm: • Presence of nesting or breeding pairs of 3 or more of the listed wildlife species. Ⓔ • Note: any site with breeding Cerulean Warblers or Canada Warblers is to be considered SWH.Ⓔ • Conduct field investigations 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 #34 provides development effects and mitigation measures.	No suitable candidate habitat is present: • Does not meet ‘candidate’ habitat criteria for ‘edge’ distance (i.e., at least 200 m from edge), size or maturity. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work from April-August 2018. One of the listed species was recorded: • Yellow-bellied Sapsucker (1 individual recorded, no breeding evidence observed) **Conclusion: no candidate or confirmed SWH is present**

1.3 HABITAT FOR SPECIES OF CONSERVATION CONCERN (NOT INCLUDING ENDANGERED OR THREATENED SPECIES)

Habitats of Species of Conservation Concern include wildlife species that are listed as Special Concern or rare, that are declining, or are featured species. Habitats of Species of Conservation Concern do not include habitats of Endangered or Threatened species as identified by the Endangered Species Act 2007. Table 1.3 assists with the identification of SWH for Species of Conservation Concern.

Table 1.3. Habitats of Species of Conservation Concern considered SWH.

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
31. Marsh Breeding Bird Habitat **<u>Rationale;</u>** Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern American Coot Common Loon Common Moorhen Green Heron Marsh Wren Pied-billed Grebe Sandhill Crane Sedge Wren Sora Trumpeter Swan Virginia Rail **<u>Special Concern:</u>** 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. <u>Information Sources</u> • OMNRF District and wetland evaluations. • Field Naturalist clubs • Natural Heritage Information Centre (NHIC) Records. • Reports and other information available from Conservation Authorities. • Ontario Breeding Bird Atlas.	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species Ⓔ. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH Ⓔ. • 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” • SWHMiST Index #35 provides development effects and mitigation measures	No suitable candidate habitat is present in the study area. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work from April-August 2018. • Green Heron – 1 individual recorded as flyover, with no breeding evidence or nests observed. **Conclusion: no candidate SWH or confirmed SWH is present**

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
32. 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.	Grasshopper Sparrow Northern Harrier Savannah Sparrow Upland Sandpiper Vesper Sparrow **Special Concern:** Short-eared Owl	CUM1 CUM2	• Large grassland areas (includes natural and cultural fields and meadows) >30 ha [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) [í]. • 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 bird clubs. • Ontario Breeding Bird Atlas • EIS Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species.[í] • 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	No suitable candidate habitat is present in the study area. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work from April-August 2018. • None of the listed species was recorded. **Conclusion: no candidate SWH or confirmed SWH is present**
33. 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 [cxcix].	**Indicator Spp:** Brown Thrasher Clay-coloured Sparrow **Common Spp.:** Black-billed Cuckoo Eastern Towhee Field Sparrow Willow Flycatcher **Special Concern:** Golden-winged Warbler Yellow-breasted Chat	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat for some bird species	Large 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) [í]. • 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 • Reports and other information available from Conservation Authorities.	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species.[í] • A habitat with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. [í] • 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.	CUS1 and CUT1 ecosites are present in the study area, however the do not meet the size or habitat criteria to be considered candidate SWH. Targeted breeding bird surveys were undertaken on two dates (May 28 and June 12, 2018), with supplemental observations during other field work from April-August 2018. One of the listed species was recorded: • Eastern Towhee (1 individual, recorded with possible breeding evidence) **Conclusion: no candidate SWH or confirmed SWH is present**

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria	
34. Terrestrial Crayfish **Rationale:** Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare. [cclii]	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) 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 meadow marsh, swamp or terrestrial sites [cci] • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the larger 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 • SWHMiST [cxlix] Index #36 provides development effects and mitigation measures.	> 15 terrestrial crayfish chimneys were recorded within the study area. The chimneys were found within the forested and wetland ecosites contiguous with the City of Guelph NHS. **Conclusion: confirmed SWH is present in the study area.** **This SWH will not be impacted by the proposed development, as the features will be retained in full, with appropriate buffers and setbacks applied.**
35. 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 Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website "Get Information" : http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas • 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 needs be easily mapped and cover an important life stage component for a species e.g. specific nesting habitat or foraging habitat. • SWHMiST [cxlix] Index #37 provides development effects and mitigation measures.	Suitable habitat is present within and adjacent to the study area. Three special concern / provincially rare species was recorded in the study area outlet during field surveys: o Eastern Wood-pewee (*Contopus virens*): Special Concern – 1 'Possible' breeder in Vegetation Unit 15, outside of the proposed development envelope. o Yellow-banded Bumble Bee (*Bombus terricola*): Special Concern – Recorded in Vegetation Unit 28, outside of the proposed development envelope. o Monarch (*Danaus plexippus*): Special Concern – Recorded in Vegetation Units 7a and 8. **Conclusion: confirmed SWH is present in the study area.** **Eastern Wood-pewee and Yellow-banded Bumble Bee habitat was observed outside of the development envelope. Within the study area, no Monarch breeding habitat was recorded (i.e. no concentrations of milkweed to support breeding) and only foraging habitat will be impacted by the proposed development (of which suitable habitat is abundant throughout the local landscape, including ~48ha in Pollinator Park, 450m east of the subject property). Forging habitat will also be replicated in the retained buffer and SWM facility.** **No adverse impacts to Special Concern or rare wildlife species are anticipated with the implementation of recommended mitigation and protection measures.**

1.4 ANIMAL MOVEMENT CORRIDORS

Animal Movement Corridors are elongated areas used by wildlife to move from one habitat to another. They are important to ensure genetic diversity in populations, to allow seasonal migration of animals (e.g. deer moving from summer to winter range) and to allow animals to move throughout their home range from feeding areas to cover areas. Animal movement corridors function at different scales often related to the size and home range of the animal. For example, short, narrow areas of natural habitat may function as a corridor between amphibian breeding areas and their summer range, while wider, longer corridors are needed to allow deer to travel from their winter habitat to their summer habitat.

Identifying the most important corridors that provide connectivity across the landscape is challenging because of a lack of specific information on animal movements. There is also some uncertainty about the optimum width and mortality risks of corridors. Furthermore, a corridor may be beneficial for some species but detrimental to others. For example, narrow linear corridors may allow increased access for racoons, cats, and other predators. Also, narrow corridors dominated by edge habitat may encourage invasion by weedy generalist plants and opportunistic species of birds and mammals. Corridors often consist of naturally vegetated areas that run through more open or developed landscapes. However, sparsely vegetated areas can also function as corridors. For example, many species move freely through agricultural land to reach natural areas. Despite the difficulty of identifying exact movement corridors for all species, these landscape features are important to the long-term viability of certain wildlife populations.

Animal Movement Corridors should only be identified as SWH where:

Where a Confirmed or Candidate SWH has been identified by MNRF or the planning authority based on documented evidence of a habitat identified within these Criterion Schedules or the Significant Wildlife Habitat Technical Guide. The identified wildlife habitats Table 1.4.1 will have distinct passageways or rely on well defined natural features for movements between habitats required by the species to complete its life cycle.

Table 1.4.1 Animal Movement Corridors

Habitat	SPECIES	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Eco-sites	Habitat Criteria and Information Sources	Defining Criteria	
36. Amphibian Movement Corridors **<u>Rationale;</u>** Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	American Toad Blue-spotted Salamander Bullfrog Eastern Newt Four-toed Salamander Gray Treefrog Green Frog Mink Frog Northern Leopard Frog Pickeral Frog Spotted Salamander 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 determined when Amphibian breeding habitat is confirmed as SWH from Table 1.2.2 (**Amphibian Breeding Habitat –Wetland)** of this Schedule Í. <u>Information Sources</u> • MNRF District Office. • Natural Heritage Information Centre (NHIC). • Reports and other information available from Conservation Authorities. • 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 waterway [cxlix] or be up to 200m wide [cxlix] 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	No suitable candidate habitat is present: • No SWH was identified for Amphibian Breeding Habitat – Wetland **Conclusion: no candidate SWH or confirmed SWH is present**

Habitat	SPECIES	CANDIDATE SWH		CONFIRMED SWH	Evaluation
		ELC Eco-sites	Habitat Criteria and Information Sources	Defining Criteria	
37. Deer Movement Corridors **<u>Rationale:</u>** Corridors important for all species to be able to access seasonally important life-cycle habitats or to access new habitat for dispersing individuals by minimizing their vulnerability while travelling.	White-tailed Deer	Corridors may be found in all forested ecosites. A Project Proposal in Stratum II Deer Wintering Area has potential to contain corridors.	Movement corridor must be determined when Deer Wintering Habitat is confirmed as SWH from Table 1.1 of this schedule. Ⓔ • A deer wintering habitat identified by the OMNRF as SWH in Table 1.1 of this Schedule will have corridors that the deer use during fall migration and spring dispersion [clxxxii, clxxxiii, cxlix, cxciv.] • Corridors typically follow riparian areas, woodlots, areas of physical geography (ravines, or ridges). <u>Information Sources</u> • MNRF District Office. • Natural Heritage Information Centre (NHIC). • Reports and other information available from Conservation Authorities. • Field Naturalist Clubs.	• Studies must be conducted at the time of year when deer are migrating or moving to and from winter concentration areas . • Corridors that lead to a deer wintering habitat should be unbroken by roads and residential areas. • Corridors should be at least 200m wide [cxlix] with gaps <20m [cxlix] and if following riparian area with at least 15m of vegetation on both sides of waterway [cxlix]. Shorter corridors are more significant than longer corridors, [cxlix]. • SWHMiST [cxlix] Index #39 provides development effects and mitigation measures	No suitable candidate habitat present in study area. **Conclusion: no candidate SWH or confirmed SWH is present**