Mount Pleasant, Caledon
Scoped Environmental Impact Study

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NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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Scoped Environmental Impact Study

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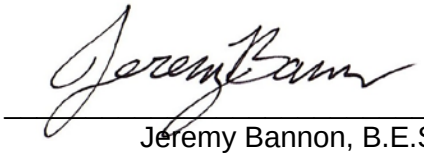

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1.0 Introduction

Natural Resource Solutions Inc. (NRSI) was retained in May 2017 by The Biglieri Group Ltd. to complete an Environmental Impact Study (EIS) for a proposed 8-lot residential development on the partial Lot 27, Concession 8, along Mount Pleasant Road in the village of Palgrave (Map 1).

The presence of several Natural Heritage Overlays, including Environmental Zone 1 and Environmental Zone 2 (Town of Caledon Officia Plan 2016, Oak Ridges Moraine 2017) and Core Greenlands (Region of Peel 2011) triggered the requirement of a Scoped EIS. In a letter dated August 23, 2017 (Appendix I) from Nattawasaga Valley Conservation Authority (NVCA) Manager Lee Bull, requirements for the Scoped EIS were outlined:

"A scoped Environmental Impact Study [EIS] is required in support of potential development on this property. The site contains a number of environmental features identified in Schedule 'I' to the Town of Caledon Official Plan as Environmental Zone 1 [EZ1] or Environmental Zone 2 [EZ2]. The EIS should contain a discussion regarding those features in light of the criteria for EZ1 and EZ2 features outlined in Section 7.1.9 "Environmental Policies" of the Town of Caledon Official Plan. The initial work scope for this study should include the following:

i. Early summer vegetation inventories and Ecological Land Classification [ELC] mapping.
ii. Incidental wildlife surveys (Standard breeding bird surveys will not be required if the development is not encroaching into the forest feature on the southern end of the property).
iii. A review and functional assessment of local drainage should be completed in accordance with the relevant Environmental Zone 1 and Environmental Zone 2 designation applied to the feature as shown on Schedule 'I' to the Town of Caledon Official Plan.
iv. An assessment of natural heritage features and the impacts of proposed development on those features should be discussed.

v. Recommendations regarding mitigation/offsetting/enhancement are required to address the potential impacts of proposed development.
vi. A screening for species at risk should be completed as part of the EIS."

This scoped EIS provides analysis of the above items, and contains additional supporting studies including Breeding Bird Surveys and Odonate surveys. Technical studies relevant to other aspects of the project have been prepared by Sirati & Partners Consultants Inc. (Hydrogeology), Valdor Engineering Inc. (Stormwater Management, Preliminary Site Grading), The Biglieri Group (Draft Plan of Subdivision) and MMH Architects Inc. (Site Plan).

This report summarizes background information on natural heritage features, as well as results of original field surveys of breeding birds, mammals, herpetofauna, Lepidoptera, Odonata, and vascular flora, for the subject property. This report contains the detailed findings of the Scoped EIS including the characterization of existing natural features based on the results of background review and original field surveys, the identification of any natural feature constraints in association with land use policy designations, and the assessment of potential impacts and mitigation measures associated with details of the proposed development. This impact study has been developed in accordance with the Town of Caledon Official Plan (2016).

The subject property, approximately 12ha in area, is bounded by Mount Pleasant Road to the northeast, coniferous plantation to the southeast, deciduous forest to the southwest, and a large residential lawn and pasture to the northwest (Map 1). The subject property contains a small row of trees and shrubs adjacent to Mount Pleasant Road along the northeastern edge of the property and is predominantly agricultural annual row crop throughout the remainder, with mature deciduous forest located within its southwestern end. A coniferous plantation, identified as Environmental Zone 1 (Town of Caledon 2016), is located adjacent to the subject property along the southwest boundary. A lower topographic, ephemeral swale is present in the row crop field running roughly west to east near the northern end of the property, which is classified as Environmental Zone 2 (Town of Caledon 2016).

For the purposes of this report, the term “subject property” refers to the lands owned by the proponent, including the area where the development is proposed to occur. The term “study area” refers to the subject property plus the surrounding area (approximately 120m) for which additional information was collected and reviewed (as could be gathered without direct access to these areas). Legacy data collected from agencies and wildlife atlases encompassed an area of approximately 1km around the property to ensure that all surrounding natural features were considered.

Project Scoping

In order to determine a study approach for the EIS, existing natural heritage information was first gathered and reviewed to identify key natural heritage features and species that are reported from or have potential to occur within the study area. Background information on the natural environmental features within the study area was gathered from the Natural Heritage Information Center (OMNR 2015 and relevant taxa-specific databases, as listed below.

Initial wildlife species lists were compiled to provide information on species reported from the vicinity of the study area (10km radius) using various atlases; including the Ontario Breeding Bird Atlas (Bird Studies Canada *et al.* 2008), the Ontario Mammal Atlas (Dobbyn 1994), the Ontario Reptile and Amphibian Atlas (Ontario Nature 2015), the Ontario Butterfly Atlas (Jones et al. 2013), and the Ontario Odonata Atlas (NHIC 2005). Since these atlases provide data based on 10x10 km survey squares, information on taxa from the square that overlaps the study area (17NJ9468) was compiled. These initial species lists were used to guide the scope and type of wildlife field surveys required as outlined in the following sections.

Based on these initial species lists, a total of 14 Species at Risk (SAR) and 10 additional Species of Conservation Concern were identified as having records from within the vicinity of the study area. SAR are those listed on the Species at Risk in Ontario List (MNRF 2015). These include species identified by the Committee on the Status of Species at Risk in Ontario (COSSARO) as provincially Endangered, Threatened, or Special Concern. Species listed as Endangered or Threatened are protected by the Endangered Species Act, 2007, which includes protection to their habitat; these species are referred to as ‘regulated SAR’ in this report.

Species considered Special Concern are included in the definition of Species of Conservation Concern (SCC), which includes the following:

- species designated provincially as Special Concern,
- species that have been assigned a conservation status (S-Rank) of S1 to S3 or SH by the Natural Heritage Information Centre, and
- species that are designated federally as Threatened or Endangered by the Committee for the Status of Endangered Wildlife in Canada (COSEWIC) but not provincially by the COSSARO. These species are protected by the federal Species at Risk Act but not provincially by the Endangered Species Act.

SCC are discussed further within the context of Significant Wildlife Habitat (SWH) (Section 5.1.3).

A preliminary screening exercise was conducted on these species to identify which species have suitable habitat within the study area. This involved cross-referencing the preferred habitat for reported SAR (OMNR 2000) against habitats known to occur on the subject property or adjacent lands. This was completed to ensure that the potential presence of all regulated SAR and SCC within the study area was adequately assessed in this EIS.

Suitable habitat is present for 5 SAR and SCC:

- Grasshopper Sparrow (*Ammodramus savannarum*) – Special Concern
- Red-headed Woodpecker (*Melanerpes erythrocephalus*) – Threatened
- Little Brown Myotis (*Myotis lucifungus*) – Endangered
- Northern Myotis (*Myotis septentrionalis*) – Endangered
- Monarch Butterfly (*Danaus plexippus*) – Special Concern

The subject area provides deciduous forest, forest edges, an agricultural field, and desirable vegetation (host plants) for the species listed. These species are discussed in Section 4.0 of this report under their respective biota subsections (e.g., Birds), as well as in Section 5.2.3 and Section 5.3. Full results of the SAR screening exercise are provided in Appendix II.

A screening for the presence of SWH was also completed for the study area (Appendix III). The Significant Wildlife Habitat Technical Guide (SWHTG) is a guideline document that outlines the types of habitats that the MNRF considers significant in Ontario as well as criteria to identify these habitats (OMNR 2000, OMNR 2015). The SWHTG groups SWH into four broad categories: seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats of Species of Conservation Concern, and animal movement corridors. Based on the results of the screening exercise, which is based on both aerial interpretation and detailed field surveys, the following were candidate SWH for the study area:

- Bat Maternity Colonies
- Snake Hibernaculum
- Special Concern and Rare Wildlife Species

These candidate SWH types are discussed further in Section 5.2 of this report. Full results of the SWH screening are provided in Appendix III.

2.0 Relevant Policies, Legislation, and Planning Studies

For the purposes of this EIS report, information on the natural heritage features within the subject property was collected and assessed for significance. To help inform suitable land-use concepts, guide the layout of development, and identify areas to be protected, these features are evaluated against the following relevant policies, legislation, and planning studies in Section 4.

Table 1. Relevant Policies, Legislation and Planning Studies

Policy/Legislation	Description	Project Relevance

Provincial Policy Statement	• Issued under the authority of Section 3 of the Planning Act and came into effect on April 30, 2014, replacing the 2005 PPS (OMMAH 2005).
	• Section 2.1 of the PPS – Natural Heritage establishes clear direction on the adoption of an ecosystem approach and the protection of resources that have been identified as 'significant'.
	• The Natural Heritage Reference Manual (OMNR 2010) and the Significant Wildlife Habitat Technical Guide (OMNR 2000, OMNR 2015) were prepared by the MNRF to provide guidance on identifying natural features and in interpreting the Natural Heritage sections of the PPS.
		• Based on a preliminary analysis, the following natural feature was identified within the study area that may have implications under the PPS:
		  • Potential habitat for endangered and threatened species
		  • SWH
		  • Fish Habitat

Endangered Species Act	• The ESA prohibits killing, harming, harassing or capturing Endangered and Threatened species and protects their habitats from damage and destruction.	• Based on a preliminary analysis, several regulated SAR were identified as having the potential to occur within the study area based on habitat present. • These include birds, amphibians, reptiles, and mammals, as outlined in Section 5.3.
Canadian Fisheries Act	• Manages threats to the sustainability and productivity of Canada's commercial, recreational and Aboriginal fisheries. • The Act prohibits "serious harm to fish" including destruction of habitat. • DFO has developed an online, self-assessment tool, where proponents can determine whether their projects require DFO review based on the type of water body the work is occurring in and the nature of the proposed activity.	• The approach to stormwater management may have implications for fish habitat downstream of the EZ2 feature. No fish habitat is present within the subject property.
Town of Caledon Official Plan	• Outlines the requirement for an EIS when Environmental Zone 1 or Environmental Zone 2 habitat may be impacted. • Outlines land use planning and density	• Protection and mitigation measures for the long-term function of this feature must be outlined in this Scoped EIS.

Policy/Legislation	Description	Project Relevance
	requirements.	• The proposed "Street A" overlaps the Environmental Zone 2, which is permitted in the OP if necessary to obtain reasonable access to a lot (7.1.9.5 & 7.1.9.39)
Region of Peel Official Plan	• Outlines the protection given to Core Greenlands within the Region of Peel, and dictates the requirement for Towns within the Region to outline (at a minimum) that these lands be protected.	• The adjacent forest and plantation communities are described as "Core Areas of the Greenlands System" and require protection. • The proposed development type (new residential lots) would be prohibited within this feature
Greenbelt Plan (2017)	• Applies to the lands delineated in Ontario Regulation 59/05. It identifies areas where urbanization should not occur in order to protect ecological features and functions, as well as agriculture • The Greenbelt Plan includes lands within the Oak Ridges Moraine Conservation Plan	• The subject property is considered to be Oak Ridges Moraine according to this Plan, and requires a 30m buffer.
Oak Ridges Moraine Conservation Plan (2017)	• Provides protection for areas considered part of the Oak Ridges Moraine	• The plantation community to the southeast and forested community to the southwest require a 30m buffer as per the Conservation Plan

3.0 Field Methods

Field surveys were undertaken within the subject property to characterize natural features and identify significant and sensitive natural heritage features and species that have potential to be adversely affected by the proposed development. A total of 5 field visits were completed between May and September 2017. A variety of field surveys were undertaken which are described in detail below. Surveys conducted were undertaken in accordance with provincial and local guidance documents as indicated below. Table 2 provides details on all site visits including survey type, protocols, weather, and participating biologists.

Table 2. Field Survey Summary

Survey Type	Protocol[1]	Date (2017)	Start and End Time (24 hrs)	Temp. (°C)	Wind Speed (Beaufort Scale)	Cloud Cover (%)	Precipitation	Observers
Ecological Land Classification and Community Description	Lee et. al (2008)	May 29	1650 – 1740	22	3	80	None	J. Bannon
Significant Wildlife Habitat Screening	N/A	June 2	0830 – 0950	12	3	0	None	T. Brenton J. Bannon
Breeding Bird Survey	OBBA (2001)	June 2	0830 – 0950	12	3	0	None	T. Brenton J. Bannon
		July 7	0715 – 0830	23	1	0	None	J. Linton
Odonate and Butterfly Survey	N/A	July 7	0745 – 0830	23	1	0	None	J. Linton
		July 28	1140 – 1235	21	2	40	None	D. Frey C. Teat
Site Meeting & Dripline Assessment	N/A	September 27	0930 – 1130	20	1	0	None	J. Bannon

3.1.1 Vegetation Surveys

Vegetation community delineation was completed using aerial photography and thorough investigations in the field on May 29, 2017. The standard Ecological Land Classification (ELC) System for southern Ontario was applied (Lee et al. 1998). Details of vegetation communities were recorded including species composition, dominance, uncommon species or features, evidence of human impact, and surficial soil characterization. The ELC communities that were identified on the subject property are shown on Map 2.

All observed species of vascular flora were recorded during the field survey on May 29 and September 27. The woodland dripline within the subject property was flagged, approved and surveyed on September 27, 2017, as shown on Map 2 and Map 3.

3.1.2 Breeding Bird Surveys

Breeding bird surveys were completed on June 2 and July 7, 2017 and data was recorded using breeding evidence (OBBA 2001). Surveys consisted of area searches throughout the subject property, documented by habitat type (ELC community). These surveys occurred between dawn and 1000hrs. All visual and auditory observations of birds were recorded as well as the highest level of breeding evidence exhibited for each species.

3.1.3 Butterfly and Odonata Surveys

Butterfly and odonate surveys were completed to address the potential presence of SAR within the subject property. A detailed survey was completed on July 7 and July 28, 2017 and all incidental odonates or butterflies observed were also documented during the 2017 field season. Area searches within suitable habitat were carried out with the use of binoculars, an insect net, and a hand lens. All representative habitats (ELC communities) were surveyed methodically.

3.1.4 Additional Wildlife

All observations of mammals and herpetofauna were documented on all field visits. This included actual direct observations of individuals, as well as signs of wildlife presence (i.e. tracks, scats, dens, nests etc.).

4.0 Existing Conditions

4.1 Soils, Terrain and Drainage

Background information indicates that the dominant soil type is well-drained sandy loam. Additionally, the soils in this region contain few stones and are slightly alkaline to neutral (Hoffman and Richards 1953). Being within the northern extent of Caledon, the entire site resides within the Oak Ridges Moraine. The study area is classified as 'Countryside Area' under the Oak Ridges Moraine Conservation Plan and is further characterized as Palgrave Estates Residential Community (OMMAH 2017). This area is characterized by hilly topography and glacial deposit features as well as increased soil permeability contributing to groundwater recharge.

4.2 Designated Natural Areas

Information on designated natural areas, SWH (e.g. deer yards, bat hibernacula), and wetlands was obtained from the NHIC database, the Region of Peel Official Plan, and the Town of Caledon Official Plan.

The background information indicates that the study area resides within the Oak Ridges Moraine, while additional surrounding areas are classified as part of the provincial Natural Heritage System (NHS). The large interlobate moraine extends from the Niagara Escarpment east to the Trent River. The terrain in this region typically consists of sands and gravel, allowing for slow release into the rivers that feed Lake Ontario (Region of Peel 2011).

In addition to being part of the Oak Ridges Moraine, a portion of the subject property is within the Greenlands System in the Region of Peel, shown on Schedule A of the Region of Peel Official Plan (2016, Appendix I), while Schedule A of the Town of Caledon Official Plan designates the property lands as Palgrave Estate Residential Community (Appendix II). The Town of Caledon Official Plan designates the property as Policy Area 3 in Schedule G, and portions are considered Environmental Zone 1 and 2 in Schedule I (Appendix II). The Environmental Zone 1 (EZ1) classification refers to the presence of sensitive biological communities; valley and stream corridors and their associated floodplains; native upland and lowland woodlands; natural waterbodies; Provincially and locally significant wetlands; and Environmentally Significant/Sensitive

Areas. Environmental Zone 2 (EZ2) areas include areas of high groundwater table (within 1.5m of the surface); areas of seasonal flooding (not including regulated floodplains); dry swale lowlands and natural depressions which perform natural run-off, detention and groundwater recharge functions; and smaller hedgerows and strips of native vegetation. When such areas overlap, for planning purposes, the Town of Caledon Official Plan states that the area will be treated as if it were classified as an EZ1.

According to the NHIC database, there are no provincially or regionally significant wetlands within or directly adjacent to the subject property. This was confirmed during a site visit conducted by NRSI biologists. Through discussion with agency staff on September 2, 2017, this Environmental Zone overlay is due to the ephemeral swale present on the subject property (see Map 3). This area was documented to contain extremely low seasonal water flow and will be maintained and improved during the site plan development.

4.3 Vegetation

4.3.1 Vegetation Communities

The majority of the subject property consists of central agricultural fields with pine plantation along the southeast border. ELC communities are described in detail below, and shown on Map 2. Original ELC data sheets are provided in Appendix IV). As the subject property contains protected forest and plantation communities, a dripline exercise was completed on September 27, 2017. The dripline staking was completed by an NRSI biologist with Oak Ridges Moraine, NVCA, and Town of Caledon staff. This approved dripline can be seen on Map 2.

Fresh – Moist Sugar Maple – Hardwood Deciduous Forest Type (FOD6-5)

This community contains a canopy dominated by Sugar Maple (*Acer saccharinum* ssp. *saccharinum*), with Black Chery (*Prunus serotina*) and White Elm (*Ulmus americana*). The ground layer is characterized by mostly native species including Virginia Waterleaf (*Hydrophyllum virginianum*) and White Trillium (*Trillium grandiflorum*). Very limited invasive species were observed around the boundaries of the community, with topography draining off-property and to the small swamp inclusion.

Silver Maple Mineral Deciduous Swamp Type (SWD3-2)

The SWD3-2 area on the property is an inclusion of the Fresh-Moist Sugar Maple-Hardwood Deciduous Forest Type (FOD6-5). This community contains a canopy dominated by Sugar Maple, Freeman's Maple (*Acer* X *freemanii*), and Black Cherry. The ground layer is characterized by Ostrich Fern (*Matteuccia struthiopteris*), Hooked Buttercup (*Ranunculus recurvatus*), and Yellow Trout Lily (*Erythronium americanum*). A small area is dominated by Ostrich Fern and likely contains ephemeral pooling in the spring at times. No pooling was observed during field surveys.

Coniferous Plantation (CUP)

This plantation is located to the southeast of the subject property, and contains sections dominated by Red Pine (*Pinus resinosa*), Scot's Pine (*Pinus sylvestris*), and White Pine (*Pinus strobus*). Manitoba Maple (*Acer negundo*) is colonizing the northern edge of this community.

Norway Spruce – European Larch Coniferous Plantation Type (CUP3-9)

This Norway Spruce (*Picea abies*) dominated plantation closely follows the southeastern boundary of the subject property. Biodiversity within this community is very low, with common meadow species present along the buffer between this community and the deciduous forest community, where an open gap in canopy was observed.

CUM1 Mineral Cultural Meadow

This community overlaps with the subject property in a small portion of the northwest subject property. Characterized by common forb pasture species, it is likely that this was previously pasture and has begun to naturalize. Common non-native grass species such as Awnless Brome (*Bromus inermis*) are present, as well as Alfalfa (*Medicago sativa*) and Tall Goldenrod (*Solidago gigantea*). Some small Manitoba Maple are present along the boundaries of the adjacent forest community.

4.3.2 Vascular Flora

Detailed vegetation inventories were conducted during site visits and 95 species were identified. A complete list of these species is appended to this report (Appendix IV). Background information and SAR screening indicates that no significant plant species are reported from within 1km of the study area. Based on the field work conducted by

NRSI biologists, no regulated SAR, SCC, or regionally rare plants were observed within the subject property. Moderate densities of invasive Garlic Mustard (*Alliaria petiolata*) and European Buckthorn (*Rhamnus cathartica*) were observed along the southeastern property boundary.

4.4 Wildlife

4.4.1 Birds

A total of 131 bird species are reported from the vicinity of the subject property based on the OBBA (BSC *et al.* 2008). The data found in the OBBA includes those species that have been observed in the area (10 x 10km range), are known to nest in the area, and/or have exhibited some evidence of breeding in the area. 29 of these species were documented within the subject property during the field surveys. 25 of these species were either observed within suitable breeding habitat or exhibited signs of breeding (i.e. singing males). Refer to Appendix V for a list of bird species found in the study area and vicinity.

The most abundant species observed during point count surveys were Blue Jay (*Cyanocitta cristata*), American Goldfinch (*Spinus tristis*), Black-capped Chickadee (*Poecile atricapillus*), Brown-headed Cowbird (*Molothrus ater*), Song Sparrow (*Melospiza melodia*), and American Crow (*Corvus brachyrhynchos*). The highest diversity of species was observed in the agricultural portions of the site, however, species exhibiting signs of breeding were more dense within the forested (FOD6-5) habitat.

Three regulated SAR bird species were observed within the subject property. Barn Swallow is considered Threatened in Ontario. Breeding habitat for this species is not present within the subject property, as this species prefers barns, bridges, or similar structures for nesting, none of which are present within the subject property. The observed individuals likely nest in the vicinity and were foraging over the agricultural fields. Foraging habitat is not protected under the ESA (2007).

Eastern Wood-Pewee is listed as Special Concern in Ontario. Habitat for this species is present within the forested deciduous communities. This species was recorded as a possible breeder.

A pair of Grasshopper Sparrows, including 1 singing male, was observed within the cultural meadow (CUM1) on June 2, and was recorded as a probable breeder. Grasshopper Sparrow is considered a species of Special Concern in Ontario. This species prefers grassland or prairie habitats with low cover of grasses, taller weeds, hayfields or weedy fallow fields. The CUM that overlaps with the subject property contains weedy fallow habitat, which could be used by this species to forage and breed.

4.4.2 Herpetofauna

According to the Ontario Amphibian and Reptile Atlas (Ontario Nature 2015), 18 species of herpetofauna are known from within 10km of the study area. NRSI field investigations confirmed the presence of 1 species within the subject property; American Toad. This is a common anuran species and does not individually warrant any protection. No amphibian breeding habitat was observed on the subject property. A complete list of herpetofauna reported from the study area, based on background information and observations made as part of this study, is included in Appendix VI.

4.4.3 Mammals

According to the Mammal Atlas of Ontario (Dobbyn 1994), 37 mammal species are reported from within 10km of the subject property. Evidence of 4 of these species was observed within the subject property through incidental observations, including Eastern Gray Squirrel (*Sciurus carolinensis*), Red Squirrel (*Tamiasciurus hudsonicus*), Eastern Cottontail (*Sylvilagus floridanus*), and White-Tailed Deer (*Odocoileus virginianus*). Appendix VII provides a complete list of mammal species reported from the study area.

4.4.4 Butterflies

According to the Ontario Butterfly Atlas (Jones et al. 2012), 27 butterfly species are reported to occur within the study area. NRSI biologists observed 12 species during surveys completed within the subject property. A complete list of species observed is provided in Appendix VIII.

One butterfly SCC was observed within the subject property. This individual Monarch larva was observed on July 7, 2017 near the southeastern edge of the agricultural field, proposed for reforestation. This species requires Milkweed (*Asclepias* sp.) to be present in an area to act as larval foodplants. Common Milkweed (*Asclepias syriaca*) was documented in small numbers along the plantation edge.

4.4.5 Odonata

According to the NHIC database (OMNR 2015), 4 Odonate (dragonfly and damselfly) species are reported from the study area. During field surveys conducted within the subject property, 5 species of Odonata were observed. A complete list of species observed is provided in Appendix IX. There were no SCC observed within the subject property.

5.0 Significance and Sensitivity

The natural features have been assessed to outline their significance and their potential sensitivity to the proposed development.

5.1 Significant Woodlands

The Natural Heritage Reference Manual (OMNR 2010) provides guidance for assessing the ecological function of woodlands, which was used to guide this discussion. The Region of Peel Official Plan provides a "Core Areas of the Greenlands System" natural overlay, which includes the adjacent plantation and deciduous forest community that extends onto the subject property. These forested communities are also considered Environmental Zone 1 in the Town of Caledon Official Plan. Both Official Plans prohibit the development of these land use areas. The approved dripline can be seen on Map 2 and Map 3.

5.2 Significant Wildlife Habitat

Requests to the MNRF and the NVCA for existing information on SWH in the study area yielded no known occurrences (MNRF 2014, Lee Bull pers. comm. 2017). The information collected through background review, agency consultation, site investigation, and vegetation community mapping were reviewed against the Evaluation Criteria for SWH (Appendix Q) of the Significant Wildlife Habitat Technical Guide (SWHTG) (OMNR 2000a) to identify any candidate SWH within the study area (Appendix II).

5.2.1 Seasonal Concentration Areas

Wildlife seasonal concentration areas are defined as areas where animals occur in relatively high densities for all, or portions, or their life cycle (OMNR 2000a). These areas are generally relatively small in size, particularly when compared to areas used by these species during other times of the year. Seasonal concentration areas include specific habitats such as winter deer yards, colonial bird nesting habitat, and shorebird migratory stopover areas as examples (OMNR 2000a).

While no confirmed seasonal concentration areas were found, suitable candidate habitat for bat maternity colonies and snake hibernaculum features could potentially be present within the subject property.

5.2.2 Rare Vegetation Communities

The SWHTG identifies rare vegetation communities as those which are designated provincially rare or rare within a planning area. Vegetation communities with the poorest representation within the planning area may also be considered significant, and those that are rare or could be lost due to development are considered highly significant. The highest priority sites are those that contain S1-S3 ranked vegetation communities. A vegetation community may also be considered locally rare if it represents <3% of the remaining natural area or if it is found at 5 or fewer sites within the local area. Higher quality sites are relatively undisturbed (i.e. no roads or infrequently used roads, no pollution, no forestry operations etc.). Rare communities supporting other Significant Wildlife Habitat are considered the most significant.

No rare vegetation communities are found within the subject property.

5.2.3 Specialized Wildlife Habitat

Specialized habitats include those that support wildlife species with highly specific habitat requirements, areas with exceptionally high species diversity, and/or areas that provide habitat that greatly enhances a species' chance of survival (OMNR 2000a). The SWHTG indicates that most specialized habitats have not been formally identified or mapped by any agency (OMNR 2000a). Examples of specialized wildlife habitat include sites supporting area-sensitive species, old growth or mature forest stands, turtle nesting habitats, seeps/springs and cliffs. The vegetation communities on-site are small, with a history of disturbance and their type, size, and combination, as well as the tight soils, lack of groundwater seepage and relatively flat topography do not provide conditions suitable for specialized wildlife habitat.

No specialized wildlife habitat is found on the subject property.

5.2.4 Habitat for Species of Conservation Concern

3 SCC were observed within the subject property with suitable habitat: Grasshopper Sparrow, Eastern Wood-Pewee and Monarch. A pair of Grasshopper Sparrows were observed in the cultural meadow (CUM1), making the likelihood of breeding "probable" following Breeding Bird protocol (BSC *et al*. 2008). The meadow extends off site, onto

the neighbouring property to the northwest. In total, the meadow is 3ha in area, with approximately 1ha within the subject property.

A Monarch caterpillar was observed on July 7, 2017 at the edge of the agricultural field. Common Milkweed (*Asclepias syriaca*) was documented in small numbers along the plantation edge.

Eastern Wood-Pewee was observed singing during each Breeding Bird suvey in the deciduous forest community, making the likelihood of breeding following Breeding Bird protocol BSC *et al.* 2008). The forested communities are considered habitat for this species.

5.2.5 Animal Movement Corridors

Animal movement corridors are elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another (OMNR 2000). They can include natural landscapes such as shorelines as well as anthropogenic features such as trails and hydro corridors. The only animal movement corridors considered SWH in Ecoregion 6E are Amphibian Movement Corridors and Deer Movement Corridors, but neither is found within the subject property or adjacent lands.

5.3 Habitat of Endangered and Threatened Species

Based on background information collected from the various wildlife atlases several Endangered and Threatened species are reported from within 10km of the subject property as outlined in Appendix II. Barn Swallow, Threatened in Ontario, was observed foraging over the agricultural fields. No nesting habitat for Barn Swallow was confirmed on the subject property so this species is likely to be using the adjacent properties for nesting structures, such as nearby homes or barn structures. Potential habitat for Little Brown Myotis (*Myotis lucifugus*) and Northern Myotis (*Myotis septentrionalis*) was identified within the subject property based on habitat preferences by these species, and habitat available on-site, but specific bat surveys were not completed as the woodlands are to be retained. These bat species may be present within the deciduous forest (FOD6-5).

6.0 Impact Analysis and Recommendations

6.1 Description of the Proposed Undertaking

The proposed site plan, as developed by MMH Architects (2018) can be seen on Map 3 and contains 8 single residential dwellings. One cul-de-sac street, currently called "Street A" is proposed, which extends from Mount Pleasant Road, and one connecting street extends north to Dempsey Court, which is not included in this EIS as it is outside of the subject property. All proposed work within the subject property is within the Annual Row Crop agricultural field, or small amounts of the Cultural Meadow community, that was likely previously used as pasture.

The proposed development includes the use of swales and bioretention areas along Street A, with a septic tile bed for each property. The stormwater measures are outlined in greater detail in the Functional Servicing Report (Valdor Engineering Inc. 2018).

The boundaries of significant natural features and their associated recommended buffers were provided to the study team to guide the development proposal. This information was combined with other physical and planning constraints to come up with a suitable development plan for the subject property which respects the natural environment. The details of the undertaking are shown on Map 3, reflecting the Site Plan provided by MMH Architects Inc. (2018).

A reforestation plan is required to achieve the proposed densities of the site plan, as outlined in the Town of Caledon OP (2016). As such, a total of 4ha of land within the subject property is to be reforested, largely comprised of the 30m buffer from the adjacent natural areas. The Reforestation Management Plan is discussed in Appendix X.

6.2 Approach to Impact Analysis

Potential impacts arising from the proposed undertaking are determined by comparing the details of the proposed undertaking with the characteristics of the existing natural features and their functions. Where the development proposal overlaps with the natural features or their buffers, impacts may arise. The following is a description of the types of impacts discussed below.

- Direct impacts to the natural features on the subject property associated with disruption or displacement caused by the actual proposed 'footprint' of the undertaking.
- Indirect impacts associated with changes in site conditions such as drainage and water quantity/quality.
- Induced impacts associated with impacts after the development is constructed such as subsequent demand on the resources created by increased habitation/use of the area and vicinity.

6.3 Buffers

Buffers are required for natural heritage features such as woodlands, wetlands, significant wildlife habitats, and watercourses to protect them from impacts during development. Woodland buffers are prescribed based on protecting the trees and their root zones as well as providing associated open habitats required by forest species or for movement. The Town of Caledon requires a minimum 30m buffer from the approved dripline (as seen on Map 2 & 3) to ensure the protection of the "Environmental Zone 1" outlined in the Town of Caledon Official Plan (2016).

There are no watercourses on the subject property, however there is an "Environmental Zone 2" (EZ2) seasonally wet swale that flows from northwest to east through the existing annual row crop agricultural field. This development within EZ2 may be permitted, as summarized in Table 1, and described in further detail in Section 7.1.9 of the Town of Caledon Official Plan. The proposed "Street A" must overlap this EZ2 feature for access to the entirety of the developable lands, however spring flows will be maintained in their current location from the northwest to east within the subject property, as outlined in the Hydrogeology Impact Study (Sirati & Partners Consultants Ltd. 2018). Further, the EZ2 and buffer area are otherwise proposed to be planted with native tree, shrub, and seed mix, which is expected to increase the outflowing water quality, and decrease erosion. The Reforestation Management Plan (Appendix X) will encourage the development of a natural riparian swamp and thicket community.

These natural features and their recommended buffers are shown on Map 3. These buffers have informed an ultimate limit of development which has assisted in minimizing any adverse impacts to natural features by reducing edge effects and providing opportunities for restoration and enhancement, as well as overall increased natural habitat.

6.4 Direct Impacts and Mitigations

The approach to identifying and delineating the natural features and associated buffers was aimed at avoiding direct impacts from development on important natural features. The delineation of the natural features and EZ1 and EZ2 Town of Caledon overlays, are the basis for the development layout, therefore direct impacts to these natural features have been avoided. Based on the proposed development, direct impacts to natural features will include Grading, Vegetation Removal, and Environmental Zone 2 Alteration.

6.4.1 Grading

Some grading will be required within the EZ2 area. This grading is proposed to enhance the form and function of the ephemeral swale. Following grading, the area is proposed to be vegetated with wet-tolerant riparian plants. This grading is considered restorative to this feature, which is currently regularly ploughed, and is recommended to provide enhanced flood attenuation and stormwater management.

6.4.2 Tree and Vegetation Removal

The proposed undertaking will result in the removal of some hedgerow trees along Mount Pleasant Road, which is required to access the subject property. A detailed leaf-on and leaf-off bat habitat assessment should be completed prior to the removal of any trees. Tree removal should occur outside of the MBCA (1994) breeding bird windows, as outlined in Section 6.3.3. and outside of active bat windows (May to October). If any bat habitat is documented during the bat habitat assessment, consultation with the MNRF will be required prior to removal. Overall, less than 10 trees are expected to require removal, none of which are considered Provincially or regionally significant. Tree removal will be compensated for in the proposed Reforestation Management Plan (Appendix X).

The CUM community is proposed to be partially protected through the Reforestation Management Plan, which has designed this area (Polygon 1) to reflect a transitional savannah habitat with more native and suitable species than the current community. The remainder is to be developed into the rear lot of a residential property, and a small corner is proposed to be removed for the required road connection north. The entire 4ha of the Reforestation Management Plan is being planted with a companion seed mix that will provide ideal transition grassland habitat for Grasshopper Sparrow, and the host plant (Milkweed) for Monarch, as the planted trees establish. Overall, breeding habitat for this species will be increased through this 4ha of protected compensation habitat. The current 3ha of habitat (with less than 1ha proposed for removal) appears to be hayfield and may be rotated by the adjacent landowner over time, which would not provide permanent established breeding habitat for this species. Milkweed is expected to remain as part of the forest buffer community following planting establishment, increasing overall Monarch habitat on the subject property. Any vegetation removal in this community should occur outside of the MBCA (1994) breeding bird timelines, as specified in Section 6.4.3 of this report.

6.4.3 Bird Nest Destruction

According to the Canadian Wildlife Service (CWS), the core breeding period for migratory birds that nest in open habitat in Caledon, Ontario is between April 20 and August 16 (CWS 2012). The *Migratory Birds Convention Act* protects migratory birds, their eggs and nests from being harmed or destroyed. During this period, they recommend that no clearing of vegetation occur within these habitats. The CWS (2013) advises that nest searches, as a measure to mitigate impact to nesting birds during the core breeding period, not occur within “complex” habitats such as woodlands where the likelihood of observing all nests and eggs is low while the potential to disturb nesting birds is high. However, nest searches, as a means of mitigation during the core breeding period may be undertaken in “simple” habitats such as the hedgerow along Mount Pleasant Road, where the potential to observe all active nests is relatively high. Nonetheless, it is recommended tree removal occur outside the active breeding bird season. The same holds true for grading of the open areas, including agricultural fields and cultural meadow (CUM1).

6.4.4 Naturalization of Environmental Zone 2

Environmental Zone 2 habitat, as outlined in the Town of Caledon OP (2016), is proposed to be naturalized. This area is currently limited in form and function as it is entirely within the existing active agricultural lands (row crop). This low-topographical area within the agricultural field provides ephemeral water flow from the adjacent northern property to the southeast corner of the subject property. This ephemeral swale is proposed to be graded into a distinct, naturalized riparian corridor, as outlined in the Functional Servicing Report (Valdor Engineering Inc. 2018). The Reforestation Management Plan proposes the introduction of wet herbaceous species, as well as Dogwood (*Cornus* spp.) and Willow (*Salix* spp.) riparian species, which will stabilize the channel and reduce overland flow. It is recommended that construction of the channel be outside of major ephemeral flows, specifically March and April. The Environmental Zone 2 habitat will be enhanced through the grading and reforestation plans to reflect a natural riparian corridor and will replace the current annual row crop.

6.5 Indirect Impacts and Mitigations

The following outlines potential sources of indirect impacts associated with the proposed development:

- Changes to groundwater and surface water flow patterns
- Changes to water quality
- Sedimentation and erosion
- Indirect impacts to wildlife

6.5.1 Surface Flow and Groundwater Water Balance

A Hydrogeological Impact Study has been prepared by Sirati & Partners Consultants Inc. (2018), which shows how the requirements of the NVCA are met. The Hydrogeological Impact Study is based on maintaining existing drainage patterns including pre-development infiltration rates and patterns, and consisted of a detailed site inspection, a 6-month groundwater level monitoring program, in-situ hydraulic conductivity tests, a private well survey, and a preliminary water balance for the subject property.

The Hydrogeological Impact Study identified a decrease in infiltration of 658m^3/year from existing conditions to post development, with an increase in runoff of 2.905 m^3/year. The

report states that Low Impact Development (LID) techniques can be used to mitigate this impact, making the following recommendations (Sirati 2018, Section 13):

- *Collection of clean run-off from the building rooftops and redirection to grassed areas and overland flow.*
- *Use of infiltration trenches or perforated pipes at selected areas.*
- *Provision of an extra thickness of topsoil at the Site (approximately 0.3 m) on open areas to promote water storage in surficial soil and infiltration.*
- *Provision of gradual slopes to open areas and back-yards in order to allow time for roof run-off to infiltrate into the topsoil.*

LID measures outlined in further detail in the Functional Servicing Report (Valdor Engineering Inc. 2018), and include the use of bioretentin swales within the Street A boulevards.

6.5.2 Changes to Water Quality

Detailed water quality studies were not considered necessary for the proposed development; however, several initiatives are proposed that are expected to improve the water quality on the subject property. The proposed bioswales protect water quality by protecting local waterways from stormwater pollutants and reduce standing water (Valdor Engineering Inc. 2018). Further, overland flow through the EZ2 habitat will be slowed through the proposed native woody and herbaceous vegetation, which will filter and reduce the turbidity of outflowing water, over existing conditions from the existing annual row crop agricultural field. As such, water quality is expected to improve.

6.5.3 Sediment and Erosion

Grading of the subject property may result in erosion of the unvegetated soil. A detailed sediment and erosion plan has been outlined in the FSR (Section 9.1, Valdor Engineering Inc. 2018) and includes the use of temporary sediment control basins, mud mats, sediment traps, roc check dams and cofferdams.

6.5.4 Indirect Impacts to Wildlife

Potential indirect impacts to wildlife may arise from noise and dust associated with construction activities and unnatural lighting resulting from the development. If unvegetated areas become dry, they should be soaked using a low-impact hose or watering system to reduce dust, particularly prior to expected high winds or soil

movement or grading. Alternatively, areas of bare soil should be seeded with Annual Rye (*Lolium multiflorum*) or Annual Oats (*Avena sativa*).

During site preparation and construction activities involving a lot of noise wildlife may temporarily avoid the area. It is recommended that construction activities are limited to daylight hours (from dawn until dusk), which allows for reduced stress for nearby wildlife.

Detailed lighting designs will be provided at the detailed design stage. Typically, it is recommended that lighting designs should include directional lighting for all areas of road and developments that are within 30m of the natural features to eliminate lightwash. Since a minimum of 30m from the natural areas is being reforested throughout the subject property, light impacts are expected to be largely avoided. Nonetheless, it is recommended that lighting be directed to the ground.

6.5.5 Induced Impacts and Mitigations

Induced impacts are described as those that are not directly related to the construction or operation of the facilities in question, but rather arise from the use of the natural areas as a result of the development. The simplest example is increased use of a natural area by residents, feral domestic wildlife, and unauthorized trail/pathway construction.

Once the development is completed, subsequent use of the natural areas by residents is difficult to control. Education with respect to the values and implications of the neighbouring natural areas is one tool that can be used. Dense plantings of native trees and shrubs are being used to discourage human intrusion into sensitive areas. Guidance to landowners on typical impacts to natural areas should be given, including the damage caused by outdoor pet cats, lawn waste, fertilizer and chemical use, and excessive water use.

The proposed development consists of relatively low-density development, with only 8 proposed residential dwellings. Impacts from increased natural area use are expected to be very low and are proposed to be mitigated through the creation of a dense reforestation area and backyard fencing.

6.6 Restoration and Enhancement of Natural Features

Significant restoration efforts are proposed for 4ha of the subject property and are outlined in the Reforestation Management Plan (Appendix X). These efforts are required in order to achieve the proposed density of the subject property, as outlined in the Town of Caledon OP (2016).

6.7 Monitoring

An environmental monitor is recommended for the duration of the proposed development process. This monitor will be responsible for ensuring the maintenance of mitigation and control measures, including erosion and sediment control fencing and other measures, as well as adherence to the recommendations and requirements outlined in this report.

6.7.1 Pre-Construction

On-site inspections of the following are recommended to ensure proper installation:

- Sediment and erosion control measures, particularly around the natural areas to the southwest and east.
- Tree protection measures, such as fences, installed beyond dripline for trees to be retained within the hedgerow adjacent to Mount Pleasant Road.

6.7.2 During Construction

- Periodic monitoring of the above measures to ensure maintenance and effectiveness,
- Maintenance of 30m buffer and fencing,
- Fuelling of machinery to be undertaken at designated location away from the ephemeral swale and woodlands,
- Storage of machinery and material, fill, etc. in designated areas, and
- Equipment movement through natural areas and setbacks to be controlled.

6.7.3 Post-Construction

A 5-year monitoring plan is recommended and outlined in the Reforestation Management Plan (Appendix X). It is the aim of this plan to ensure the successful establishment of the reforestation area.

Recommendations are provided to minimize impacts and ensure that mitigative measures are installed and functioning. These include recommendations to mitigate direct, indirect, and induced impacts that may arise during the proposed development. If the recommendations provided in this report are followed, no negative impacts to the natural features are anticipated to occur.

6.8 Impact Assessment Summary

A summary of potential impacts associated with proposed development, with associated recommended mitigations and significance of impacts once mitigated, are presented in Table 3.

Table 3. Summary of Potential Development Impacts and Mitigation

Potential Impact	Recommended Mitigation Measure(s)	Resulting Impact Significance
Design and Construction Phase		
Vegetation/habitat removal	• The proposed development occurs outside of the adjacent forest and plantation communities and respects the 30m buffer. • The hedgerow present along Mount Pleasant Road will be partially removed for the construct of Street A. These trees should be inspected prior to removal as outlined in this report. • Limit unnecessary vegetation removal and degradation by clearly demarcating the boundaries of construction zones. • The proposed conceptual development will not directly impact any significant wildlife habitats.	Not Significant
Bird nesting disruption and avoidance, and active nest destruction	• Time vegetation removal activities to occur outside the typical bird breeding season (April 20 to August 16) • If vegetation removal must occur during the bird breeding season, retain an avian biologist to survey for active nests just prior to vegetation removal activities. Vegetation cannot be removed if an active nest of a migratory bird is observed until after the young have fledged.	Not Significant
Damage or other disturbance to the adjacent natural features	• Clearly demarcate the limits of construction with silt fencing around the perimeter of the construction zone.	Not Significant
Wildlife avoidance of the area, and other impacts associated with construction	• Restrict the daily timing of construction activities to between sunrise and sunset. • These construction-related impacts are expected to be temporary, minimal and localized.	Not Significant
Erosion and sedimentation	• The Sediment and Erosion Control Plan outlined in the FSR should be implemented throughout the subject property. • Install silt fencing along the boundaries of the construction zone, inspect on a regular basis, remove accumulated sediment as needed, and immediately replace any damaged fencing.	Not Significant
Impacts to groundwater recharge/discharge functions	• Groundwater water balances are expected to be achieved through the use of LID measures, including bioswales. A final detailed water balance for the site post-construction is still required.	Not Significant
Alterations to wetland hydrological balance	• Due to the size and scale of the proposed conceptual development, no significant impacts to the distant wetland inclusion hydrological balance are anticipated.	Not Significant
Post-Construction Use		

Potential Impact	Recommended Mitigation Measure(s)	Resulting Impact Significance
Disturbances to created and retained natural features on-property	• No vegetation clearing should occur within the adjacent forest or wetland communities, or elsewhere within the subject property, with the exception of non-native species removal. • The use of lawn or garden chemicals should be reduced or eliminated. • Any landscape plantings should use native species to avoid the proliferation of non-native species within adjacent natural features. • Guidance to landowners on typical impacts to natural areas should be given, including the damage caused by outdoor pet cats, lawn waste, fertilizer and chemical use, and excessive water use.	Not Significant

7.0 Summary

NRSI was retained to complete an EIS and a Reforestation Management Plan for the proposed residential development on partial Lot 27, Concession 8, along Mount Pleasant Road in the village of Palgrave, Town of Caledon, Region of Peel. This report provides a summary of the natural features within the study area and provides an analysis of impacts based on the proposed 8 lot residential development.

The subject property was documented to be overlaid with the following policy areas:

- Oak Ridges Moraine (protecting the plantation community to the south)
- Region of Peel Greenlands System (Region of Peel OP Schedule A)
- Policy Area 3 (Town of Caledon 2016, Schedule G)
- Environmental Zone 1 and 2 (Town of Caledon Schedule I). The Environmental Zone 1 (EZ1) classification refers to the presence of sensitive biological communities

The natural areas have been considered and suitably buffered from the development, as described throughout Sections 5 and 6. Due to the large 30m buffer and associated Reforestation Management Plan, no impacts are anticipated to the natural features, and the natural areas are expected to be provided with a net benefit through the proposed plan. Impacts have been summarized in Table 4.

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Region of Peel. 2016. Official Plan. Office Consolidation 2016.

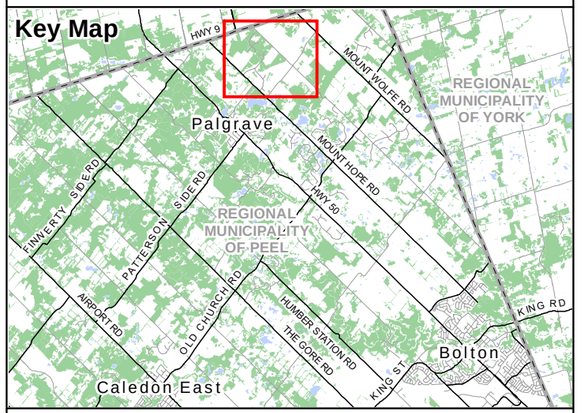
Town of Caledon. 2017. Official Plan. 2017. Consolidated April 2018.

MAPS

Map 1

Mt. Pleasant EIS

Subject Property and Natural Features



Legend

- Subject Property
- Railway
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Water Body
- Provincially Significant Wetland (PSW)
- Unevaluated Wetland
- Wooded Area
- Tertiary Watershed Boundary
- Municipal Boundary

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1930
Date: July 10, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:10,000

0 200 400 600 Metres

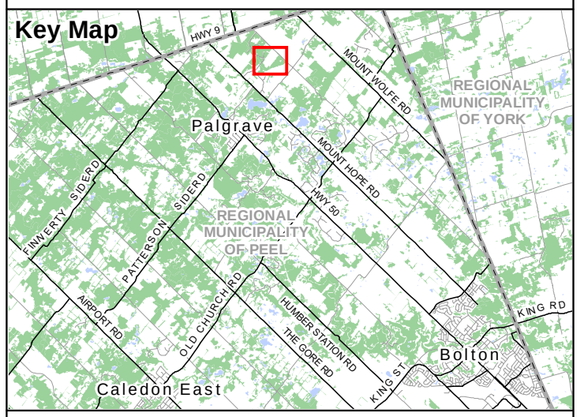
N

Path: X:\1930_MountPleasantEIS\NRSI_1930_Map1_SubjectProperty_NatFeatures_10K_2018_07_10_KEF.mxd

Map 2

Mt. Pleasant EIS

Vegetation Communities



Legend

- Subject Property
- Railway
- Surveyed Dripline (September 27, 2017)
- Ephemeral Swale
- Ecological Land Classification (ELC)

(AG) Agriculture

(CUM1) Mineral Cultural Meadow Ecosite

(CUP) Plantation

(CUP3-9) Norway Spruce - European Larch Coniferous Plantation Type

(FOD6-5) Fresh - Moist Sugar Maple - Hardwood Deciduous Forest Type

(H) Hedgerow

- Inclusion

(SWD3-2) Silver Maple Mineral Deciduous Swamp Type

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1930
Date: July 10, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:3,500

0 50 100 150 200 Metres

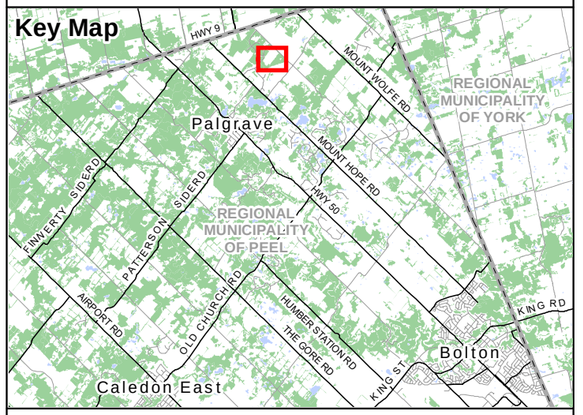
N

Path: X:\1930_MountPleasantEIS\NRSI_1930_Map2_VegetationCommunities_4K_2018_07_10_KEF.mxd

Map 3

Mt. Pleasant EIS

Opportunities and Constraints



Legend

- Subject Property
- Surveyed Dripline (September 27, 2017)
- Dripline Buffer (30m)
- Proposed Site Plan
- Proposed Septic Tile Bed
- Proposed Grading
- Proposed Bioretention Swale Grading
- Proposed Watercourse Centreline
- Existing Ephemeral Swale
- Existing Contour (0.25m)
- Railway

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1930
Date: July 11, 2018

NAD83 - UTM Zone 17
Size: 11x17"
1:3,000

0 50 100 150 200 Metres

N

Path: X:\1930_MountPleasantEIS\NRSI_1930_Map3_OpportunitiesContraints_4K_2018_07_10_KEF.mxd

APPENDIX I

Agency Correspondence

From:	Lee Bull
To:	Mary Nordstrom
Subject:	0 Mount Pleasant Road - Toiwn of Caledon - NVCA Pre-consultation comments - NVCA ID # 31842
Date:	August-23-17 12:49:07 PM

Good afternoon Mary

Thank you for the opportunity to provide preliminary pre-consultation comments on the proposed Plan of Subdivision on the property located at 0 Mount Pleasant Road in the Town of Caledon. The NVCA mapping for the property illustrates an unnamed water feature located at the northern end of the property. Beeton Creek runs past the southeast boundary of the property.

Based upon a review of the draft concept plan provided by the Biglieri Group Ltd., dated July 21, 2017, NVCA staff offers the following preliminary comments:

Stormwater Management

1. A stormwater management report and associated plans will be required to current standards. The stormwater concept is encouraged to consider Low Impact Development [LID] measures as a key component in meeting stormwater objectives.

Hazards

2. A Natural Hazards study (erosion and flood hazards) should be completed for the watercourse near the north end of the property near Mount Pleasant Road. It should also be demonstrated that safe access and egress are provided through the proposed development and at Mount Pleasant Road.

Ecology

3. A scoped Environmental Impact Study [EIS] is required in support of potential development on this property. The site contains a number of environmental features identified in Schedule 'I' to the Town of Caledon Official Plan as Environmental Zone 1 [EZ1] or Environmental Zone 2 [EZ2]. The EIS should contain a discussion regarding those features in light of the criteria for EZ1 and EZ2 features outlined in Section 7.1.9 "Environmental Policies" of the Town of Caledon Official Plan. The initial work scope for this study should include the following :

   i. Early summer vegetation inventories and Ecological Land Classification [ELC] mapping.

   ii. Incidental wildlife surveys (Standard breeding bird surveys will not be required if the development is not encroaching into the forest feature on the southern end of the property).

   iii. A review and functional assessment of local drainage should be completed in accordance with the relevant Environmental Zone 1 and Environmental Zone 2 designation applied to the feature as shown on Schedule 'I' to the Town of Caledon Official Plan.

   iv. An assessment of natural heritage features and the impacts of proposed development on those features should be discussed.

   v. Recommendations regarding mitigation/offsetting/enhancement are required to address the potential impacts of proposed

development.

vi. A screening for species at risk should be completed as part of the EIS.

Hydrogeology

4. A Hydrogeological study should be completed in support of the draft plan of subdivision application.

SUBMISSION REQUIREMENTS

NVCA staff request that all submissions materials be provided in digital format provided through 'dropbox' or equivalent large file transfer site.

FEES

The fee for residential draft plans of subdivision is $3,300 per net hectare, with a minimum fee of $12,500 and a maximum fee of $100,000. This fee is payable in four phases, the first 25% is due upon receipt of the formal application. Please make cheques payable to the "Nottawasaga Valley Conservation Authority" and direct them to the attention of the undersigned.

These comments should be considered preliminary in nature. Once the consulting team has been retained by the application, NVCA staff would be happy to further scope the above noted studies.

We require additional information in order to complete our review and additional comments may be provided in the future. NVCA staff appreciates the opportunity to comment at this stage in the process. Should you require any further information, please feel free to contact the undersigned.

Sincerely,

Lee J. Bull, MCIP, RPP | Manager, Planning Services

Nottawasaga Valley Conservation Authority
8195 8th Line, Utopia, ON L0M 1T0
T 705-424-1479 ext. 231 ¦**F** 705-424-2115
lbull@nvca.on.ca ¦**nvca.on.ca**

APPENDIX II

SAR and SCC Screening

Scientific Name	Common Name	S-RANK[1]	ESA/ COSSARO[3]	COSEWIC[2]	SARA	Background Source	Observed by NRSI	Habitat Preference[4,5]	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Birds											
Cardellina canadensis	Canada Warbler	S4B	SC	T	Schedule 1	BSC et al. 2006	No	Interior forest habitats with a dense, well-developed shrub and vegetation understory; along riparian zones or wet bottomland habitat. require tracts of land which are >30ha.	No	No	Although some interior forest habitat exists, it is <30ha
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	BSC et al. 2006	No	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	No	No	No suitable feeding or nesting habitat was observed during field visits.
Chordeiles minor	Common Nighthawk	S4B	SC	T	Schedule 1	BSC et al. 2006	No	Open ground; clearings in dense forests; ploughed fields; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	No	No	Habitat for this species is not present. The ploughed field is actively planted, maintained and harvested with corn crop, and would lead to almost certain nest failure. No nests or nesting activity was observed along several visits at the edge of the fields.
Ammodramus savannarum	Grasshopper Sparrow	S4B	SC	SC		BSC et al. 2006	Yes	It lives in open grassland areas with well-drained, sandy soil. It will also nest in hayfields and pasture, as well as alvars, prairies and occasionally grain crops such as barley. It prefers areas that are sparsely vegetated. Its nests are well-hidden in the field and woven from grasses in a small cup-like shape. The Grasshopper Sparrow is a short-distance migrant and leaves Ontario in the fall to migrate to the southestern United States and Central America for the winter.	Yes	Yes	The subject area may contain well-drained, sandy soils. Minor meadow habitat is also present to the west. Grasshopper Sparrow was observed during Breeding Bird surveys.
Caprimulgus vociferus	Eastern Whip-poor-will	S4B	THR	T	Schedule 1	BSC et al. 2006	No	Dry, open, deciduous woodlands of small to medium trees; oak or beech with lots of clearings and shaded leaflitter; wooded edges, forest clearings with little herbaceous growth; pine plantations; associated with >100 ha forests; may require 500 to 1000 ha to maintain population.	No	No	Although a Scoth Pine plantatio is present the area is far less than 100ha
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC	No Schedule	BSC et al. 2006	Yes	The eastern wood-pewee lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It is most abundant in intermediate-age mature forest stands with little understory vegetation.	Yes	Yes	Study area provides deciduous and mixed forests.
Ixobrychus exilis	Least Bittern	S4B	THR	T	Schedule 1	BSC et al. 2006	No	Deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; intolerant of loss of habitat and human disturbance.	No	No	A Silver Maple swamp (SWD3-2) includsion was idenified during ELC surveys, however, no standing water was found.
Melanerpes erythrocephalus	Red-headed Woodpecker	S4B	SC	T	Schedule 1	BSC et al. 2006	No	Open, deciduous forest with little understory; fields or pasture lands with scattered large trees; wooded swamps; orchards, small woodlots or forest edges; groves of dead or dying trees; feeds on insects and stores nuts or acorns for winter; loss of habitat is limiting factor; requires cavity trees with at least 40 cm dbh; require about 4 ha for a territory.	Yes	Yes	Breeding bird surveys, confirmed the absense of this species.
Riparia riparia	Bank Swallow	S4B	THR	T		BSC et al. 2006	No	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence.	No	No	No sand, clay or gravel riverbankcliffs are present on the property. No water bodies are near the subject property.

Scientific Name	Common Name	S-RANK[1]	ESA/ COSSARO[3]	COSEWIC[2]	SARA	Background Source	Observed by NRSI	Habitat Preference[4,5]	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Hirundo rustica	Barn Swallow	S4B	THR	T		BSC et al. 2006	Yes	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	No	No	No cliffs, caves, rock niches or open water exist on or directly adjacent to the site
Vermivora chrysoptera	Golden-winged Warbler	S4B	SC	T	Schedule 1	BSC et al. 2006	No	Early successional habitat; shrubby, grassy abandoned fields with small deciduous trees bordered by low woodland and wooded swamps; alder bogs; deciduous, damp woods; shrubbery clearings in deciduous woods with saplings and grasses; brier-woodland edges; requires >10 ha of habitat.	No	No	A small swamp inclusion is present within the forest community, but is too small to be considered habitat for this species, and will not be impacted by the development.
Setophaga cerulea	Cerulean Warbler	S3B	THR	E	Schedule 1	BSC et al. 2006	No	Mature deciduous woodland of Great Lakes- St. Lawrence and Carolinian forests, sometimes coniferous; swamps or bottomlands with large trees; area sensitive species needing extensive areas of forest (>100 ha).	No	No	The study area and surrounding habitats are <100ha
Herpetofauna											
Chrysemys picta marginata	Midland Painted Turtle	S5		SC		Ontario Nature 2012	No	Painted Turtles prefer shallow aquatic habitats with slow-moving water, soft bottoms, aquatic vegetation, and abundant basking sites. Typical habitats include swamps, marshes, permanent or temporary ponds, creeks, rivers and lakes. Females nest in sandy or gravelly soils in open-canopy habitats with high sun exposure, such as in forest clearings, meadows, shorelines, rock outcrops, agricultural fields and the shoulders of roads. The nest sites are typically within 200 m of a water body. Painted Turtles overwinter at the bottom of water bodies or under submerged undercut banks.	No	No	This habitat is not present. There is no significant water source for this species to nest.
Chelydra serpentina serpentina	Common Snapping Turtle	S3	SC	SC	Schedule 1	Ontario Nature 2012	No	Permanent or semi-permanent fresh water; marshes, swamps or bogs; rivers and streams with soft muddybanks or bottoms. The species often uses soft soil or clean dry sand on south-facing slopes for nest sites and may nest at some distance from water.	No	No	The watercourse present in the subject area is extremely seasonal and small, and does not provide adequate habitat for this species.
Pseudacris triseriata	Western Chorus Frog	S3	NAR	T	Schedule 1	Ontario Nature 2012	No	Roadside ditches or temporary ponds in fields; swamps or wet meadows; woodland or open country with cover and moisture; small ponds and temporary pools ponds and temporary pools	No	No	No standing water was observed on the subject property during any site visits.
Mammals											
Myotis leibii	Eastern Small-footed Myotis	S2S3	END				No	Roosts in caves, mine shafts, crevices or buildings that are in or near woodland; hibernates in cold dry caves or mines; maternity colonies in caves or buildings; hunts in forests.	No	No	No suitable caves, crevices or buildings are present to provide suitable breeding habitat.
Myotis lucifungus	Little Brown Myotis	S5	END	E	Schedule 1	Ontario Mammal Atlas 1994	No	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges	Yes	No	Forested areas exist on the property, but none of this is proposed to be impacted. Increased habitat is being proposed through buffer plantings.
Myotis septentrionalis	Northern Myotis	S3?	END	E	Schedule 1	Ontario Mammal Atlas 1994	No	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, man-made structures but prefers hollow trees or under loose bark; hunts within forest, below canopy	Yes	No	Forested areas exist on the property, but none of this is proposed to be impacted. Increased habitat is being proposed through buffer plantings.

Scientific Name	Common Name	S-RANK[1]	ESA/ COSSARO[3]	COSEWIC[2]	SARA	Background Source	Observed by NRSI	Habitat Preference[4,5]	Suitable Habitats within Subject Property	Carried Forward to EIS?	Rationale
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	Schedule 1	Ontario Mammal Atlas 1994	No	During the summer, the Tri-colored Bat is found in a variety of forested habitats. It forms day roosts and maternity colonies in older forest and occasionally in barns or other structures. They forage over water and along streams in the forest. Tri-colored Bats eat flying insects and spiders gleaned from webs. At the end of the summer they travel to a location where they swarm; it is generally near the cave or underground location where they will overwinter. They overwinter in caves where they typically roost by themselves rather than part of a group.	No	No	Tri-colored Bats require water/streams within a forest; or underground locations (i.e. caves.
Insects											
Danaus plexippus	Monarch	S4	SC	SC		TEA 2012	Yes	Open areas with milkweed species (*Asclepias spp.*).	Yes	Yes	Butterfly surveys were completed and this species was confirmed to not be present.
Odonates (Dragon/Damsel Flies)											
Arigomphus furcifer	Lilypad Clubtail	S3				Ontario Odonata Atlas 2005	No	Found near ponds, lakes, and slow streams with floating vegetation, often with submergent vegetation and low brushy shores, including bog lakes.	No	No	Habitat is not present. Odonate surveys were completed and this species was confirmed to not be present.
Cordulegaster diastatops	Delta-spotted Spiketail	S4				Ontario Odonata Atlas 2005	No	Found near sunny seepages and small streams, usually spring runs, including boggy ones.	No	No	Habitat is not present. Odonate surveys were completed and this species was confirmed to not be present.
Somatochlora tenebrosa	Clamp-tipped Emerald	S2S3				Ontario Odonata Atlas 2005	No	Found near shady forest waters, from trickles to streams, occasionally boggy and often partly dry.	No	No	No stream features are present in the subject property. Odonate surveys were completed and this species was confirmed to not be present.
Perithemis tenera	Eastern Amberwing	S4				Ontario Odonata Atlas 2005	No	Found near permanent still or slowly moving waters such as ponds, lakes, ditches, and stream pools, but not bogs.	No	No	No permanent water is present in the subject proerty. Odonate surveys were completed and this species was confirmed to not be present.

APPENDIX III

Significant Wildlife Habitat Screening

Significant Wildlife Habitat Assessment Tables

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Terrestrial)					
Rationale: Habitat important to migrating waterfowl.	American Black Duck Wood Duck Green-winged Teal Blue-winged Teal Mallard Northern Pintail Northern Shoveler American Wigeon Gadwall	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]. Information Sources • Anecdotal information from the landowner, adjacent landowners or local naturalist clubs may be good information in determining occurrence. • Reports and other information available from Conservation Authorities (CAs) • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Field Naturalist Clubs • Ducks Unlimited Canada • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of an annual concentration of any listed species, evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Any mixed species aggregations of 100 or more individuals required. • The area of the flooded field ecosite habitat plus a 100-300m radius buffer dependent on local site conditions and adjacent land use is the significant wildlife habitat[cxlviii]. • Annual use of habitat is documented from information sources or field studies (annual use can be based on studies or determined by past surveys with species numbers and dates). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Fields with spring sheet water are not present within the subject lands or surrounding study area. **Not SWH.**
Wildlife Habitat: Waterfowl Stopover and Staging Areas (Aquatic)					
Rationale: Important for local and migrant waterfowl populations during the spring or fall migration or both periods combined. Sites identified are usually only one of a few in the eco-district.	Canada Goose Cackling Goose Snow Goose American Black Duck Northern Pintail Northern Shoveler American Wigeon Gadwall Green-winged Teal Blue-winged Teal Hooded Merganser Common Merganser Lesser Scaup Greater Scaup Long-tailed Duck Surf Scoter White-winged Scoter Black Scoter Ring-necked Duck Common Goldeneye Bufflehead Redhead Ruddy Duck Red-breasted Merganser Brant Canvasback	MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7	• Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify. • These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water). Information Sources • Environment Canada • Naturalist clubs often are aware of staging/stopover areas. • OMNRF Wetland Evaluations indicate presence of locally and regionally significant waterfowl staging. • Sites documented through waterfowl planning processes (eg. EHJV implementation plan) • Ducks Unlimited projects • Element occurrence specification by Nature Serve: http://www.natureserve.org • Natural Heritage Information Centre (NHIC) Waterfowl Concentration Area	Studies carried out and verified presence of: • Aggregations of 100[i] or more of listed species for 7 days[i], results in > 700 waterfowl use days. • Areas with annual staging of ruddy ducks, canvasbacks, and redheads are SWH[cxlix] • The combined area of the ELC ecosites and a 100m radius area is the SWH[cxlviii] • Wetland area and shorelines associated with sites identified within the SWHTG[cxlviii] Appendix K[cxlix] are significant wildlife habitat. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • Annual Use of Habitat is Documented from Information Sources or Field Studies (Annual can be based on completed studies or determined from past surveys with species numbers and dates recorded). • SWHMiST[cxlix] Index #7 provides development effects and mitigation measures.	Open water is not present in the subject property **Not SWH.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shorebird Migratory Stopover Area					
Rationale: High quality shorebird stopover habitat is extremely rare and typically has a long history of use.	Greater Yellowlegs Lesser Yellowlegs Marbled Godwit Hudsonian Godwit Black-bellied Plover American Golden-Plover Semipalmated Plover Solitary Sandpiper Spotted Sandpiper Semipalmated Sandpiper Pectoral Sandpiper White-rumped Sandpiper Baird's Sandpiper Least Sandpiper Purple Sandpiper Stilt Sandpiper Short-billed Dowitcher Red-necked Phalarope Whimbrel Ruddy Turnstone Sanderling Dunlin Whimbrel	BBO1 BBO2 BBS1 BBS2 BBT1 BBT2 SDO1 SDS2 SDT1 MAM1 MAM2 MAM3 MAM4 MAM5	Shorelines of lakes, rivers and wetlands, including beach areas, bars and seasonally flooded, muddy and un-vegetated shoreline habitats. Great Lakes coastal shorelines, including groynes and other forms of armour rock lakeshores, are extremely important for migratory shorebirds in May to mid-June and early July to October. Sewage treatment ponds and storm water ponds do not qualify as a SWH. Information Sources • Western hemisphere shorebird reserve network. • Canadian Wildlife Service (CWS) Ontario Shorebird Survey. • Bird Studies Canada • Ontario Nature • Local birders and naturalist clubs • Natural Heritage Information Center (NHIC) Shorebird Migratory Concentration Area	Studies confirming: • Presence of 3 or more of listed species and > 1000 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 Whimbrel used for 3 years or more is significant. • The area of significant shorebird habitat includes the mapped ELC shoreline ecosites plus a 100m radius area[cxlviii] • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #8 provides development effects and mitigation measures.	Shorelines of lakes, wetlands, and beach areas are not present within or adjacent to the subject property. **Not SWH.**
Wildlife Habitat: Raptor Wintering Area					
Rational: Sites used by multiple species, a high number of individuals and used annually are most significant	Rough-legged Hawk Red-tailed Hawk Northern Harrier American Kestrel Snowy Owl Special Concern: Short-eared Owl Bald Eagle	Hawks/Owls: Combination of ELC Community Series; need to have present one Community Series from each land class: Forest: FOD, FOM, FOC Upland: CUM, CUT, CUS, CUW	The habitat provides a combination of fields and woodlands that provide roosting, foraging and resting habitats for wintering raptors. Raptor wintering 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, large trees and snags available for roosting Information Sources • OMNRF Ecologist or Biologist • Field Natural Clubs • Natural Heritage Information Center (NHIC) Raptor Winter Concentration Area • Data from Bird Studies Canada • Reports and other information available from Conservation Authorities CAs.	Studies confirm the use of these habitats by: • One or more Short-eared Owls or; One or more Bald Eagles or; At least 10 individuals and two listed hawk/owl species • To be significant a site must be used regularly (3 in 5 years)[cxlix] for a minimum of 20 days by the above number of birds • The habitat area for an Eagle winter site is the shoreline forest ecosites directly adjacent to the prime hunting area • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #10 and #11 provides development effects and mitigation measures.	The subject property does not contain CUM, CUT, CUS, or CUW ELC communites. **Not a SWH.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Bat Hibernacula					
Rationale Bat hibernacula are rare habitats in 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 Center (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 habitat area includes a 200m radius around the entrance of the hibernaculum[cxlviii, ccvii] for most. • 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.	The required ecosites are not present in the subject property. **Not SWH.**
Wildlife Habitat: Bat Maternity Colonies					
Rationale: Known locations of forested bat maternity colonies is 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 buildings[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] • SWHMiS T[cxlix] Index #12 provides development effects and mitigation measures.	Additonal surveys will need to be completed in order to determine suitable habitat, such as tree cavities. Some mixed forest exists within and surrounding the property **Candidate SWH.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Turtle Wintering Area					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Snapping and Midland Painted Turtles - ELC Community Classes: SW, MA, OA and SA; ELC Community Series: FEO and BOO Northern Map Turtle - Open Water areas such as deeper rivers or streams and lakes with current can also be used as over-wintering habitat.	For most turtles, wintering areas are in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrates. • Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate Dissolved Oxygen[cix, cx, cxi, cxviii]. • Man-made ponds such as sewage lagoons or storm water ponds should not be considered SWH. Information Sources • EIS studies carried out by Conservation Authorities. • Local field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. • OMNRF ecologist or biologist • Natural Heritage Information Center (NHIC)	• Presence of 5 over-wintering Midland Painted Turtles is significant. • One or more Northern Map Turtle or Snapping Turtle over-wintering within a wetland is significant. • 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]. • SWHMiST[cxlix] Index #28 provides development effects and mitigation measures for turtle wintering habitat.	The study area does not have an open water source that is suitable for turtle wintering activities. **Not SWH.**
Wildlife Habitat: Snake Hibernaculum					
Rationale: Generally sites are the only known sites in the area. Sites with the highest number of individuals are most significant	Snakes: Eastern Gartersnake Northern Watersnake Northern Red-bellied Snake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Special Concern: Milksnake Eastern Ribbonsnake Lizard: Special Concern (Southern Shield population): Five-lined Skink	For all snakes, habitat may be found in any ecosite other than very wet ones. Talus, Rock Barren, Crevice and Cave, and Alvar sites may be directly related to these habitats. Observations of congregations of snakes on sunny warm days in the spring or fall is a good indicator. 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 locations. The existence of features that go below the 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[xliv, l, li, liii, cxii]. • Wetlands can also be important over-wintering habitat in conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover. • Five-lined skink prefer mixed forests with rock outcrop openings providing cover rock overlaying granite bedrock with fissures cciii. Information Sources • In spring, local residents or landowners may have observed the emergence of snakes on their property (e.g. old dug wells). • Reports and other information from CAs. • Local Field naturalists and experts, as well as university herpetologists may also know where to find some of these sites. clubs • Natural Heritage Information Center (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. or; individuals of two or more snake spp. • Congregations of a minimum of five individuals of a snake sp. or; individuals of two or more snake spp. near potential hibernacula (eg. foundation or rocky slope) on sunny warm days in Spring (Apr/May) and Fall (Sept/Oct). • Note: If there are Special Concern Species present, then site is SWH • Note: Sites for hibernation possess specific habitat parameters (e.g. temperature, humidity, etc.) and consequently are used annually, often by many of the same individuals of a local population [i.e. strong hibernation site fidelity]. Other critical life processes (e.g. mating) often take place in close proximity to hibernacula. The feature in which the hibernacula is located plus a 30m buffer is the SWH[l] • 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.	Snake hibernaculum may be present in the area. This will be confirmed upon site visits. **Candidate SWH.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Bank and Cliff)					
Rationale: Historical use and number of nests in a colony make this habitat significant. An identified colony can be very important to local populations. All swallow populations are declining in Ontario.	Cliff Swallow Northern Rough-winged Swallow (this species is not colonial but can be found in Cliff Swallow colonies)	Eroding banks, sandy hills, borrow pits, steep slopes, and sand piles Cliff faces, bridge abutments, silos, barns Habitat found in the following ecosites: CUM1 CUT1 CUS1 BLO1 BLS1 BLT1 CLO1 CLS1 CLT1	• Any site or areas with exposed soil banks, undisturbed or naturally eroding that is not a licensed/permitted aggregate area. • Does not include man-made structures (bridges or buildings) or recently (2 years) disturbed soil areas, such as berms, embankments, soil or aggregate stockpiles. • Does not include a licensed/permitted Mineral Aggregate Operation. Information Sources • Reports and other information available from CAs • Ontario Breeding Bird Atlas [ccv] • Bird Studies Canada; *NatureCounts* http://www.birdscanada.org/birdmon/ • Field Naturalist clubs	Studies confirming: • Presence of 1 or more nesting sites with 8[cxlvix] or more cliff swallow pairs and/or rough-winged swallow pairs during the breeding season. • A colony identified as SWH will include a 50m radius habitat area from the peripheral nests[ccvii] • Field surveys to observe and count swallow nests are to be completed during the breeding season Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #4 provides development effects and mitigation measures	Suitable habitat not idenitified within the subject lands, are are unlikely located within the vicinity. **Not SWH**
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Tree/Shrubs)					
Rationale: Large Colonies are important to local bird population, typically sites are only known colony in area and are used annually.	Great Blue Heron Black-crowned Night-heron Great Egret Green Heron	SWM2 SWM3 SWM5 SWM6 SWD1 SWD2 SWD3 SWD4 SWD5 SWD6 SWD7 FET1	• Nests in live or dead standing trees in wetlands, lakes, islands, and peninsulas. Shrubs and occasionally emergent vegetation may also be used. • Most nests in trees are 11 to 15m 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 (OMNR). • NHIC Mixed Wader Nesting Colony • Aerial photographs can help identify large heronries • Reports and other information available from CAs • MNRF District Offices • Local naturalist clubs	Studies confirming: • Presence of 5[i] or more active nests of Great Blue Heron or other listed species. • The habitat extends from 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.	While an area classified as a SWD3 community is present, there is no open water on the subject property. **Not SWH.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Colonially - Nesting Bird Breeding Habitat (Ground)					
Rationale: Colonies are important to local bird populations, typically sites are only known colony in area and are used annually.	Herring Gull Great Black-backed Gull Little Gull Ring-billed Gull Common Tern Caspian Tern Brewer's Blackbird	Any rocky island or peninsula (natural or artificial) within a lake or large river (two-lined on a 1:50,000 NTS map). Close proximity to watercourses in open fields or pastures with scattered trees or shrubs (Brewer's Blackbird) MAM1 – 6 MAS1 – 3 CUM CUT CUS	• Nesting colonies of gulls and terns are on islands or peninsulas associated with open water or in marshy areas. • Brewers Blackbird colonies are found loosely on the ground in or in low bushes in close proximity to streams and irrigation ditches within farmlands. Information Sources • Ontario Breeding Bird Atlas[ccv], rare/colonial species records. • Canadian Wildlife Service • Reports and other information available from CAs • Natural Heritage Information Center (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[i]. • 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 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, ccvii] • Studies would be done during May/June when actively nesting. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #6 provides development effects and mitigation measures.	Islands or peninsula not present within subject property. **Not SWH.**
Wildlife Habitat: Migratory Butterfly Stopover Areas					
Rationale: Butterfly stopovers 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 CUS CUT Forest: FOC FOM FOD CUP Anecdotally, a candidate sight for butterfly stopover will have a history of butterflies being observed.	A butterfly stopover area will be a minimum of 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. • SWHMiST[cxlix] Index #16 provides development effects and mitigation measures.	Subject property not within 5 km of Lake Ontario. **Not SWH.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Landbird Migratory Stopover Areas					
Rationale: Sites with a high diversity of species as well as high number are most significant	All migratory songbirds. Canadian Wildlife Service Ontario website: http://www.on.ec.gc.ca/wildlife_e.html All migrant raptors species: Ontario Ministry of Natural Resources: Fish and Wildlife Conservation Act, 1997. Schedule 7: Specially Protected Birds (Raptors)	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	Woodlots need to be >10 ha[i] in size and within 5km [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 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 dates. 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.	Subject property not within 5 km of Lake Ontario. **Not SWH.**
Wildlife Habitat: Deer Yarding Areas					
Rationale: Winter habitat for deer is considered to be the main 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 20cm, most of the deer will have moved here. If the snow is light and fluffy, deer may continue to use this area until 30cm 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.	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, i]. • 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.	White-tailed Deer have been documented within the vicinity of the study area. Deer yarding habitat not identified within or adjacent to the subject property. **Not SWH.**

Table 1. Characteristics of Seasonal Concentration Areas for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Deer Winter Congregation Areas					
Rationale: Deer movement during winter in the southern areas of Ecoregion 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[exlviii]	White-tailed Deer	All Forested Ecosites with these ELC Community Series: FOC FOM FOD SWC SWM SWD Conifer plantations much smaller than 50ha 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 Eco-region 6E are not constrained by snow depth, however deer will annually congregate in large numbers in suitable woodlands[cxlviii]. • 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[ccxxiv]. • Woodlots with high densities of deer due to artificial feeding are not significant. Information Sources • MNRF District Offices • LIO/NRVIS	Studies confirm: • Deer management is an MNRF responsibility, deer winter congregation areas considered significant will be mapped by MNRF[cxlviii]. • Use of the woodlot by white-tailed deer will be determined by MNRF, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNR[i]. • Studies should be completed during winter (Jan/Feb) when >20cm of snow is on the ground using aerial survey techniques[ccxxiv], ground or road surveys, or a pellet count deer density survey[ccxxv]. • If a SWH is determined for Deer Wintering Area of 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.	White-tailed Deer have been documented within the vicinity of the study area. Deer overwintering habitat not identified within or adjacent to the subject property. **Not SWH.**

Significant Wildlife Habitat Assessment Tables

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Cliff and Talus Slopes					
Rationale: Cliffs and Talus Slopes are extremely rare habitats in Ontario.	Any ELC Ecosite within Community Series: TAO CLO TAS CLS TAT CLT	A Cliff is vertical to near vertical bedrock >3m in height. A Talus Slope is rock rubble at the base of a cliff made up of coarse rocky debris.	Most cliff and talus slopes occur along the Niagara Escarpment. Information Sources • The Niagara Escarpment Commission has detailed information on location of these habitats. • OMNRF District • Natural Heritage Information Center (NHIC) has location information on their website • Local 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.	Vegetation community not present within subject property. **Not SWH.**
Sand Barrens					
Rationale: Sand barrens are rare in Ontario and support rare species. Most Sand Barrens have been lost due to cottage development and forestry.	ELC Ecosites: SBO1 SBS1 SBT1 Vegetation cover varies from patchy and barren to continuous meadow (SBO1), thicket-like (SBS1), or more closed and treed (SBT1). Tree cover always <60%.	Sand Barrens typically are exposed sand, generally sparsely vegetated and caused by lack of moisture, periodic fires and erosion. They have little or no soil and the underlying rock protrudes through the surface. Usually located within other types of natural habitat such as forest or savannah. Vegetation can vary from patchy and barren to tree covered but less than 60%.	Any sand barren area, >0.5ha in size. Information Sources • OMNRF Districts. • Natural Heritage Information Center (NHIC) has location information 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.	Vegetation community not present within subject property. **Not SWH.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Alvar					
Rationale: Alvars are extremely rare habitats in Ecoregion 6E. Most alvars in Ontario are in Ecoregion 6E and 7E. Alvars in 6E are small and highly localized just north of the Palaeozoic-Precambrian contact.	ALO1 ALS1 ALT1 FOC1 FOC2 CUM2 CUS2 CUT2-1 CUW2 Five Alvar Indicator Species: 1) Carex crawei 2) Panicum philadelphicum 3) Eleochairs compressa 4) Scutellaria parvula 5) Trichostema branchiatum These indicator species are very specific to Alvars within Ecoregion 6E	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 zoo geographically 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]. Information Sources • Alvars of Ontario (2000), Federation of Ontario Naturalists[lxxvi]. • Ontario Nature – Conserving Great Lakes Alvars[ccviii]. • Natural Heritage Information Center (NHIC) has location information on their website • Field Naturalist clubs • Conservation Authorities	Field studies 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 are exotics sp.). • 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.	Vegetation community not present within subject property. **Not SWH.**
Old Growth Forest					
Rationale: 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 Stands areas 30ha or greater in size or with at least 10 ha interior habitat assuming 100m buffer at edge of forest Í. Information Sources • OMNRF Forest Resource Inventory mapping • OMNRF Forester, Ecologist or Biologist • Field Local naturalist clubs • Conservation Authorities • Sustainable Forestry License (SFL) companies will possibly know locations through field operations. • Municipal forestry departments	Field Studies will determine: • If dominant trees species of the ecosite are >140 years old, then stand is Significant Wildlife Habitat[cxlviii] • The stand will have experienced no recognizable forestry activities[cxlviii] • The area of Forest Ecosites combined to make up the stand is the SWH. • Determine ELC Vegetation Type for forest stand[lxxviii] • SWHDSS[cxlix] Index #23 provides development effects and mitigation measures.	Old Growth Forest not present within subject property. **Not SWH.**

Table 2. Characteristics of Rare Vegetation Communities for Ecoregion 6E.

Rare Vegetation Community[1]	Candidate SWH			Confirmed SWH	Study Area
	ELC Ecosite Codes[1]	Habitat Description[1]	Detailed Information and Sources[1]	Defining Criteria[1]	Assessment Details
Savannah					
Rationale: Savannahs are extremely rare habitats in Ontario.	TPS1 TPS2 TPW1 TPW2 CUS2	A Savannah is a tallgrass prairie habitat that has tree cover between 25 – 60%.	• No minimum size to site 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 Center (NHIC) has location information on their website • OMNRF Ecologists • Field naturalists clubs • Conservation Authorities	Field studies confirm one or more of the Savannah indicator species listed in[lxxv] Appendix N should be present. 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 sp.). • SWHMiST[cxlix] Index #18 provides development effects and mitigation measures.	Vegetation community not present within subject property. **Not SWH.**
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.	• No minimum size to site Site must be restored or a natural site. Remnant sites such as railway right of ways are not considered to be SWH. Information Sources • OMNR Districts • Natural Heritage Information Center (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. 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.	vegetation community not present within subject property. **Not SWH.**
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 OMNR/NHIC will have up to date listing for rare vegetation communities. Information Sources • Natural Heritage Information Center (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 other rare vegetation communities are present within the subject property. **Not SWH.**

Significant Wildlife Habitat Assessment Tables

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Waterfowl Nesting Area					
Rationale: Important to local waterfowl populations, sites with greatest number of species and highest number of individuals are significant.	American Black Duck Northern Pintail Northern Shoveler Gadwall Blue-winged Teal Green-winged Teal Wood Duck Hooded Merganser Mallard	All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SWT1 SWT2 SWD1 SWD2 SWD3 SWD4 Note: includes adjacency to Provincially Significant Wetlands	A waterfowl nesting area extends 120m[cxlix] from a wetland (> 0.5 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 120m of each individual wetland where waterfowl nesting is known to occur[cxlix]. • Upland areas should be at least 120m wide so that predators such as raccoons, skunks, and foxes have difficulty finding nests. • Wood Ducks and Hooded Mergansers utilize large diameter trees (>40cm dbh) in woodlands for cavity nest sites. Information Sources • Ducks Unlimited staff may know the locations of particularly productive nesting sites. • OMNRF Wetland Evaluations for indication of significant waterfowl nesting habitat. • Reports and other information available from CAs	Studies confirmed: • Presence of 3 or more nesting pairs for listed species excluding Mallards, or • Presence of 10 or more nesting pairs for listed species including Mallards. • Any active nesting site of an American Black Duck is considered significant. • Nesting studies should be completed during the spring breeding season (April - June). Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • A field study confirming waterfowl nesting habitat will determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less than 120m[cxlviii] from the wetland and will provide enough habitat for waterfowl to successfully nest. • SWHMiST[cxlix] Index #25 provides development effects and mitigation measures.	The subject property does not contain a wetland. **Not SWH.**
Wildlife Habitat: Bald Eagle and Osprey Nesting, Foraging and Perching Habitat					
Rationale: Nest sites are fairly uncommon in Eco-region 6E are used annually by these species. Many suitable nesting locations may be lost due to increasing shoreline development pressures and scarcity of habitat.	Osprey Special Concern: Bald Eagle	ELC Forest Community Series: FOD, FOM, FOC, SWD, SWM and SWC directly adjacent to riparian areas – rivers, lakes, ponds and wetlands	• Nests are associated with lakes, ponds, rivers or wetlands along forested shorelines, islands, or on structures over water. • Osprey nests are usually at the top a tree whereas Bald Eagle nests are typically in super canopy trees in a notch within the tree's canopy. • Nests located on man-made objects are not to be included as SWH (e.g. telephone poles and constructed nesting platforms). Information Sources • Natural Heritage Information Center (NHIC) compiles all known nesting sites for Bald Eagles in Ontario. • MNRF values information (LIO/NRVIS) will list known nesting locations. Note: data from NRVIS is provided as a point and does not represent all the habitat. • Nature Counts, Ontario Nest Records Scheme data. • OMNRF Districts • Sustainable Forestry License (SFL) companies will identify additional nesting locations through field operations. • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented • Reports and other information available from CAs. • Field naturalists clubs	Studies confirm the use of these nests by: • One or more active Osprey or Bald Eagle nests in an area[cxlviii]. • Some species have more than one nest in a given area and priority is given to the primary nest with alternate nests included within the area of the SWH. • For an Osprey, the active nest and a 300m radius around the nest or the contiguous woodland stand is the SWHccvii, maintaining undisturbed shorelines with large trees within this area is important[cxlviii]. • For a Bald Eagle the active nest and a 400-800m radius around the nest is the SWH[cvi], ccvii. Area of the habitat from 400-800m is dependent on site lines from the nest to the development and inclusion of perching and foraging habitat[cvi]. • To be significant a site must be used annually. When found inactive, the site must be known to be inactive for >3 years or suspected of not being used for >5 years before being considered not significant[ccvii] • Observational studies to determine nest site use, perching sites and foraging areas need to be done from mid March to mid August. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi] • SWHMiST[cxlix] Index #26 provides development effects and mitigation measures	There is no open water within or adjacent to the site. **Not SWH.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Woodland Raptor Nesting Habitat					
Rationale: Nests sites for these species are rarely identified; these area sensitive habitats and are often used annually by these species.	Northern Goshawk Cooper's Hawk Sharp-shinned Hawk Red-shouldered Hawk Barred Owl Broad-winged Hawk	May be found in all forested ELC Ecosites. May also be found in SWC, SWM, SWD and CUP3.	All natural or conifer plantation woodland/forest stands >30ha with >10ha of interior habitat[lxxxviiii, lxxxix, xc, xci, xciii, xciv, xcv, xcvi, cxxxiii]. Interior habitat determined with a 200m buffer[cxlviii]. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Cooper's 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 • Check the Ontario Breeding Bird Atlas[ccv] or Rare Breeding Birds in Ontario for species documented. • Check data from Bird Studies Canada • Reports and other information available from CAs	Studies confirm: • Presence of 1 or more active nests from species list is considered significant[cxlviii]. • Red-shouldered Hawk and Northern Goshawk – a 400m radius around the nest or 28ha area of habitat is the SWH[ccvii]. • 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.	Natural or conifer plantation woodland/forest stands >30ha are not present within subject lands. **Not SWH.**
Wildlife Habitat: Turtle Nesting Area					
Rationale: These habitats are rare and when identified will often be the only breeding site for local populations of turtles	Midland Painted Turtle Special Concern: Northern Map Turtle Snapping Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m)[cxlviii] or within the following ELC Ecosites: MAS1 MAS2 MAS3 SAS1 SAM1 SAF1 BOO1 FEO1	• Best nesting habitat for turtles are close to water and away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle-nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used. Information Sources • Use Ontario Soil Survey reports and maps to help find suitable substrate for nesting turtles (well-drained sands and fine gravels). • Check the Ontario Herpetofaunal Summary Atlas records or other similar atlases for uncommon turtles; location information may help to find potential nesting habitat for them. • Natural Heritage Information Center (NHIC) • Field Naturalist clubs and landowners	Studies confirm: • Presence of 5 or more nesting Midland Painted Turtles • One or more Northern Map Turtle or Snapping Turtle nesting is a SWH[i] • The area or collection of sites within an area of exposed mineral soils where the turtles nest, plus a radius of 30-100m around the nesting area dependent 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[cxlix]. • 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[cxlix] Index #28 provides development effects and mitigation measures for turtle nesting habitat.	The subject property does not contain open water. **Not SWH.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Seeps and Springs					
Rationale: Seeps/Springs are typical of headwater areas and are often at the source of coldwater streams.	Wild Turkey Ruffed Grouse Spruce Grouse White-tailed Deer Salamander spp.	Seeps/Springs are areas where ground water comes to the surface. Often they are found within headwater areas within forested habitats. Any forested Ecosite within the headwater areas of a stream could have seeps/springs.	Any forested area (with <25% meadow/field/pasture) within the headwaters of a stream or river system[cxvii, cxlix]. • Seeps and springs are important feeding and drinking areas especially in the winter will typically support a variety of plant and animal species[cxix, cxx, cxxi, cxxii, cxiii, cxiv] Information Sources • Topographical Map • Thermography • Hydrological surveys conducted by CAs 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 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 the habitat[cxlviii] • SWHMiST[cxlix] Index #30 provides development effects and mitigation measures	Subject property is not located within the headwaters of a stream or river system. **Not SWH.**
Wildlife Habitat: Amphibian Breeding Habitat (Woodland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Wood Frog	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians.	• Presence of a wetland, pond or woodland pool (including vernal pools) >500m^2 (about 25m diameter) [ccvii] within or adjacent (within 120m) to a woodland (no minimum size)[cbxxxii, bxiii, lxv, lxvi, lxvii, lxviii, lxix, lxx] Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat[cxlviii] Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) for records • Local landowners may also provide assistance as they may hear spring-time choruses of amphibians on their property. • OMNRF District • 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)[lxxi] or 2 or more of the listed frog species with Call Level Codes of 3. • A combination of observational study and call count surveys[cviii] will be required during the spring March-June when amphibians are concentrated around suitable breeding habitat within or near the woodland/wetlands. • The habitat is the woodland 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 the be included in the habitat. • SWHMiST[cxlix] Index #14 provides development effects and mitigation measures.	Wood Frog has been documented in the vicinity of the study area. However, there are no wetlands, ponds or woodland pools >500m2. Suitable breeding habitat is not present in the subject property. **Not SWH.**

Table 3. Characteristics of Specialized Wildlife Habitat for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Breeding Habitat (Wetland)					
Rationale: These habitats are extremely important to amphibian biodiversity within a landscape and often represent the only breeding habitat for local amphibian populations	Eastern Newt American Toad Spotted Salamander Four-toed Salamander Blue-spotted Salamander Gray Tree frog Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	ELC Community Classes SW, MA, FE, BO, OA and SA. Typically these wetland ecosites will be isolated (>120m) from woodland ecosites, however larger wetlands containing predominantly aquatic species (e.g. Bull Frog) may be adjacent to woodlands.	• Wetlands >500m2 (about 25m diameter)[ccvii] 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[cxxxiv]. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation. Information Sources • Ontario Herpetofaunal Summary Atlas (or other similar atlases) • Canadian Wildlife Service Amphibian Road Surveys and Backyard Amphibian Call Count. • OMNRF Districts and wetland evaluations • Reports and other information available from CAs.	Studies confirm: • Presence of breeding population of 1 or more of the listed newt/salamander species or 2 or more of the listed frog/toad species and with at least 20 individuals (adults or eggs masses)[lxxi, lxxiii], 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 spring March to 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.	American Toad have been documented within the vicinity of the subject lands. However, there are no wetlands, ponds or woodland pools >500m2. Suitable breeding habitat is not present in the subject property. **Not SWH.**
Woodland Area-Sensitive Bird Breeding Habitat					
Rationale: Large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario are important habitats for area sensitive interior forest song birds.	Yellow-Bellied Sapsucker Red-breasted Nuthatch Veery Blue-headed Vireo Northern Parula Black-throated Green Warbler Blackburnian Warbler Black-throated Blue Warbler Ovenbird Scarlet Tanager Winter Wren Special Concern: Cerulean Warbler Canada Warbler	All Ecosites associated with these ELC Community Series: FOC FOM FOD SWC SWM SWD	• Habitats where interior forest breeding birds are breeding, typically large mature (>60 yrs old) forest stands or woodlots >30 ha.[cv, cxxxi, cxxxii, cxxxiii, cxxxiv, cxxv, cxxvi, cxxxvii, cxxxviii, cxxxix, cxl, cxli, cxlii, cxliii, cxliv, cxlv, cxlvi, cl, cli, clii, cliii, cliv, clv, clvii, clviii, clix • Interior forest habitats are at least 200m from forest edge habitat. Information Sources • Local bird 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 greatest value to interior species • Reports and other information available from CAs.	• 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.	The site is likely too small to be SWH for woodland area-sensitive breeding birds. **Not SWH.**

Significant Wildlife Habitat Assessment Tables

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Marsh Bird Breeding Habitat					
Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Gallinule American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan Special Concern: Black Tern Yellow Rail	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	• Nesting occurs in wetlands • All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present[cxxiv]. • For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. Information Sources • Contact OMNRF, wetland evaluations are a good source of information. • Field naturalist clubs • Natural Heritage Information Center (NHIC) Records • Reports and other information available from CAs. • Ontario Breeding Bird Atlas[ccv]	Studies confirm: • Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species[i]. • Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH[i]. • Area of the ELC ecosite is the SWH • Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. • Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects"[ccxi]. • SWHMiST[cxlix] Index #35 provides development effects and mitigation measures	Wetland complex is not present in the subject area. **Not SWH.**
Wildlife Habitat: Open Country Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. Species such as the Upland Sandpiper have declined significantly the past 40 years based on CWS (2004) trend records.	Upland Sandpiper Grasshopper Sparrow Vesper Sparrow Northern Harrier Savannah Sparrow Special Concern: Short-eared Owl	CUM1 CUM2	Large grassland areas (includes natural and cultural fields and meadows) >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)[i]. Grassland sites considered significant should have a history of longevity, either abandoned fields, mature hayfields and pasturelands that are at least 5 years or older. The Indicator bird species are area sensitive requiring larger grassland areas than the common grassland species. Information Sources • Agricultural land classification maps, Ministry of Agriculture. • Ask local birders • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs.	Field Studies confirm: • Presence of nesting or breeding of 2 or more of the listed species. • A field with 1 or more breeding Short-eared Owl 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.	Grasshopper sparrow and Vesper Sparrow were observed within this community, but the habitat is <30 ha, and therefore does not mee the criteria for this habitat. **Not SWH.**

Table 4. Characteristics of Habitat for Species of Conservation Concern for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Shrub/Early Successional Bird Breeding Habitat					
Rationale: This wildlife habitat is declining throughout Ontario and North America. The Brown Thrasher has declined significantly over the past 40 years based on CWS (2004) trend records cxcix.	Indicator spp.: Brown Thrasher Clay-coloured Sparrow Common spp.: Field Sparrow Black-billed Cuckoo Eastern Towhee Willow Flycatcher Special Concern: Yellow-breasted Chat Golden-winged Warbler	CUT1 CUT2 CUS1 CUS2 CUW1 CUW2 Patches of shrub ecosites can be complexed into a larger habitat 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)[l]. Shrub thicket habitats (>10 ha) are most likely to support and sustain a diversity of these species [clxxiii]. Shrub and thicket habitat sites considered significant should have a history of longevity, either abandoned fields or pasturelands. Information Sources • Agricultural land classification maps Ministry of Agriculture Local bird clubs • Ontario Breeding Bird Atlas[ccv] • Reports and other information available from CAs	Field Studies confirm: • Presence of nesting or breeding of 1 of the indicator species and at least 2 of the common species[l]. • A field with breeding Yellow-breasted Chat or Golden-winged Warbler is to be considered as Significant Wildlife Habitat. • 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.	Large field areas are not present within the sibject property. Required ecosites are not present. **Not SWH.**
Wildlife Habitat: Terrestrial Crayfish					
Rationale: Terrestrial Crayfish are only found within SW Ontario in Canada and their habitats are very rare.[ccii]	Chimney or Digger Crayfish: (*Fallicambarus fodiens*) Devil Crawfish or Meadow Crayfish: (*Cambarus Diogenes*)	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 MAS1 MAS2 MAS3 SWD SWT SWM	Wet meadow and edges of shallow marshes (no minimum size) identified should be surveyed for terrestrial crayfish. • Constructs burrows in marshes, mudflats, meadows, the ground can't be too moist. Can often be found far from water. • Both species are a semi-terrestrial burrower which spends most of its life within burrows consisting of a network of tunnels. Usually the soil is not too moist so that the tunnel is well formed. Information Sources • Information sources from "Conservation Status of Freshwater Crayfishes" by Dr. Premek Hamr for the WWF and CNF March 1998	Studies Confirm: • Presence of 1 or more individuals of species listed or their chimneys (burrows) in suitable marsh meadow or terrestrial sites[cci] • Area of ELC Ecosite or an ecoelement area of meadow marsh or swamp within the larger ecosite area is the SWH • Surveys should be done April to August during in temporary or permanent water Note the presence of burrows or chemistry are often the only indicator of presence, observance or collection of individuals is very difficult[cci] • SWHMiST[cxlix] Index #36 provides development effects and mitigation measures.	Site contains some SWD area. **Candidate SWH.**
Wildlife Habitat: Special Concern and Rare Wildlife Species					
Rationale: These species are quite rare or have experienced significant population declines in Ontario.	All Special Concern and Provincially Rare (S1-S3, SH) plant and animal species. Lists of these species are tracked by the Natural Heritage Information Centre.	All plant and animal element occurrences (EO) within a 1 or 10km grid. Older element occurrences were recorded prior to GPS being available, therefore location information may lack accuracy.	When an element occurrence is identified within a 1 or 10 km grid for a Special Concern or provincially Rare species; linking candidate habitat on the site needs to be completed to ELC Ecosites[lxxviii]. Information Sources • Natural Heritage Information Centre (NHIC) will have the Special Concern and Provincially Rare (S1-S3, SH) species lists with element occurrences data. • NHIC Website: "Get Information": http://nhic.mnr.gov.on.ca • Ontario Breeding Bird Atlas[ccv] • Expert advice should be sought as many of the rare spp. have little information available about their requirements.	Studies Confirm: • Assessment/inventory of the site for the identified special concern or rare species needs to be completed during the time of year when the species is present or easily identifiable. • The area of the habitat to the finest ELC scale that protects the habitat form and function is the SWH, this must be delineated through detailed field studies. The habitat needs to 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.	See SAR Table **Candidate SWH.**

Significant Wildlife Habitat Assessment Tables

Table 5. Characteristics of Animal Movement Corridors for Ecoregion 6E.

	Wildlife Species[1]	Candidate SWH		Confirmed SWH	Study Area
		ELC Ecosite Codes[1]	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
Wildlife Habitat: Amphibian Movement Corridors					
Rationale: Movement corridors for amphibians moving from their terrestrial habitat to breeding habitat can be extremely important for local populations.	Eastern Newt Blue-spotted Salamander Spotted Salamander Gray Treefrog Spring Peeper Western Chorus Frog Northern Leopard Frog Pickerel Frog Green Frog Mink Frog Bullfrog	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]. Information Sources • MNRF District Office • Natural Heritage Information Center NHIC • Reports and other information available from CAs • Field Naturalist Clubs	• Field Studies must be conducted at the time of year when species are expected to be migrating or entering breeding sites. • Corridors should consist of native vegetation, with several layers of vegetation. Cooridors 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 standing water was found throughout the entire subject property, and only a small isolated wetland community was documented. **Not SWH**
Wildlife Habitat: Deer Movement Corridors					
Rationale: 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[í]. • 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). Information Sources • MNRF District Office • Natural Heritage Information Center (NHIC) • Reports and other information available from CAs • 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 yard 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.	Deer movement may occur throughout the wooded feature, and deer may seasonally use the agricultural field to be developed. **Candidate SWH**

Significant Wildlife Habitat Assessment Tables

Table 6. Exceptions for Ecodistricts within Ecoregion 6E.

	Wildlife Habitat and Species	Candidate SWH			Confirmed SWH	Study Area
		Ecosites	Habitat Description	Habitat Criteria and Information Sources[1]	Defining Criteria[1]	Assessment Details
EcoDistrict: 6E-14						
Rationale: The Bruce Peninsula has an isolated and distinct population of black bears. Maintenance of large woodland tracks with mast producing tree species is important for bears. [clxxxvi, ccxvii]	**Mast Producing Areas** Black Bear	All Forested habitat represented by ELC Community Series: FOM FOD	• Black bears require forested habitat that provides cover, winter hibernation sites, and mast producing tree species. [clxxxv, clxxxvii, clxxxviii, clxxxix, cxc, cxci, cxcii, cxciii, ccxvii] • Forested habitats need to be large enough to provide cover and protection for black bears [ccxvii.]	Woodland ecosites >30ha with mast-producing tree species, either soft (cherry) or hard (oak and beech), Information Sources Important forest habitat for black bears may be identified by OMNRF.	• All woodlands > 30 ha with a 50% composition of these ELC Vegetation Types are considered significant: FOM1-1 FOM2-1 FOM3-1 FOD1-1 FOD1-2 FOD2-1 FOD2-2 FOD2-3 FOD2-4 FOD4-1 FOD5-2 FOD5-3 FOD5-7 FOD6-5 • SWHMiST [cxlix] Index #3 provides development effects and mitigation measures.	The entire woodland, including the woodland outside the subject property, is not large enough to support this habitat. **Not SWH**
EcoDistrict: 6E-17						
Rationale: Sharp-tailed grouse only occur on Manitoulin Island in Ecoregion 6E, Leks are an important habitat to maintain their population	**Lek** Sharp-tailed Grouse	CUM CUS CUT	• The lek or dancing ground consists of bare, grassy or sparse shrubland. There is often a hill or rise in topographyccxix. • Leks are typically a grassy field/meadow >15h with adjacent shrublands and >30ha with adjacent deciduous woodland. Conifer trees within 500m are not tolerated. ccxix	Grasslands (field/meadow) are to be >15ha when adjacent to shrubland and >30ha when adjacent to deciduous woodland[ccxix]. • Grasslands are to be undisturbed with low intensities of agriculture (light grazing or late haying) • Leks will be used annually if not destroyed by cultivation or invasion by woody plants or tree planting[ccxix] Information Sources • OMNRF district office • Bird watching clubs • Local landowners • Ontario Breeding Bird Atlas	Studies confirming lek habitat are to be completed from late March to June. • Any site confirmed with sharp-tailed grouse courtship activities is considered significant • The field/meadow ELC ecosites plus a 200 m radius area with shrub or deciduous woodland is the lek habitat • SWHMiST [cxlix] Index #32 provides development effects and mitigation measures	No grasslands are large enough to support this SWH type. No leks were observed, and none are expected to occur within the subject property or study area. **Not SWH**

APPENDIX IV

Vascular Flora Reported From the Subject Property

Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Peel Region	CUP3-1	SWD3-2	FOD6-5
Pteridophytes	**Ferns & Allies**											
Dryopteridaceae	**Wood Fern Family**											
Dryopteris carthusiana	Spinulose Wood Fern	5	-2		S5				X			X
Matteuccia struthiopteris var. pensylvanica	Ostrich Fern	5	-3		S5				X		X	X
Onoclea sensibilis	Sensitive Fern	4	-3		S5				X		X	
Equisetaceae	**Horsetail Family**											
Equisetum arvense	Field Horsetail	0	0		S5				X	X		
Thelypteridaceae	**Beech Fern Family**											
Thelypteris palustris var. pubescens	Marsh Fern	5	-4		S5				X		X	
Gymnosperms	**Conifers**											
Pinaceae	**Pine Family**											
Picea abies	Norway Spruce		5	-1	SE3				X	X		X
Pinus resinosa	Red Pine	8	3		S5				R1	X		
Pinus strobus	Eastern White Pine	4	3		S5				X	X		
Pinus sylvestris	Scots Pine		5	-3	SE5				X	X		X
Tsuga canadensis	Eastern Hemlock	7	3		S5				X			X
Dicotyledons	**Dicots**											
Aceraceae	**Maple Family**											
Acer negundo	Manitoba Maple	0	-2		S5				X	X	X	X
Acer saccharinum	Silver Maple	5	-3		S5				X		X	
Acer saccharum ssp. saccharum	Sugar Maple	4	3		S5				X	X		X
Asteraceae	**Composite or Aster Family**											
Ambrosia artemisiifolia	Common Ragweed	0	3		S5				X			X
Ambrosia trifida	Giant Ragweed	0	-1		S5				X			X
Cirsium arvense	Canada Thistle		3	-1	SE5				X			X
Cirsium vulgare	Bull Thistle		4	-1	SE5				X	X		
Hieracium auricula	Pale Hawkweed											X
Solidago altissima var. altissima	Tall Goldenrod	1	3		S5				X	X		X
Taraxacum officinale	Common Dandelion		3	-2	SE5				X			X
Balsaminaceae	**Touch-me-not Family**											
Impatiens capensis	Spotted Touch-me-not	4	-3		S5				X			X
Berberidaceae	**Barberry Family**											
Caulophyllum giganteum	Blue Cohosh				S5				R1			X
Betulaceae	**Birch Family**											
Ostrya virginiana	Hop Hornbeam	4	4		S5				X			X
Brassicaceae	**Mustard Family**											
Alliaria petiolata	Garlic Mustard		0	-3	SE5				X	X	X	X
Caprifoliaceae	**Honeysuckle Family**											
Lonicera tatarica	Tartarian Honeysuckle		3	-3	SE5				X			X
Sambucus racemosa ssp. pubens	Red-berried Elderberry	5	2		S5				X			X
Cucurbitaceae	**Gourd Family**											
Cucumis anguria	Bur Cucumber										X	

Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Peel Region	CUP3-1	SWD3-2	FOD6-5
Dipsacaceae	**Teasel Family**											
Dipsacus fullonum ssp. sylvestris	Wild Teasel		5	-1	SE5				X	X		
Fabaceae	**Pea Family**											
Vicia cracca	Tufted Vetch		5	-1	SE5				X	X		
Fumariaceae	**Fumitory Family**											
Dicentra cucullaria	Dutchman's-breeches	6	5		S5				U			X
Geraniaceae	**Geranium Family**											
Geranium robertianum	Herb Robert		5	-2	SE5				X	X		X
Hydrophyllaceae	**Water-leaf Family**											
Hydrophyllum virginianum	Virginia Water-leaf	6	-2		S5				X	X		X
Onagraceae	**Evening-primrose Family**											
Circaea lutetiana ssp. canadensis	Yellowish Enchanter's Nightshade	3	3		S5				X			X
Oenothera biennis	Common Evening-primrose	0	3		S5				U	X		
Papaveraceae	**Poppy Family**											
Sanguinaria canadensis	Bloodroot	5	4		S5				X			X
Portulacaceae	**Purslane Family**											
Claytonia caroliniana	Carolina Spring Beauty	7	3		S5				R5			X
Ranunculaceae	**Buttercup Family**											
Actaea pachypoda	White Baneberry	6	5		S5				X			X
Anemone americana	Round-lobed Hepatica	6	5		S5				R7			X
Ranunculus recurvatus var. recurvatus	Hooked Buttercup	4	-3		S5				X		X	
Thalictrum dioicum	Early Meadow-rue	5	2		S5				X			X
Rhamnaceae	**Buckthorn Family**											
Rhamnus cathartica	Common Buckthorn		3	-3	SE5				X	X		
Rosaceae	**Rose Family**											
Fragaria virginiana	Wild Strawberry				S5							X
Geum canadense	White Avens	3	0		S5				X			X
Malus domestica	Apple									X		
Prunus susquehanae	Wild Black Cherry	10	5		S5							X
Prunus virginiana ssp. virginiana	Choke Cherry	2	1		S5				X	X		X
Rubus idaeus ssp. idaeus	Red Raspberry				SE1					X		X
Rubus occidentalis	Thimble-berry	2	5		S5				X		X	

Vascular Plant Species Reported From the Study Area

Scientific Name	Common Name	CC	CW	Weed	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Peel Region	CUP3-1	SWD3-2	FOD6-5
Rubiaceae	**Madder Family**											
Galium aparine	Cleavers	4	3		S5				R4			X
Salicaceae	**Willow Family**											
Populus tremuloides	Trembling Aspen	2	0		S5				X			X
Saxifragaceae	**Saxifrage Family**											
Tiarella cordifolia	False Mitrewort	6	1		S5				X			X
Scrophulariaceae	**Figwort Family**											
Verbascum thapsus	Common Mullein		5	-2	SE5				X	X		
Ulmaceae	**Elm Family**											
Ulmus americana	White Elm	3	-2		S5				X	X		X
Urticaceae	**Nettle Family**											
Urtica dioica ssp. dioica	European Stinging Nettle		-1	-1	SE2				XSR	X	X	
Violaceae	**Violet Family**											
Viola pubescens	Downy Yellow Violet	5	4		S5				X			X
Vitaceae	**Grape Family**											
Parthenocissus vitacea	Woodbine	3	3		S5				X			X
Monocotyledons	**Monocots**											
Araceae	**Arum Family**											
Arisaema triphyllum	Jack-in-the-pulpit	5	-2		S5				X		X	X
Cyperaceae	**Sedge Family**											
Carex formosa	Handsome Sedge	6	-2		S4							
Liliaceae	**Lily Family**											
Erythronium americanum ssp. americanum	Yellow Dog's-tooth Violet	5	5		S5				X		X	X
Maianthemum canadense	Wild Lily-of-the-valley	5	0		S5				X			X
Trillium grandiflorum	White Trillium	5	5		S5				X			X
Uvularia grandiflora	Large-flowered Bellwort	6	5		S5				X			X
Smilacaceae	**Catbrier Family**											
Smilax herbacea	Herbaceous Carrion Flower	5	0		S4				X			X
								Total	**46**	**23**	**12**	**80**

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016

LEGEND			
SRANK	**COSEWIC**	**COSSARO**	**SARA Schedule**
S1 Critically Imperiled	E Endangered	END Endangered	Schedule 1 Officially Protected under SARA
S2 Imperiled	T Threatened	THR Threatened	
S3 Vulnerable	SC Special Concern	SC Special Concern	Schedule 2 Threatened/endangered; may be reassessed for consideration for
S4 Apparently Secure	NAR Not at Risk	NAR Not at Risk	
S5 Secure	DD Data Deficient	DD Data Deficient	
SU Unrankable	XT Extirpated	EXP Extirpated	Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1
SNA Unranked			
SX Presumed Extirpated			
SH Possibly Extirpated (Historical)			

APPENDIX V

Birds Reported From the Study Area

Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] 17NJ96	NHIC Data[6] (17NJ9468, 17NJ9568, 17NJ9469, 17NJ9569)	NRSI Observed	
Anatidae	**Ducks, Geese & Swans**								
Branta canadensis	Canada Goose	S5				CO			
Aix sponsa	Wood Duck	S5				CO			
Anas rubripes	American Black Duck	S4				PO			
Anas platyrhynchos	Mallard	S5				CO			
Lophodytes cucullatus	Hooded Merganser	S5B, S5N				CO			
Mergus merganser	Common Merganser	S5B, S5N				CO			
Phasianidae	**Partridges, Grouse & Turkeys**								
Bonasa umbellus	Ruffed Grouse	S4				PR		H	
Meleagris gallopavo	Wild Turkey	S5				CO			H
Podicipediformes	**Grebes**								
Podilymbus podiceps	Pied-billed Grebe	S4B, S4N				CO			
Columbidae	**Pigeons & Doves**								
Columba livia	Rock Pigeon	SNA				CO			
Zenaida macroura	Mourning Dove	S5				CO			
Cuculiformes	**Cuckoos & Anis**								
Coccyzus americanus	Yellow-billed Cuckoo	S4B				CO			
Coccyzus erythropthalmus	Black-billed Cuckoo	S5B				PR			
Caprimulgidae	**Goatsuckers**								
Chordeiles minor	Common Nighthawk	S4B	SC	T	Schedule 1	PO			
Caprimulgus vociferus	Eastern Whip-poor-will	S4B	THR	T	Schedule 1	PO			
Apodidae	**Swifts**								
Chaetura pelagica	Chimney Swift	S4B, S4N	THR	T	Schedule 1	CO			
Trochilidae	**Hummingbirds**								
Archilochus colubris	Ruby-throated Hummingbird	S5B				CO			
Rallidae	**Rails, Gallinules & Coots**								
Rallus limicola	Virginia Rail	S5B				CO			
Porzana carolina	Sora	S4B				PR			
Gallinula galeata	Common Gallinule	S4B				PR			
Charadriidae	**Plovers**								
Charadrius vociferus	Killdeer	S5B, S5N				CO			
Scolopacidae	**Waders**								
Gallinago delicata	Wilson's Snipe	S5B				PR			
Scolopax minor	American Woodcock	S4B				CO			
Actitis macularia	Spotted Sandpiper	S5				CO			
Ardeidae	**Herons & Bitterns**								
Botaurus lentiginosus	American Bittern	S4B				PO			
Ixobrychus exilis	Least Bittern	S4B	THR	T	Schedule 1	PR			
Ardea herodias	Great Blue Heron	S4B				CO			
Butorides virescens	Green Heron	S4B				PR			
Cathartidae	**Vultures**								
Cathartes aura	Turkey Vulture	S5B				CO			
Accipitridae	**Hawks, Kites, Eagles & Allies**								
Circus cyaneus	Northern Harrier	S4B	NAR	NAR		PR			X

Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] 17NJ96	NHIC Data[6] (17NJ9468, 17NJ9568, 17NJ9469, 17NJ9569)	NRSI Observed	
Accipiter striatus	Sharp-shinned Hawk	S5	NAR			CO			
Accipiter cooperii	Cooper's Hawk	S4	NAR	NAR		CO			X
Accipiter gentilis	Northern Goshawk	S4	NAR	NAR		CO			
Buteo platypterus	Broad-winged Hawk	S5B				CO			
Buteo jamaicensis	Red-tailed Hawk	S5	NAR	NAR		CO			
Strigidae	**Typical Owls**								
Megascops asio	Eastern Screech-Owl	S4	NAR	NAR		CO			
Bubo virgianus	Great Horned Owl	S4				CO			
Strix varia	Barred Owl	S5				CO			
Asio otus	Long-eared Owl	S4				PO			
Aegolius acadicus	Northern Saw-whet Owl	S4				PO			
Alcedinidae	**Kingfishers**								
Megaceryle alcyon	Belted Kingfisher	S4B				CO			
Picidae	**Woodpeckers**								
Melanerpes erythrocephalus	Red-headed Woodpecker	S4B	SC	T	Schedule 1	PO			
Melanerpes carolinus	Red-bellied Woodpecker	S4				PO			
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B				CO			
Picoides pubescens	Downy Woodpecker	S5				CO		S	
Picoides villosus	Hairy Woodpecker	S5				CO		S	
Colaptes auratus	Northern Flicker	S4B				CO			
Dryocopus pileatus	Pileated Woodpecker	S5				CO			
Falconidae	**Caracaras & Falcons**								
Falco sparverius	American Kestrel	S4				CO			
Tyrannidae	**Tyrant Flycatchers**								
Contopus virens	Eastern Wood-Pewee	S4B	SC	SC		PR		S	
Empidonax alnorum	Alder Flycatcher	S5B				PR			
Empidonax traillii	Willow Flycatcher	S5B				PR			
Empidonax minimus	Least Flycatcher	S4B				PR			
Sayornis phoebe	Eastern Phoebe	S5B				CO			
Myiarchus crinitus	Great Crested Flycatcher	S4B				PR		S	
Tyrannus tyrannus	Eastern Kingbird	S4B				CO			
Vireonidae	**Vireos**								
Vireo solitarius	Blue-headed Vireo	S5B				PO			
Vireo gilvis	Warbling Vireo	S5B				PR			
Vireo olivaceus	Red-eyed Vireo	S5B				CO		S	
Corvidae	**Crows & Jays**								
Cyanocitta cristata	Blue Jay	S5				CO		S/H	
Corvus brachyrhynchos	American Crow	S5B				CO			X
Corvus corax	Common Raven	S5				PR			
Alaudidae	**Larks**								
Eremophila alpestris	Horned Lark	S5B				PR			
Hirundinidae	**Swallows**								
Progne subis	Purple Martin	S4B				CO			
Tachycineta bicolor	Tree Swallow	S4B				CO			
Stelgidopteryx serripennis	Northern Rough-winged Swallow	S4B				CO			
Riparia riparia	Bank Swallow	S4B	THR	T		CO			
Petrochelidon pyrrhonota	Cliff Swallow	S4B				CO			
Hirundo rustica	Barn Swallow	S4B	THR	T		CO			OB

Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] 17NJ96	NHIC Data[6] (17NJ9468, 17NJ9568, 17NJ9469, 17NJ9569)	NRSI Observed	
Paridae	**Chickadees & Titmice**								
Poecile atricapillus	Black-capped Chickadee	S5				CO		S	H
Sittidae	**Nuthatches**								
Sitta canadensis	Red-breasted Nuthatch	S5				CO		S	
Sitta carolinensis	White-breasted Nuthatch	S5				CO			
Certhiidae	**Creepers**								
Certhia americana	Brown Creeper	S5B				CO			
Troglodytidae	**Wrens**								
Troglodytes aedon	House Wren	S5B				CO			S
Troglodytes hiemalis	Winter Wren	S5B				PR			
Cistothorus platensis	Sedge Wren	S4B	NAR	NAR		PO			
Cistothorus palustris	Marsh Wren	S4B				PR			
Regulidae	**Kinglets**								
Regulus satrapa	Golden-crowned Kinglet	S5B				CO			
Mussciciapidae	**Old worlk Flycatchers**								
Turdidae	**Thrushes**								
Sialia sialis	Eastern Bluebird	S5B	NAR	NAR		CO			
Catharus fuscescens	Veery	S4B				PR			
Catharus guttatus	Hermit Thrush	S5B				PR			
Hylocichla mustelina	Wood Thrush	S4B	SC	T		PR			
Turdus migratorius	American Robin	S5B				CO		S	
Mimidae	**Mockingbirds, Thrashers & Allies**								
Dumetella carolinensis	Gray Catbird	S4B				CO		H	
Toxostoma rufum	Brown Thrasher	S4B				PR			
Mimus polyglottos	Northern Mockingbird	S4				CO			
Sturnidae	**Starlings**								
Sturnus vulgaris	European Starling	SNA				CO			
Bombycillidae	**Waxwings**								
Bombycilla cedrorum	Cedar Waxwing	S5B				CO			OB
Passeridae	**Old World Sparrows**								
Passer domesticus	House Sparrow	SNA				CO			H
Fringillidae	**Finches & Allies**								
Carpodacus mexicanus	House Finch	SNA				CO			
Carpodacus purpureus	Purple Finch	S4B				CO			
Loxia leucoptera	White-winged Crossbill	S5B				CO			
Spinus pinus	Pine Siskin	S4B				CO			
Spinus tristis	American Goldfinch	S5B				CO			X
Parulidae	**Wood Warblers**								
Seiurus aurocapillus	Ovenbird	S4B				CO		S	
Parkesia noveboracensis	Northern Waterthrush	S5B				CO			
Vermivora chrysoptera	Golden-winged Warbler	S4B	SC	T	Schedule 1	PR			
Vermivora cyanoptera	Blue-winged Warbler	S4B				CO			
Mniotilta varia	Black-and-white Warbler	S5B				PR			
Oreothlypis ruficapilla	Nashville Warbler	S5B				PR			

Bird Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	OBBA[5] 17NJ96	NHIC Data[6] (17NJ9468, 17NJ9568, 17NJ9469, 17NJ9569)	NRSI Observed	
Geothylpis philadelphia	Mourning Warbler	S4B				CO			
Geothylpis trichas	Common Yellowthroat	S5B				CO			
Setophaga ruticilla	American Redstart	S5B				PR			
Setophaga cerulea	Cerulean Warbler	S3B	THR	E	Schedule 1		X		
Setophaga magnolia	Magnolia Warbler	S5B				PR			
Setophaga fusca	Blackburnian Warbler	S5B				PR			
Setophaga petechia	Yellow Warbler	S5B				CO			
Setophaga pensylvanica	Chestnut-sided Warbler	S5B				PR			
Setophaga pinus	Pine Warbler	S5B				CO			
Setophaga coronata	Yellow-rumped Warbler	S5B				PR			
Setophaga virens	Black-throated Green Warbler	S5B				PR			
Emberizidae	**New World Sparrows & Allies**								
Pipilo erythrophthalmus	Eastern Towhee	S4B				PR			
Spizella passerina	Chipping Sparrow	S5B				CO		S	S
Spizella pallida	Clay-colored Sparrow	S4B				CO			
Spizella pusilla	Field Sparrow	S4B				CO			
Pooecetes gramineus	Vesper Sparrow	S4B				CO			S
Passerculus sandwichensis	Savannah Sparrow	S4B				CO			S
Ammodramus savannarum	Grasshopper Sparrow	S4B	SC	SC		CO			P/S
Melospiza melodia	Song Sparrow	S5B				CO			S
Melospiza georgiana	Swamp Sparrow	S5B				PR			
Zonotrichia albicollis	White-throated Sparrow	S5B				CO			
Cardinalidae	**Cardinals, Grosbeaks & Allies**								
Piranga olivacea	Scarlet Tanager	S4B				CO			
Cardinalis cardinalis	Northern Cardinal	S5				CO			
Pheucticus ludovicianus	Rose-breasted Grosbeak	S4B				CO			
Passerina cyanea	Indigo Bunting	S4B				CO		S	S
Icteridae	**Blackbirds**								
Dolichonyx oryzivorus	Bobolink	S4B	THR	T	No Schedule	CO			
Agelaius phoeniceus	Red-winged Blackbird	S4				CO			
Sturnella magna	Eastern Meadowlark	S4B	THR	T	No Schedule	PR	X		
Quiscalus quiscula	Common Grackle	S5B				CO			
Molothrus ater	Brown-headed Cowbird	S4B				PR			H
Icterus galbula	Baltimore Oriole	S4B				CO			
					Total	**130**	**2**	**15**	**17**

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Cadman et al. 2007; [6]OMNR 2013c

LEGEND		
SRANK	**COSSARO**	**COSEWIC**
S1 Critically Imperiled	END Endangered	E Endangered
S2 Imperiled	THR Threatened	T Threatened
S3 Vulnerable	SC Special Concern	SC Special Concern
S4 Apparently Secure	NAR Not at Risk	NAR Not at Risk
S5 Secure	DD Data Deficient	DD Data Deficient
SU Unrankable	EXP Extirpated	XT Extirpated
SNA Unranked	**SARA Schedule**	
SX Presumed Extirpated		
SH Possibly Extirpated (Historical)	Schedule 1 Officially Protected under SARA	
S#? Rank Uncertain		

APPENDIX VI

Herpetofauna Reported From the Study Area

Reptile and Amphibian Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Ontario Reptile and Amphibian Atlas[5] (17NJ96)	NHIC Data[6]	NRSI Observed
Turtles								
Chelydra serpentina serpentina	Snapping Turtle	S3	SC	SC	Schedule 1	X		
Chrysemys picta marginata	Midland Painted Turtle	S5				X		
Snakes								
Lampropeltis taylori triangulum	Eastern Milksnake	S4	NAR	SC		X		
Storeria dekayi dekayi	Northern Brownsnake	S5	NAR	NAR		X		
Thamnophis sirtalis sirtalis	Eastern Gartersnake	S5				X		
Salamanders								
Ambystoma maculatum	Spotted Salamander	S4				X		
Notophthalmus viridescens viridescens	Red-spotted Newt	S5				X		
Plethodon cinereus	Eastern Red-backed Salamander	S5				X		
Toads and Frogs								
Anaxyrus americanus	American Toad	S5				X		X
Hyla versicolor	Tetraploid Gray Treefrog	S5				X		
Pseudacris triseriata pop. 2	Western Chorus Frog *(Great Lakes/St. Lawrence - Canadian Shield Population)*	S3	NAR	T	Schedule 1	X		
Pseudacris crucifer	Spring Peeper	S5				X		
Lithobates catesbeiana	American Bullfrog	S4				X		
Lithobates clamitans melanota	Northern Green Frog	S5				X		
Lithobates palustris	Pickerel Frog	S4	NAR	NAR		X		
Lithobates pipiens	Northern Leopard Frog	S5	NAR	NAR		X		
Lithobates septentrionalis	Mink Frog	S5				X		
Lithobates sylvatica	Wood Frog	S5				X		
					Total	**18**	**0**	**1**

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Oldham, M.J. and W.F. Weller. 2000; [6]OMNR 2013c

Legend
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SU Unrankable
SNA Unranked
SX Presumed Extirpated
SH Possibly Extirpated (Historical)
S#? Rank Uncertain
COSSARO
END Endangered
THR Threatened
SC Special Concern
NAR Not at Risk
DD Data Deficient
EXP Extirpated
COSEWIC
E Endangered
T Threatened
SC Special Concern
NAR Not at Risk
DD Data Deficient
XT Extirpated
SARA Schedule
Schedule 1 Officially Protected under SARA

APPENDIX VII

Mammals Reported From the Study Area

Mammal Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	Ontario Mammal Atlas[5]	NHIC Data[6]	NRSI Observed
Didelphis virginiana	Virginia Opossum	S4				X		
Insectivora	**Shrews and Moles**							
Blarina brevicauda	Northern Short-tailed Shrew	S5				X		
Condylura cristata	Star-nosed Mole	S5				X		
Parascalops breweri	Hairy-tailed Mole	S4				X		
Sorex cinereus	Masked Shrew	S5				X		
Sorex fumeus	Smoky Shrew	S5				X		
Chiroptera	**Bats**							
Eptesicus fuscus	Big Brown Bat	S4				X		
Lasionycteris noctivagans	Silver-haired Bat	S4				X		
Lasiurus borealis	Eastern Red Bat	S4				X		
Lasiurus cinereus	Hoary Bat	S4				X		
Myotis leibii	Eastern Small-footed Myotis	S2S3	END			X		
Myotis lucifugus	Little Brown Myotis	S4	END	E	Schedule 1	X		
Myotis septentrionalis	Northern Myotis	S3	END	E	Schedule 1	X		
Perimyotis subflavus	Tri-colored Bat	S3?	END	E	Schedule 1	X		
Lagomorpha	**Rabbits and Hares**							
Lepus europaeus	European Hare	SNA				X		
Sylvilagus floridanus	Eastern Cottontail	S5				X		X
Rodentia	**Rodents**							
Castor canadensis	Beaver	S5				X		
Glaucomys volans	Southern Flying Squirrel	S4	NAR	NAR		X		
Marmota monax	Woodchuck	S5				X		
Microtus pennsylvanicus	Meadow Vole	S5				X		
Napaeozapus insignis	Woodland Jumping Mouse	S5				X		
Ondatra zibethicus	Muskrat	S5				X		
Peromyscus leucopus	White-footed Mouse	S5				X		
Peromyscus maniculatus	Deer Mouse	S5				X		
Rattus norvegicus	Norway Rat	SNA				X		
Sciurus carolinensis	Eastern Gray Squirrel	S5				X		X
Tamiasciurus hudsonicus	Red Squirrel	S5				X		X
Tamias striatus	Eastern Chipmunk	S5				X		
Zapus hudsonius	Meadow Jumping Mouse	S5				X		
Carnivora	**Carnivores**							
Canis latrans	Coyote	S5				X		
Mephitis mephitis	Striped Skunk	S5				X		
Mustela erminea	Ermine	S5				X		
Mustela frenata	Long-tailed Weasel	S4				X		
Mustela vison	American Mink	S4				X		
Procyon lotor	Northern Raccoon	S5				X		
Vulpes vulpes	Red Fox	S5				X		
Artiodactyla	**Deer and Bison**							
Odocoileus virginianus	White-tailed Deer	S5				X		
					Total	**37**	**0**	**3**

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]Dobbyn 1994; [6]OMNR 2013c

Legend	
SRANK	**COSSARO**
S1 Critically Imperiled	NAR Not at Risk
S2 Imperiled	SC Special Concern
S3 Vulnerable	THR Threatened
S4 Apparently Secure	END Endangered
S5 Secure	EXP Extirpated
SU Unrankable	DD Data Deficient
SNA Unranked	**COSEWIC**
SX Presumed Extirpated	NAR Not at Risk
SH Possibly Extirpated (Historical)	SC Special Concern
S#? Rank Uncertain	T Threatened
SARA Schedule	E Endangered
Schedule 1 Officially Protected under SARA	XT Extirpated
	DD Data Deficient
Schedule 2 Threatened/endangered; may be reassessed for consideration for inclusion to Schedule 1	
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1	

APPENDIX VIII

Lepidoptera Reported From the Study Area

Butterfly Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	TEA Atlas[5] (17NJ96)	NHIC Data[6] (17NH8687)	NRSI Observed
Hesperiidae	**Skippers**							
Carterocephalus palaemon	Arctic Skipper	S5				X		
Erynnis baptisiae	Wild Indigo Duskywing	S4				X		
Erynnis icelus	Dreamy Duskywing	S5				X		
Erynnis juvenalis	Juvenal's Duskywing	S5				X		
Euphyes vestris	Dun Skipper	S5						X
Poanes hobomok	Hobomok Skipper	S5				X		X
Polites mystic	Long Dash Skipper	S5				X		
Polites themistocles	Tawny-edged Skipper	S5				X		
Wallengrenia egeremet	Northern Broken Dash	S5						X
Papilionidae	**Swallowtails**							
Papilio canadensis	Canadian Tiger Swallowtail	S5				X		
Papilio polyxenes	Black Swallowtail	S5				X		
Pieridae	**Whites and Sulphurs**							
Colias philodice	Clouded Sulphur	S5				X		X
Pieris oleracea	Mustard White	S4				X		
Pieris rapae	Cabbage White	SNA				X		X
Lycaenidae	**Harvesters, Coppers, Hairstreaks, Blues**							
Callophrys niphon	Eastern Pine Elfin	S5				X		
Cupido comyntas	Eastern Tailed Blue	S5						X
Satyrium liparops	Striped Hairstreak	S5				X		
Nymphalidae	**Brush-footed Butterflies**							
Aglais milberti	Milbert's Tortoiseshell	S5				X		X
Cercyonis pegala	Common Wood-Nymph	S5						X
Coenonympha tullia	Common Ringlet	S5				X		
Danaus plexippus	Monarch	S2N, S4B	SC	SC	Schedule 1	X		X
Lethe eurydice	Eyed Brown / Northern Eyed Brown	S5				X		
Limenitis archippus	Viceroy	S5				X		
Limenitis arthemis arthemis	White Admiral/Banded Purple	S5				X		X
Limenitis arthemis astyanax	Red-spotted Purple	S5				X		
Megisto cymela	Little Wood-Satyr	S5				X		X
Nymphalis antiopa	Mourning Cloak	S5				X		
Speyeria cybele	Great Spangled Fritillary	S5				X		
Vanessa atalanta	Red Admiral	S5				X		X
Vanessa virginiensis	American Lady	S5				X		
							Total	**12**

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5] Jones et al. 2013, [6] OMNR 2013c

Butterfly Species Reported From the Study Area

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SU Unrankable
SNA Unranked
SX Presumed Extirpated
SH Possibly Extirpated (Historical)
S#? Rank Uncertain
COSSARO
NAR Not at Risk
SC Special Concern
THR Threatened
END Endangered
EXP Extirpated
DD Data Deficient
COSEWIC
NAR Not at Risk
SC Special Concern
T Threatened
E Endangered
XT Extirpated
DD Data Deficient
SARA Schedule
Schedule 1 Officially Protected under SARA
Schedule 2 Threatened/endangered; may be reassessed for consideration for inclusion to Schedule 1
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1

APPENDIX IX

Odonata Reported From the Study Area

Dragonfly and Damselfly Species Reported From the Study Area

Scientific Name	Common Name	SRANK[1]	SARO[2]	COSEWIC[3]	SARA Schedule[4]	NHIC Data[6] (17N J9468, 17N J9568, 17N J9469, 17N J9569)	NRSI Observed
Aeshnidae	**Darners**						
Anax junius	Common Green Darner	S5					X
Gomphidae	**Clubtails**						
Arigomphus furcifer	Lilypad Clubtail	S3				X	
Cordulegasteridae	**Spiketails**						
Cordulegaster diastatops	Delta-spotted Spiketail	S4				X	
Corduliidae	**Emeralds**						
Somatochlora tenebrosa	Clamp-tipped Emerald	S2S3				X	
Libellulidae	**Skimmers**						
Libellula luctuosa	Widow Skimmer	S5					X
Libellula pulchella	Twelve-spotted Skimmer	S5					X
Perithemis tenera	Eastern Amberwing	S4				X	
Sympetrum obtrusum	White-faced Meadowhawk	S5					X
Sympetrum rubicundulum	Ruby Meadowhawk	S5					X
					Total	**4**	**5**

[1]MNRF 2014; [2]MNRF 2016; [3]COSEWIC 2016; [4]Government of Canada 2016; [5]OMNR2005 [6]MNRF 2013

LEGEND
SRANK
S1 Critically Imperiled
S2 Imperiled
S3 Vulnerable
S4 Apparently Secure
S5 Secure
SU Unrankable
SNA Unranked
SX Presumed Extirpated
SH Possibly Extirpated (Historical)
S#? Rank Uncertain
COSSARO
NAR Not at Risk
SC Special Concern
THR Threatened
END Endangered
EXP Extirpated
DD Data Deficient
COSEWIC
NAR Not at Risk
SC Special Concern
T Threatened
E Endangered
XT Extirpated
DD Data Deficient
SARA Schedule
Schedule 1 Officially Protected under SARA
Schedule 2 Threatened/endangered; may be reassessed for consideration for inclusion to Schedule 1
Schedule 3 Special concern; may be reassessed for consideration for inclusion to Schedule 1

APPENDIX X

Reforestation Management Plan

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

July 5, 2018 Project No.1930

Derrik Libawski
Carriage House Realty
16 Regan Road, Suite 35
Brampton, ON L7A 1C1

c/o The Biglieri Group Ltd.
20 Leslie Street, Suite 121
Toronto, ON M4M 3L4

Dear Mr. Libawski,

Re: Reforestation Management Plan – Mount Pleasant Scoped EIS, Caledon

Natural Resource Solutions Inc. (NRSI) was retained in May 2017 by The Biglieri Group Ltd. to complete a Reforestation Management Plan in conjunction with a Scoped Environmental Impact Study (EIS) for a proposed 8-lot residential development on the partial Lot 27, Concession 8, along Mount Pleasant Road in the village of Palgrave. This letter provides the preliminary details of the Reforestation Management Plan, including proposed species, overall strategy, maintenance and monitoring. Final quantities, sizes and densities are to be discussed with the Nottawasaga Valley Conservation Authority (NVCA) through conditions of draft plan approval.

The subject property contains 4ha of proposed reforestation area, which includes, but is not limited to, the 30m buffer from the adjacent natural areas and a buffer from the Environmental Zone 2 (EZ2) ephemeral swale, as described in further detail in the Mount Pleasant Scoped EIS (NRSI 2018). The current land comprising the Reforestation Management Plan is annual row crop and provides very limited natural function and services to the nearby wildlife or hydrological systems. This plan has incorporated the following considerations in the final planting details:

- Habitat should be tailored for the documented wildlife, particularly the documented SCC species,
- Habitat should be contiguous with the natural forest communities, where appropriate, and
- Habitat should reflect the expected moisture regime and topographical location throughout the site.

On September 27, 2017, the project team met on-site with Town of Caledon, Nottawasaga Valley Conservation Authority (NVCA) and Oak Ridges Moraine staff in order to confirm the dripline of the surrounding natural communities. This approved dripline was simultaneously surveyed and can be seen on Map 1. A 30m buffer has been proposed to protect the forest and plantation communities (located on the Oak Ridges Moraine) from potential impacts associated with the proposed development. The project team has completely respected this 30m buffer and has restricted the development entirely outside of this area.

Reforestation Management Plan

The proposed development is located adjacent to a lowland deciduous forest, characterized by Sugar Maple (*Acer saccharinum* ssp. *saccharinum*), with Black Chery (*Prunus serotina*) and White Elm (*Ulmus americana*). Some invasive species were documented within the forest community, including European Buckthorn (*Rhamnus cathartica*), Multiflora Rose (*Rosa multiflora*) and Garlic Mustard (*Alliaria petiolata*). The ground layer is characterized by mostly native species including Virginia Waterleaf (*Hydrophyllum virginianum*) and White Trillium (*Trillium grandiflorum*).

The Reforestation Management Plan (Map 1) details the proposed shrub and tree species and seed mix within the reforestation area. A companion native seed mix has also been recommended in order to stabilize bare soil, reduce invasive species establishment, and maintain soil moisture to aid in the success of the proposed tree and shrub species. Selected species are based on a variety of factors, including:

- Native species suitable to the macro- and micro-topography,
- Resistance to deer browse,
- The ability to form a dense understorey in order to discourage encroachment and traffic within the forest feature,
- Soil and moisture conditions,
- Aesthetic suitability with surrounding landscape,
- Ability to compete with the documented invasive species, and
- Strategic purpose in creating a long-term established natural forest system.

The proposed restoration plan contains 15 polygons that are tailored to the site topography, expected shade, moisture, and adjacent natural communities. Preliminary details for each polygon can be seen on Map 1, including overall strategy and recommended species.

SAR and SCC Habitat Creation

Based on the results of the Scoped EIS, habitat for 3 SAR have the potential to occur, and 2 SCC were observed within the subject property:

- Grasshopper Sparrow (*Ammodramus savannarum*) – Special Concern,
- Red-headed Woodpecker (*Melanerpes erythrocephalus*) – Threatened,
- Little Brown Myotis (*Myotis lucifugus*) – Endangered,
- Northern Myotis (*Myotis septentrionalis*) – Endangered,
- Monarch Butterfly (*Danaus plexippus*) – Special Concern

Grasshopper Sparrow were observed using the CUM community to the north, as described in the Scoped EIS (NRSI 2018). This habitat is largely being retained, and partially being increased through the meadow species seed mix throughout most polygons (Map1). Polygons are expected to provide meadow and savannah habitat while trees establish and grow. Polygon 1 has been prepared to intentionally provide savannah-like habitat permanently, which will continue to provide habitat for this species while other polygons transition into forest.

Red-headed Woodpecker, and both documented SAR bat species require mature forest stands. This plan supports the retention, buffering, and overall increase in the size of the existing habitat. Sugar Maple and Red Oak have been included in the plan, which provide ideal bat habitat when mature.

Monarch larva were observed on a Common Milkweed (*Asclepias syriaca*) plant along the edge of the forested community, as outlined in the Scoped EIS (NRSI 2018). Monarch require Milkweed (*Asclepias* sp.) as a food source for larva. This planting plan has added Common Milkweed seeds into the seed mix for Polygon 1, 4 and 5 (Map 1). It is expected that this species will endure along the edges of the planting plan, providing increased Monarch habitat.

Land Preparation

Grading is not proposed within the Reforestation Area. Prior to any planting efforts, any recently established or establishing vegetation should be removed. Any necessary vegetation removal should be completed by hand in order to reduce damage to the roots of nearby trees to be retained. Removal of lawn grass should be completed by hand in order to ensure no compaction of the root zones by heavy machinery and ensure that no major tree roots are severed. Once the VPZ has been prepared for planting, the area should not be left unvegetated, and should be planted following this plan immediately.

Restoration Planting

The restoration plan should be completed in early spring or late fall (before June or after September) to reduce plant stress resulting from transplant shock during the growing season. Survival rates of plantings are expected to be much higher if planted in very early spring or very late fall. All plantings are to be installed by hand in order to minimize damage to the root zone of trees to be retained. Any damaged or severed roots should be pruned with clean and sharp pruning tools in order to aid in the healthy compartmentalization of the affected root. The corresponding native plant companion seed mix, as outlined on the restoration plan (Map 1), should be applied at the outlined concentrations to any bare soils following the planting. Young woody plants, including many in this restoration plan, are susceptible to deer browse. Shrubs should be planted in small groupings of similar species to encourage successful colonies. It is recommended that guards are provided for all installed caliper trees, if planted, and all shrubs with large enough stems, including Alternate-leaved Dogwood and Witch-hazel (*Hamamelis virginiana*). A deer and rodent deterrent, such as “Skoot” should be applied to all new plantings to maximize survival.

Maintenance

Trees and shrubs require deep-watering during an establishment period of approximately 2 years. Watering of the VPZ should be done at a minimum of once weekly from April to October during the first 2 years of establishment. Watering can be done in part through the use of “TreeGator” bags in order to ensure slow and deep-water penetration, or through gentle hose watering on “rain” or “shower” settings, avoiding leaves and stems. Watering should be done before 10am or after 7pm in order to reduce sun scorch. Soil should be allowed to dry between watering.

Monitoring

Detailed qualitative post-construction monitoring of the restoration plan will be completed 1 year following planting, as well as once in Year 2, Year 3, and Year 5. A summary letter will be provided to the Town of Caledon outlining the findings during each year of monitoring. Table 2 outlines the tasks to be completed in each year of monitoring.

Recommendations involving any signs of misuse or notable vegetation dieback will be provided and reported to the Town for comment.

Table 1. Post-Construction Monitoring of Vegetation Protection Zone

Monitoring Year	Tasks to be Completed
Year 1	- Establishment of fixed photo plots to document any changes in vegetation, - Qualitative analysis of abundances of all observed species, - Hand-pulling of any establishing invasive species, and - Recommendations on continued maintenance, if needed.
Year 2	- Continued fixed photo plot - Qualitative analysis of abundances of all observed species, - Quantitative tally of all planted woody species, - Replacement of any dead or poorly established individuals, and - Hand-pulling of any establishing invasive species.
Year 3	- Continued fixed photo plot - Qualitative analysis of abundances of all observed species, and - Hand-pulling of any establishing invasive species.
Year 5	- Continued fixed photo plot - Qualitative analysis of abundances of all observed species, and - Hand-pulling of any establishing invasive species.

Conclusion

This Reforestation Management Plan will provide protection for the natural features present within and adjacent to the subject property. The increased vegetated area will provide habitat for wildlife, including Monarch, Grasshopper Sparrow and Eastern Wood-Pewee. The companion seed mix will provide additional host plants and food sources for significant butterfly species, as well as other insects. The trees and meadow seed mix will mimic natural succession and will provide low ground cover and refuge for wildlife. The dense tree and shrub plantings will provide a visual barrier between the natural features and the development, as well as restrict light and noise penetration into the surrounding natural features. If the recommendations outlined in this letter are followed, it is expected that overall natural habitat for several SCC species, as well as common bird and mammal species will be enhanced, and impacts to the adjacent natural areas will be sufficiently mitigated.

Sincerely,

Natural Resource Solutions Inc.

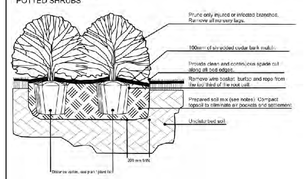
Jeremy Bannon, B.E.S.
Terrestrial & Wetland Biologist, Certified Arborist, Tree Risk Assessment Qualified

Enclosed
Map 1 Reforestation Management Plan

References
Natural Resource Solutions Inc. (NRSI). 2018. Mount Pleasant Scoped EIS.

Polygon Number	Polygon Area (ha)	Polygon Description	Form	Scientific Name	Common Name	Special Requirements
1	0.16	This polygon is present on a southwest facing slope, and is currently meadow habitat for grassland birds and pollinating insects. The proposed planting list for this area respects the natural meadow community, with some new tree establishment. It is expected that this will encourage continued use of the habitat from birds such as Grasshopper Sparrow. Milkweed has been added to the seed mix for this polygon in order to mitigate any loss	Trees	*Betula papyrifera*	White Birch	Sun
				Pinus strobus	Eastern White Pine	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Quercus macrocarpa	Bur Oak	None
				Rubus odoratus	Purple Flowering Raspberry	None
			Shrubs	*Rhus hirta*	Staghorn Sumac	None
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
				Asclepias syriaca	Common Milkweed	Hand cast
2	0.21	This lowland depression will be provided with some shade from the southern forest community, and provides wetter habitat than most polygons. Species proposed are complimentary with the adjacent lowland Sugar Maple forest, and are intended to guide this polygon to transition into the adjacent community.	Trees	*Acer saccharum ssp. saccharum*	Sugar Maple	Deer protection, shade
				Acer X.freemanii	Freeman's Maple	Moist soil
				Betula papyrifera	White Birch	Sun
				Betula alleghaniensis	Yellow Birch	Moist soil
				Populus tremuloides	Trembling Aspen	Sun
				Prunus serotina	Black Cherry	Sun or partial shade
				Thuja occidentalis	Eastern White Cedar	None
			Shrubs	*Cornus foemina ssp. racemosa*	Red Panicled Dogwood	Moist soil
				Sambucus racemosa ssp. pubens	Red-berried Elderberry	None
			Seed Mix	Woodland Seed Mix (8275)		Hand cast
3	0.24	Similar to Polygon 2, this area is situated within a lower depression area, but will benefit from increased shade from morning sun. A slight preference toward shade-tolerant species has been shown for this polygon.	Trees	*Acer rubrum*	Red Maple	Shade, moist soil
				Acer saccharum ssp. saccharum	Sugar Maple	Deer protection, shade
				Acer X.freemanii	Freeman's Maple	Moist soil
				Betula papyrifera	White Birch	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Thuja occidentalis	Eastern White Cedar	None
				Prunus serotina	Black Cherry	Sun or partial shade
			Shrubs	*Cornus foemina ssp. racemosa*	Red Panicled Dogwood	Moist soil
				Sambucus racemosa ssp. pubens	Red-berried Elderberry	None
			Seed Mix	Woodland Seed Mix (8275)		Hand cast
4	0.50	Located uphill from Polygon 1 and 2, and located in a sunnier location, this plant list provides more upland and shade-intolerant species. This reflects species associated with early succession, which specialize in providing a starting canopy that is able to eventually nurse shade-tolerant forest species. Milkweed has been added to the seed mix for this polygon in order to mitigate any loss of habitat for Monarch.	Trees	*Acer saccharum ssp. saccharum*	Sugar Maple	Shade, moist soil
				Acer X.freemanii	Freeman's Maple	Moist soil
				Betula papyrifera	White Birch	Sun
				Pinus strobus	Eastern White Pine	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Prunus serotina	Black Cherry	Sun or partial shade
			Shrubs	*Cornus alternifolia*	Alternate-leaved Dogwood	Upland to moist soil
				Cornus foemina ssp. racemosa	Red Panicled Dogwood	Moist soil
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
				Asclepias syriaca	Common Milkweed	Hand cast
5	0.06	Located on a rising slope from the southwest, this polygon is slightly drier and slightly less protected by shade than the polygons to the west. Milkweed has been added to the seed mix for this polygon in order to mitigate any loss of habitat for Monarch.	Trees	*Acer rubrum*	Red Maple	Shade, moist soil
				Acer saccharum ssp. saccharum	Sugar Maple	Deer protection, shade
				Betula papyrifera	White Birch	Sun
				Prunus serotina	Black Cherry	Sun or partial shade
			Shrubs	*Cornus alternifolia*	Alternate-leaved Dogwood	Upland to moist soil
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
				Asclepias syriaca	Common Milkweed	Hand cast
6	0.13	Higher in topography than the areas to the west, and with less shade than most polygons, this planting list reflects early-successional, sun-tolerant species that are able to establish a primary canopy before the establishment of shade-tolerant forest species.	Trees	*Betula papyrifera*	White Birch	Sun
				Pinus strobus	Eastern White Pine	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Prunus serotina	Black Cherry	Sun or partial shade
			Shrubs	*Rhus hirta*	Staghorn Sumac	None
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
7	0.06	This polygon is provided with increased shade from the southwest to southeast, and more shade-tolerant species are recommended to be planted within this shadier polygon. These are intended to reflect the nearby lowland deciduous community.	Trees	*Acer saccharum ssp. saccharum*	Sugar Maple	Deer protection, shade
				Acer X.freemanii	Freeman's Maple	Moist soil
				Ostrya virginiana	Hop Hornbeam	Shade
				Quercus macrocarpa	Bur Oak	None
			Shrubs	*Cornus alternifolia*	Alternate-leaved Dogwood	Upland to moist soil
				Sambucus racemosa ssp. pubens	Red-berried Elderberry	None
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
8	0.20	This polygon is provided with some shade from the southeast, and reflects a more upland deciduous to mixed forest community, providing a suitable transition between the lowland deciduous forest and the topographically higher plantation community.	Trees	*Acer saccharum ssp. saccharum*	Sugar Maple	Deer protection, shade
				Betula papyrifera	White Birch	Sun
				Ostrya virginiana	Hop Hornbeam	Shade
				Pinus strobus	Eastern White Pine	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Quercus macrocarpa	Bur Oak	None
			Shrubs	*Cornus alternifolia*	Alternate-leaved Dogwood	Upland to moist soil
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
9	0.42	This polygon is provided with some shade from the southeast, and reflects a more upland deciduous to mixed forest community, providing a suitable transition between the lowland deciduous forest and the topographically higher plantation community. This community is present at the highest topographical points in the planting plan.	Trees	*Acer saccharum ssp. saccharum*	Sugar Maple	Deer protection, shade
				Fagus grandifolia	American Beech	Shade
				Ostrya virginiana	Hop Hornbeam	Shade
				Pinus strobus	Eastern White Pine	Sun
				Prunus serotina	Black Cherry	Sun or partial shade
				Quercus macrocarpa	Bur Oak	None
				Quercus rubra	Red Oak	Shade, moist soil
			Shrubs	*Cornus alternifolia*	Alternate-leaved Dogwood	Upland to moist soil
				Prunus virginiana ssp. virginiana	Choke Cherry	None
				Rhus hirta	Staghorn Sumac	None
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
10	0.28	This polygon is situated in a minor depression between the two highest points in the planting plan. The planting plan reflects this upland community, with some species more tolerant of seasonally wet conditions.	Trees	*Acer saccharum ssp. saccharum*	Sugar Maple	Deer protection, shade
				Betula papyrifera	White Birch	Sun
				Ostrya virginiana	Hop Hornbeam	Shade
				Pinus strobus	Eastern White Pine	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Quercus macrocarpa	Bur Oak	None
				Thuja occidentalis	Eastern White Cedar	None
				Tsuga canadensis	Eastern Hemlock	None
			Shrubs	*Cornus alternifolia*	Alternate-leaved Dogwood	Upland to moist soil
				Cornus foemina ssp. racemosa	Red Panicled Dogwood	Moist soil
				Sambucus racemosa ssp. pubens	Red-berried Elderberry	None
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
11	0.39	This buffer polygon is designed to take advantage of the increased sun, and also acts as a thick natural barrier to discourage encroachment and unintended use from landowners. Thick shrub species, smaller tree species and sun-tolerant tree species are proposed for this buffer polygon.	Trees	*Pinus strobus*	Eastern White Pine	Sun
				Quercus macrocarpa	Bur Oak	None
			Shrubs	*Rubus odoratus*	Purple Flowering Raspberry	None
				Cornus alternifolia	Alternate-leaved Dogwood	Upland to moist soil
				Corylus cornuta ssp. cornuta	Beaked Hazel	None
				Rhus hirta	Staghorn Sumac	None
				Sambucus canadensis	Common Elderberry	Upland soil.
				Viburnum lentago	Nannyberry	None
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
12	0.19	This polygon reflects a more upland deciduous to mixed forest community, providing a suitable transition between the lowland deciduous forest and the topographically higher plantation community. Located on a slightly north-facing slope, this community transitions into the lowland, riparian habitat near Mount Pleasant Road.	Trees	*Acer saccharum ssp. saccharum*	Sugar Maple	Deer protection, shade
				Acer X freemanii	Freeman's Maple	Moist soil
				Betula papyrifera	White Birch	Sun
				Ostrya virginiana	Hop Hornbeam	Shade
				Pinus strobus	Eastern White Pine	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Prunus serotina	Black Cherry	Sun or partial shade
				Quercus macrocarpa	Bur Oak	None
			Shrubs	*Cornus alternifolia*	Alternate-leaved Dogwood	Upland to moist soil
				Cornus foemina ssp. racemosa	Red Panicled Dogwood	Moist soil
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
13	0.10	This polygon is provided with some shade from the southeast, and is located near the bottom of the Polygon 12 north-facing slope, transitioning into the riparian lowland habitats associated with the protected seasonal swale to the northeast. Wet-tolerant tree species are recommended in this area, similar to the off-site swamp inclusion to the southwest.	Trees	*Acer rubrum*	Red Maple	Shade, moist soil
				Betula papyrifera	White Birch	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Salix amygdaloides	Peach-leaved Willow	Moist soil
				Thuja occidentalis	Eastern White Cedar	None
			Shrubs	*Cornus foemina ssp. racemosa*	Red Panicled Dogwood	Moist soil
				Sambucus racemosa ssp. pubens	Red-berried Elderberry	None
			Seed Mix	Early Succession Dry Prairie Meadow Mix (8115)		Hand cast
14	0.62	This riparian polygon is adjacent to the proposed swale. Proposed species include those that would be present in a swamp thicket, intended to transition into a swamp community through the listed tree plantings.	Trees	*Acer X freemanii*	Freeman's Maple	Moist soil
				Betula alleghaniensis	Yellow Birch	Moist soil
				Populus tremuloides	Trembling Aspen	Sun
				Salix amygdaloides	Peach-leaved Willow	Moist soil
				Salix nigra	Black Willow	Sun, moist soil
			Shrubs	*Cornus foemina ssp. racemosa*	Red Panicled Dogwood	Moist soil
				Cornus stolonifera	Red-osier Dogwood	Moist soil
				Salix exigua	Sandbar Willow	Moist soil
				Salix discolor	Pussy Willow	Moist soil
			Seed Mix	Early Succession Wet Meadow Mix (8170)		Hand cast
15	0.62	This polygon is located within the ephemeral swale, and provides species that can withstand seasonal flooding. Woody or tree species in this polygon should be planted at the boundaries of the community, and the topography of the swale should be maintained during planting activities.	Trees	*Betula alleghaniensis*	Yellow Birch	Moist soil
				Betula papyrifera	White Birch	Sun
				Pinus strobus	Eastern White Pine	Sun
				Populus balsamifera	Balsam Poplar	Sun
				Populus tremuloides	Trembling Aspen	Sun
				Tsuga canadensis	Eastern Hemlock	Partial shade, moist soils
			Shrubs	*Cornus foemina ssp. racemosa*	Red Panicled Dogwood	Moist soil
				Cornus stolonifera	Red-osier Dogwood	Moist soil
				Salix discolor	Pussy Willow	Moist soil
				Salix eriocephala	Heart-leaved Willow	Moist soil
				Salix exigua	Sandbar Willow	Moist soil
			Seed Mix	Early Succession Wet Meadow Mix (8170)		Hand cast

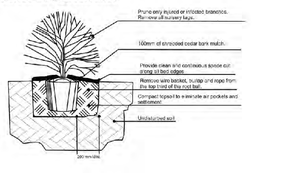
BALLED & BURLAPPED
POTTED SHRUBS



Notes:

1. Soil mixture: four (4) parts native soil, one (1) part well rotted compost.
2. Saucer shall be soaked with water and mulched immediately following planting.
3. All dimensions are in mm.
4. In poorly drained soils plant shrubs slightly higher than adjacent grade.
5. All plants to be straight and planted vertically regardless of slope.

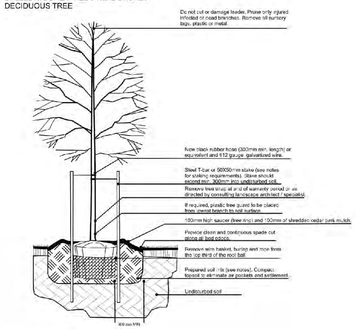
POTTED SHRUBS and TREE SEEDLINGS



Notes:

1. Soil mixture: four (4) parts native soil, one (1) part well rotted compost.
2. Saucer shall be soaked with water and mulched immediately following planting.
3. All dimensions are in mm.
4. In poorly drained soils plant shrubs slightly higher than adjacent grade.
5. All plants to be straight and planted vertically regardless of slope.

BALLED & BURLAPPED / WIRE BASKET
DECIDUOUS TREE

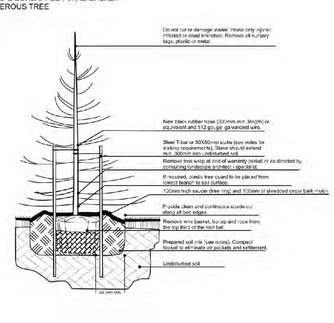


Notes:

1. Soil mixture: four (4) parts native soil, one (1) part well rotted compost.
2. Saucer shall be soaked with water and mulched immediately following planting.
3. All dimensions are in mm.
4. Staking Schedule:
   - < 2500 Ht. - one stake
   - > 2500 Ht. - two stakes
   - Spaded trees - three stakes or guy wires

   All support systems must be removed once tree is established.
5. All trees to be straight and planted vertically regardless of slope.
6. Top of root flare shall be positioned 50mm above grade

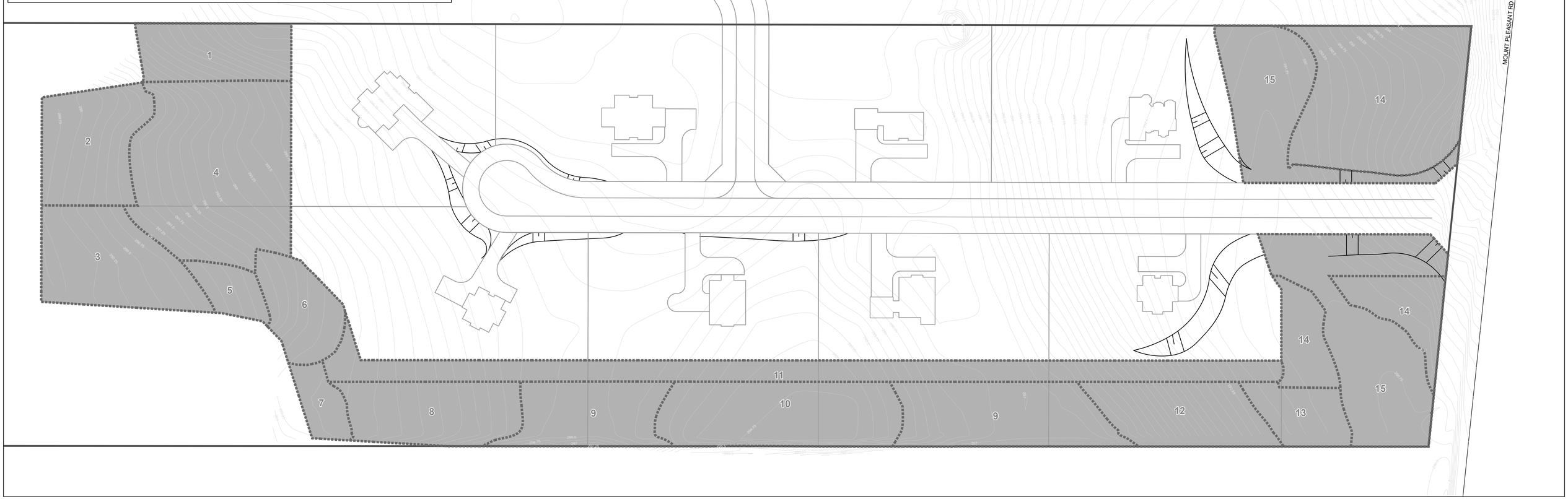
BALLED & BURLAPPED / WIRE BASKET
CONIFEROUS TREE



Notes:

1. Soil mixture: four (4) parts native soil, one (1) part well rotted compost.
2. Saucer shall be soaked with water and mulched immediately following planting.
3. All dimensions are in mm.
4. Staking Schedule:
   - < 2500 Ht. - one stake
   - > 2500 Ht. - two stakes
   - Spaded trees - three stakes or guy wires

   All support systems must be removed once tree is established.
5. All trees to be straight and planted vertically regardless of slope.
6. Top of root flare shall be positioned 50mm above grade



Map 4

Mt. Pleasant EIS

Forest Management Plan

Legend

- Subject Property
- Reforestation Plot
- Proposed Site Plan
- Proposed Grading
- Existing Contour (0.25m)
- Railway
- Road

N

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1930	NAD83 - UTM Zone 17
Date: July 11, 2018	Size: 24x36"
	1:750

0 20 40 60
Meters