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European Larch Plantation Assessment

0 Nicholas Street, Alton

Palmer Project #
1904304

Prepared For
David Goodman (Mt. Nicholas Holdings Inc.)

Update #1: February 6, 2024

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1. Introduction

Palmer is pleased to provide this European Larch Plantation Assessment related to the proposed development of 0 Nicholas Street, Alton (the Subject Property – **Figure 1**). A plan of subdivision application under the *Planning Act* is being pursued, of which an Environmental Impact Study (EIS) is a required document. The lands in question are currently a European Larch (*Larix decidua*) plantation area, which is a non-native species to Ontario. The Subject Property is 5.99 hectares (ha), of which the European Larch Plantation occupies 2.58 ha on the northeast side (the grey-toned trees on **Figure 1**).

As a precursor to an EIS, this plantation assessment has been completed to evaluate the plantation in terms of its applicability as a natural heritage feature (NHF), specifically a *Significant Woodland*, for which relevant natural heritage policies would apply. Regarding that, the Town of Caledon Official Plan (OP) maps the Subject Property as "Settlement Area", and outside the Town's Natural Heritage System (NHS). The Subject Property is also not mapped within Provincial planning policies, specifically the *Greenbelt Plan* NHS or the *Growth Plan for the Greater Golden Horseshoe* NHS. As the area is not in *Greenbelt* NHS and the Region of Peel has adopted the *Growth Plan* mapping, these two plans would not apply to the Subject Property. While these lands are within Credit Valley Conservation Authority (CVC) jurisdiction, there are no lands regulated by the CVC within the Subject Property and therefore a permit would not be required under O. Reg. 155/06.

The Region of Peel OP maps the Subject Property as Core Area of the Regional NHS. Yet there are provisions in the Regional and Town OPs that may allow a non-naturalized, non-native plantation to be removed from the NHS. As Significant Woodlands are defined in the Region of Peel OP, conformity to that plan would also demonstrate conformity to the *Provincial Policy Statement*.

In summary, the objective of this assessment is to determine the character of the European Larch Plantation in relation to the definitions of Region of Peel NHF. To this effect, the CVC has provided a Terms of Reference (TOR) for the evaluation of the European Larch Plantation.

LEGEND:

Watercourse *(Shaw's Creek)*

Subject Site

Imagery (2019) provided by Peel Region WMS

0 20 40 60 80 100

metres

N

PROJECT NO.	1904304	REVISION:	1-2
DATE:	Apr 26, 2022	SCALE:	1:3000
DRAWN:	CV	DATUM:	NAD 1983
CHECKED:	AA	PROJECTION:	UTM zone 17

CLIENT: The Biglieri Group

PREPARED BY: Palmer

PROJECT: 0 Nicholas Street, Alton

TITLE:

Site Location

Figure 1

Document Path: G:\Shared drives\Projects 2019\19043 - The Biglieri Group\1904304 - 0 Nicholas Street, Alton\Mapping\Figures\5_ArcGIS\2022 - Figures\1904304_1-1_Site Location.mxd

2. Terms of Reference

A TOR for the assessment was provided to the proponent by the CVC on provided on August 9, 2018 (**Appendix A**). The TOR requirements were specific to the evaluation of the European Larch Planation area, with the expectation of further TOR discussions should the project proceed to the EIS stage. Reflective of Region of Peel OP definitions, the CVC detailed that the characteristics of the European Larch Plantation to be evaluated include:

- Ecological Land Classification (using the 2nd approximation (Lee, et al., 1998)), including soil cores;
- A single-season botanical survey;
- Soil conditions (using cores collected through Ecological Land Classification);
- Stand composition;
- Vegetation structure and health;
- Distribution and ecology of successional species;
- Functional relationship of the cultural plantation to the whole woodland (e.g. interior woodland habitat, contribution to SWH);
- Whether this portion of the Subject Property, or portions of the portion, have dense regeneration of native tree seedlings;
- Whether this portion of the Subject Property, or portions of the portion, have 100+ stems per hectare of regenerated native trees (height 1.37 m+); and
- Incidental wildlife observations.

This information was to be used to develop a constraints figure for the Subject Property, including identified ecological features and functions.

3. Policy Review

3.1 Provincial Policy Statement (2020)

The Provincial Policy Statement (PPS) provides direction to regional and local municipalities regarding planning policies for the protection and management of natural heritage features and resources (Ontario Ministry of Municipal Affairs and Housing, 2020). The PPS defines eight types of natural heritage features (NHF) and adjacent areas, and provides planning policies for each. Of these NHF, development is not permitted in:

- Significant Coastal Wetlands;
- Significant Wetlands in Ecoregions 5E, 6E and 7E;
- Fish Habitat, except in accordance with provincial and federal requirements; or
- Habitat of species designated as Endangered and Threatened, except in accordance with provincial and federal requirements.

Additionally, unless it can be demonstrated through an EIS that there will be no negative impacts on the NHF or their ecological functions, development and site alteration are also not permitted in:

- Significant Wetlands in the Canadian Shield north of Ecoregions 5E, 6E and 7E;
- Significant Woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Mary's River);
- Significant Wildlife Habitat;
- Significant Areas of Natural and Scientific Interest;
- Other Coastal Wetlands in Ecoregions 5E, 6E and 7E; and
- Lands defined as *Adjacent Lands* to all the above natural heritage features.

Each of these natural heritage features is afforded varying levels of protection subject to guidelines, and in some cases, regulations. The Subject Property is located in Ecoregion 6E (Crins, Gray, Uhlig, & Wester, 2009).

3.2 Region of Peel Official Plan

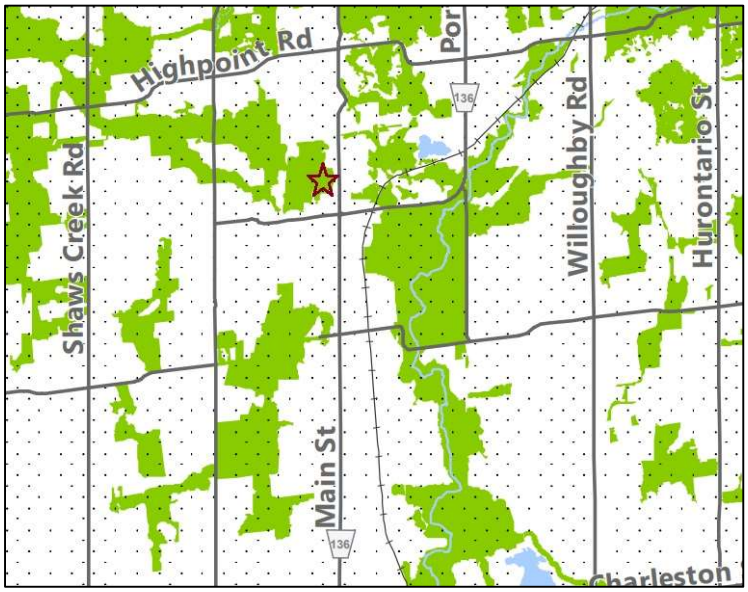
The Region's Official Plan (OP) was adopted by Regional Council on April 28, 2022 (Region of Peel, 2022). This by-law repealed and replaced the former July 11, 1996 Region of Peel Official Plan adopted by By-law 54-96, as amended. It was approved with modification by the Ontario Ministry of Municipal Affairs and Housing (OMMAH) through the Minister's Notice of Decision on the Plan dated November 4, 2022.

Natural heritage features in Peel Region are protected by its Greenlands System, which consists of Core Areas, Natural Areas and Corridors, and Potential Natural Areas and Corridors. Core Areas are designated on Schedule C-2 (Core Areas of the Greenlands System in Peel) and include provincially and regionally significant features and areas that are deemed to be important to the Region and warrant a high standard of protection (Policy 2.14 introduction) (Region of Peel, 2022). Reference should be made to the local

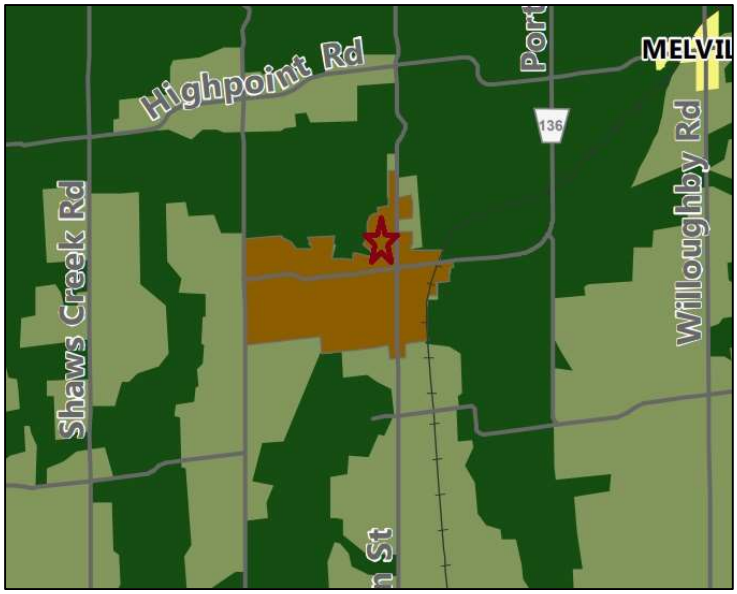
municipal official plans and related documents for a detailed interpretation of the location and extent of the Greenlands System Core Areas, Natural Areas and Corridors and Potential Natural Areas and Corridors, and the key natural heritage features and key hydrologic features protected in the provincial plans (Region of Peel, 2022).

Core Areas include significant wetlands, significant coastal wetlands, Core Area Woodlands (criteria provided), Environmentally Sensitive or Significant Areas, Provincial Life Science Areas of Natural and Scientific Interest, Escarpment Natural Areas of the Niagara Escarpment Plan and core valley and stream corridors (criteria provided). Development is generally prohibited within Core Areas. However, there are provisions in the OP that may allow the removal of a non-naturalized, non-native plantation to be removed from the NHS (Policy 2.14.32). As Significant Woodlands are defined in the Region of Peel OP, conformity to that plan would also demonstrate conformity to the *Provincial Policy Statement*.

The Region of Peel OP currently does map the Subject Property as Core Area of the Greenlands System on Schedule C-2 (**Map A**). On Schedule B-5 – Greenbelt Plan Area Land Use Designations, the Region of Peel OP maps the Subject Property as within a “Village” within the “Greenbelt Plan Area” (**Map B**).



Map A: Schedule A – Core Areas of the Greenlands System in Peel (Green), within Greenbelt area (dots). Approximate Subject Property in Red.



Map B: Schedule D3 – Greenbelt Plan Area Land Use Designations. Approximate Subject Property in Red.

Section 2.14.28 of the Region of Peel OP states that plantations are to be included as Core Area Woodlands if they are a *naturalized* plantation, for which the OP contains a definition and criteria. In addition, Section 2.14.29 allows for the assessment of woodlands within Region of Peel OP Urban System, via natural heritage studies to evaluate and confirm their quality and functions.

Policy 2.14.32 states that *…additional exclusions may be considered for treed communities which are dominated by invasive non-native tree species such as buckthorn (Rhamnus species), Norway maple (Acer platanoides), or others deemed to be highly invasive, that threaten the ecological functions or biodiversity of native communities. Such exceptions should be supported by site-specific studies that consider 1) the degree of threat posed; 2) any potential positive and/or negative impact on the ecological functions or biodiversity of nearby or adjacent native communities; and 3) the projected natural succession of the community. Communities where native tree species comprise approximately 10 percent or less of the tree crown cover and approximately 100 or fewer stems of native tree species of any size per hectare would be candidates for exclusion*.

Region of Peel OP definitions include:

Plantation: a treed community in which the majority of trees have been planted or the majority of the basal area is in trees that have been planted, often characterized by regularly spaced rows. With time and forest management, natural regeneration can become established and eventually convert the community to natural forest.

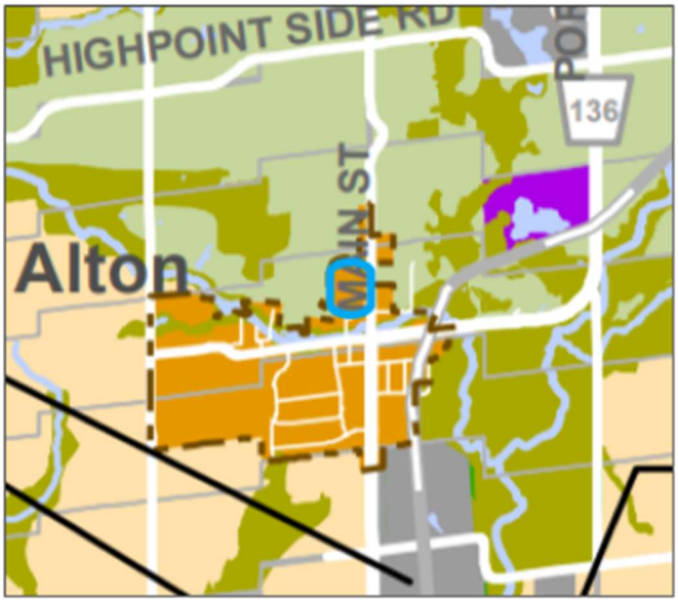
Plantation, Naturalized: a plantation or portion of a plantation that is undergoing regeneration to a native woodland community either through natural succession or woodland restoration. An assessment to determine if a plantation is naturalized should include, but not be limited to soil conditions, stand composition, vegetation structure and health, the distribution and ecology of successional species (e.g., the ability of species to convert plantations to native communities) and the distance to and functional relationship with adjacent natural heritage features (e.g. proximity to watercourses, contribution to interior woodland habitat). Naturalized plantations will generally have dense regeneration of native tree seedlings and/or approximately 100 or more stems per hectare of regenerated native trees that have attained a minimum height of 1.37 metres. ***This assessment shall not preclude the local municipalities from evaluating plantations in the local context and in accordance with the criteria in Table 1 and policies in Section 2.5 of this Plan***.

3.3 Town of Caledon Official Plan

Within the Town of Caledon, Environmental Policy Areas include all Natural Core Areas and Natural Corridors (Town of Caledon, 2018). As stated in the Town of Caledon OP Section 5.7.3.1.1, new development is prohibited within areas designated EPA on the OP Land Use Schedules, with the exception of the specified permitted uses. The uses permitted in EPA are limited to: legally existing residential and agricultural uses; a building permit on a vacant existing lot of record; portions of new lots; activities permitted through approved Forest Management and Environmental Management Plans; limited extractive industrial; non-intensive recreation and essential infrastructure.

The Town's Official Plan contains significant woodland policies in conformity with the Provincial Policy Statement (2014).

The Town of Caledon Official Plan (OP) maps the Subject Property as "Settlement Area", and outside EPA and the Town's NHS (**Map C**).



Map C: Settlement Area (orange) and Environmental Policy Area (olive green). Approximate Subject Property in Blue.

The Town of Caledon OP also defines Woodlands to include "*woodlots, cultural woodlands, cultural savannahs, plantations and forested areas and may also contain remnants of old growth forests. Woodlands are further defined as any area greater than 0.5 hectares that has:*

a) A tree crown cover of over 60% of the ground, determinable from aerial photography, or
b) A tree crown cover of over 25% of the ground, determinable from aerial photography, together with on-ground stem estimates of at least:

i) 1,000 trees of any size per hectare, or
ii) 750 trees measuring over five centimetres in diameter at breast height (1.37 m), per hectare, or
iii) 500 trees measuring over 12 centimetres in diameter at breast height (1.37 m), per hectare, or
iv) 250 trees measuring over 20 centimetres in diameter at breast height (1.37 m), per hectare (densities based on the Forestry Act of Ontario, 1998) and, which have a minimum average width of 40 metres or more measured to crown edges."

However, the Town of Caledon also sets out exceptions for treed areas that are not to be considered woodlands (Section 191 of the Official Plan). These exceptions include areas:

"*a) Managed for production of fruits, nuts, Christmas trees or nursery stock;*
b) Managed for tree products with an average rotation of less than twenty (20) years (e.g. hybrid willow or poplar); or,

c) Established and continuously managed for the sole purpose of complete removal at rotation, as demonstrated with documentation acceptable to the Region or area municipality, without a woodland restoration objective."

Furthermore, additional exclusions may be considered for "*treed communities which are dominated by invasive non-native tree species such as buckthorn (Rhamnus species) and Norway Maple (Acer plantanoides), or others deemed to be highly invasive, that threaten the ecological functions or biodiversity of native communities*". Such exceptions are to be supported by site-specific studies that consider the following factors:

"1) the degree of threat posed;
2) any potential positive and/or negative impact on the ecological functions or biodiversity of nearby or adjacent native communities; and
3) the projected natural succession of the community. Communities where native tree species comprise approximately 10 percent or less of the tree crown cover and approximately 100 or fewer stems of native tree species of any size per hectare would be candidates for exclusion."

3.4 The Growth Plan for the Greater Golden Horseshoe and The Greenbelt Plan

The Subject Property is outside the Natural Heritage Systems (NHS) of both the *Growth Plan for the Greater Golden Horseshoe* (Ministry of Municipal Affairs and Housing, 2019) and The *Greenbelt Plan* (Ontario Ministry of Municipal Affairs and Housing, 2017).

For the *Growth Plan*, the Subject Property is outside the policy area Town of Caledon NHS (Official Plan Figure 1), and defined within the Settlement Area (see **Map C**). The Subject Property is also outside the Region of Peel NHS, being defined as Rural Settlement Area on Region of Peel Official Plan *Schedule E-3 – The Growth Plan Policy Areas in* Peel. As per the Growth Plan policies, as the Region of Peel has adopted the *Growth Plan* mapping, the *Growth Plan* would not apply to the Subject Property

Similarly, the Subject Property is mapped as Village in *Greenbelt Plan* Area *Land Use Designation* on Region of Peel Official Plan Schedule B-5(**Map B**), and Town of Caledon Schedule S. As such, the Subject Property is not in the *Greenbelt Plan* Protected Countryside or NHS designations, and the NHS policies would not apply.

4. Methods

The methods utilized for the European Larch Plantation assessment are detailed below. For efficiencies in anticipation of the completion of an EIS, a two season botanical survey and a breeding bird survey were also completed, being supplementary to the TOR detailed by the CVC. This information was also applied to the evaluation of the natural heritage features and functions of the plantation.

4.1 Botanical Survey

Ecological surveys were completed on March 31, May 26 and 27, and June 30, 2020 by traversing the Subject Property and recording all flora species and ecological characteristics observed. Identified vascular plants were checked for their Provincial status based on the Species at Risk in Ontario (SARO) (Ministry of Environment, Conservation and Parks, 2020) and the Natural Heritage Information Centre (NHIC) (Ministry of Natural Resources and Forestry, 2020). Local and regional rarity status was cross-referenced with the Credit Valley Conservation Authority flora list (Credit Valley Conservation Authority, 2002) and Vascular Plan Flora of the GTA (Varga, et al., 2000).

Vegetation communities were mapped and described following the Ecological Land Classification (ELC) System for Southern Ontario, 2nd approximation (Lee, *et al.*, 1998). Vegetation community boundaries were delineated on field maps through the interpretation of recent aerial photographs, and refined in the field. Information collected during ELC surveys includes dominant species cover, community structure, as well as level of disturbance, presence of indicator species, and other notable features.

As the purpose of the study was the characterization of the European Larch Plantation, additional data were collected. These include a basal area estimate, stem density count and soil characteristics, following standard methods for the ELC System for Southern Ontario (Lee, *et al.*, 1998). Soils were characterized using the *Field Manual for Describing Soils in Ontario* (Denholm, Schut, & Irvine, 1993). Additional notes were also taken to relate to the evaluation characteristics listed in the terms of reference (**Appendix A**).

To ensure an adequate representation of the European Larch Plantation, five (5) ELC plots were established within the polygon. An additional four (4) were established in the adjacent White Pine Plantation areas, and plots were completed in all ELC types within the Subject Property.

4.2 Breeding Birds

Breeding bird surveys were conducted at the property on May 30 and June 18, 2020 to document the presence of bird species and their breeding in the following habitats on the Subject Property: (i) Pine Plantation, (ii) Cultural Plantation, and (iii) flyovers and adjacent areas. Surveys were carried out between 05:30 and 10:00 h to coincide with the dawn chorus. Surveys were conducted in general accordance with *Breeding Bird Atlas* protocols (Bird Studies Canada, 2001).

4.3 Incidental Wildlife and Wildlife Habitat

Incidental observations of wildlife were made during all field investigations. Palmer ecologists traversed the Subject Property, noting any evidence of wildlife or sensitive habitat features (e.g., stick nests, potential amphibian breeding habitat), as well as gaining a general characterization of available habitat. A habitat suitability assessment for Significant Wildlife Habitat (SWH) characteristics was conducted as part of the field information gathering efforts in order to determine whether SWH is present, potentially present, or absent within the Subject Property (Ontario Ministry of Natural Resources, 2015).

4.4 Species at Risk Screening

Prior to field work, existing Species at Risk (SAR) records and species ranges were queried through the NHIC database and other available wildlife atlases and databases. The species noted during this background review and others known through professional experience to have potential to occur in urban environments were considered in the assessment. During field work, the area was screened for potential SAR habitat opportunities and SWH characteristics. Habitat opportunities for SAR in the Study Area were assessed by comparing habitat preferences of species deemed to have potential to occur against current site conditions.

5. Existing Environmental Characteristics

The Subject Property is 5.99 ha, of which the European Larch Plantation occupies 2.58 ha (**Figure 2**). The property is primarily vegetated by plantations of various dominant species, which is reflective of the overall 31.6 ha treed area that contains the Subject Property (**Figure 3**). The northeastern portion of the Subject Property is a tableland "bench" that rises slightly above the residential properties found to the northeast along Main Street. From the tableland. a slope bisects the Subject Property along its middle from northwest to southeast, with the crests of the slope near the southwest limits of the property.

5.1 Ecological Land Classification

5.1.1 Terrestrial System

European Larch Coniferous Plantation (CUP3-6)

The European Larch Plantation rests on the tableland bench found above the residential properties on Main Street, and ends at the toe of slope in the southwest (**Figure 2**). The ground is relatively level, with the most variability found in the north side, where portions are included in the slopes to the southwest.

European Larch comprises almost the entire canopy, providing 60 – 70% cover, and at approximately 25 - 30 m, is approximately twice the height of the subcanopy layer (**Photo** 1). The canopy is of a consistent age, and is planted in rows. Only sparse Eastern White Pine (*Pinus strobus*) from the adjacent polygon and the occasional Black Cherry (*Prunus serotina*) make minor components of the canopy.

Photo 1: European Larch Plantation from Cultural Meadow to the south

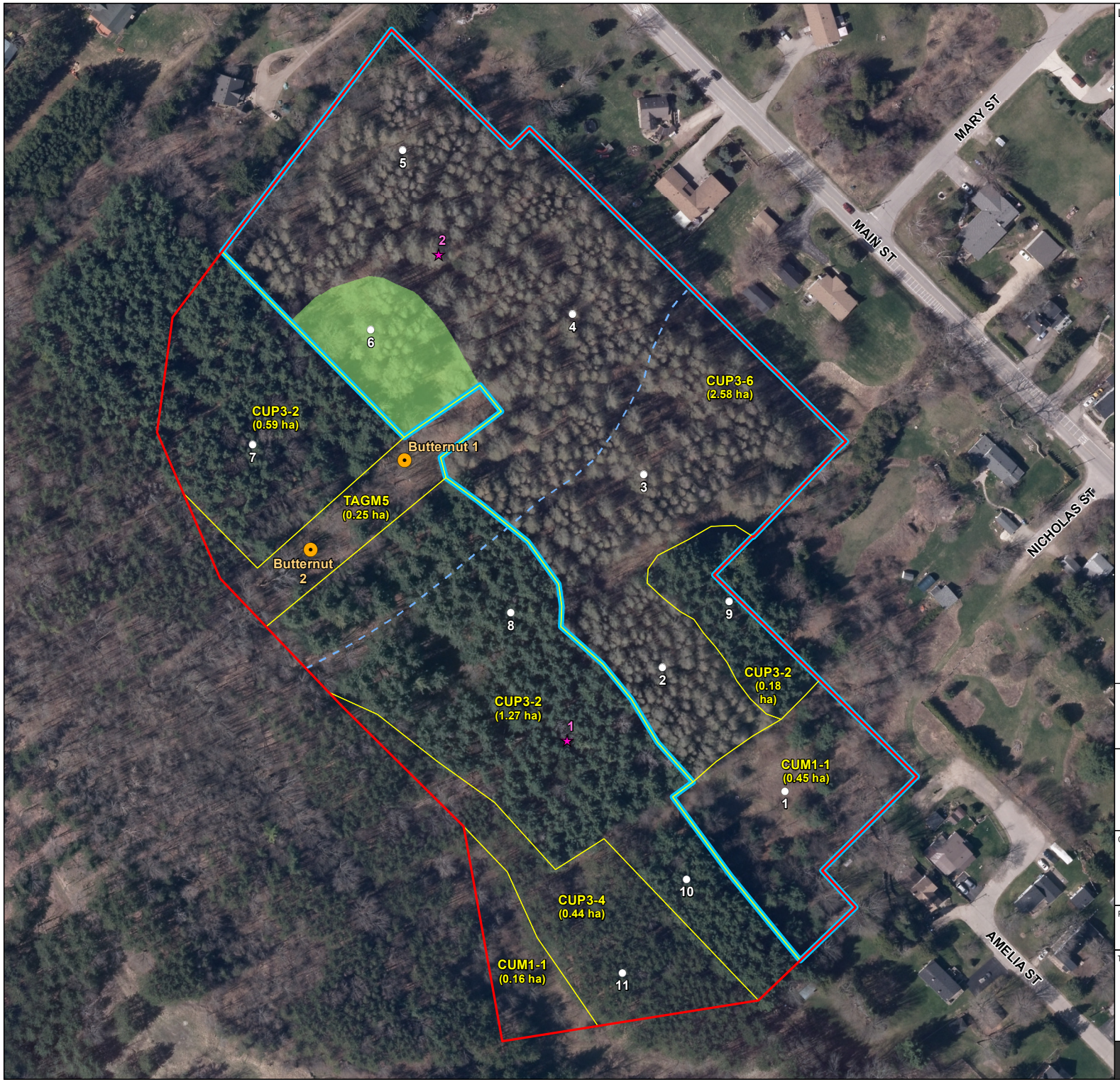
The subcanopy is sparse, providing a limited 10 – 15% cover. Species include regeneration of European Larch, with White Ash (*Fraxinus americana*), Black Cherry, Sugar Maple (*Acer saccharum*), and Manitoba Maple (*Acer negundo*). There is an area of Sugar Maple regeneration (**Figure 2**) that is denser, stemming

from a single “wolf tree” (i.e., large open mature tree that is a remnant from previous cover) at that location (**Photo 2**).

Photo 2: "Wolf" tree in Sugar Maple regeneration area

The shrub/understory layer includes a sparse cover of saplings of the above subcanopy species. Shrubby species were also observed, including Red Elderberry (*Sambucus racemosa*), Red-osier Dogwood (*Cornus sericea*), with intrusions of the invasive European Buckthorn (*Rhamus cathartica*).

Ground covers varied slightly dependant on topographic position, varying between 40 – 60%, though sparser surrounding the Sugar Maple area. Consistent ground species included Greater Celandine (*Chelidonium majus*), Garlic Mustard (*Alliaria petiolata*), Woodland Forget-me-not (*Myosotis sylvatica*), all of which are exotic species. A large patch of European Lily-of-the-valley (*Convallaria majalis*) was also observed, and is likely a garden escapee. Frequently observed native species included Stinging Nettle (*Urtica dioica*), Wild Lily-of-the-valley (*Maianthemum canadense*), and Wild Cucumber (*Echinocystis lobata*). Spring ephemeral species including Yellow Trout Lily (*Erythronium americanum*) and Jack-in-the-pulpit (*Arisaema triphyllum*) were also occasionally observed.



LEGEND:

- Ecological Survey Point
- Breeding Bird Survey Point
- Butternut
- Ephemeral Drainage
- Subject Site (5.91 ha)
- Potential Development Area (3.21 ha)
- Sugar Maple Regeneration Area
- Ecological Land Classification

ELC Description:

CUP3-6: European Larch Coniferous Plantation
CUP3-2: White Pine Coniferous Plantation
CUP3-4: Scotch Pine Coniferous Plantation
CUM1-1: Dry - Moist Old Field Meadow
TAGM5: Fencerow

Imagery (2019) provided by Peel Region WMS

0 20 40 60 80 100
metres

N

PROJECT NO.	1904304	REVISION:	1-2
DATE:	Apr 26, 2022	SCALE:	1:2000
DRAWN:	CV	DATUM:	NAD 1983
CHECKED:	AA	PROJECTION:	UTM zone 17

CLIENT: The Biglieri Group

PREPARED BY: Palmer

PROJECT: 0 Nicholas Street, Alton

TITLE: **Existing Environmental Conditions**

Figure 2

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White Pine Coniferous Plantation (CUP3-2)

To the west/southwest of the European Larch Plantation, an Eastern White Pine Plantation is found on the northeast facing slope (1.86 ha in two polygons). An isolated pocket of this type (0.16 ha) is also found to the east of the larch, also on the tablelands above the existing residential properties. This canopy is also of a consistent age, and is planted in rows.

The Eastern White Pine Plantation areas are similar to the European Larch Plantation, though Eastern White Pine replaces the larch at approximately 60% cover. While pine is dominant, White Ash and Trembling Aspen (*Populus tremuloides*) also a minor component of the canopy. The subcanopy is consistent with the Larch Plantation, with White Ash, Sugar Maple and Black Cherry found in sparse amounts. Red Elderberry is abundant in the shrub layer, with occasional saplings of White Ash, Black Cherry, Sugar Maple, and Manitoba Maple (*Acer negundo*). In the ground cover (50 – 80%), Garlic Mustard, Greater Celandine, and Stinging Nettle dominate, with Common Lady Fern (*Athyrium filix-femina*) appearing frequently as well.

Scotch Pine Coniferous Plantation (CUP3-4)

Further up the northeast facing slope, a 0.44 ha Scotch Pine (*Pinus sylvestris*) Plantation is found at the south end of the Subject Property. The canopy is entirely rows of Scotch (Scots) Pine, also at 60% cover, but a bit shorter at approximately 20 - 25 m. The subcanopy of this type was very sparse (<10%) White Ash. In the understorey, Black Cherry and Red Elderberry were common. Similar to the other plantation areas, exotic species are dominant, including Garlic Mustard and Greater Celandine.

Fencerow (TAGM5)

Dividing portions of the Eastern White Pine Plantation, a trail can be found leading up the northeast facing slope. A single row of large deciduous trees is found along the trail, and include White Ash, Sugar Maple and Butternut (*Juglans cinerea*). Most of these trees appeared over mature and many are in decline. The ground cover is pervasive patches of Stinging Nettle and Garlic Mustard with grasses.

Dry – Moist Old Field Meadow (CUM1-1)

The southern portion of the mid-level tableland is an open cultural meadow. The area is fringed with trees at the subcanopy height at <10% cover, being mostly White Ash and Black Cherry, though all deciduous species found on the Subject Property are represented. The shrubby layer is also sparse (10% cover), which is predominantly Red Raspberry (*Rubus idaeus*), Tatarian Honeysuckle (*Lonicera tatarica*), and Common Lilac (*Syringa vulgaris*).

With the open ground, the ground cover is quite diverse with 28 species observed. Exotic species dominate, including Garlic Mustard, Woodland Forget-me-not, European Swallowwort/Dog-Strangling Vine (*Vincetoxicum rossicum*), Common Dandelion (*Taraxacum officinale*), and Wild Carrot (*Daucus carota*); among grass species including Quackgrass (*Elymus repens*) and Common Timothy (*Phleum pratense*).

A similar polygon is found at the extreme south corner of the Study Area. This clearing is found at the crest of this ridge, and appears cleared for hiking and outdoor excursion purposes. The amount of exotic species is reduced in this area, though still have a noticeable presence.

Single Family Residential (CVR_3)

The Subject Property does extend to Main Street in Alton along a single Residential Property.

5.2 European Larch CUP3-6 Conditions

5.2.1 Flora

There were 78 species of vascular plants recorded within the Subject Property, including 37 (47%) native species, 32 (41%) which are non-native to Ontario, and 10 species were identified to the genus only due to the limited representation of key characteristics (**Appendix B – Table 1**). This high recorded presence of non-native species is indicative of past disturbance in the Study Area, typical of developed areas in the Greater Toronto Area (GTA) (Morton & Venn, 1984). Oldham et al. (1995) indicate that in southern Ontario plant communities, non-native flora presence averages between 20 and 30%.

Within the European Larch Plantation specifically, conditions reflect the past disturbance character of the overall Subject Property. Within the CUP3-6 plantation, 43 species were observed, including 27 (63%) native species, 14 (33%) which are non-native to Ontario, and two species were identified to the genus only (**Appendix B – Table 2**).

No listed SAR, locally or regionally rare vegetation species were observed (Ministry of Natural Resources and Forestry, 2020; Credit Valley Conservation Authority, 2002; Varga, et al., 2000). All species observed had either an “S4” or “S5” provincial rank or were exotic species, indicating that observed species were either secure in Ontario or introduced (Ministry of Natural Resources and Forestry, 2020). It should be noted that Virginia Creeper (*Parthenocissus quinquefolia*) is listed as locally rare based on literature (Varga, et al., 2000); however, is noted in practice to be pervasive and common. Swamp Red Currant (*Ribes triste*) is listed as locally uncommon. Both these species are common and secure in Ontario, being “S4” and “S5” species, respectively.

The Coefficient of Conservatism (CC) of a floristic species is a measure of its sensitivity to disturbance and the degree of habitat specificity it requires (Catling, 2013; Oldham, Bakowsky, & Sutherland, 1995). Measured on a scale between 0 and 10, a native species that establishes easily and/or in a variety of ecological communities would score low; while a plant that is very sensitive to human disturbances and/or lives only in specific environments (e.g. only marsh wetlands) would score high.

Based on the data collected, the average CC for the Site is **3.5 for both the Subject Property and the European Larch Plantation specifically**, indicating that most of the species in the Subject Property are found in wide variety of plant communities, including disturbed sites or plant communities with minor disturbances. Only one species (Smooth Aster - *Symphyotrichum laeve*) has a CC of 7, indicating a fidelity to communities of advanced successional stage, but perhaps with minor disturbances. However, this species was found in the Cultural Meadow area, where ground cover diversity was highest.

Coefficient of Wetness (CW) reflects a species' affinity for wet soil conditions (Oldham, Bakowsky, & Sutherland, 1995). Scoring for CW ranges between 5 and -5, indicating the degree of fidelity to upland and wetland conditions, respectively. Both the Subject Property and the European Larch Plantation specifically have an **average CW value of 1**, indicating average values for upland areas.

5.2.2 Soil Conditions

Soil plots were completed with a Dutch auger (hand-held soil auger) at all ecological survey plots (**Figure 2**). All plots were dug to a depth of 100 cm or to the point of refusal. Each sample was photographed, textured, assessed for mottles and gleys, and characterized using the *Field Manual for Describing Soils in Ontario* (Denholm, Schut, & Irvine, 1993).

The soil types in the European Larch Plantation area are moderate to fine textured Silty Sands overlying moderate to fine Loamy Sands (**Appendix C**). The soils within the European Larch Plantation were classed as having a Moderately Dry to a Moderately Moist moisture regime (MR = 0 to 4), depending on location/plot; the average moisture is likely Fresh (MR = 2). Soil drainage was rated as Very Rapid to Moderately Well/Imperfect, most plots being Moderately Well/Imperfect. Mottles and/or Gley were generally low in the soil profile.

Soils in other portions of the Subject Property were similar to the European Larch Plantation area. While soil types ranged from moderate Sand to fine Sandy Loams, most of the Subject Property is a form of Loamy Sand, with a Fresh moisture regime and an average of Moderately Well drained soils.

These soils are typical of toe of slope position tablelands. There is no indication of fill or soil alterations, and the consistency of soil types suggests that while the area was replanted, there were no significant alterations or disturbances to the existing soils.

5.2.3 Stand Composition

Stand composition was calculated using two methods within each of the five plots established within the European Larch Plantation (**Appendix D**). A basal area sweep was completed, using a Factor 2 prism, which allows for estimation of surface area occupied by trees in m^2/ha, following ELC protocols (Lee, et al., 1998). A stem count was also completed for a 12.6 m radius (0.05 ha) area, categorized by estimated diameter at breast height (DBH) class. The average density by plot was calculated and the estimated number of stems per hectare derived.

5.2.3.1 Basal Area

Using the basal area analysis, trees occupy 20.3 m^2/ha within the European Larch Plantation (**Table 1**). **European Larch is the dominant species, being 18.7 m^2/ha (92%) of the basal area**. Other species comprise only 1.7 m^2/ha, and include Sugar Maple at 0.8 m^2/ha (4%), White Ash at 0.7 m^2/ha (3%) and Manitoba Maple at 0.2 m^2/ha (1%). Other species such as Black Cherry and Eastern White Pine were also observed, but not in measurable amounts for basal area estimates.

Table 1: European Larch Plantation - Basal Area Estimates

Common Name	Scientific Name	Basal Area (m^2/ha)	Relative Average (%)
European Larch	*Larix decidua*	18.67	92
White Ash	*Fraxinus americana*	0.67	3
Black Cherry	*Prunus serotina*	0.00	0
Manitoba Maple	*Acer negundo*	0.17	1
Sugar Maple	*Acer saccharum*	0.83	4
Totals		**20.33**	**100**

5.2.3.2 Stem Density

Using stem density, the plantation has an average stem density of 1,368 stems/hectare (**Table 2**). Approximately half (704) of those stems are for trees <10 cm DBH. Using the average stem counts, the European Larch Plantation is also dominated by European Larch (49%). Regenerating stems within the plantation include Sugar Maple (30%), White Ash (14%), Manitoba Maple (3%) and Black Cherry (3%). Eastern White Pine and (taller) Red-osier Dogwood have minor inclusions at 0.3%, each. It is noted that only European Larch has stems >25 cm DBH in the plantation sample plots, with the exception of the occasional Eastern White Pine overlap from the adjacent CUP3-2 areas.

Table 2: European Larch Plantation - Estimated Stem Density (average stems/ha)

Estimated Stem Density (stems/ha)		Diameter at Breast Height (DBH) Class				Total Stems
		<10 cm	10-24 cm	25-50 cm	>50 cm	
European Larch	*Larix decidua*	56	260	264	96	**676**
White Ash	*Fraxinus americana*	172	16	0	0	**188**
Black Cherry	*Prunus serotina*	28	12	0	0	**40**
Eastern White Pine	*Pinus strobus*	0	0	4*	0	**4**
Manitoba Maple	*Acer negundo*	36	8	0	0	**44**
Sugar Maple	*Acer saccharum*	408	4	0	0	**412**
Red-osier Dogwood	*Cornus sericea*	4	0	0	0	**4**
Total		**704**	**300**	**268**	**96**	**1,368**

*Note: this regeneration estimate is of Eastern White Pine overlap from the adjacent areas.

5.2.4 Vegetation Structure and Health

The European Larch Plantation remains a monoculture canopy, with a sparse subcanopy. The larch are very tall (approximately 25 - 30 m), and present an exaggerated difference between layers, the subcanopy being only approximately 15 m tall. The larch appear vigorous, with few signs of decay or advanced age. Larch are the only species with DBH greater than 25 cm, with the exception of Eastern White Pine overlap from the adjacent plantation (**Appendix D**).

European Larch are present in all stem density DBH categories, showing strong replacement of the larch. Other species are limited to primarily the <10 cm DBH category, with only occasional trunks between 10 and 25 cm DBH. Regenerating species include White Ash, Black Cherry, Sugar Maple and Manitoba Maple. These sizes are reflective of the relatively sparse subcanopy layer, with the exception of the Sugar Maple regeneration area (Section 5.1.1, **Figure 2**).

While there is regeneration of native stems within the plantation, it appears hindered by the dense and closed larch canopy. Overall, the regeneration presents an unbalanced or "over-tall" growth pattern; meaning that while all stems counted were >1.37 m tall, a majority of the stems were skinny, having DBH sizes smaller than might be expected of trees of that height (**Photo 3**). This is also corroborated by an observed consistent "leaning or drooping" in stems of smaller DBH. This rapid vertical over horizontal growth pattern might be due to the limited light and nutrient opportunities provided by the larch canopy. Larger DBH regeneration stems were largely limited to areas of openings in the overall canopy.

Photo 3: "Over-tall" growth pattern regeneration with the European Larch Plantation

White Ash do make up a noted composition of the regeneration. While there were no signs of Emerald Ash Borer (EAB), this is a consideration for the future health of the plantation. EAB is a boring beetle that is causing significant impacts to ash species across Ontario.

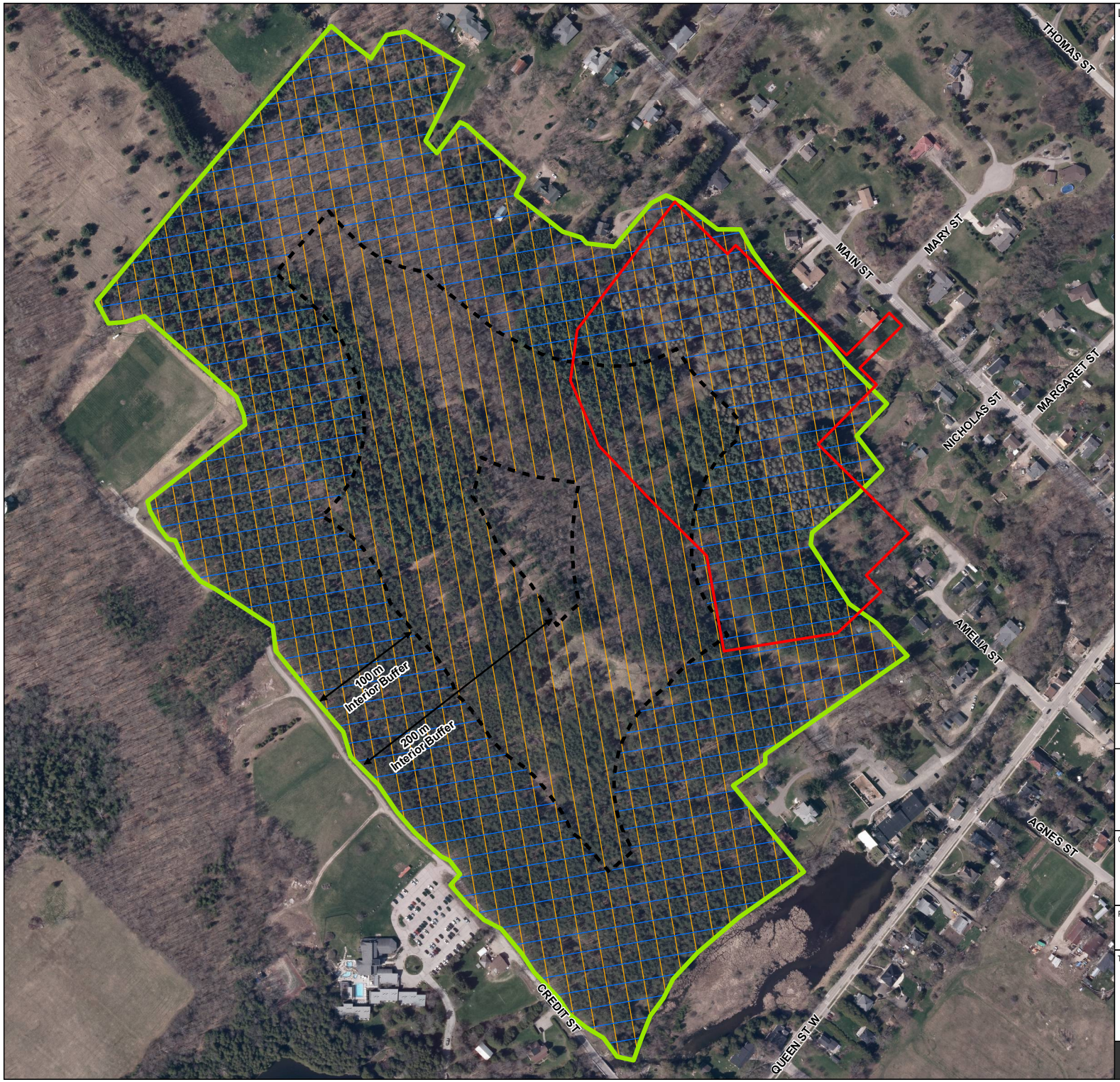
The ground cover also presents noted challenges that hinder potential naturalization. While native species are present, the plantation floor is dominated exotic species including Garlic Mustard, European Swallowwort/Dog-Strangling Vine, and Woodland Forget-me-not. Patches of non-native Lesser Periwinkle

(*Vinca minor*) and European Lily-of-the-valley were also observed as likely garden escapes. In the case of Garlic Mustard, European Swallowwort/Dog-Strangling Vine, and Lesser Periwinkle, these species are also considered invasive species in Ontario (Ontario Invading Species Awareness Program, 2020).

In comparison, the Eastern White Pine Plantation (CUP3-2) appears more natural. While the height difference between canopy and subcanopy layers is similar to the European Larch Plantation (CUP3-6), there are more standing snags and openings, suggesting more opportunities for replacement. The understorey layer is more developed; the Red Elderberry component is bushy and vigorous. The dominance of Garlic Mustard and Greater Celandine suggest that exotic ground covers are also an issue in these areas, though species such as Common Lady Fern suggest that naturalization has progressed more than in the European Larch Plantation.

5.2.5 Distribution and Ecology of Successional Species

The analysis of the European Larch Plantation must consider the successional transition to a naturalize stand and ability of species to convert plantations to native communities. As previously discussed, the larch is well established in this area and dominant in all DBH categories, showing strong self-regeneration and replacement (**Appendix D**). The plantation is vigorous and unlikely to allow native species regeneration without significant competition. By comparison, regenerating native species within the plantation have a limited density, an “over-tall” growth pattern, and have not grown to the extent there is representation in the canopy. This evidence suggests that the plantation will continue to self-regenerate for any foreseeable future. The one exception may be the Sugar Maple regeneration area, where the Sugar Maple has grown more rapidly and outpaced the larch stem replacement.



LEGEND:

- Woodland (31.56 ha)
- 100 m Interior Habitat Buffer
- 200 m Interior Habitat Buffer
- Subject Site

Imagery (2019) provided by Peel Region WMS

0 20 40 60 80 100

metres

N

PROJECT NO.	1904304	REVISION:	1-1
DATE:	Sep 29, 2020	SCALE:	1:4500
DRAWN:	CV	DATUM:	NAD 1983
CHECKED:	AA	PROJECTION:	UTM zone 17

CLIENT: The Biglieri Group

PREPARED BY: Palmer

PROJECT: 0 Nicholas Street, Alton

TITLE:

Woodland Function Analysis

Figure 3

Document Path: G:\Shared drives\Projects 2019\19043 - The Biglieri Group\1904304 - 0 Nicholas Street, Alton\Mapping\Figures\5_ArcGIS\1904304_3-1_Woodland Function Analysis.mxd

5.2.6 Regeneration of Native Tree Seedlings and Stems Per Hectare

Native tree regeneration in the European Larch Plantation includes Sugar Maple, White Ash and Black Cherry. Manitoba Maple is also native to Ontario, but is not a typical species in natural woodlands; rather, it is "invasive-like" and has gained prominence in southern Ontario by via anthropogenic disturbance. Therefore, calculations have been made with and without this species. Visual impressions of the plantation are that native regeneration is not dense, and is generally limited to saplings with an "over-tall" growth pattern. Based on plot data, the number of saplings that have attained a height >1.37 m exceeds 100 stems/ha (**Table 3**).

However, due to the demonstrated self-replacement of larch, the lack of native regeneration within the canopy, and the visual impressions of the native tree regeneration success and distribution, this may not be the best metric to consider a "regenerated native tree" (read: established) as per Region of Peel definitions (Section 3.2). Trees >10 cm DBH is also often used as a metric for an established tree, such as in many Ontario Municipal Tree Protection By-laws. Applying this as a metric, the average regenerated/established trees in the European Larch Plantation are **limited to 40 stems/ha with Manitoba Maple, and 36 stems/ha without** (**Table 3**). It should be noted that the estimated 4 stems/ha in the 25-50 cm DBH class comes from Eastern White Pine overlap from adjacent areas.

Table 3: Average Stem Density of Regenerating Trees in the European Larch Plantation

Native Species Regeneration		Diameter at Breast Height (DBH) Class				Average Stems/ha
		<10 cm	10-24 cm	25-50 cm	>50 cm	
White Ash	*Fraxinus americana*	172	16	0	0	188
Black Cherry	*Prunus serotina*	28	12	0	0	40
Eastern White Pine	*Pinus strobus*	0	0	4*	0	4
Sugar Maple	*Acer saccharum*	408	4	0	0	412
Red-osier Dogwood	*Cornus sericea*	4	0	0	0	4
Manitoba Maple	*Acer negundo*	36	8	0	0	44
Total Without Manitoba Maple		**608**	**32**	**4***	**0**	**644**
Total With Manitoba Maple		**648**	**40**	**4***	**0**	**692**

*Note: this regeneration estimate is of Eastern White Pine overlap from the adjacent areas.

5.3 Breeding Bird Results

The breeding bird survey documented birds present within two vegetation communities in the study area, as well as flyovers and adjacent areas. A total of 14 bird species were documented on the property, as summarized in **Appendix E**. Most of the birds recorded on the property are considered common. The most

frequently observed species found on the property included birds characteristic of woodlands, such as Black-capped Chickadee (*Poecile atricapillus*) and American Crow (*Corvus brachyrhynchos*).

One Species at Risk designated as Special Concern was observed during the second survey. One Eastern Wood-pewee (*Contopus virens*) was heard singing near the southwestern property boundary on June 18, 2020, and not within the European Larch Plantation CUP3-6 area. This species was not observed during the first-round survey.

Possible Breeding status was noted for area-sensitive bird species recorded within the Subject Property. While not SAR, such species can be associated with higher quality habitats and generally require large areas of continuous habitat for breeding and foraging. The specific habitat requirements vary by species. The following three area-sensitive birds were observed throughout the Subject Property during surveys:

- Red-breasted Nuthatch (*Sitta canadensis*);
- White-breasted Nuthatch (*Sitta carolinensis*); and
- Ovenbird (*Seiurus aurocapillus*).

Red-breasted Nuthatch was observed in the European Larch Plantation, White-breasted Nuthatch in the both the European Larch Plantation and the adjacent Eastern White Pine Plantation, and Ovenbird only in the adjacent Eastern White Pine Plantation.

Red-breasted Nuthatch prefer mixed or coniferous woods of at least 1 ha in size (Ontario Ministry of Natural Resources, 1984). White-breasted Nuthatch prefer mature beech maple forests, as well as mixed woods, with at least 2 ha of continuous forest (Ontario Ministry of Natural Resources, 1984). Ovenbird prefer larger forests of >50 ha but are known to inhabit smaller forest fragments (Ministry of Natural Resources, 2011).

No other SAR birds or area-sensitive birds were recorded on the Subject Property.

5.4 Species at Risk

Butternut is an *Endangered* species, protected by the *Endangered Species Act* (ESA), with exceptions for trees that are dead or in major decline (Government of Ontario, 2007). Two individuals were observed within the fencerow (TAGM5) area (**Figure 2**). The tree nearest the European Larch Plantation is nearly dead and the second also appeared in major decline. Butternut Health Assessment would likely categorize them as “non-retainable”/Class 1 trees; as such, neither is expected to be protected under the ESA. To avoid contravention of the ESA, a Butternut Health Assessment and Activity Registry should be conducted prior to any removal of these individuals.

No other SAR were observed during the breeding bird surveys or incidentally during ecological field surveys within the Subject Property. The European Larch Plantation has been shown to have limited potential for bat maternity habitat (Section 5.2.6), including SAR bats. Habitat opportunities for SAR on the property were assessed by comparing habitat preferences of species deemed to have potential to occur against current site conditions (**Appendix F**).

5.5 Incidental Wildlife Observations

Incidental wildlife observations were generally limited to bird observations, for which formal surveys were conducted (Section 5.5). During general ecology surveys, Northern Cardinal (*Cardinalis cardinalis*), American Crow (*Corvus brachyrhynchos*), Black-capped Chickadee (*Poecile atricapillus*) and other songbirds were observed. On May 27, 2020, a Wild Turkey (*Meleagris gallopavo*) was heard to the west of the European Larch Plantation. Within the plantation an American Toad (*Anaxyrus americanus*) was also observed during the May visit (**Photo 4**).

Photo 4: American Toad within European Larch Plantation

5.6 Functional Relationship with Adjacent Woodlands

The European Larch Plantation was also evaluated for its functional relationships to adjacent woodlands/plantation areas, such as proximity to watercourses and contribution to interior habitat. The overall treed area is 31.6 ha (**Figure 3**); the European Larch Plantation area being a contiguous but fringe portion of this. Woodlands do continue beyond the western corner of the overall treed area. However, this overall treed area was chosen as a distinct unit, as this it is composed of plantations of various species (primarily conifers), presenting a distinction from the deciduous woodlands to the west. The connection between the conifer and deciduous units is small, and partially severed by Credit Street. Most importantly, the overall treed area used is distinct in the calculation of interior habitats due to this limited connection (i.e. connecting the conifer and deciduous units would not add interior habitat relatable to the European Larch Plantation).

For wildlife functional relationships, the European Larch Plantation is evaluated for potential Significant Wildlife Habitat (SWH) as defined by the MNRF in the Significant Wildlife Habitat Technical Guide (Ontario Ministry of Natural Resources, 2000), which includes the following broad categories:

- seasonal concentration areas;
- rare vegetation communities or specialised habitats for wildlife;

- habitats of species of conservation concern, excluding the habitats of endangered and threatened species; and
- animal movement corridors.

Criteria for the identification of these features within our area of interest are provided in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (Ontario Ministry of Natural Resources and Forestry, 2015). These criteria were used to screen wildlife habitat within the Study Area for potential SWH (**Appendix G**). For the European Larch Plantation, based on its character or potential interior habitats, the overall treed area has the potential for/was screened for the following SWH types:

SWH Screening Determined Potential For:

- **Woodland Area-Sensitive Bird Breeding Habitat:** The overall treed area contains a limited amount (0.7 ha) of interior habitat using the criteria 200 m buffer (**Figure 3**). Although breeding bird surveys (Section 5.5) show that three species of area-sensitive birds possibly breeding in the overall treed area, from a habitat form and function perspective, the plantation does not represent a naturalized woodland to the extent that it would be considered high quality habitat for most area-sensitive species.

SWH Screening Removed Potential For:

- **Raptor Wintering Area:** The European Larch Plantation is part of a treed area >20 ha, with >15 ha of open meadow to north; however, plantations are not a class considered as SWH. While not SWH, this combination of trees and meadows could provide alternative roosting, foraging and resting habitats for wintering raptors. The removal of the plantation would not remove this amount of area from the overall treed area or the general landscape.
- **Bat Maternity Colonies:** The European Larch Plantation and overall treed area is not a deciduous or mixed forest with large leaves used as a criteria for this SHW type (Ontario Ministry of Natural Resources, 2015). Larch have deciduous *needles*, thus the area is more akin to a pure coniferous forest. In addition, decay signs that would indicate potential roosts are generally absent in the plantation, and the SWH criteria of >10 snags/ha is unlikely to be met. Therefore, loss of the European Larch Plantation would not greatly affect potential bat maternity colonies in the area.
- **Woodland Raptor Nesting Habitat:** While coniferous plantations may be SWH for this type, the overall treed area does not contain >10 ha interior habitat using the criteria 200 m buffer.

Relationship to Waterbodies and Watercourses

The European Larch Plantation is greater than 200 m from the Credit River Alton Branch, found south of the Study Area (**Figure 1**). As the tableland slope from the plantation extends eastwards into Alton, there appears to be no direct connection between the Subject Property and this waterbody.

There is evidence of an ephemeral drainage extending east through the Subject Property (**Figure 2**). However, no water was seen during any survey in 2020, and it is likely that it only holds water during very high rain events or spring run off during years with high snow cover. This drainage extends eastward onto the properties along Main Street, Alton and there is no evident connection with any watercourse or waterbody.

6. Analysis Summary

The European Larch Plantation on the Subject Property is larger than 0.5 ha and has a tree crown cover of over 60% of the ground. While this suggests that it should be classified as a Woodland in the Region of Peel and the Town of Caledon, the relevant Official Plans describe conditions whereupon non-naturalized non-native plantations can be excluded from woodlands that fall within relevant NHS policies (Sections 3.1 and 3.2). The following summary details the observed characteristics in relation to these policies.

Within the CUP3-6 European Larch Plantation, 43 plant species were observed, including 27 (63%) native species, 14 (33%) which are non-native to Ontario, and two species were identified to the genus only. European Larch was the sole canopy species. No SAR or uncommon flora were observed.

6.1 Soil Conditions

The soil types in the European Larch Plantation area are moderate to fine Silty Sands overlying moderate to fine Loamy Sands typical of toe of slope position tablelands. There is no indication of fill or soil alterations, and the consistency of soil types suggests that while the area was replanted, there were no significant alterations or disturbances to the existing soils.

6.2 Stand Composition

European Larch comprises almost the entire canopy, with only the occasional Black Cherry and sparse Eastern White Pine from the adjacent polygon making minor components of the canopy.

Using the basal area analysis, trees occupy 20.3 m^2/ha within the European Larch Plantation. **European Larch is the dominant species, being 18.7 m^2/ha (92%) of the basal area**. Other species include Sugar Maple at 0.8 m^2/ha (4%), White Ash at 0.7 m^2/ha (3%) and Manitoba Maple at 0.2 m^2/ha (1%).

Using stem density, the plantation has an average stem density of 1,368 stems/hectare, dominated by European Larch (49%). Regenerating stems within the plantation include Sugar Maple (30%), White Ash (14%), Manitoba Maple (3%) and Black Cherry (3%). Eastern White Pine and (taller) Red-osier Dogwood have minor inclusions at 0.3%, each. With stem density, European Larch are dominant in all size classes, generally the only species 25 cm DBH or more, and other species are generally limited to <10 cm DBH. Due to this distinct variation in sizes, basal area calculations are recommended to be considered as representative of stand composition, as stem density remarkably overvalues the contributions of the smaller stems to overall biomass and ecosystem expression.

6.3 Vegetation Structure and Health

The European Larch Plantation remains a monoculture canopy, with a sparse subcanopy. The larch present an exaggerated difference between the canopy and other layers. The larch appear vigorous, with few signs of decay or advanced age. European Larch are present in all DBH categories, showing strong replacement of the larch. Other species are limited to primarily the <10 cm DBH category. Overall, native species regeneration has an “over-tall” growth pattern; observed by stems much thinner than they should

be for their height, and consistent “leaning” of these stems. White Ash do make up a noted composition of the regeneration, and EAB may pose issues to natural regeneration in the near future. The ground cover shows noted issues towards naturalization, with non-native and invasive species composing a dominant cover.

6.4 Distribution and Ecology of Successional Species

The larch well is established and self-replacing in the European Larch Plantation, and are unlikely to give way to native species without competition from its own succession. The one exception may be the Sugar Maple regeneration area, where the Sugar Maple has greatly outpaced the larch stem replacement.

6.5 Functional Relationship with Adjacent Woodlands

6.5.1 Significant Wildlife Habitat Types

Analysis determined that the European Larch Plantation has potential relationships to the overall woodland area via SWH type for Woodland Area-Sensitive Bird Breeding Habitat, while not providing viable habitat for Raptor Wintering Areas (plantations not an SWH type), Bat Maternity Colonies (>10 snags/ha not likely) or Woodland Raptor Nesting Habitat (>10 ha interior habitat not present).

While the removal of the plantation would remove approximately 0.7 ha of potential Woodland Area-Sensitive Bird Breeding Habitat, breeding bird surveys could not confirm breeding status to confirm the SWH type. While area-sensitive species may casually use the overall area, at 0.7 ha it is unlikely that the overall woodland provides an adequate interior habitat range for this type. From a habitat form and function perspective, the plantation does not represent a naturalized woodland to the extent that it would be considered high quality habitat for most area-sensitive species.

6.5.2 Relationship to Waterbodies and Watercourses

The European Larch Plantation is greater than 200 m from the Credit River Alton Branch and there appears to be no direct connection between the Subject Property and this waterbody. There is evidence of an ephemeral drainage extending east through the Subject Property, and any development would need to consider proper storm water management.

6.5.3 Species at Risk

There are two Butternut located on the Subject Property; however, due to location and poor condition of the trees, assessment is likely to class these as “non-retainable”/Class 1 trees under the ESA. Therefore, it is unlikely that the area proposed for development would affect required/protected habitats for this species. Due to stand composition, there is a marginal potential for SAR bat habitat. No other SAR suitable habitat has been identified.

6.6 Regeneration of Native Tree Seedlings and Stems Per Hectare

Visual impressions of the plantation are that native regeneration is not dense, and is generally limited to saplings with an "over-tall" growth pattern. The exception to this is the Sugar Maple Regeneration area. Per Region of Peel definitions, a dense regeneration of native tree seedlings is not observed, though the average number of saplings that have attained a height >1.37 m is 644 stems/ha (692 stems/ha with Manitoba Maple), exceeding the 100 stems/ha definition. However, due to the demonstrated self-replacement of larch, the lack of native species within the canopy or subcanopy, and the visual impressions of the native tree regeneration success and distribution, this may not be the best metric to consider a "regenerated native tree" (read: established). Trees >10 cm DBH is also often used as a metric for an established tree, such as in many Ontario Municipal Tree Protection By-laws. Applying this as a metric, the average regenerated/established trees in the European Larch Plantation are **limited to 36 stems/ha (or 40 stems/ha with Manitoba Maple)** (**Table 3**).

7. Conclusions and Constraint Mapping

7.1 Conclusions

The analysis shows that the European Larch Plantation presents aspects that both match and do not match the criteria for a naturalized plantation as set out in the Region of Peel and Town of Caledon Official Plans.

Following the Region of Peel definitions (Section 3.2), a dense regeneration of native tree seedlings is not observed as part of the plantation ground cover. Yet as per the criteria, the plantation does contain more than 100 stems/ha that have attained a height of 1.37 m at 644 stems/ha (692 stems/ha with Manitoba Maple). However, the "over-tall" growth pattern and leaning nature of the majority of stems raises questions on their successful establishment. Using a benchmark of >10 cm DBH to mark a regenerated/established tree, this number falls from 644 to 36 stems/ha (40 stems/ha with Manitoba Maple), much lower than 100 stems/ha.

The Region of Peel also sets as a criterion the need to evaluate plantations in the local context (Section 3.2), which considers the projected natural succession of a community, plantations with 10 percent or less of the tree crown cover in addition to approximately 100 or fewer stems of native tree species as criteria for exclusion from the NHS (Section 3.3). The larch are dominant and well established in the European Larch Plantation, and are unlikely to allow native species succession without competition from its own self-replacement/succession. As per the Town of Caledon criteria, the European Larch make up 92% of the basal area of the plantation, and native species comprise far less than 10% of the tree crown cover, making the area a candidate for exclusion from a Core Areas designation. Further, the dominance of non-native and invasive species in the ground cover presents additional challenges to the re-establishment of a native community.

For the above reasons, the European Larch Plantation is not projected to follow a path towards natural succession for the foreseeable future. The nearly complete tree canopy of European Larch limits opportunities for establishment of native tree cover. The non-native nature of the dominant species (European Larch) and potential spread of invasive ground cover (e.g., Garlic Mustard) are also likely to present challenges to the ecological functions or biodiversity of nearby or adjacent native communities. While the area does contain >100 stems/ha of native species, other metrics suggest that establishment of those stems is questionable, and demonstrate that natural regeneration is unlikely to be successful without significant management or change.

For these reasons, it is recommended that the European Larch Plantation should not be considered a Naturalized Plantation and be removed as part of the Region of Peel Core Areas mapping, with the exception of the Sugar Maple Regeneration Area.

Based on this analysis, there is potentially developable area on the Subject Property (Section 7.2), and it is recommended that the project be advanced to an EIS once a conceptual development plan has been developed.

7.2 Constraints Mapping

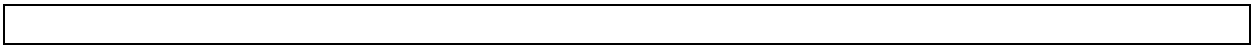
Considering the European Larch Plantation as a non-naturalized plantation, Table 1 (*Criteria and Thresholds for the Identification of Core Areas, Natural Areas and Corridors and Potential Natural Areas and Corridors Woodlands*) of the Region of Peel Official Plan would not be applied (Section 2.14.28 of the Official Plan), and can be removed as Core Area and development proposed as it is within Settlement Areas within both the Region of Peel and Town of Caledon Official Plans (**Figure 4**).

However, the adjacent areas to the southwest would remain Core Area, including the Eastern White Pine Plantation, as the dominant species is native and more closely matches the criteria. As such, the Eastern White Pine Plantation is considered a naturalized plantation in Core Area and a constraint to development (**Figure 4**). This area is recommended to include the Sugar Maple Regeneration area within the European Larch Plantation due to the differences in species and densities of native regeneration (Section 5.1.1). As the Region of Peel and Town of Caledon Official Plans do not define a minimum vegetation protection zone (MVPZ), the CVC 10 m Setback recommendation has been applied, following their Development Plan Review Criteria in Section 6.2 (Lot Creation) of the *Watershed Planning and Regulation Policies* (Credit Valley Conservation Authority, 2010).

The ephemeral drainage is also a potential constraint, and management recommendations for it are recommended to be evaluated using the *Evaluation, Classification and Management of Headwater Drainage Features Guidelines* (Toronto and Region Conservation Authority and Credit Valley Conservation, 2014).

Note that the small Eastern White Pine Plantation area east of the European Larch Plantation has not been considered a constraint to development. Assuming the removal of the European Larch Plantation, it is functionally separated from the overall woodland area, and at 0.18 ha, it is not of sufficient size to be considered a Significant Woodland under the Region of Peel and Town of Caledon Official Plans.

Figure 4: Environmental Constraints



LEGEND:

- Butternut
- Ecological Land Classification
- Sugar Maple Regeneration Area
- Subject Site

Potential Constraints

- Potential Headwater Drainage Feature
- 10m Woodland Minimum Vegetation Protection Zone (CVC)
- 25m Potential Habitat Buffer

ELC Description:

CUP3-6: European Larch Coniferous Plantation
CUP3-2: White Pine Coniferous Plantation
CUP3-4: Scotch Pine Coniferous Plantation
CUM1-1: Dry - Moist Old Field Meadow
TAGM5: Fencerow
CVR_3: Single Family Residential

Imagery (2019) provided by Peel Region WMS

0 20 40 60 80 100
metres

N

PROJECT NO.	1904304	REVISION:	1-1
DATE:	Sep 29, 2020	SCALE:	1:2000
DRAWN:	CV	DATUM:	NAD 1983
CHECKED:	AA	PROJECTION:	UTM zone 17

CLIENT: The Biglieri Group

PREPARED BY: Palmer

PROJECT: 0 Nicholas Street, Alton

TITLE: **Environmental Constraints**

Figure 4

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7.3 EIS Recommendations

Once the project is advanced to the EIS stage, it is recommended that the TOR for the EIS be discussed with the CVC and other relevant authorities. It is recommended that the TOR include assessment of:

- **Ephemeral Drainage:** The Hydrological Drainage Feature (HDF) classification of this drainage should be assessed, so that a management recommendation can be developed to appropriately mitigate and plan for this area.
- **Butternut Health Assessment (BHA):** should be completed for the trees located on the Subject Property, and the individuals dealt with appropriately.

8. Closure

We trust that the information provided is adequate to consider the status of the European Larch Plantation on the Study Area. If you have any questions or comments on this submission, please contact Austin Adams (647-461-2372) or austin.adams@pecg.ca.

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9. References

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Appendix A

Correspondence

Gmail **Austin Adams <austin.adams@pecg.ca>**

Fwd: Alton Village - Preliminary Field Studies

11 messages

Mark Jacobs <mjacobs@thebiglierigroup.com> Wed, Jan 8, 2020 at 11:05 AM
To: Austin Adams <austin@pecg.ca>
Cc: Dirk Janas <dirk@pecg.ca>, Brayden Libawski <blibawski@thebiglierigroup.com>

Hi Austin,

The TofR were sent via email. I'm forwarding the email below from CVC amending Dillon's initial work program.

As the email notes, we met with Caledon, Peel and CVC staff and agreed that the assessment of the European Larch plantation was required. Support for a non-Core Area designation would be considered if it was determined that it has not naturalized.

Our primary objective is confirming that it has not naturalized, followed by additional environmental constraints.

Mark Jacobs, MCIP RPP
Planner

THE BIGLIERI GROUP LTD.
Planning | Development | Project Management | Urban Design

20 Leslie Street, Suite 121
Toronto, Ontario M4M 3L4

126 Catharine Street North
Hamilton, Ontario L8R 1J4

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Website: thebiglierigroup.com

---------- Forwarded message ---------
From: **Hosale, Lisa** <Lisa.Hosale@cvc.ca>
Date: Thu, Aug 9, 2018 at 3:01 PM
Subject: RE: Alton Village - Preliminary Field Studies
To: Bourassa, Daniel <dbourassa@dillon.ca>, Wilson, Christine <Christine.Wilson@cvc.ca>
Cc: Anthony Biglieri <abiglieri@thebiglierigroup.com>, Mark Jacobs <mjacobs@thebiglierigroup.com>, Brayden Libawski

<blibawski@thebiglierigroup.com>, Katherine Bibby <Katherine.Bibby@caledon.ca>, Rob Hughes <Rob.Hughes@caledon.ca>, Simms, Joy <joy.simms@peelregion.ca>

Hi Dan,

Thank you for the productive discussions on Tuesday, and for your patience as we discussed your email with senior ecology staff at CVC. We have made some edits (in blue) to your email for clarity, with the goal of being very specific on the scope of the preliminary field studies.

Please do let me know if this works for you and your team as a plan to move forward.

The preliminary field studies will include the following:

• Determine whether the European Larch plantation is a *naturalized plantation* (undergoing regeneration to a native woodland community) per Region of Peel Official Plan, Glossary, p.225 by assessing and describing:

- Soil conditions
- Stand composition
- Vegetation structure and health
- Distribution and ecology of successional species
- Functional relationship to the whole woodland (e.g. interior woodland habitat, contribution to SWH, etc.)
- Whether this portion, or portions of the portion, have dense regeneration of native tree seedlings
- Whether this portion, or portions of the portion, have 100+ stems per hectare of regenerated native trees (height 1.37m+).

• Ecological Land Classification of the subject lands (using 2nd approximation) including soil cores.

• Single season (i.e. summer) botanical survey performed as part of the ELC.

• Constraints Figure (including all ecological features/functions, for example hibernacula, snags, seeps, watercourse, springs, steep slopes, trees of note, ELC, etc.).

• Incidental Wildlife Observations.

• Deliverable: Memo & Figure summarizing preliminary field study results.

At this time, we also want to recommend that if the preliminary field studies (and Region/Town/CVC review) lead to an outcome that the Core area may be amended/removed, the Woodland would still meet the definition of 'Other Woodlands' under Town policies, and development would need to meet the requirements of Town policy 3.2.5.3.2 (demonstrating no degradation of ecosystem integrity), among others. In the event that we reach that phase, CVC would like to be involved in scoping the EIS TOR.

I have cc'd colleagues at the Town and Region so that they are in the loop on our discussions so far. Please do let me know if you have any questions. We look forward to working with you on this.

Best wishes,

Lisa

Lisa Hosale

Planner, Planning and Development Services | Credit Valley Conservation

905-670-1615 ext 268 | 1-800-668-5557

lisa.hosale@cvc.ca | cvc.ca

From: Bourassa, Daniel [mailto:dbourassa@dillon.ca]
Sent: August 7, 2018 5:36 PM
To: Hosale, Lisa; Wilson, Christine
Cc: Anthony Biglieri; Mark Jacobs; Brayden Libawski
Subject: Alton Village - Preliminary Field Studies

Hi Lisa and Christine,

The purpose of this email is to document the preliminary field studies Dillon will be completing on behalf of the Proponent for the Alton Site, as confirmed at our meeting this morning.

The preliminary field studies will include the following:

- Stem counts to determine whether the European Larch plantation meets the definition of woodland as per Regional policy (i.e. 100 or more stems per ha of native trees ≥ 1.37 m in height).
- Ecological Land Classification of the subject lands (using 2nd approximation).
- Single season (i.e. summer) botanical survey.
- Constraints Figure.
- Incidental Wildlife Observations.
- Deliverable: Memo summarizing preliminary field study results.

Should you have any questions, please do not hesitate to contact me.

Regards,

DILLON CONSULTING

Daniel Bourassa
Office Manager, Associate
Dillon Consulting Limited
1155 North Service Road West Unit 14
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T - 905.901.2912 ext. 3417
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DBourassa@dillon.ca
www.dillon.ca

Appendix B

Flora Lists

Appendix B

Flora List – Table 1 – Subject Property

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CVC Rank	Coefficient of Conservatism	Coefficient of Wetness
						Global	Provincial	Exotic			
Aceraceae	*Acer negundo*	Manitoba Maple				G5	S5			0	0
Aceraceae	*Acer saccharum*	Sugar Maple				G5	S5			4	3
Hippocastanaceae	*Aesculus hippocastanum*	Horse Chestnut				GNR	SNA	SE2			5
Rosaceae	*Agrimonia gryposepala*	Hooked Agrimony				G5	S5			2	3
Brassicaceae	*Alliaria petiolata*	Garlic Mustard				GNR	SNA	SE5			0
Ranunculaceae	*Anemonastrum canadense*	Canada Anemone				G5	S5			3	-3
Asteraceae	*Arctium minus*	Common Burdock				GNR	SNA	SE5			3
Araceae	*Arisaema triphyllum*	Jack-in-the-pulpit				G5	S5			5	-3
Apocynaceae	*Asclepias syriaca*	Common Milkweed				G5	S5			0	5
Dryopteridaceae	*Athyrium filix-femina*	Common Lady Fern				G5	S5			4	0
Poaceae	*Bromus inermis*	Smooth Brome				G5	SNA	SE5			5
Asteraceae	*Carduus nutans*	Nodding Thistle				GNR	SNA	SE5			3
Cyperaceae	*Carex sp.*	Sedge Species									
Caryophyllaceae	*Cerastium fontanum*	Common Mouse-ear Chickweed				GNR	SNA	SE5			3
Papaveraceae	*Chelidonium majus*	Greater Celandine				GNR	SNA	SE5			5
Onagraceae	*Circaea canadensis*	Broad-leaved Enchanter's Nightshade				G5	S5			2	3
Liliaceae	*Convallaria majalis*	European Lily-of-the-valley				G5	SNA	SE5			5
Cornaceae	*Cornus sericea*	Red-osier Dogwood				G5	S5			2	-3

Legend:

COSEWIC - Committee on the Status of Endangered Wildlife in Canada

SARA - Ontario Species at Risk Act List

SARO - Species at Risk in Ontario

NHIC - Natural Heritage Information Centre

CVC Rank – CVC, 2002

Coefficients – Oldham et al., 1995

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CVC Rank	Coefficient of Conservatism	Coefficient of Wetness
						Global	Provincial	Exotic			
Apiaceae	*Daucus carota*	Wild Carrot				GNR	SNA	SE5			5
Dryopteridaceae	*Dryopteris sp.*	Wood Fern Species									
Cucurbitaceae	*Echinocystis lobata*	Wild Cucumber				G5	S5			3	-3
Equisetaceae	*Equisetum arvense*	Field Horsetail				G5	S5			0	0
Liliaceae	*Erythronium americanum*	Yellow Trout-lily				G5	S5			5	5
Fagaceae	*Fagus grandifolia*	American Beech				G5	S4			6	3
Rosaceae	*Fragaria vesca*	Woodland Strawberry				G5	S5			4	3
Oleaceae	*Fraxinus americana*	White Ash				G5	S4			4	3
Lamiaceae	*Galeopsis tetrahit*	Common Hemp-nettle				GNR	SNA	SE5			3
Rubiaceae	*Galium triflorum*	Three-flowered Bedstraw				G5	S5			4	3
Geraniaceae	*Geranium robertianum*	Herb-Robert				G5	S5			2	3
	Grass sp.	Grass Species									
	Gymnocarpium sp.	Oak Fern Sepcies									
Brassicaceae	*Hesperis matronalis*	Dame's Rocket				G4G5	SNA	SE5			3
Asteraceae	*Hieracium vulgatum*	Common Hawkweed				G5	SNA	SE2?			5
Hydrophyllaceae	*Hydrophyllum virginianum*	Virginia Waterleaf				G5	S5			6	0
Asteraceae	*Lactuca serriola*	Prickly Lettuce				GNR	SNA	SE5			3
Pinaceae	*Larix decidua*	European Larch				G5	SNA	SE2			5
Caprifoliaceae	*Lonicera tatarica*	Tatarian Honeysuckle				GNR	SNA	SE5			3
Liliaceae	*Maianthemum canadense*	Wild Lily-of-the-valley				G5	S5			5	3
Liliaceae	*Maianthemum stellatum*	Star-flowered False Solomon's Seal				G5	S5			6	0
Rosaceae	*Malus sp.*	Apple Species									
Malvaceae	*Malva alcea*	Vervain Mallow				GNR	SNA	SE1			5
Dryopteridaceae	*Matteuccia struthiopteris*	Ostrich Fern				G5	S5			5	0

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Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CVC Rank	Coefficient of Conservatism	Coefficient of Wetness
						Global	Provincial	Exotic			
	Mertensia sp.	Bluebells Species									
Boraginaceae	*Myosotis sylvatica*	Woodland Forget-me-not				G5	SNA	SE4			5
Vitaceae	*Parthenocissus quinquefolia*	Virginia Creeper				G5	S4?			6	3
Poaceae	*Phleum pratense*	Common Timothy				GNR	SNA	SE5			3
Pinaceae	*Pinus strobus*	Eastern White Pine				G5	S5			4	3
Pinaceae	*Pinus sylvestris*	Scots Pine				GNR	SNA	SE5			3
Poaceae	*Poa pratensis*	Kentucky Bluegrass				G5	S5			0	3
Salicaceae	*Populus tremuloides*	Trembling Aspen				G5	S5			2	0
Rosaceae	*Prunus pensylvanica*	Pin Cherry				G5	S5			3	3
Rosaceae	*Prunus serotina*	Black Cherry				G5	S5			3	3
Ranunculaceae	*Ranunculus abortivus*	Kidney-leaved Buttercup				G5	S5			2	0
Ranunculaceae	*Ranunculus acris*	Common Buttercup				G5	SNA	SE5			0
Rhamnaceae	*Rhamnus cathartica*	European Buckthorn				GNR	SNA	SE5			0
Grossulariaceae	*Ribes rubrum*	European Red Currant				G4G5	SNA	SE5			5
Grossulariaceae	*Ribes triste*	Swamp Red Currant				G5	S5			6	-5
Rosaceae	*Rubus idaeus*	Red Raspberry				G5	S5			2	3
Caprifoliaceae	*Sambucus racemosa*	Red Elderberry				G5	S5			5	3
Solanaceae	*Solanum dulcamara*	Bittersweet Nightshade				GNR	SNA	SE5			0
Asteraceae	*Solidago sp.*	Goldenrod Species									
Rosaceae	*Sorbus sp.*	Mountain-ash Species									
Asteraceae	*Symphyotrichum laeve*	Smooth Aster				G5	S5			7	3
Oleaceae	*Syringa vulgaris*	Common Lilac				GNR	SNA	SE5			5
Asteraceae	*Taraxacum officinale*	Common Dandelion				G5	SNA	SE5			3
Apiaceae	*Torilis japonica*	Erect Hedge-parsley				GNR	SNA	SE4			3

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Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CVC Rank	Coefficient of Conservatism	Coefficient of Wetness
						Global	Provincial	Exotic			
Anacardiaceae	*Toxicodendron radicans*	Poison Ivy				G5	S5			2	0
Asteraceae	*Tragopogon dubius*	Yellow Goatsbeard				GNR	SNA	SE5			5
Fabaceae	*Trifolium hybridum*	Alsike Clover				GNR	SNA	SE5			3
Liliaceae	*Trillium sp.*	Trillium Species									
Urticaceae	*Urtica dioica*	Stinging Nettle				G5	S5			2	0
Scrophulariaceae	*Verbascum thapsus*	Common Mullein				GNR	SNA	SE5			5
Caprifoliaceae	*Viburnum opulus*	Cranberry Viburnum				G5	S5			5	-3
Fabaceae	*Vicia cracca*	Tufted Vetch				GNR	SNA	SE5			5
Apocynaceae	*Vinca minor*	Lesser Periwinkle				GNR	SNA	SE5			5
Apocynaceae	*Vincetoxicum rossicum*	European Swallowwort				GNR	SNA	SE5			5
Violaceae	*Viola pubescens*	Yellow Violet				G5	S5			5	3
Vitaceae	*Vitis riparia*	Riverbank Grape				G5	S5			0	0

Legend:

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Flora List – Table 2 – European Larch Plantation

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CVC (2002)	Coefficient of Conservatism	Coefficient of Wetness
						Global	Provincial	Exotic			
Aceraceae	*Acer negundo*	Manitoba Maple				G5	S5			0	0
Aceraceae	*Acer saccharum*	Sugar Maple				G5	S5			4	3
Hippocastanaceae	*Aesculus hippocastanum*	Horse Chestnut				GNR	SNA	SE2			5
Rosaceae	*Agrimonia gryposepala*	Hooked Agrimony				G5	S5			2	3
Brassicaceae	*Alliaria petiolata*	Garlic Mustard				GNR	SNA	SE5			0
Ranunculaceae	*Anemonastrum canadense*	Canada Anemone				G5	S5			3	-3
Araceae	*Arisaema triphyllum*	Jack-in-the-pulpit				G5	S5			5	-3
Dryopteridaceae	*Athyrium filix-femina*	Common Lady Fern				G5	S5			4	0
Papaveraceae	*Chelidonium majus*	Greater Celandine				GNR	SNA	SE5			5
Onagraceae	*Circaea canadensis*	Broad-leaved Enchanter's Nightshade				G5	S5			2	3
Liliaceae	*Convallaria majalis*	European Lily-of-the-valley				G5	SNA	SE5			5
Cornaceae	*Cornus sericea*	Red-osier Dogwood				G5	S5			2	-3
Cucurbitaceae	*Echinocystis lobata*	Wild Cucumber				G5	S5			3	-3
Equisetaceae	*Equisetum arvense*	Field Horsetail				G5	S5			0	0
Liliaceae	*Erythronium americanum*	Yellow Trout-lily				G5	S5			5	5
Oleaceae	*Fraxinus americana*	White Ash				G5	S4			4	3
Lamiaceae	*Galeopsis tetrahit*	Common Hemp-nettle				GNR	SNA	SE5			3
Rubiaceae	*Galium triflorum*	Three-flowered Bedstraw				G5	S5			4	3
Geraniaceae	*Geranium robertianum*	Herb-Robert				G5	S5			2	3
Brassicaceae	*Hesperis matronalis*	Dame's Rocket				G4G5	SNA	SE5			3
Hydrophyllaceae	*Hydrophyllum virginianum*	Virginia Waterleaf				G5	S5			6	0
Pinaceae	*Larix decidua*	European Larch				G5	SNA	SE2			5

Legend:

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CVC Rank – CVC, 2002

Coefficients – Oldham et al., 1995

Family	Scientific Name	Common Name	COSEWIC	SARA	SARO	NHIC Ranks			CVC (2002)	Coefficient of Conservatism	Coefficient of Wetness
						Global	Provincial	Exotic			
Liliaceae	*Maianthemum canadense*	Wild Lily-of-the-valley				G5	S5			5	3
Liliaceae	*Maianthemum stellatum*	Star-flowered False Solomon's Seal				G5	S5			6	0
Boraginaceae	*Myosotis sylvatica*	Woodland Forget-me-not				G5	SNA	SE4			5
Vitaceae	*Parthenocissus quinquefolia*	Virginia Creeper				G5	S4?			6	3
Pinaceae	*Pinus strobus*	Eastern White Pine				G5	S5			4	3
Salicaceae	*Populus tremuloides*	Trembling Aspen				G5	S5			2	0
Rosaceae	*Prunus serotina*	Black Cherry				G5	S5			3	3
Ranunculaceae	*Ranunculus acris*	Common Buttercup				G5	SNA	SE5			0
Rhamnaceae	*Rhamnus cathartica*	European Buckthorn				GNR	SNA	SE5			0
Grossulariaceae	*Ribes rubrum*	European Red Currant				G4G5	SNA	SE5			5
Grossulariaceae	*Ribes triste*	Swamp Red Currant				G5	S5			6	-5
Caprifoliaceae	*Sambucus racemosa*	Red Elderberry				G5	S5			5	3
Rosaceae	*Sorbus sp.*	Mountain-ash Species									
Asteraceae	*Taraxacum officinale*	Common Dandelion				G5	SNA	SE5			3
Liliaceae	*Trillium sp.*	Trillium Species									
Urticaceae	*Urtica dioica*	Stinging Nettle				G5	S5			2	0
Caprifoliaceae	*Viburnum opulus*	Cranberry Viburnum				G5	S5			5	-3
Apocynaceae	*Vinca minor*	Lesser Periwinkle				GNR	SNA	SE5			5
Apocynaceae	*Vincetoxicum rossicum*	European Swallowwort				GNR	SNA	SE5			5
Violaceae	*Viola pubescens*	Yellow Violet				G5	S5			5	3
Vitaceae	*Vitis riparia*	Riverbank Grape				G5	S5			0	0

Legend:

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Coefficients – Oldham et al., 1995

Appendix C

Soils Assessment

Appendix C

Soils Assessment

Quality	1	2	3	4	5	6	7	8	9	10	11
Core Depth (cm)	110	100	80	98	100	50*	100	100	100	100	100
Upper Layer Texture	fLS	mfLS	mSiS	fSiS	fSiS	fSiS	fSiS	SiS	fLS	fLS	fLS
Lower Layer Texture	fLS	fLS	mLS	mLS	fLS	fLS	fSL	mS	fLS	fLS	fLS
Depth of Organics (cm)	3	1	2	2	3	2	2	3	2	2	2
Depth to Mottles (cm)	-	-	65	80	50	40	-	-	85	88	-
Depth to Gley (cm)	-	-	-	-	86	43	85	-	85	-	81
Depth to Groundwater (cm)	-	-	-	-	-	-	-	-	-	-	-
Depth to Bedrock (cm)	-	-	80	98	-	50	-	-	-	-	-
Effective Texture	**fLS**	**mfLS**	**mLS**	**mLS**	**fLS**	**fLS**	**fSL**	**mS**	**fLS**	**fLS**	**fLS**
Soil Moisture	Moderately Fresh	Moderately Dry	Very Fresh	Fresh	Moderately Moist	Moderately Moist	Very Fresh	Moderately Dry	Very Fresh	Very Fresh	Very Fresh
Drainage	Rapid to Well	Rapid to Very Rapid	Moderately Well to Imperfect	Moderately Well to Imperfect	Moderately Well to Imperfect	Moderately Well to Imperfect	Moderately Well to Imperfect	Rapid to Very Rapid	Moderately Well to Imperfect	Moderately Well to Imperfect	Moderately Well to Imperfect

Appendix D

Stand Composition

Appendix D

Basal Area – European Larch Plantation

Common Name	Latin Name	Plot 2	Plot 3	Plot 4	Plot 5	Plot 6	Total	Relative Average (%)
European Larch	*Larix decidua*	25	16	24	24	23	112	91.80
White Ash	*Fraxinus americana*		2		2		4	3.28
Manitoba Maple	*Acer negundo*		1				1	0.82
Sugar Maple	*Acer saccharum*					5	5	4.10
Total		25	19	24	26	28	122	187.69
Basal Area		**50**	**38**	**48**	**52**	**56**	**244**	**20.33**
Dead Trees		0	1	2	1	0	4	0.33

Stem Density – European Larch Plantation

Plot Number	Common Name	Latin Name	Diameter at Breast Height (DBH) Class				Total Stems
			<10 cm	10-24 cm	25-50 cm	>50 cm	
2	European Larch	*Larix decidua*	6	25	12	3	46
	White Ash	*Fraxinus americana*	16	0	0	0	16
	Black Cherry	*Prunus serotina*	1	1	0	0	2
	Eastern White Pine	*Pinus strobus*	0	0	1	0	1
	Manitoba Maple	*Acer negundo*	1	0	0	0	1
3	European Larch	*Larix decidua*	0	8	11	9	28
	White Ash	*Fraxinus americana*	8	1	0	0	9
	Black Cherry	*Prunus serotina*	3	2	0	0	5

Plot Number	Common Name	Latin Name	Diameter at Breast Height (DBH) Class				Total Stems
			<10 cm	10-24 cm	25-50 cm	>50 cm	
	Manitoba Maple	*Acer negundo*	2	2	0	0	4
	Sugar Maple	*Acer saccharum*	6	0	0	0	6
4	European Larch	*Larix decidua*	0	11	18	4	33
	White Ash	*Fraxinus americana*	12	0	0	0	12
	Manitoba Maple	*Acer negundo*	2	0	0	0	2
	Sugar Maple	*Acer saccharum*	3	0	0	0	3
5	European Larch	*Larix decidua*	6	13	15	2	36
	White Ash	*Fraxinus americana*	7	3	0	0	10
	Black Cherry	*Prunus serotina*	3	0	0	0	3
	Sugar Maple	*Acer saccharum*	3	1	0	0	4
	Red-osier Dogwood	*Cornus sericea*	1	0	0	0	1
	Manitoba Maple	*Acer negundo*	2	0	0	0	2
6	European Larch	*Larix decidua*	2	8	10	6	26
	Sugar Maple	*Acer saccharum*	90	0	0	0	90
	Manitoba Maple	*Acer negundo*	2	0	0	0	2
Total Stems			**176**	**75**	**67**	**24**	**342**
Average Density			**35.20**	**15.00**	**13.40**	**4.80**	**68.40**

Appendix E

Breeding Bird Survey Results

Breeding Birds of 0 Nicholas Street - 2020

Common Name	Scientific Name	Status						Locations			Observed on site visit	
		National Species at Risk COSEWIC [a]	Species at Risk in Ontario Listing [a]	Provincial breeding season SRANK [b]	Regional Status	Area-sensitive (OMNR)c	Breeding Evidence	Pine Plantation	CUP	Flyovers and adjacent areas	May 30, 2020	June 18, 2020
Northern Flicker	*Colaptes auratus*			S4			T		x		2	1
Eastern Wood-Pewee	*Contopus virens*	SC	SC	S4			S	x				1
Blue Jay	*Cyanocitta cristata*			S5			H	x	x		2	1
American Crow	*Corvus brachyrhynchos*			S5			T	x	x		8	1
Black-capped Chickadee	*Poecile atricapillus*			S5			T	x	x	x	2	4
Red-breasted Nuthatch	*Sitta canadensis*			S5		A	S		x		1	
White-breasted Nuthatch	*Sitta carolinensis*			S5		A	S	x	x			2
House Wren	*Troglodytes aedon*			S5			T		x	x	1	2
American Robin	*Turdus migratorius*			S5			S		x		1	
Red-eyed Vireo	*Vireo olivaceus*			S5			T	x	x		2	2
Yellow Warbler	*Setophaga petechia*			S5			S	x			1	
Ovenbird	*Seiurus aurocapillus*			S4		A	S	x				1
Northern Cardinal	*Cardinalis cardinalis*			S5			S	x	x	x	1	2
American Goldfinch	*Cardeulis tristis*			S5			T	x	x		2	2

Field Work Conducted On:	Date	Temp (°C)	Wind Speed (km/h)	Cloud Cover (%)	Start Time	End Time	Level of effort (h:min)	Number of species observed
Site visit 1	30-May-20	13	11	80	9:00	10:00	1:00	11
Site visit 2	18-Jun-20	14	2	0	6:28	7:30	1:02	11

Location 1 - Pine Plantation
Location 2 - Cultural Plantation
Location 3 - Flyovers and adjacent areas

Number of Species: 14
Number of (provincial and national) Species at Risk: 1
Number of S1 to S3 (provincially rare) Species: 0
Number of Regionally Rare Species: 0
Number of Area-sensitive Species: 3

Location 1
Number of Species: 10
Number of (provincial and national) Species at Risk: 1
Number of S1 to S3 (provincially rare) Species: 0
Number of Regionally Rare Species: 0
Number of Area-sensitive Species: 2

Location 2 11
Number of Species: 0
Number of (provincial and national) Species at Risk: 0
Number of S1 to S3 (provincially rare) Species: 0
Number of Regionally Rare Species: 0
Number of Area-sensitive Species: 2

Location 3
Number of Species: 3
Number of (provincial and national) Species at Risk: 0
Number of S1 to S3 (provincially rare) Species: 0
Number of Regionally Rare Species: 0
Number of Area-sensitive Species: 0

KEY
a COSEWIC = Committee on the Status of Endangered Wildlife in Canada
a Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in Ontario)
END = Endangered, THR = Threatened, SC = Special Concern

[b] SRANK (from Natural Heritage Information Centre) for breeding status if:
S1 (Critically Imperiled), S2 (Imperiled),S3 (Vulnerable), S4 (Apparently Secure), S5 (Secure)
SZB (breeding migrants or vagrants) and SR (reported as breeding, but no persuasive documentation) .
SE (exotic, i.e. non-native)

c Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat Technical Guide (Appendix G). 151 p plus appendices.

d Toronto and Region Conservation Authority L rank:
L1 to L3 Regional species of concern from highest to lowest; L4 Urban concern; L5 Secure through region

Appendix F

Species At Risk Screening

Appendix F: Species at Risk Screening

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
AVIFAUNA										
Bank Swallow (*Riparia riparia*)	THR	THR	THR	1	S4B	The bank swallow is threatened by loss of breeding and foraging habitat, destruction of nesting habitat and widespread pesticide use. Bank swallows are small songbirds with brown upperparts, white underparts and a distinctive dark breast band. It averages 12 cm long and weighs between 10 and 18 grams. The swallow can be distinguished in flight from other swallows by its quick, erratic wing beats and its almost constant buzzy, chattering vocalizations. They nest in burrows in natural and human-made settings where there are vertical faces in silt and sand deposit, including banks of rivers and lakes, active sand and gravel pits or former ones where the banks remain suitable. The birds breed in colonies ranging from several to a few thousand pairs (Ministry of Natural Resources and Forestry, 2014).	OBBA	N	Lack of banks or other vertical faces required for nesting.	Threatened species and their general habitat are automatically protected.
Barn Swallow (*Hirundo rustica*)	THR	THR	THR	1	S4B	The barn swallow is a threatened species, is found throughout southern Ontario, and can range into the north as long as suitable nesting locations can be found. These birds prefer to nest within human made structures such as barns, bridges, and culverts. Barn swallow nests are cup-shaped and made of mud; they are typically attached to horizontal beams or vertical walls underneath an overhang. A significant decline in populations of this species has been documented since the mid-1980s, which is thought to be related to a decline in prey. Since the barn swallow is an aerial insectivore, this species relies on the presence of flying insects at specific times during the year. Changes in building practices and materials may also be having an impact on this species (Ministry of Natural Resources and Forestry, 2015).	OBBA	N	Lack of anthropogenic structures often used for nesting.	General Habitat protection applies. General habitat description on MNR website.
Bobolink (*Dolichonyx oryzivorus*)	THR	THR	THR	1	S4B	The bobolink is found in grasslands and hayfields, and feeds and nests on the ground. This species is widely distributed across most of Ontario; however, are designated at risk because of rapid population decline over the last 50 years (Ministry of Natural Resources and Forestry, 2014). The historical habitat of the bobolink was tallgrass prairie and other natural open meadow communities; however, as a result of the clearing of native prairies and the post-colonial increase in agriculture, bobolinks are now widely found in hayfields. Due to their reproductive cycle, nesting habits, and use of agricultural areas, bobolink nests and young are particularly vulnerable to loss as a result of common agricultural practices (i.e. first cut hay).	NHIC / OBBA	N	Lack of open grassland habitat on Site.	General Habitat protection applies. General habitat description on MNR website.
Canada Warbler (*Cardellina canadensis*)	THR	SC	THR	1	S4B	The Canada warbler is found in a variety of forest types, but is most abundant in moist, mixed forests with a well-developed, dense shrub layer. This species can also be locally abundant in regenerating forests following natural or anthropogenic disturbances. Nests are usually located on or near the ground on mossy logs, and along stream banks. In Canada, habitat loss due to conversion of swamp forests, agricultural activities and road development have contributed to the species' significant long-term decline, and its special concern designation. A reduction in forests with a well-developed shrub-layer has also likely impacted Canada warblers throughout their breeding range in Ontario (Committee on the Status of Endangered Wildlife in Canada, 2008).	OBBA	N	Lack of Specific Habitat, none observed during surveys.	Habitat protection does not apply to Special Concern Species.
Chimney Swift (*Chaetura pelagica*)	THR	THR	THR	1	S4B,S4N	The chimney swift is a threatened species which breeds in Ontario and winters in northwestern South America. It is found mostly near urban areas where the presence of chimneys or other manmade structures provide nesting and roosting habitat. Prior to settlement, the chimney swift would mainly nest in cave walls and hollow tress. The chimney swift initially benefitted from human settlement; however, recent declines in flying insects and the modernization of chimneys are factors attributed to their current population declines. As a threatened species, the chimney swift receives protection for both species and habitat under the ESA (Ministry of Natural Resources and Forestry, 2014).	OBBA	N	Lack of large cavity trees and / or chimneys required for nesting.	General Habitat protection applies. General habitat description on MNR website.

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Eastern Meadowlark (*Sturnella magna*)	THR	THR	THR	1	S4B	The eastern meadowlark is a bird that prefers pastures and hayfields, but is also found to breed in orchards, shrubby fields and human use areas such as airports and roadsides. Eastern meadowlarks can nest from early May to mid-August, in nests that are built on the ground and well-camouflaged with a roof woven from grasses. The decline in population of these species is thought to be at least partially related to habitat destruction and agricultural practices (Ministry of Natural Resources and Forestry, 2014).	NHIC / OBBA	N	Lack of open grassland habitat on Site.	General Habitat protection applies. General habitat description on MNR website.
Eastern Wood-Pewee (*Contopus virens*)	SC	SC	SC	1	S4B	The eastern wood-pewee is classified as a species of special concern by COSSARO. Their population has been gradually declining since the mid-1960's (The Cornell Lab of Ornithology, 2015). The eastern wood-pewee is a "flycatcher", a bird that eats flying insects, that lives in the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. It prefers intermediate-age forest stands with little understory vegetation. Threats to the population are largely unknown; however, causes may include loss of habitat due to urban development and decreases in the availability of flying insect prey (Ministry of Natural Resources and Forestry, 2014).	OBBA	Y	Forests on Site provide potential suitable nesting habitat.	Habitat protection does not apply to Special Concern Species.
Grasshopper Sparrow (*Ammodramus savannarum*)	No Statu	No Statu	SC	X	S4B	Grasshopper Sparrow are specialized to open relatively short grassland habitat, preferably grasslands with relatively sparse cover such as those in areas of poor soils, including alvars, moraines, and sand plains and generally does not favour tall grass moist meadows. It will also breed in manmade hayfields and occasionally in cereals such as Rye (*Secale cereale*).	OBBA	N	Lack of open grassland habitat on Site.	Habitat protection does not apply to Special Concern Species.
Wood Thrush (*Hylocichla mustelina*)	THR	SC	THR	1	S4B	The wood thrush is a species of Special Concern because of habitat degradation or destruction by anthropogenic development. The wood thrush is a medium-sized songbird, generally rusty-brown on the upper parts with white under parts and large blackish spots on the breast and sides, and about 20 cm long. The wood thrush forages for food in leaf litter or on semi-bare ground, including larval and adult insects as well as plant material. They seek moist stands of trees with well-developed undergrowth in large mature deciduous and mixed (conifer-deciduous) forests. The wood thrush flies south to Mexico and Central America for the winter (Ministry of Natural Resources and Forestry, 2014).	OBBA	Y	Forests on Site provide potential suitable nesting habitat.	Habitat protection does not apply to Special Concern Species.
HERPTILES										
Snapping Turtle (*Chelydra serpentina*)	SC	SC	SC	1	S3	The snapping turtle is a species of special concern in Ontario due to the potential for the species to become threatened or endangered as a result of biological factors or other identified threats. While not presently protected by law, the snapping turtle has been recognized as a species of special concern by COSSARO. Snapping turtles spend the majority of their lives in water and travel slightly upland to gravel or sandy embankments or beaches to lay their eggs (Ontario Ministry of Natural Resources and Forestry, 2014).	ORAA	N	Lack of suitable aquatic habitat required for breeding.	Habitat protection does not apply to Special Concern Species.
VASCULAR PLANTS										
Butternut (*Juglans cinerea*)	END	END	END	1	S2?	The butternut is designated as endangered by COSSARO and is tracked by the NHIC as a species at risk. The tree is federally regulated by the Species at Risk Act (2002). Butternut belongs to the walnut family and produces edible nuts which are a preferred food source for wildlife. The range of butternut trees is south of the Canadian Shield on soils derived from calcium rich limestone bedrock. Butternut trees, which at one time were much more common to the south extending to the northern aspect of zone 6E, have been declining due to factors including forest loss and disease. Butternut trees suffer from a highly transmissible fungal disease called butternut canker. Butternut canker is causing very rapid decline in this tree species across its native range. The fungal disease is easily transmitted by wind and is very difficult to prevent. Trees often die within a few years of infection by butternut canker (Ministry of Natural Resource and Forestry, 2014).	Professional Experience	Y	Forest edges and openings present on Site provide potential suitable habitat for Butternut. Two individuals were observed in an adjacent hedgerow during field investigations.	General Habitat Protection as of June 30, 2013.
MAMMALS										

NAME	SARA STATUS	SARO	COSEWIC	SCHEDULE	S-RANK	HABITAT REQUIREMENTS	SOURCE OF RECORD	POTENTIAL HABITAT PRESENT (Y/N)	RATIONALE	POTENTIAL IMPACTS AND MITIGATION
Tri-colored Bat (Eastern Pipistrelle) (*Perimyotis subflavus*)	END	END	END	1	S3?	The eastern pipistrelle is a small bat that is widely distributed in eastern North America and whose range extends north to southern Ontario. The eastern pipistrelle is rare in this region of Ontario which is at the northernmost limit of the natural range for the species. These bats prefer to nest in foliage, tree cavities and woodpecker holes, and are occasionally found in buildings; though this is not their preferred habitat. Winter hibernation takes place in caves, mines and deep crevices. Eastern pipistrelles feed primarily on small insects and prefer an open forest habitat type in proximity to water (University of Michigan Museum of Zoology, 2004).	Professional Experience	P	Large forests on Site provide potential suitable cavity trees for roosting.	General Habitat Protection for Endangered species.
Eastern Small-footed Myotis (*Myotis leibii*)	No Status	END	No Status	No Schedu	S2S3	The eastern small-footed myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Eastern small-footed bat's fur has black roots and shiny light brown tips, giving it a yellowish-brown appearance. Its face mask, ears and wings are black, and its underside is grayish-brown, about 8 cm long in size and weighs 4-5 grams. In the spring and summer, eastern small-footed bats will roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees. They change their roosting locations daily and hunt at night for insects to eat, including beetles, mosquitos, moths, and flies. They hibernate in winter, often in caves and abandoned mines. They can be found from south of Georgian Bay to Lake Erie and east to the Pembroke area, and choose colder and drier sites (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	P	Large forests on Site provide potential suitable cavity trees for roosting.	General Habitat protection applies. General habitat description on MNR website.
Little Brown Myotis (*Myotis lucifugus*)	END	END	END	1	S4	Little brown myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Little brown bats have glossy brown fur and usually weigh between four and 11 grams. Bats are nocturnal. During the day they roost in trees and buildings. They often select attics, abandoned buildings and barns for summer colonies where they can raise their young. Little brown bats hibernate from October or November to March or April, most often in caves or abandoned mines that are humid and remain above freezing – an ideal environment for the fungus to grow and flourish. The syndrome affects bats by disrupting their hibernation cycle, so that they use up body fat supplies before the spring when they can once again find food sources (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	N	Lack of abandoned anthropogenic structures often used for roosting.	General Habitat Protection as of January 24, 2013.
Northern Myotis (*Myotis septentrionalis*)	END	END	END	1	S3	The northern long-eared myotis, a bat, are an endangered species threatened by a disease known as white nose syndrome, caused by a fungus from Europe. Northern long-eared bats have dull yellow-brown fur with pale grey bellies. They are approximately eight cm long, with a wingspan of about 25 cm, and usually weigh six to nine grams. Northern long-eared bats can be found in boreal forests, roosting under loose bark and in the cavities of trees. These bats hibernate from October or November to March or April, most often in caves or abandoned mines (Ministry of Natural Resources and Forestry, 2014).	Professional Experience	P	Large forests on Site provide potential suitable cavity trees for roosting.	General Habitat Protection as of January 24, 2013.

Notes:
SC - Special Concern
THR - Threatened
END - Endangered
S1 - Extremely rare in Ontario
S2 - Very rare in Ontario
S3 - Rare to uncommon in Ontario
S4 - Considered to be common in Ontario
S5 - Species is widespread in Ontario
SH - Possibly extirpated
S#S# - Indicates insufficient information exists to assign a single rank.
S#? - Indicates some uncertainty with the classification due to insufficient data.
S#N - Nonbreeding
S#B - Breeding

Appendix G

Significant Wildlife Habitat Screening

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/P/N)	Rationale
Seasonal Concentration Areas of Animals					
Waterfowl Stopover and Staging Areas (Terrestrial)	Ducks	CUM + CUT ecosites	Fields with sheet-water flooding mid-March to May	N	Not present in Study Area.
Waterfowl Stopover and Staging Area (Aquatic)	Ducks, Geese	Ponds, Lakes, Inlets, Marshes, Swamps, Shallow Water Ecosites	Sewage & SWM ponds **not** SWH. Reservoir managed as a large wetland or pond/lake qualifies.	N	Not present in Study Area.
Shorebird Migratory Stopover Area	Shorebirds	Beaches, Dunes, Meadow Marshes	Shorelines. Sewage treatment ponds and storm water ponds **not** SWH.	N	Not present in Study Area.
Raptor Wintering Area	Eagles, Hawks, Owls	**Hawks/Owls:** Combination of both Forest and Cultural Ecosites **Bald Eagle:** Forest or swamp near open water (hunting ground)	**Raptors:** >20ha, with a combo of forest and upland. Meadow (>15ha) with adjacent woodlands. **Eagles:** open water, large trees & snags for roosting.	N	Study Area is not FOD/FOM/FOC. Is part of a Plantation (>30 ha), adjacent to a large meadow area (>15 ha).
Bat Hibernacula	Big Brown Bat, Tri-coloured Bat	Caves, Crevices, mines, karsts	Buildings and active mine sites **not** SWH.	N	Not present in Study Area.
Bat Maternity Colonies	Big Brown Bat, Silver-haired Bat	Decidious or mixed forests and swamps.	Mature deciduous and mixed forests with >10/ha cavity trees >25 cm DBH.	N	Study Area is not a deciduous or mixed forest with large leaves. With deciduous needles, the area is more akin to a pure coniferous forest.
Turtle Wintering Area	**Turtles** (Midland, N. Map, Snapping)	SW, MA, OA, SA, FEO, BOO (requires open waters)	**Free water beneath ice.** Soft mud substrate. Permanent water bodies, large wetlands, bogs, fens with adequate DO.	N	Not present in Study Area.
Reptile Hibernaculum	Snakes	**Snakes:** Any ecosite (esp. w/ rocky areas), other than very wet ones. **Five-lined Skink:** FOD and FOM, FOC1, FOC3 - with rock outcrops	**Access below frost line:** burrows; **rock** crevices, piles or slopes, **stone** fences or foundations. Conifer/shrubby swamps/swales, poor fens, depressions in bedrock w/ accumulations of sphagnum moss or sedge hummock ground cover.	N	Not present in Study Area.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	Cliff Swallow, N. Rough-winged Swallow	Banks, sandy hills/piles, pits, slopes, cliff faces, bridge abutments, silos, barns.	Exposed soil banks, **not** a licensed/permitted aggregate area or new man-made features (2 yrs).	N	Not present in Study Area.
Colonially-nesting Bird Breeding Habitat (Tree/Shrubs)	Great Blue Heron, Black-crowned NightHeron, Great Egret, Green Heron	SWM2, SWM3, SWM5, SWM6, SWD1 to SWD7, FET1	Nests in live or dead standing trees in wetlands, lakes, islands and peninsulas. Shrubs and emergents may be used. Nests in trees are 11 - 15 m from ground, near tree tops.	N	Not present in Study Area.
Colonially-nesting Bird Breeding Habitat (Ground)	Herring Gull, Great Black-backed Gull, Little Gull, Ring-billed Gull, Common Tern, Caspian Tern, Brewer's Blackbird	**Gulls/Terns:** Rocky island or peninsula in lake or river. **Brewer's Blackbird:** close to watercourses in open fields or pastures with scattered trees or shrubs.	**Gulls/Terns:** islands or peninsulas with open water or marshy areas. **Brewers Blackbird colonies:** on the ground in low bushes close to streams and irrigation ditches.	N	Not present in Study Area.
Migratory Butterfly Stopover Area	Painted Lady, Red Admiral, **Special Concern:** Monarch	Combination of open (CU) and forested (FO) ecosites (need one from each).	≥10 ha, located within 5 km of Lake Ontario. Undisturbed sites, with preferred nectar species.	N	Not within 5 km of Lake Ontario.
Landbird Migratory Stopover Areas	All migratory songbirds. All migrant raptor species.	Forest (FO) and Swamp (SW) ecosites	Woodlots >10 ha within 5 km of Lake Ontario. If multiple woodlands are along the shoreline, those <2 km from L. Ontario are more significant.	N	Not within 5 km of Lake Ontario.
Deer Yarding Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	MNRF does not map this within the Subject Property.
Deer Winter Congregation Areas	White-tailed Deer	Mixed or Conifer ecosites	Determined by MNRF - no studies	N	MNRF does not map this within the Subject Property.
Rare Vegetation Communities					
Cliffs and Talus Slopes		TAO, TAS, CLO, CLS, TAT, CLT e.g., Niagara Escarpment (contact NEC)	**Cliff:** near vertical bedrock >3m **Talus Slope:** coarse rock rubble at the base of a cliff	N	Not present in study area.
Sand Barren		SBO1, SBS1, SBT1	Sand Barrens >0.5 ha. Vegetation can vary from patchy and barren to tree covered, but <60%. <50% vegetation cover are exotic species.	N	Not present in study area.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/P/N)	Rationale
Alvar	*Carex crawei, Panicum philadelphicum, Eleocharis compressa, Scutellaria parvula, Trichostema brachiatum,* Loggerhead Shrike	ALO1, ALS1, ALT1, FOC1, FOC2, CUM2, CUS2, CUT2-1, CUW2	Alvar >0.5 ha. **Need 4 of the 5 Alvar Inidcator Spp**. <50% vegetation cover are exotic species.	N	Not present in study area.
Old Growth Forest	Trees >140 yrs; heavy mortaily = gaps. Multi-layer canopy, lots of snags and downed logs	FOD, FOC, FOM, SWD, SWC, SWM	Woodland areas ≥30 ha with a≥10 ha interior habitat, assuming a 100 m buffer at edge of forest.	N	Woodland habitat not of sufficient size or character.
Savannah	Prairie Grasses w/ trees	TPS1, TPS2, TPW1, TPW2, CUS2	A Savannah is a tallgrass prairie habitat that has tree cover of 25 – 60%. <50% cover of exotic species.	N	Not present in study area.
Tallgrass Prairie	Prairies Grasses dominate	TPO1, TPO2	An open Tallgrass Prairie habitat has < 25% tree cover. Less than 50% cover of exotic species.	N	Not present in study area.
Other Rare Vegetation Communities		Provincially Rare S1, S2 and S3 vegetation communities are listed in Appendix M of SWHTG.	Rare Vegetation Communities may include beaches, fens, forest, marsh, barrens, dunes and swamps.	N	Not present in study area.
Specialized Habitat for Wildlife					
Waterfowl Nesting Area	Ducks	Upland habitats adjacent to: MAS1 to MAS3, SAS1, SAM1, SAF1, MAM1 to MAM6, SWT1, SWT2, SWD1 to SWD4 (>0.5 ha open water wetlands, alone or collectively).	Extends 120 m from a wetland or wetland complex. Upland areas should be at least 120 m wide. Wood Ducks and Hooded Mergansers use cavity trees (>40 cm dbh).	N	Not present in Study Area.
Bald Eagle & Osprey Nesting, Foraging and Perching Habitat	Osprey, Bald Eagle	FOD, FOM, FOC, SWD, SWM, SWC directly adjacent to riparian areas	Nesting areas are associated with waterbodies along forested shorelines, islands, or on structures over water.	N	Area is not associated with a waterbody.
Woodland Raptor Nesting Habitat	Barred Owl. **Hawks:** N. Goshawk, Cooper's, Sharp-shinned, Red-shouldered, Broad-winged.	Forests (FO), swamps (SW), and conifer plantations	>30 ha with > 10 ha interior habitat.	N	Area does not contain >10 ha interior habitat using the criteria 200 m buffer.
Turtle Nesting Areas	Midland Painted Turtle **Special Concern:** Snapping Turtle, Northern Map Turtle	Exposed mineral soil (sand or gravel) areas adjacent (<100m) or within: MAS1 to MAS3, SAS1, SAM1, SAF1, BOO1	Nest sites within open sunny areas with soil suitable for digging. Sand and gravel beaches.	N	Nesting opportunities not present in Study Area.
Seeps and Springs	Wild Turkey, Ruffed Grouse, Spruce Grouse, White-tailed Deer, Salamander spp.	Seeps/Springs are areas where ground water comes to the surface.	Any forested area within the headwaters of a stream/river system. **(2 or more confirms SWH type).**	N	Seeps and springs not present in Study Area.
Amphibian Breeding Habitat (Woodland)	Woodland Frogs and Salamanders	FOC, FOM, FOD, SWC, SWM, SWD	Open water wetlands, pond or woodland pool of >500 m^2 within or adjacent to wooded areas. Permanent ponds or holding water until mid-July preferred.	N	Open waters/ponds/vernal pools not present in Study Area.
Amphibian Breeding Habitat (Wetlands)	Toads, Frogs, and Salamanders	SW, MA, FE, BO, OA and SA. Typically isolated (>120m) from woodland ecosites, however larger wetlands may be adjacent to woodlands.	Open water wetland ecosites >500m^2 isolated from woodland ecosites with high species diversity. Permanent water with abundant vegetation for bullfrogs.	N	Open waters/ponds not present in Study Area.
Woodland Area-Sensitive Bird Breeding Habitat	Birds (area-sensitive species)	FOC, FOM, FOD, SWC, SWM, SWD	Large mature (>60 years) forest stands/woodlots >30 ha. Interior forest habitat >200m from forest edge.	P	Area contains limited interior habitat using the criteria 200 m buffer.
Habitat of Species of Conservation Concern					
Marsh Bird Breeding Habitat	Wetland Birds	MAM1 to MAM6, SAS1, SAM1, SAF1, FEO1, BOO1 **Green Heron**: SW, MA and CUM1	Wetlands with shallow water and emergent vegetation. Gr. Heron @ edges of these types w/ woody cover.	N	Not present in study area.
Open Country Bird Breeding Habitat	Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, N. Harrier, Savannah Sparrow, **Short-eared Owl (SC)**	CUM1, CUM2	Grassland/meadow >30 ha. Not being actively used for farming. Habitat established for 5 years or more.	N	Not present in study area.
Shrub/Early Successional Bird Breeding Habitat	**Brown Thrasher + Clay-coloured Sparrow (indicators),** Field Sparrow, Black-billed Cuckoo, E. Towhee, Willow Flycatcher, Yellow-breasted Chat, Golden-winged Warbler	CUT1, CUT2, CUS1, CUS2, CUW1, CUW2	Large field areas succeeding to shrub and thicket habitats > 10 ha. Areas not actively used for farming in the last 5 years.	N	Not present in study area.
Terrestrial Crayfish	Chimney or Digger Crayfish; Devil Crayfish or Meadow Crayfish	MAM1 to MAM6, MAS1 to MAS3, SWD, SWT, SWM. CUM1 sites with inclusions of the aforementioned.	Wet meadow and edges of shallow marshes (no minimum size) should be surveyed for terrestrial crayfish (typc. protected by wetland setbacks).	N	Not present in study area.

SWH Type	Associated Species	Associated ELC Ecosites	Habitat Criteria	Presence (Y/P/N)	Rationale
Special Concern and Rare Wildlife Species	Any species of concern or rare wildlife species	Any ELC code.	Presence of species of concern or rare wildlife species.	N	Not present in study area.
Animal Movement Corridors					
Amphibians	Amphibians	all ecosites assoc. w/ water	When Breeding Habitat - wetland confirmed	N	No viable breeding habitat in Study Area.
Deer Movement	White-tailed Deer	all forested ecosites	When Deer Wintering Habitat confirmed	N	Not present in study area.
Exceptions for Ecoregion 6E					
Mast Producing: 6E-14	Black Bear	Forested Ecosites	>30 ha w/ mast producing species: Cherry (berries), Oak, Beech (nuts).	N	Not in Ecoregion 6E-14.
Leks: 6E-17	Sharp-tailed Grouse	CUM, CUS, CUT	Grassland/meadow >15 ha adjacent to shrublands, >30 ha adjacent to woodlands. Low agricultural intensity.	N	Not in Ecoregion 6E-7.