

**Environmental Impact Study-
Thornbury Acres
Concession 8, Grey Road 40**

**Report Prepared for:
Thornbury Acres Holdings Inc.,**

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Report Reference # 22-21.2

15 December 2022

Executive Summary

Background

This Environmental Impact Study (EIS) has been prepared for a 60-hectare (ha) area of land located on the southeast corner of the intersection of Grey Road 40 and Grey Road 2 in the Town of the Blue Mountains (TOBM) (see Figure 1). The property consists of three 20-ha parcels, all currently held by Thornbury Acres Holdings Inc.. The Property is currently unoccupied and devoid of buildings or infrastructure, but was subject to a limited extent of initial clearing for golf course development that was never completed.

EIS Scope and Purpose

A Farm Co-Operative Site Plan has been prepared in support of a pending application to re-designate and re-zone the Property in order to permit a vacant land draft plan of condominium. This EIS has been prepared in support of the pending application(s) for the TA Property.

The scope and content of this EIS are site-specific, intended to address specific and general concerns regarding the environment and natural heritage features to the satisfaction of approval authorities and other concerned agencies. The core environmental issues of potential concern associated with the Property include:

1. potential impacts that site development might have on small watercourses which flow within or near to the Property
2. potential impacts that site development might have on Significant Woodlands within and adjacent to the Property, and their various functions; and
3. potential impacts on Priority Species, including species of conservation concern (SOCC) and legislated species at risk (SAR), or otherwise significant wildlife or significant wildlife habitat (SWH), that might be present on or near the Property.

The scope and content of this EIS have been developed to be consistent with the general requirements specified in Section C9 of the TOBM OP and also in Section 7.11 of the Grey County OP.

At this time, this EIS has been prepared primarily to assist in the advancement of planning application with the TOBM. It provides an understanding of environmental features and functions within and adjacent to the Property, and how these features and functions are relevant in the context of identified policy constraints. It also provides an assessment of potential development-related impacts associated with the proposed Farm Co-Operative Site Plan and recommendations to avoid or mitigate any such impacts.

As the EIS has progressed, key findings and recommendations have also been conveyed to the proponents to inform and guide the planning process for the TA property, including

the preparation of the proposed Farm Co-Operative Site Plan and various supporting studies.

Existing Conditions

The TA Property is occupied largely by early succession woody communities that are regionally and locally common. This includes Cultural Thickets and Woodlands that account for a bit more than 80% (~50 ha) of the Property. About 6 ha (~10%) of the Property is currently occupied by Cultural Meadow communities, largely in the form of active crop lands. Aside from the prevailing Cultural communities, there is a single 5-ha patch of Deciduous Forest community in Parcel 1. This deciduous forest patch has been mapped as Significant Woodland in the Grey County OP. About 7 ha of the Cultural Woodland community in Parcel 2 is also mapped as Significant Woodlands.

There is one plant species occurring within the Property that is considered herein to be a Priority Species. Multiple specimens of Butternut (*Endangered*) are found along remnant stone fence-lines in Parcel 2. Otherwise, the floral assemblages within the Property consist of a moderately diverse mix of common species, almost 40% of which are non-native and, in numerous cases, also invasive.

The faunal communities associated with the Property are comprised of a relatively modest diversity of species that have secure populations within Ontario and within Grey County. There is no evidence indicating that the Property directly supports any Priority Species of animal in meaningful number or is otherwise important in sustaining local populations of these species.

In regard to Significant Wildlife Habitat (SWH) the findings of direct site surveillance do not indicate that any of the vegetation communities within the Property are supportive of SWH function.

There are four linear drainage features that are within or abut the Property that are characterized by intermittent event-based flow. These drainage features do not function as fish habitat or otherwise support communities of aquatic biota.

Aside from the confined presence of Butternuts, the TA Property supports a limited range of ecological functions that are not considered significant or sensitive, and which are not critical elements in the functional integrity of the local natural heritage system (NHS) integrity.

Analysis of Impacts

In brief summary, the findings of the analysis of potential impacts associated with the proposed Farm Co-Operative Site Plan are as follows:

- development within the Property as proposed does not incur meaningful risk of adverse effects on SWH.

- the proposed development does not incur meaningful risk of adverse effects on Priority Species other than specimens of Butternut (Endangered) in confined locations in Parcel 2. These risks can be fully mitigated.
- proposed development does not incur meaningful risk of impact on watercourses or aquatic habitat function.
- proposed development will result in direct impact (loss or alteration) of the large majority of the 7 ha of Significant Woodlands in Parcel 2. The 5-ha patch of Significant Woodland in Parcel 1 will be retained, and there is no expectation of indirect impacts on this patch. As proposed, and subject to mitigation measures, the proposed development could occur without significant loss or impairment of woodland function within the Property, and without significant diminishment of the overall presence and function of Significant Woodlands in the area.

Overall, development as proposed in the proposed Farm Co-Operative Site Plan could occur within the TA Property without loss or impairment of features and functions that are recognized as conservation priorities, and without compromising the functional integrity of the local natural heritage system.

Recommendations

Regardless of the relatively low level of risk, there should be efforts to further mitigate the risk of any impacts potentially associated with proposed development of the Property. Recommendations are provided herein to avoid, limit or otherwise mitigate the potential impacts that have been identified. The general recommendations are summarized as follows:

- Optimize the placement, size or configuration of all elements of development (including homesteads, buildings, roads, farms and amenity areas) to optimize forest or woodland retention, with emphasis on placement and sizing of development elements involving built/impermeable surface or significant grading;
- Develop a Tree Preservation Plan (TPP) for the Property, with a focus on protection of Significant Woodland areas and Butternuts, and with the inclusion of compensation planting requirements if/where feasible;
- Develop a naturalization plan for the exposed perimeter of retained wooded areas, including edge planting and naturalized buffers where homesteads or agricultural lands border those areas;
- Develop a plan to optimize ecological function of land assigned as recreational lands (15.7 ha total) and residential buffer (8.5 ha total), the majority of which is occupied by the CUT community. This plan should target to offset the area of loss of CUW in Parcel 2;
- Plan the timing of clearing of existing natural vegetation within the Property to avoid the active bird nesting period (i.e., May to August, inclusive);

- Consideration should be given to the retention or functional replacement of small pockets of standing water along the upper end of the linear drainage feature in the northeast part of the Property;
- Removal/filling of any of the small pools should occur outside the time when amphibians are most likely to be present at these features (April and May); and
- Development of the TA property is to be undertaken in consideration of regulations under the ESA of relevance to Butternut (an SAR), and in consultation with the MECP, to ensure compliance with respect to the presence of this SAR within the Property.

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Acronyms and Abbreviations

ANSI	Area of Natural and Scientific Interest
AVS	Amphibian Vocalization Survey
BBS	Breeding Bird Survey
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
COSSARO	Committee on the Status of Species at Risk in Ontario
CUM	Cultural Meadow (ELC Community)
CUT	Cultural Thicket (ELC Community)
CUW	Cultural Woodland (ELC Community)
DBH	Diameter (of a tree) at breast height
EIS	Environmental Impact Study
ELC	Ecological Land Classification
ESA	Endangered Species Act (Ontario)
ESC	Erosion and Sediment Control
FOD	Deciduous Forest (ELC Community)
GSCA	Grey Sauble Conservation Authority
ha	hectare(s)
masl	meters above sea level
mbgs	meters below ground surface
MBCA	Migratory Bird Conservation Act (Canada)
MECP	Ministry of Environment Conservation and Parks
MNRF	Ministry of Natural Resources and Forestry
NHIC	Natural Heritage Information Centre
NHS	Natural Heritage System
OARA	Ontario Amphibian and Reptile Atlas
OBBA	Ontario Breeding Bird Atlas
OP	Official Plan
PPS	Provincial Policy Statement
PSW	Provincially Significant Wetland
RHPZ	Root Harm Prevention Zone (for Butternut)
SAR	Species at Risk

SARA	Species at Risk Act (Canada)
SOCC	Species of Conservation Concern
SWH	Significant Wildlife Habitat
SWM	Stormwater Management
TOBM	Town of the Blue Mountains
UTM	Universal Transverse Mercator

1.0 INTRODUCTION

1.1 Property Description

This Environmental Impact Study (EIS) has been prepared for a 60-hectare (ha) property located on the southeast corner of the intersection of Grey Road 40 and Grey Road 2 in the Town of the Blue Mountains (TOBM). At the time of preparation of this EIS, this property consisted of three assessment parcels, each legally known as Part of Lot 27, Concession 8, Grey Road 40. The combined parcels have a frontage of about 610 m on Grey Road 2 and about 1,015 m on Grey Road 40. The location of this property is depicted in Figure 1.

At the time of initiation of this EIS in 2020, the subject lands consisted of a single 40-ha parcel bordering Grey Road 2. In 2021, consent was granted by the TOBM, dividing this parcel along the east-west axis to create two 20-ha parcels. However, the combined 40 ha of land is still considered herein as a single parcel (i.e., Parcel 1). In 2022, the scope of the EIS was expanded to include the 20-ha parcel under acquisition, bordering the east side of Parcel 1. This second parcel is referred to as Parcel 2 (see Figure 2). For the purpose of this EIS, the combined parcels are generally treated as a single property, with some level of distinction provided in regard to Parcels 1 and 2. The combined 60 ha of land is currently held by Thornbury Acres Holdings Inc., and is referred to herein collectively as the "Thornbury Acres Property", the "TA Property", or simply the "Property".

Under the current Official Plan (OP) of Grey County, the land-use designation for the TA Property includes roughly 4.8 ha of Hazard land, located in the southwest corner of Parcel 1 (see Figure 2). About 8 ha of land in the north half of Parcel 2 is designated as Special Agriculture, partly reflective of the historical presence of apple orchards in this location. Otherwise, the balance of the Property is designated as Rural. Under the TOBM Zoning By-law, the Property is zoned as Rural, Hazard, and Special Agriculture, effectively consistent with the Grey County OP.

In 2002, planning approval was granted for the creation of an 18-hole golf course and clubhouse within Parcel 1 of the TA property. There is still remnant evidence of partial clearing of the Property for development of the golf course, but the golf course was never completed. About 6 ha of Parcel 2 is currently in active use for agricultural production, but lacks any built structures other than the remnant foundation of a now demolished barn. Otherwise, the TA Property is currently unoccupied and devoid buildings or infrastructure.

1.2 Environmental Constraints

The current understanding of potential environmental constraints of relevance to the Property is based in part on mapping of formal delineations available from several sources, including:

- the TOBM and Grey County OPs and supporting on-line mapping resources,
- Natural Heritage mapping available from the Ministry of Natural Resources and Forestry (MNR) or Land Information Ontario (LIO), and
- mapping available from the Grey Sauble Conservation Authority (GSCA).

Copies of relevant constraint maps are provided in Appendix A. In regard to existing natural heritage features within or near the Property, the existing mapping reveals the following:

- The nearest Area of Natural and Scientific Interest (ANSI) is the Blue Mountain Slopes Life-Science ANSI. At the closest point, the ANSI is separated from the Property by about 2 km. The Property does not encroach on the designated adjacent lands (i.e., within 120 m) of the ANSI;
- There are no Provincially Significant Wetlands (PSW) or other wetlands, as mapped by the MNR or in the County and Municipal OP, within the Property or adjacent lands. The nearest PSW is the Silver Creek wetland complex located almost 10 km east of the Property;
- The nearest Natural Heritage System (NHS) core area, as indicated in Appendix C of the Grey County OP, overlaps with the Blue Mountain Slopes ANSI and is located about 2 km to the east of the Property; and
- There are no Significant Wildlife Areas (SWA), as identified in current OPs or in LIO or MNR mapping, within or in close proximity to the Property. The nearest SWA is a deer wintering yard in the Lora Bay area to the northwest, almost 5 km away from the Property at the closest point.

In summary, the Property is not subject to constraints related to SWAs, PSWs, ANSIs, or NHS Core lands or Corridors, and such features are not subject to focused analysis in this EIS. Otherwise, there are a few other mapped features within or near the Property which should be considered in the determination of the need for an EIS and its scope. These are;

- the presence Significant Woodlands near the core of Parcel 1 and over much of the south half of Parcel 2, as mapped in Appendix B of the Grey County OP,
- the presence of small un-named watercourses traversing the southern perimeter of the Property, as mapped by the GSCA, and
- the presence of Hazard land (as per both county and municipal OPs) associated with the watercourses and a portion of the Significant Woodlands within Parcel 1.

In regard to Significant Wildlife Habitat (SWH) or critical habitat for Species at Risk (SAR), comprehensive mapping of these features has not been compiled by planning authorities, but their presence is a possibility to consider at any site at the outset of an

EIS. A full assessment of possible SWH and SAR habitat has been included in the scope of this EIS.

1.3 EIS Rationale and Purpose

At present, a Farm Co-Operative Site Plan has been developed for the TA property which includes a mix of land and facilities dedicated to agricultural production along with a residential community, managed under a condominium style ownership model that integrates the residential and agricultural components. A copy of the Farm Co-Operative Site Plan is provided as Appendix B. The Farm Co-Operative Site Plan has been prepared in support of a pending application to re-designate and re-zone the Property in order to permit a vacant land draft plan of condominium. This EIS has been prepared in support of the pending application(s) for the TA Property.

The core focus of the EIS is to assess the Farm Co-Operative Site Plan in context of the various OP policies pertaining the environmental constraints of relevance to the Property, as identified in Section 1.2. The assessment is guided by consideration of any encroachment on these features or their "adjacent lands" (i.e., within 120 m).

An EIS may also be required as supporting material to address GSCA regulatory requirements. A portion of the TA Property (effectively corresponding to the lands designated as Hazard) was previously mapped as being subject to Regulatory control by the GSCA under Ontario Regulation 151/06 (Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses). However, following a site visit in late 2020, GSCA staff indicated that the TA property no longer encompassed any lands designated as Regulated Area. It is assumed for the purpose of this EIS that permits would not be required from the GSCA for any development scenario that may eventually be proposed for the Property. However, the scope of the EIS is such that its content should address specific concerns in the event that a GSCA permit is required.

At this time, this EIS has been prepared primarily to assist in the advancement of the planning applications with the TOBM. It provides an understanding of environmental features and functions within and adjacent to the Property, and how these features and functions are relevant in the context of identified policy constraints. It also provides an assessment of potential development-related impacts associated with the proposed Farm Co-Operative Site Plan and recommendations to avoid or mitigate any such impacts.

As the EIS has progressed, key findings have also been conveyed to the proponents to inform and guide the planning process for the TA property, including the preparation of the proposed Farm Co-Operative Site Plan and various supporting studies.

1.4 Scope of Work

The scope and content of this EIS are site-specific and have been developed so that anticipated concerns regarding the environment and natural heritage features are

addressed, ultimately to the satisfaction of approval authorities and other concerned agencies.

The EIS scope was developed in part in consideration of the policies of the Grey County and TOBM OPs. The scope and content of this EIS have been developed to be consistent with the general requirements specified in Section C9 of the TOBM OP and also in Section 7.11 of the Grey County OP.

The scope of this EIS was also developed in consideration of site-specific comment from the GSCA. In 2020, an application was submitted for a Zoning Bylaw Amendment (ZBLA) to rezone the Property to the general Rural (RU) Zone. The Grey Sauble Conservation Authority (GSCA) received and reviewed the application on behalf of the TOBM and Grey County. The GSCA provided written comment¹ in regard to two potential environmental constraints for the property. The GSCA noted that:

1. forested areas within and adjacent to the Property are defined as Significant Woodlands in the County of Grey OP, and
2. the Property provides potential suitable habitat for two species that are designated as Species at Risk (SAR) (i.e., Meadowlark and Bobolink).

The GSCA also provided comment² in 2021 in response to the application for consent relating to Parcel 1. In that correspondence, the GSCA reiterated that the presence of Significant Woodlands within Parcel 1 and the potential for SAR habitat were issues to be considered. The GSCA also noted the presence of Significant Woodlands immediately adjacent to the Property (i.e., in what is now Parcel 2), and the potential ecological connectivity of the Property to those woodlands. The GSCA noted that other natural features of potential concern (Wetlands, Fish Habitat, Natural Heritage System), or their respective adjacent lands, are NOT present within the Property.

The scope and content of this EIS also reflect pre-consultation comments from planning staff at the County and TOBM, provided in January and August 2022.

In consideration of the initial analysis of existing information and agency comments to date, the core environmental issues of potential concern associated with the TA Property include:

1. Potential impacts that site development might have on Significant Woodlands within and adjacent to the Property, and their various functions,
2. Potential impacts that site development might have on watercourses (and their functions) located within the Property, and

¹ Letter from Jacob Kloeze (Planning Technician, GSCA) to Denise Whaley (Planner, Town of the Blue Mountains). Re: Application for Zoning Amendment (P2906), West Part Lot 27, Concession 8. 7 October 2020

² Letter from Jacob Kloeze (Planning Technician, GSCA) to TOBM Committee of Adjustment. Re: Consent Application B04-2021, West Part Lot 27, Concession 8. 17 February 2021

3. Potential impacts on species of conservation concern (SOCC) or legislated species at risk (SAR), or otherwise significant wildlife or wildlife habitat that might be present within or near the Property.

The EIS considers, at a minimum, the potential impacts of any eventual site alteration or development on these features and functions. The coverage and level of detail of on-site surveillance that has been undertaken are intended to allow adequate description of the general natural environment, and also to allow focused assessment of potential effects on site features and functions of concern. The characterization of the TA Property and relevant features is based primarily on direct field-level surveillance. To effectively address the identified EIS requirements, this field surveillance has included:

- Direct examination of slope/topography, conveyance features (swales, seeps), and overburden characteristics within and adjacent to the Property, to understand hydrological processes within the Property and connectivity between the Property and hydrologic features of interest (i.e., watercourses).
- Completion of Ecological Land Classification (ELC) of the Property,
- Focused characterization of woodlands within the Property, including tree species composition, forest structure, ecological function (habitat, ecological connectivity).
- Direct examination of two un-named watercourses, including abiotic characteristics (e.g. substrate, flow regime, water depth) and the presence and nature of any aquatic biota communities and habitat function.
- Detailed plant and animal inventories with a focus on identification of possible presence of Species at Risk (SAR) or Significant Wildlife Habitat (SWH). This includes;
 - 3-season botanical survey, following a wandering transect approach and encompassing all identified ELC communities within the Property,
 - breeding bird survey (BBS) – point-count monitoring following the standard approach of the Ontario Breeding Bird Atlas (OBBA), and also wandering surveillance throughout the study area,
 - amphibian vocalization survey (AVS) – point-count monitoring following the standard approach of the Marsh Monitoring Program (MMP), and also wandering surveillance throughout the study area,
 - surveillance of other fauna – incidental surveillance of reptiles, mammals and invertebrates, conducted in all identified ELC communities during the full period of study.

The information acquired through the site-specific surveillance has been combined with previously compiled information for the local area to complete the required site characterization. Further details of ecological monitoring methods are provided in Section 2.

2.0 METHODOLOGY

The work undertaken to allow the preparation of this EIS Report has included two main components;

1. a desktop review of previously recorded information regarding the characteristics of the Property and adjacent lands, and
2. focused on-site monitoring of the Property.

The assessment herein collectively considers the findings of the desktop review and the on-site monitoring in a weight-of-evidence manner, with primary emphasis on site-specific data.

The following sections describe the methods employed in conducting the various components of environmental monitoring for the purposes of this EIS. In summary, the methodology adopted for the monitoring documented herein was developed to provide results of relevance to the stated objectives, and is based on standard accepted protocol where available.

A handheld GPS unit (Garmin model “GPSmap 76”) was used to delineate key features, to measure areas of features, and to provide the geographic coordinates of monitoring locations or key natural heritage features of relevance. All coordinates have been obtained and reported using the Universal Transverse Mercator (UTM) coordinate system and NAD83 datum.

2.1 Review of Existing Information

A review of existing information of relevance to the TA Property was completed prior to completion of direct field assessment. Several sources of information were consulted for this purpose, including:

- Grey County’s web-based interactive GIS mapping tool,
- GSCA's web-based interactive GIS mapping tool,
- on-line natural feature mapping available from Land Information Ontario (LIO),
- the Natural Heritage Information Centre (NHIC) on-line database,
- the Ontario Breeding Bird Atlas (OBBA) (Cadman et al, 2007) and associated database (Bird Studies Canada (BSC) *et al.*, 2021),
- the Soil Survey of Grey County (Gillespie and Richards, 1954),
- the Grey County Natural Heritage System Study (NRSI, 2017),

- the Ontario Reptile and Amphibian Atlas (OARA) on-line database (Ontario Nature), and
- various layers of the *iNaturalist* on-line database.

The information obtained in this review has served in part to determine certain ecological characteristics of the Property, and also in part to identify possible features to receive focus during on-site monitoring efforts.

Information from several of the sources noted above was also used to complete initial screening in regard to the possible presence of Species at Risk (SAR). The available information of relevance has ultimately been combined with results of direct surveillance of the Property to assess SAR presence (see Section 4.8).

2.2 On-Site Monitoring

On-site monitoring was intended to provide a sufficient understanding of all relevant characteristics of the Property. Elements of the monitoring program were focused on the priority endpoints, including woodlands, watercourses, and the possible presence of species of conservation concern (SOCC), legislated species at risk (SAR) or Significant Wildlife Habitat (SWH) within the Property.

On-site surveillance of both parcels was conducted during two preliminary site visits in September and October of 2020. Subsequently, Parcel 1 was subject to six additional visits over the period of April to September 2021, and Parcel 2 was subject to five visits from May to September 2022. The timing of site visits allowed for appropriate seasonal coverage for the various specific monitoring efforts.

2.2.1 Avian Monitoring

A Breeding Bird Survey (BBS) of the Property was completed using a combination of two methods; 1) the point-count method, and 2) wandering surveillance. The BBS gave focused attention to any indications of the possible presence of SOCC or SAR.

The point-count method was implemented following protocol consistent with that employed for the Ontario Breeding Bird Atlas (OBBA) (Cadman et al., 2007) and the Marsh Monitoring Program (BSC, 2003). Six point-count stations were established throughout Parcels 1 and 2. These stations were located to provide coverage of both Parcels as a whole, and specific representation of the distinct vegetation communities within the Property (see Figures 3 and 5). Following OBBA protocol, the preferred station separation distance is 250 m for wooded areas, and 500 m for open habitats (including thicket habitat). The six stations were established within the Property with about 300 to 350 m of separation, which is a bit less than standard separation for open habitats. With this spacing, there is potential for overlap in the results of adjacent point-count stations. The implications of this potential overlap are taken into consideration in the interpretation of the results of the BBS (see Section 4.4).

Point-count monitoring was conducted between sunrise and 10:00 a.m.. Each individual bird heard or seen within a 100 meter radius (3.142 ha) of the fixed centre was recorded over two successive five-minute periods (10 continuous minutes per survey episode). The distance from the observation point was approximated for each individual bird occurrence. Breeding evidence for each bird species was documented using OBBA Evidence Codes.

Wandering surveillance was conducted throughout the period the study (April to September) which covered the breeding bird season as well as spring and early fall periods when the presence of migratory birds could also be expected. Surveillance was conducted within the major habitat types identified within the area of focused monitoring (see Section 4.2 and Figure 5). Avian monitoring efforts gave focused attention to any indications of the possible presence of SOCC or SAR, as identified through initial screening (see Section 4.8).

2.2.2 Amphibian Monitoring

General aspects of the amphibian monitoring protocol established for the Marsh Monitoring Program (MMP) (BSC, 2003) were applied for the purpose of this EIS. Amphibian monitoring was focused on locations within the Property where meaningful area and depth of standing water was present for at least a portion of the amphibian breeding season. Initial surveillance of the Property indicated the presence of two such areas, only within Parcel 1.

Amphibian Vocalization Survey (AVS) was conducted at each location of standing water presence (see Figure 3). Monitoring of vocalization was conducted at least 30 minutes after sunset on nights when conditions were consistent with the standard conditions defined in the protocol, relating largely to night-time temperature thresholds and an absence of wind and precipitation. Timing also gave consideration to the broader activity trends observed in southern Ontario through the spring and early summer of 2021. In 2021, the areas of standing water within the TA Property were completely dried up by early June, and only two AVS sessions were completed (April and May).

During each AVS session, a Call Level Code (as per MMP protocol) and the general abundance of individuals calling was recorded. The areas of standing water were also subject to direct day-time surveillance for the presence of adult amphibians, egg masses or larval stage amphibians.

In addition to focused amphibian monitoring, instances of any amphibian seen or heard at any location or time were recorded throughout the full period of study.

2.2.3 Mammal Surveillance

During all site visits, all observations of mammals within the TA Property were recorded, along with all other evidence of mammal presence (e.g. foot prints, trails, scat, and burrows).

The Property was also surveyed for the presence of features that might provide habitat for bats (e.g. dead or dying large trees possibly providing hollows or bark crevices for roosting or hibernating).

2.2.4 Reptile Surveillance

The TA Property was monitored for any evidence of the presence of reptiles during all site visits. This included turning of larger rocks or logs to detect possible snake presence within the Property.

2.2.5 Botanical Inventory

Surveillance of terrestrial vascular plant species was completed following a basic “wandering transect” approach to determine the presence and general distribution of plant species within the TA Property. The vascular plant inventory was conducted to provide coverage of each of the distinct ecological communities delineated within the Property (see Section 4.2 and Figure 5). Three-season botanical surveillance was conducted over the full period of study (i.e., from April to October).

2.2.6 Ecological Land Classification

The TA Property was assessed following the Ecological Land Classification (ELC) methodology described by Lee *et al.* (1998). This approach generates classification and mapping of ecological communities down to a size of approximately 0.5 ha, or smaller if warranted, and allows much more detailed classification of communities than broad scale Landsat imagery. Distinct vegetation communities smaller than 0.5 ha may be mapped as inclusions to a larger vegetation type. Communities smaller than 0.2 ha are ecologically less meaningful and are generally addressed as inclusions only in the written description of larger vegetation community types.

The application of the ELC methodology to the TA Property was completed through the following general task sequence:

- Initial delineation of community distribution using satellite imagery and aerial photos.
- Subsequent site reconnaissance to generally characterize major community types, for a first approximation of ELC.

- Further detailed site monitoring to refine initial ELC approximations. Each distinct community was examined to determine soil characteristics and to determine the plant species present.

To facilitate characterizations of soil conditions (texture, moisture regimes) vertical soil profiles were completed in multiple locations in each distinct ecological unit. Soil profiles were completed to a depth of up to 1 m below ground surface (bgs) using a hand-auger, where possible.

The detailed ELC monitoring included examination of physiographic attributes such as topography/slope, surface soil profiles, and the possible presence of elevated water table. Within each identified unit, the following information regarding vegetation cover was recorded:

- Relative species composition and percent cover of trees and shrubs, where present
- Caliper and height range of trees in wooded units, and
- General under-storey characteristics and non-woody ground cover composition.

Through other specific monitoring efforts, the habitat function of each unit was also assessed and recorded.

2.2.7 Aquatic Features

The on-site surveillance of the TA Property included direct examination of all identified aquatic features within the Property (see Figure 4). To generate an understanding of hydrological connectivity, this included any discernable drainage features, areas of ponding, or streams. The only mapped surface water features within the Property are the two small watercourses identified as crossing the southern edge of the Property. Examination of these features included the visual assessment of several standard abiotic variables (water depth, turbidity, substrate type), and the possible presence of aquatic biota (macrophytes, invertebrates, fish, amphibians). The presence/absence of fish was assessed through simple visual surveillance, and fish collection was not conducted as part of this EIS.

For the purposes of this EIS, the hydrology of the site has been examined with particular attention paid to the hydrological connectivity between areas of potential development and the noted watercourses.

3.0 PHYSICAL CHARACTERISTICS

3.1 Topography

The TA Property is characterized by generally level topography. Peak elevation of about 225 meters above sea level (masl) is encountered along the southern perimeter of the Property. There is a gradual decline in elevation moving north through the Property, with a low of about 218 masl along the frontage on Grey Road 40. The decline in elevation through the Property is gradual and gentle, with overall average slope of about 1%. There are scattered small pockets of very minor elevation or depression within the Property, but there are no larger scale topographic variations that have significant influence on natural heritage features and functions. The south half of Parcel 2 does exhibit some localized and minor variability of microtopography that does influence plant species assemblages on a very small scale. This is not considered to be a significant determinant of natural heritage characteristics or functions within the Property.

3.2 Soils

According to the Grey County soil survey (Gillespie and Richards, 1954), the overburden within the TA Property is classed mainly as Wiarton Loam. This is a medium-textured calcareous soil with clay inclusions that exhibits imperfect drainage. There is also a pocket of Brookston Clay Loam in the southwest corner of the Property which has finer texture and is reported to have poor drainage. In general, both of these soil types can lead to wet conditions. A large portion of the area mapped as Hazard on the west side of Parcel 1 overlaps the area of Brookston Clay Loam.

Observations from surface soil profiling conducted as part of this EIS confirmed the broad presence of loam soil throughout the Property, with increasing silt content with depth. The Property encompasses several areas with a notable presence of large stones in the upper horizons, including much of the area mapped as Significant Woodland in both Parcel 1 and Parcel 2. In a few small isolated locations with a seasonal presence of standing water, a relatively thin surface layer of organic soil is present. The depth of organic material in these locations is limited, transitioning to loam/silt within 10 cm of surface. In the context of Ecological Land Classification (see Section 4.2) these and all other soils within the Property are considered to be "mineral" as opposed to "organic".

A recent geotechnical investigation (Cambium, 2022a) reports the general presence of dark surficial topsoil to a depth of 0.15 to 0.60 mbgs, transitioning to cohesionless material of varying silt and sand content. Soil was visually described as moist or wet, with wet soils encountered at depths of at least 0.8 mbgs. Layers of relatively cohesive clay were encountered beneath topsoil in the southwest corner of Parcel 1. Bedrock was not encountered in any of the test pits (excavated to 2 - 3 m deep) or boreholes (5.2 m deep).

Overall, the available information indicates that the TA property exhibits a dark loam topsoil layer that is moist, overlying sand/silt overburden. It should be noted that about 6 ha of land in the north half of Parcel 2 has been subject to drainage improvements (i.e., tile drainage) to facilitate use for agricultural purposes. This area of improved drainage generally corresponds to the lands designated as "Special Agriculture" for planning purposes. The characteristics of Wiarton Loam soil type occurring throughout Parcel 2, and almost the entirety of Parcel 1, are such that these lands are mapped as Class 1 soils for agricultural purposes. A small pocket of Class 2 soils occupies the southwest corner of the Parcel 1, corresponding to the presence of Brookston Clay Loam which exhibits relatively poor drainage.

3.3 Hydrology

Hydrological characteristics of the TA Property have been determined on the basis of direct visual surveillance of water presence and movement within the Property, along with topographical mapping and aerial/satellite imagery. The various features that have been identified for discussion are depicted in Figure 4.

The prevailing hydraulic gradient in the area of the Property is roughly northward, following topographical decline, ultimately toward Georgian Bay. Within the Property, the absence of pronounced topographical relief and the presence of soils with imperfect or poor drainage results in relatively weak hydraulic gradients and a relatively slow rate of drainage of surface water or shallow groundwater from the Property. These characteristics, in turn, contribute to an absence of well defined and persistent watercourses within the Property.

In the Craigeleith-Camperdown Subwatershed Study (CCSS) (Gore and Storrie, 1993), the Property is mapped as being within the watershed of Watercourse #34. This watercourse originates about 2 km south of the Property, and follows a north-northeast flow path for almost 4 km before discharging to Georgian Bay. At its closest point, the path of flow of Watercourse #34 lies about 150 m to the southeast of the Property. It should be noted that drainage from some portion of the north half of the Property appears to ultimately discharge to an un-named watercourse that is not within the watershed of Watercourse #34. Site drainage is discussed in further detail below.

According to GSCA mapping (see Appendix A), there are two small first order watercourses extending within the boundary of Parcel 1 that are indicated as flowing southward. These watercourses are depicted as merging about 250 south of the Property, and then converging with Watercourse #34 another 500 m to the south. These features are not mapped as significant watercourses in Appendix 1 of the TOBM OP, nor are they depicted as streams in Appendix B of the Grey County OP. The two small watercourses were subject to direct surveillance during this EIS. The smaller watercourse to the east consists of a small but discernable swale that is fully vegetated with upland plant species. Saturated soil and a very scant presence of surface ponding were observed in the spring, but flowing water was not observed in this feature at any time during the period of study.

This feature appears to be simple drainage swale that is presumed to convey occasional event-based flow to the south.

The larger watercourse that traverses the southwest corner of Parcel 1 is more variable in its morphology. This watercourse exhibits a weakly scoured and discontinuous channel in closer proximity to the southern boundary of the Property. The majority of the length of this feature within the Property is wider and more diffuse and generally devoid of any scoured channel. Very low spring-time flow was observed in the channelized sections of this watercourse. In the wider and more diffuse sections, shallow standing water was present in the spring, but flow was not discernable. This watercourse is hydrologically connected, by culvert, to lands on the west side of Grey Road 2. There were no instances of active flow through the culvert over the period of study. In the limited instances when minor flow was observed closer to the southern boundary of the Property, the direction of flow was north, which is counter to the direction of flow indicated by GSCA mapping.

There is one other location in the Property where there is evidence of collated and confined surface water movement. There is a linear feature with an east-west orientation that traverses the northeast quadrant of Parcel 1 (see Figure 4). Close to the east side of Parcel 1, there is a small but discernable channel running through dense thicket vegetation. Moving to the west, the feature becomes wider (up to 20 m) and more diffuse, with small pockets of seasonal standing water near the western terminus. The presence of surface water in this feature is intermittent, with pools and discontinuous trickle flow present in the spring but completely absent by early summer. Following a substantial late-season precipitation event in 2021, less extensive and short duration pooling was observed in the western end of this feature. The very minor volume of spring runoff that was discernable in some spots along this feature was observed to be moving east at a very low rate of flow. There is no obvious discernable outlet that conveys collated discharge from this feature from Parcel 1 to Parcel 2. However, there is evidence of intermittent movement of surface drainage via swales across the north half of Parcel 2, likely with some degree of connectivity to the noted feature in Parcel 1. Some portion of the surface drainage from Parcel 2, either diffuse or within swales, appears to be conveyed to a drainage ditch along the eastern perimeter. This ditch is connected to a mapped watercourse that originates more-or-less at the eastern boundary of the TA Property. Direct surveillance of the mapped watercourse immediately downstream of the Property reveals it to be a shallow and mostly vegetated drainage feature. This feature conveys intermittent flow roughly eastward before veering north across Grey Rd 40 and eventually discharging to Georgian Bay about 1 km north of the Property.

The Property exhibits a variable presence of elevated water table, with small scattered pockets of wet soil associated with mapped hazard lands in the southwest of Parcel 1 and also the noted feature in the northeast of Parcel 1. Small low-lying pockets with intermittent presence of saturated soil or standing surface water are also fairly regularly encountered in the south half of Parcel 2 where woody vegetation is present. These areas are evidenced by soil characteristics and also the presence of some hydrophilic plant species as part of the vegetation communities (see Section 4.2). A recent hydrogeological investigation (Cambium, 2022b) reports shallow groundwater levels of 1

mbgs or lower through most of the Property over the period of evaluation (September to November). In the southwest corner of Parcel 1, shallow groundwater levels ranged from 0.26 to 0.59 mbgs. These findings suggest that elevated water table is not a factor that influences the nature of vegetation throughout most of the Property. In the southwest corner, reported groundwater levels indicate possible localized influence on the plant rooting zone at certain times of the year. However, the vegetation communities observed in this part of the Property are not wetland communities (see Section 4.2.1) although small pockets with a presence of some hydrophilic plants are encountered.

4.0 ECOLOGICAL CHARACTERISTICS

The following sections describe the ecological characteristics of the TA Property. A description of the regional ecology is provided for context. Results of on-site monitoring are summarized in Tables 1 to 6, and additional detailed results are provided in Appendix C.

4.1 Regional and Local Ecology

The TA Property is situated within the Mixedwood Plains *Ecozone*, and more specifically it is within the Manitoulin – Lake Simcoe *Ecoregion*, equivalent to Site Region 6E under Provincial classification. This Ecoregion is characterized by warm summers, mild winters, and relatively abundant precipitation (700 to 1000 mm/a) that is evenly distributed throughout the year. The dominant land cover is cropped land with significant areas of mixed forest. Climax vegetation is characterized by mixed hardwoods, including Sugar Maple, American Beech, Eastern Hemlock, Red Oak, and Basswood. Pioneer species include White Pine, White Birch, and Trembling Aspen. Yellow Birch, White and Slippery Elm, Red Maple, Black Ash and White Cedar are typical forest cover species in depressions and moist areas. Wetlands account for only about 3.5% of the total land area within this Ecoregion.

On a more local scale, the landscape within a few km of the TA Property is characterized by a relatively modest presence of patchy forest cover. The forest cover is a mix of deciduous and coniferous communities, mostly associated with prominent slopes (Nipissing Ridge and Niagara Escarpment), small unevaluated wetland features, or riparian corridors (e.g. Indian Brook and Watercourse #34). Outside of the forest patches, the majority of land, including land on the immediate perimeter of Property, is largely agricultural (including orchards) or former agricultural land that is now in early stages of natural succession.

4.2 Vegetation Communities

The delineation of vegetation community types within the TA Property is intended to identify and characterize communities at a scale that has meaning and relevance to the overall objectives of the EIS. Following the ELC system of Lee *et al.* (1998), there are several broad community types within the TA Property that have been delineated for the purpose of this EIS. Figure 5 depicts the distribution of these communities within the Property, and representative photos are provided in Appendix D. Each community type is briefly described in the following sections. A summary of the ELC communities and their main characteristics is provided in Table 1.

The communities identified and described herein are those that measure 0.5 ha or more in area and have a potential relevance to the natural heritage functions of the Property. Inclusions of smaller (<0.5 ha) patches of other community types are generally not

included in Table 1 or Figure 5 but are discussed below if potentially relevant to the findings of the EIS.

4.2.1 Overall Characteristics

In its current state, about 90% of the TA Property is occupied by vegetation communities that are primarily woody (trees and/or shrubs) and largely influenced by the land management history of the Property. The generally level topography and relatively moist soil conditions throughout the Property are also key factors that influence the nature of the vegetation community types currently found.

These woody communities are mainly deciduous and comprised largely of shrubs and young trees that are typical of early succession lands in the region. ***Mature forest communities or late-succession communities typical of the region are not found within or immediately adjacent to the Property.***

4.2.2 Cultural Communities

Parcels 1 and 2 have both been subject to substantial anthropogenic alteration in past decades, primarily for agricultural use of various forms and for varying duration. Based on aerial photos and the characteristics of the trees and shrubs that are present, and also information provided by previous owners, natural succession has progressed over the past 20 years or so following cessation of agricultural use over most of the Property. The existing plant communities are in relatively early stages of successional transition, and still exhibit characteristics that significantly reflect the past alteration and land-use patterns. Accordingly, the majority of the communities within the Property are classed as *Cultural* communities under the ELC system. Further discrimination of ELC community type is based on the extent to which natural woody vegetation has become established. In total, there are three primary Cultural community types that have been delineated and characterized for the purpose of this EIS.

Cultural Meadow

There is a block of land bordering the front of Parcel 2 that is devoid of woody vegetation other than treed fence-lines on the east and west perimeters and also in the centre. This block measures approximately 6 ha, and consists of tile-drained agricultural land that was previously occupied by apple orchards. The last orchard lands were cleared in 2016 and the area is now used for row crop production (soybeans in 2021 and 2022). Under the ELC system, the block can be generally referred to as a Cultural Meadow (CUM) community. Land used for row crop production can be more specifically categorized as an Open Agriculture (OAG) community.

In general, OAG communities are effectively devoid of natural plant assemblages and are characterized by relatively low plant diversity. There can be a short-lived but relatively high presence of non-native and invasive species of herbaceous plants where land is

disturbed through cultivation. Such communities are not expected to support any natural functions that can be associated with other more naturalized CUM habitats (e.g. pasturelands, successional meadows).

There is another relatively small area (~0.6 ha) on the east side of Parcel 2 where woody vegetation is effectively absent. The area is in relatively early stages of natural succession and is occupied by a well established layer of ground cover comprised of a mix of grasses and herbaceous dicots, including many non-native species. This is also a CUM community, exhibiting more natural characteristics than the OAG community. However, because of the small patch size, the habitat function of this area is quite limited. Priority Species or SWH function have generally not been evidenced in this area or in the OAG community. The notable exception is the presence of multiple specimens of Butternut along the remnant fence-lines that traverse these communities. The presence of Butternut is discussed further in Section 4.8.

Cultural Thicket

Over the majority of Parcel 1 and about a quarter of Parcel 2, shrubs and young trees have become established as part of the early succession process, but the presence of trees remains below the threshold for classification as "Woodland". The total average tree cover is estimated as <25%, and there is a general absence of mature trees or any discernable canopy. Under the ELC system, this is classed as a Mineral Cultural Thicket (CUT1) community type.

Saplings of White Ash are the dominant constituents of the existing woody cover within this community. Scattered young White Elm, Eastern White Cedar and Red Ash are also present. Nearly all specimens of these tree species are <10 cm diameter at breast height (DBH) and <5 m tall, with the majority being <5 cm DBH and <3 m tall.

The scattered young trees are interspersed with substantial shrub cover. Rod-osier Dogwood is widely present, typically in dense and relatively large clusters. There are also scattered clusters of willow shrubs (e.g. Pussy Willow, Bebb's Willow, Slender Willow) generally reflective of localized moist soil conditions. Non-native Buckthorn is also widely encountered, in relatively high abundance and density in numerous locations. A few other species of non-native woody vegetation (e.g. Tartarian Honeysuckle, Scot's Pine, domestic Apple) are also found in this community, but generally at low abundance.

The ground cover within the CUT community is dense (>90% overall average) consisting of a variable mix of grasses/sedges and herbaceous dicots. There is a substantial presence of species that are typical of disturbed sites, including non-native and also invasive species (e.g. Wild Carrot, Tufted Vetch, Common Dandelion, Red Clover).

The area of the CUT community encompasses isolated pockets of wetter soil with a more hydrophilic plant mix. In these small areas, the plant community exhibits characteristics generally consistent with Mineral Thicket Swamp (SWT) or Mineral Meadow Marsh (MAM) communities under the ELC system. The primary presence of these localized

inclusions is within an area measuring <0.5 ha associated with the margins of the drainage channel that laterally traverses the northeast quadrant of Parcel 1 (see Figure 4).

The CUT community within the Property represents early stages of regeneration, and is likely to progress to a Mineral Ash Lowland Deciduous Forest (FOD7-2) community in the coming decades. In general, the CUT community in Parcel 2 is younger than in Parcel 1, and the presence of Ash saplings is more pronounced, likely reflecting a later cessation of agricultural use than in Parcel 1. Eventual transition to an FOD7-2 community is still expected in Parcel 2.

In terms of ecological function, the CUT community generally supports a low diversity of regionally common fauna, with no species that are considered to be sensitive or of conservation concern. The notable exception is the presence of multiple specimens of Butternut in fence-lines that traverse the CUT community within Parcel 2. The presence of Butternut is discussed further in Section 4.8.

Cultural Woodland

In parts of Parcel 1, most notably on the north and west perimeter, clusters of young conifers have established with tree cover now in the range of 30 to 50 %. The tree cover is mainly coniferous and comprised of variable presence of Eastern White Cedar, Red Pine, White Spruce, and also Scot's Pine. The trees are relatively young and even aged, with the largest specimens reaching 25 cm DBH. Two small patches on the west side of Parcel 1 appear to have been planted, and could be described as Conifer Plantation (CUP3) under the ELC system. There is no differentiation in the ecological function of these variable conifer patches, and for the purpose of this EIS they are collectively described as Cultural Woodland (CUW) communities. The combined area of these coniferous woodland patches in Parcel 1 is just over 3 ha, and individual patch sizes range from about 0.2 to 1 ha. The small patch size, lack of structural layering and low plant diversity generally limits the ecological function of these patches. No Priority Species, SWH or any other functions of conservation concern have been evidenced in association with these woodland patches.

Moving south from the CUT community in Parcel 2, there is an abrupt transition in the nature of woody vegetation commencing at an old stone fence-line that traverses the parcel on an east-west axis. From this line to the southern Property boundary, trees are more abundant and generally larger than those in the adjacent CUT community. Total woody cover exceeds 75%, but overall average tree cover in this area is estimated as no more than 50%. Accordingly, this 8-ha block is also described as a CUW community. Similar to the CUT community to the north, White Ash is the dominant tree species, with a secondary and scattered presence of White Elm, Eastern White Cedar and also Trembling Aspen. The majority of trees are relatively young and measure <15 cm DBH. Within the area there are a few small (<0.5 ha) clusters of relatively mature Cedar or Aspen where specimens in the range of 20 to 35 cm DBH are locally prevalent. These patches, particularly the Cedars, appear to be associated with a relatively high presence of large rocks at surface. Outside of the noted clusters, the canopy is relatively thin and

broken and there is no discernable canopy layering. There is a dense presence of shrubs throughout this community. Red-osier Dogwood is a primary constituent of the shrub layer, along with European Buckthorn which forms dense stands throughout. There is a scattered secondary presence of various other shrub species, including Honeysuckle (non-native), Choke Cherry, Round-leaved and Alternate-leaved Dogwood, and several Hawthorn species (both native and non-native). Shrub willows (e.g. Bebb's Willows, Pussy Willow, Shining Willow) are also encountered in the shrub layer in association with some low patches.

The area occupied by the CUW community in Parcel 2 is characterized by relatively poor drainage and also variable microtopography. There is an abundance of relatively large rocks at surface, interspersed in limited locations by either slightly raised hummocks or low-lying pockets which often exhibit relatively high levels of soil moisture. This small-scale variability in topography is associated with some variability in vegetation community composition in the lower strata. Hydrophilic shrubs and herbaceous ground cover are associated with some of the small depressions that exhibit more persistent saturation. Overall, the presence of hydrophilic plants is secondary and includes a limited presence of wetland indicator species, and the prevailing plant community is considered to be an upland community.

In Parcel 2, the CUW community is older and thus more diverse in terms of structure and plant diversity than the CUW community in Parcel 1. However, direct monitoring of the CUW community in Parcel 2 indicates that it primarily supports a modest diversity of species that are habitat generalists or typical of early succession communities. ***The flora and fauna are mostly common to the region and are not considered to be sensitive or of conservation concern. The noted exception is the presence of a number of Butternut trees along the fence-lines that run across the northern and eastern perimeter of this community. The distribution and implications of Butternuts within the Property are discussed further in Section 4.8.***

4.2.3 Forest Communities

The area mapped as Significant Woodland in Parcel 1 is the only portion of the Property where tree cover is substantial enough to warrant designation as a "forest" community. The canopy of this forest block is heavily dominated by Trembling Aspen, and is consistent with the Fresh-Moist Poplar Deciduous Forest (FOD8-1) under the ELC system. The Aspens exhibit a relatively narrow range of age-size classes. Most canopy specimens are in the range of 15 to 30 cm DBH, with a moderate presence of specimens in the range 30 to 45 cm DBH. In addition to the dominant presence of Trembling Aspen, there are limited pockets where Balsam Poplar are relatively abundant in the canopy, generally in the same size class as the Aspen. White Ash are also present in relatively low abundance and primarily as a sub-canopy constituent. The subcanopy is not well developed, but there is a fairly well established shrub layer. Non-native Buckthorn is a dominant component of the shrub layer, forming relatively dense stands in parts. Other species of deciduous shrub (e.g. Round-leaved Dogwood, *Ribes* species, Choke Cherry and Elderberry) are present in relatively low abundance.

There is a notable presence of large stones at or above soil surface in this forest block, which facilitate the presence of moss as a notable component of groundcover. Otherwise, herbaceous ground cover is variable and the overall average cover is estimated as about 40%. The ground cover includes a variety of species typical of young moist forests (e.g. Herb Robert, Starry False Solomon's-seal, Woodland Agrimony, various asters and horsetails). There is also a substantial presence of vine species (Wild Grape, Virginia Creeper, Poison Ivy) which is also typical of moist lowland forest conditions.

Surveillance has revealed that standing water is present in parts of this forest block for a limited duration in the early spring. The maximum coverage of standing water within the block is estimated as 20%. The presence of water is ephemeral and does not lead to hydric soils or the presence of plant communities comprised substantially of hydrophilic species.

4.3 Vascular Plants

The detailed plant species list for the TA Property is provided in Table 2. This list reflects three-season monitoring through the period of April to October. A total of 174 vascular plant species have been identified within the Property. Of those that are native to Ontario, all but one are currently ranked as “Secure” (S5) or “Apparently Secure” (S4) in the Province. The sole exception is the Butternut (*Juglans cinerea*) which has an uncertain rank of “Imperiled” (S2?). The Butternut is also considered to be a Species at Risk (SAR), listed as *Endangered* both provincially and federally. None of the other plant species observed within the TA Property have been subject to assessment either federally or provincially as possible SAR.

The plants found within the TA Property consist of a mix of native and non-native species. About 38% of the plant species identified within the Property are non-native, with a notably greater abundance and diversity of non-native species observed in Parcel 2 relative to Parcel 1. At least 29 of the species identified within the TA Property are considered by various sources to be invasive in Ontario. Scattered specimens of several non-native tree and shrub species are present, with European Buckthorn occurring in considerable abundance in numerous parts of the Property. The presence of non-native and/or invasive species is most pronounced within the Cultural Meadow and Cultural Thicket communities which occupy just over 70% of the Property.

A total of 42 woody species (trees and shrubs), including seven conifers, have been identified within the Property. This includes 11 species that are non-native. A small number of these tree and shrub species are dominant in terms of spatial distribution and overall cover and biomass within the Property. There are only a few tree species that occur in high abundance and wide distribution within the Property. White Ash and Trembling Aspen have a greater presence within the Property than all other tree species. Eastern White Cedar also exhibit relative abundance, found primarily in dense clusters in the north half of Parcel 1 and the south half of Parcel 2. Regional climax tree species (American Beech, Sugar Maple, Eastern Hemlock, Ironwood) are either absent or occur

in very limited abundance and distribution within the Property. Overall, woody and non-woody species typically encountered in late-succession forests within the region are not meaningfully present within the Property. Red-osier Dogwood is the most abundant and widespread shrub species within the Property. This species is typical of early succession communities and/or relatively moist soil conditions.

About 30% of the vascular plant species encountered within the Property are hydrophilic (i.e., have a coefficient of wetness (CW) of -3 to -5) and grow primarily in moist or wet conditions. About 40% of these (i.e., 13% of all species recorded) are considered to be wetland indicator species (i.e., CW of -4 or -5) following ELC guidance. These plants are primarily associated with the linear surface water feature in the northeast part of the Parcel 1, and to a lesser extent with very small depressions within the CUW community in Parcel 2. The hydrophilic species include both woody plants and a variety of herbaceous plants (e.g. ferns, rushes, cattails, etc.). A few of the woody hydrophilic species (Eastern White Cedar, Red Ash, Red-osier Dogwood) are abundant and widely encountered within the Property, reflecting the generally moist soil conditions that prevail. These species are also regularly encountered in early succession communities even where conditions are relatively dry. Their presence throughout the TA Property is likely reflective of both soil moisture and the general prevalence of early succession plant communities.

Only 9 (5%) of the plant species observed within the Property have a coefficient of conservatism (CC) of 7 or higher. These species are all present in low abundance and limited spatial distribution, most often in association with small localized wet areas. The implications are that the Property is largely occupied by plant species that are not typical of communities that are long-standing or reflective of later stages of succession.

4.4 Birds and Bird Habitat

A list of all bird species observed at the Property throughout the full monitoring period is provided in Table 3. The breeding status within the Property of each species observed is indicated in Table 3, along with the provincial and federal conservation status. The TA Property is located with Ontario Breeding Bird Atlas (OBBA) square 17NK43. Data have been obtained for this square and considered as local context for the Property. The local breeding status determined during the most recent (2005) OBBA campaign is also included in Table 3.

Through direct on-site surveillance, a total of 51 species of bird have been observed within or in immediate proximity to the TA Property over the period of study. Of these, 44 are on record in the OBBA with some evidence of breeding in the area. With the exception of the Woodcock, the species not reported in the OBBA are considered to be present within the Property as migrants or itinerants, with limited likelihood of breeding presence within the Property. Only four of the 51 species observed were "confirmed" as breeding within the Property boundary, with 12 other species indicated as "probable" breeders during surveillance of the Property. Thirty-four (~75%) of the species observed

at the Property were assigned "confirmed" or "probable" breeding status through OBBA surveillance of square 17NK43. These species are mostly considered to have a reasonable likelihood of breeding presence within the Property, assuming specific habitat requirements are met.

The preferred breeding habitat of the species observed at the Property during the breeding season is variable. About 45% of the observed species breed primarily in early-succession or mid-succession habitat or are habitat generalists, while only 33% are considered to be forest breeding species. Most of these will regularly nest in relatively small wood patches or fragmented habitat. The Wood Thrush is the only species generally considered to have a strong affinity for forest *interior* habitat (i.e., areas that are more than 100 m from the forest edge). There is no forest interior habitat within or near the TA Property, and only a single Wood Thrush was observed within the Property in May 2021. Overall, there is no evidence to suggest that this species would nest to any meaningful extent within the Property.

Only six of the species observed within the Property have a wetland habitat association, including two that nest in association with persistent open water (e.g. Cormorant, Ring-billed Gull). There is no expectation that either of these species would nest within the Property. The other species identified as wetland nesters (Canada Goose, Mallard, Common Yellowthroat, Red-winged Blackbird) are not obligate wetland species and will nest in non-wetland areas. There is reasonable potential for nesting presence of some of these species within the Property.

The Provincial ranking of 34 of the species observed is "secure" (S5) while 17 species are ranked as "apparently secure" (S4). Five of the species observed (Barn Swallow, Wood Thrush, Eastern Wood-pewee, Meadowlark and Bobolink) are considered to be Species at Risk (SAR) or Species of Conservation Concern (SOCC) (see further discussion in Section 4.8). Only isolated singular occurrences of each of these species were recorded either within the Property or on adjacent lands, with minimal evidence to suggest possible nesting within the Property.

The OBBA surveillance of square 17NK43 has identified 98 species of bird with some evidence of breeding within the 10-km² area of this square. Of these species, 16 have been subject to assessment by COSEWIC and/or COSSARO as possible SAR. As of the date of this report, seven of the 16 have been deemed to be *Not at Risk*. The other nine species on record for the area that are currently identified as either *Endangered*, *Threatened* or *Special Concern* are summarized in Table 5. The general habitat requirements of these species are such that only the Eastern Wood-pewee and Wood Thrush have some reasonable likelihood of being present within the Property, at least on occasion. Both of these species were observed during the surveillance of Parcel 1 in 2021, but neither was observed in Parcel 2. Isolated foraging flights of a Barn Swallows were also observed over relatively open areas at the north end of the Property, but there is no reason to expect that this species would nest at the Property in its current state. Meadowlark and Bobolink are grassland specialists, and these species were only observed on adjacent lands to the east of the TA property.

The only other occurrence of a possible SAR relates to limited evidence of the presence of a single occurrence of the Golden-winged Warbler in the CUW community within Parcel 2. The occurrence reflects isolated auditory evidence without visual confirmation and otherwise without evidence to confirm breeding. It is possible that the vocalizations heard at the TA property could be those of a hybrid of the Golden-winged and the Blue-winged warblers. The presence of this species and the other noted SAR and SOCC at the TA Property are discussed further in Section 4.8.

4.5 Amphibians

During focused amphibian monitoring and broader general surveillance of the TA Property, the presence of only five amphibian species was directly evidenced, as summarized in Table 6. The abundance and distribution of these amphibians within the Property was limited, most obviously associated with small ephemeral pockets of standing water in the southwest and northeast quadrants of Parcel 1. Amphibian egg masses and larvae (tadpoles) were not observed during focused examination of any temporary standing water encountered within both Parcel 1 and Parcel 2. Breeding vocalizations were low level and scattered.

The Ontario populations of the species observed at the TA Property are considered "secure" (S Rank = S5) or "apparently secure" (S4). The Western Chorus Frog has been assessed by COSEWIC as *Threatened*, but assessment by COSSARO has determined that this relatively common species is *Not at Risk* in Ontario. For the purpose of this EIS, the Western Chorus Frog is addressed as a potential Priority Species (see Section 4.8).

The Ontario Amphibian and Reptile Atlas (OARO) records for Square 17NK43 are presented in Table 7 as comparative context for the area around the Property. The OARA identifies a total of six amphibians (5 frogs, 1 salamander) that have been reported at least once in the past two decades in Square 17NK43. The OARA list includes the three species observed during surveillance of the Property, as listed in Table 6. In addition to these three amphibian species, the OARA reports a few records of Green Frog, Northern Leopard Frog and Red-backed Salamander in the surrounding area. Given the absence of appropriate habitat (persistent standing water, mature woods) within the Property, there is a low likelihood that any of these species would be present to a meaningful extent within the Property.

In summary, there are five common amphibian species present in limited abundance and distribution within the Property. **There is no evidence to indicate meaningful levels of amphibian reproduction at any location within the Property.**

4.6 Other Fauna

4.6.1 Reptiles

During surveillance of the Property, no reptile species were detected. Existing data sets (OARA, NHIC) indicate that Midland Painted Turtle and Snapping Turtle are present in the area within a few km of the Property. Both are considered to be Priority Species. However, there is only a very limited presence of standing water that is neither deep nor persistent, and there is no expectation that any turtle species would be resident within the Property.

In addition to the two turtle species, the OARA reports the presence of two snake species for square 17NK43 (see Table 7). This includes the Eastern Milksnake, which is also considered to be a Priority Species, and the Eastern Gartersnake. There is some potential that either snake species could be encountered within the Property. The potential presence of reptilian Priority Species is discussed in Section 4.8.

4.6.2 Mammals

Ecological monitoring of the TA Property revealed direct evidence of the presence of four mammal species, as follows:

- White-tailed Deer (*Odocoileus virginianus*) - scattered observations of tracks and droppings in various locations within Parcel 1 and Parcel 2,
- Eastern Chipmunk (*Tamias striatus*) - a few observations of foraging adults, mainly in proximity to areas with greater presence of trees,
- Red Squirrel (*Tamiasciurus hudsonicus*) - several observations near areas with some mature tree presence, especially along the boundary between Parcel 1 and Parcel 2.
- Northern Raccoon (*Procyon lotor*) - tracks observed in a few low areas in Parcel 1 and Parcel 2.

The Ontario populations of the species observed at the TA Property are considered "secure" (S Rank = S5), and these species are not considered to be of conservation concern.

It is considered likely that a number of other species of regionally common mammals (e.g., Striped Skunk, Eastern Cottontail, various species of vole or mouse) could be present at the Property from time to time. The possible presence of mammals that are Priority Species in the province (e.g. Eastern Mole, Woodland Vole) is considered to be extremely unlikely. The Property is well outside of the distribution range of most of the Priority Species on record in Ontario.

In regard to the possible presence of bats, there are several bat species that can be found, at least on occasion, in Grey County. This includes four that are listed as *Endangered*: Tricolored Bat (*Perimyotis subflavus*), Little Brown Myotis bat (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and the Eastern Small-footed Myotis (*Myotis leibii*). The Northern Myotis is generally encountered in coniferous forest, while the three other species-at-risk bats are each common to deciduous or mixed forest habitat. There is a theoretical potential for individuals of all species to be present at some point in time within the Property. The likelihood of presence of maternal colonies is dependent on the local abundance of large (≥ 25 cm DBH) snags/cavity trees. Within the confines of the TA Property, there is a general absence of tree specimens that could be regarded as favorable snag trees. The Property does not encompass or border any occurrences of Cliff-Cave ecosites and does not contain any features (caves, crevices) that could serve as hibernacula. Overall, there is some possibility of occasional and intermittent presence of species-at-risk bats within or near the TA Property, but there is no reason to expect the concentrated presence of bats for hibernation or maternal roosting purposes. No bats were observed during the surveillance of the Property for the purpose of this EIS.

Overall, the likelihood of presence within the Property of mammal species that are of conservation concern is considered to be very low, and not likely to be meaningful to the viability of the local or regional population.

4.6.3 Invertebrates

No significant presence of butterflies or moths was observed during the period of on-site monitoring. A single specimen of Monarch Butterfly (*Danaus plexippus*), which is currently classed as *Special Concern* in Ontario, was observed in the relatively open area within Property in late summer. Only a few specimens of milkweed were observed within the Property, and it is not expected to support significant levels of monarch reproduction.

Visual surveillance of the Property revealed a low-level presence of invertebrates typically associated with wetlands (e.g. Odonata, Tricoptera, Daphnia) in a small areas of seasonal standing water in the northeast quadrant of Parcel 1 and in a few locations in the south half of Parcel 2.

4.7 Aquatic Ecology

The characteristics and functions of aquatic features associated with the TA Property are based on direct surveillance completed in 2021 and 2022 and also existing information from other sources.

The defined surface water features within the Property (see Figure 4) are all generally characterized by an absence of true aquatic substrates or persistent standing or flowing water. These features were not observed to support obligate aquatic biota, including fish or aquatic plants. The minor exception was the presence of some aquatic invertebrates in pockets of standing water in the northeast corner of the Parcel 1 and in the south half of

Parcel 2. Aside from the invertebrates, there were no other aquatic biota associated with these small pockets.

4.8 Priority Species

For the purpose of this EIS, the term "Priority Species" includes:

1. any species with a provincial (sub-national) conservation status rank (SRank) of S1, S2, S3 or SH, or otherwise considered rare in Ontario, and
2. any species that has been designated as either *Endangered*, *Threatened*, or *Special Concern* by either the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) or the Committee on the Status of Species at Risk in Ontario (COSSARO).

The term "Species at Risk" (SAR) is applied to those included in regulatory listings as *Threatened* or *Endangered*, and thus subject to certain regulatory prohibitions. The term "Species of Conservation Concern" (SOCC) is generally applied to species other than those legally designated as *Threatened* and *Endangered*. Species of any of the noted designations are all tracked by the Natural Heritage Information Centre (NHIC).

The potential presence of SAR within or near the Property was initially examined in a manner consistent with guidance prepared by the Ministry of Environment, Conservation and Parks (MECP, 2019). Several sources of existing information were consulted to identify SAR that are on record for the area within a few km of the Property. This includes:

- the most recent results of the Ontario Breeding Bird Atlas (OBBA) for the 10-km x 10-km Square 17NK43, which encompass the Property, as summarized in Table 5,
- the results of the Ontario Amphibian and Reptile Atlas (OARA) for Square 17NK43 as summarized in Table 7, and
- the NHIC Element Occurrences (EO) for the 1-km grid segments within about 3-4 km of the TA Property (21 squares in total), as summarized in Table 8.

The likelihood of occurrence of identified Priority Species within or in very close proximity to the Property has been assessed in consideration of the specific habitat requirements of each species and also direct evidence of their presence resulting from on-site surveillance.

Data from the OBBA indicate the presence of a total of nine Priority Species in the area near the Property. As noted in Section 4.4, five of these species (Barn Swallow, Bobolink, Meadowlark, Wood-pewee and Wood Thrush) were observed during EIS

surveillance of the Property and adjacent lands. Only the Wood-pewee and Wood Thrush exhibited some evidence of landed presence within the confines of the Property, but no evidence to indicate meaningful breeding presence. The Barn Swallow, Bobolink and Meadowlark were observed in association with adjacent lands, and there was no evidence to suggest breeding presence within the Property. For the other Priority Species identified in the OBBA, and NOT observed within the TA Property, the habitat requirements are such that none have any likelihood of meaningful occurrence within the Property.

Data from the OARA (Table 7) indicate a total of four Priority Species of reptile or amphibian in the area of the TA Property. None of the reptiles were observed during on-site surveillance, and the Property does not exhibit conditions consistent with the preferred habitat of these species. Milksnake is the only reptile species that might be occasionally present within or near the Property, but is not expected to be encountered with any frequency within thicket, forest and woodland habitats. Limited portions of the TA Property do contain small pockets of standing water that could function as habitat for Western Chorus Frogs. Low-level calls of this species were heard during surveillance of the Property, but there was no evidence to indicate the presence of local breeding populations of the Chorus Frog within Parcel 1.

EO records from the NHIC were obtained for the 1-km grid segments within about 3-4 km of the TA Property (21 squares in total). The NHIC reports occurrences of eight Priority Species in these squares, four of which are on record in the OBBA or OARA. In considering habitat requirements and findings of direct surveillance of the TA Property, there is no expectation that the Property supports any meaningful presence of any species on record exclusively with the NHIC, except the Butternut.

A total of 55 Butternut specimens have been identified within the TA Property, all within Parcel 2. All specimens were located along or closely adjacent to remnant stone fence-lines that bisect or border the north half of Parcel 2 (see Figure 6). The larger and relatively mature specimens were generally located along the centre of the fence-line or on its immediate edges, suggesting that at least some may have been planted. These specimens are mostly in the range of 15 to 30 cm DBH, with 11 specimens in the range of 30 to 50 cm, and a single specimen measuring 97 cm DBH. A number of these larger specimens exhibited active nut production. The observed Butternut specimens include 12 saplings (i.e.; with a DBH <5 cm), mostly located within 10 m of the fence-lines. A single sapling was detected within the CUT community about 40 m from the east property boundary. Aside from this one sapling, no other Butternuts were observed in this area or otherwise further than 10 m from the fence-lines. A formal Butternut Health Assessment (BHA) was not completed as part of this EIS, but all identified specimens were subject to cursory examination for evidence of Butternut canker infection. All specimens were observed to have healthy crowns, and no evidence of advanced canker was observed on trunks or root flares. Based on this information, all trees would likely be classed as Category 2 (i.e., retainable) under the BHA protocol. In absence of any nearby trees with obvious canker, the specimens observed within the TA property would not be classed as Category 3 (i.e., archivable).

In addition to the 17 species listed in the noted databases, site surveillance conducted for this EIS has revealed the possible or confirmed presence of two other Priority Species. Even though not on record with the NHIC, the Monarch Butterfly (*Danaus plexippus*) is currently listed as *Special Concern* under both provincial and federal regulations, and has a status recommendation of *Endangered* by COSEWIC. A few solitary specimens of adult Monarch were observed within the Property during the period of study. There was no evidence that the Property functions as significant breeding habitat for this species. The Milkweed plants that are necessary for the completion of the Monarch life-cycle are present within the Property, but not in concentration or abundance. The other possible occurrence of a Priority Species not on existing records relates to evidence of presence of the Golden-winged Warbler in the CUW community in Parcel 2. As noted in Section 4.4, the confirmation of presence of this species requires visual evidence. For the purpose of this EIS, the possibility of low-level non-breeding presence on occasion can be conservatively assumed in the assessment of risk.

In total, there are 19 Priority Species on record as present within the surrounding area and possibly found in portions of the Property where development is being proposed, as summarized in Table 9. ***Butternut is the only species that is known or expected to occur within the Property to an extent where the assessment of risk of adverse impacts due to proposed development is warranted.*** An analysis of the risk of such impacts is provided in Section 5.3 of this report.

4.9 Significant Wildlife Habitat

For planning purposes in Ontario, Significant Wildlife Habitat (SWH) is defined as habitat that is "*ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or Natural Heritage System*".

The information available for the purpose of this EIS, as presented above, has been reviewed in specific consideration of the potential presence and implications of SWH within the TA Property. The analysis of potential SWH presence and impacts is based on guidance provided by the MNRF (MNR 2000, MNRF 2015). There are several categories and specific SWH designations which have been considered. These various categories have generally recognized associations with a number of the ELC community types that have been identified within the Property. The presence of these communities does not necessarily equate to the presence of SWH. There are various criteria, often related to ELC patch size, that have been established as partial determinants of SWH function for the given ELC community type. The determination of SWH habitat is ultimately based on direct evidence of presence of the class of wildlife in question, particularly the indicator species specified in MNRF Guidance.

The current assessment of possible SWH function considers the results of on-site monitoring to assess candidate areas of SWH for which the relevant ELC community types are found within the Property, particularly near the PBS (i.e., CUM, CUW, and

FOD ecosites). The following sections provide a brief synopsis of this assessment process.

4.9.1 Seasonal Concentration Areas

Waterfowl Staging and Stopover Areas (terrestrial):

The CUM and CUT areas within the TA Property do not exhibit seasonal sheet flooding, and none of the identified indicator species were observed during surveillance of the Property, which encompassed the months of April and May when migratory waterfowl might be present.

Raptor wintering yards:

The Property does encompass a mix of open (CUM/CUT) and Forest (FOD) communities. Direct assessment of winter raptor presence was not included in the scope of this EIS. However, natural heritage mapping and databases (LIO, MNRF) do not indicate the presence of raptor wintering yards in the vicinity of the Property. Also, the Property does not embody the characteristics of preferred sites (i.e., lightly grazed meadow or fallow area >15 ha).

Bat hibernacula and maternity colonies:

As discussed in Sections 4.7 and 4.8, the wooded communities within the TA property generally lack the attributes that would be conducive to the presence of bat hibernacula or maternal colonies (i.e., the presence of >10 relatively large snag trees per ha). During direct surveillance of the TA Property, there was no evidence of maternal roosting of bats within the Property.

Colonial Nesting Breeding Bird Habitat (Bank or Cliff):

The small area of CUM habitat within the Property does not exhibit exposed soil banks, and none of the identified indicator species were observed during surveillance of the Property.

Colonially-Nesting Bird Breeding Habitat (Ground)

The patch size of CUM habitat within the Property is generally too small for this SWH function. The relevant indicator species (Brewer's Blackbird) was not observed during surveillance of the Property. Other existing databases (e.g. OBBA) do not indicate the presence of this species in proximity to the Property.

Deer Yarding Areas

Various forest communities (e.g. FOD, FOM) may function as deer wintering yards. However, there are no identified deer wintering yards (LIO, MNRF) that overlap or abut

the Property. The nearest deer wintering yard is located almost 5 km to the northeast of the Property. The Property is lacking in adequate coniferous forest cover that would support wintering yard function.

4.9.2 Rare Vegetation Communities

As per the MNR (2015) there are a number of vegetation communities that can be considered as rare in Ecoregion 6E, including alvars, dunes, prairies, barrens, cliffs and old growth forest. The FOD8-1 forest community is not old growth, and the other noted community types are not found within the TA Property (see Section 4.2).

4.9.3 Specialized Habitat for Wildlife

There are numerous species of wildlife that require substantial areas of certain habitat(s) that support critical stages of their life history in order for the local population to be sustainable.

Bald Eagle and Osprey Nesting, Foraging and Perching Habitat

The Property does encompass relevant ELC community types within the Property (FOD) but lacks the presence of riparian areas that is required for this SWH function. Neither of the indicator species was observed during surveillance of the Property and no large stick nests were observed.

Woodland Raptor Nesting Habitat

The Property does contain forested habitat (i.e. FOD8-1) that is generally recognized as potential nesting habitat for woodland raptor species. However, the TA Property does not provide interior habitat consistent with the noted criterion (i.e., >200 m from forest edge). None of the indicator species or any stick nests were observed during surveillance of the Property.

Seeps and Springs

The conditions typically conducive to the presence of seeps or springs (i.e., lowlands at the base of notable slopes below substantial tablelands) are not encountered within the Property. No seeps or springs were observed within the TA Property.

Amphibian breeding habitat (woodland)

The TA Property is devoid of wetlands or small ephemeral pools within forested areas (FOD or FOM) that could potentially function as breeding habitat for amphibians. Surveillance of the Property indicates an absence of meaningful levels of amphibian breeding activity (see Section 4.5). Overall, there is no evidence to indicate that there is any significant amphibian breeding habitat function supported within or near the Property.

Area-Sensitive Bird Breeding Habitat

The block of forest cover (FOD8-1) within Parcel 1 exhibits dimensions that do not meet the criterion for forest interior habitat (i.e., >200 m from forest edges). Forest cover within the Property is also not mature, which is a secondary defining characteristic of interior forest. During breeding bird surveillance of the Property, the presence of only two of the listed indicator species was evidenced within the Property. This consisted of limited evidence of possible breeding of the Red-breasted Nuthatch in Parcel 1 and possible breeding of the Yellow-bellied Sapsucker in Parcel 2. The criterion for this form of SWH is the confirmed nesting presence of three of the indicator species. Accordingly, this form of SWH is not considered to be present within or near the TA Property.

4.9.4 Habitat for Species of Conservation Concern

In this context, SOCC include wildlife species that are listed as *Special Concern* or rare, but excludes those listed as *Endangered* or *Threatened* species.

Open Country Bird Breeding Habitat:

The Property does contain an area of CUM community that borders a larger patch that exceeds the size criterion (30 ha) to function as SWH for open country birds. However, this open area is currently in use for cash crop production. There is one small patch of and there is no grassland habitat present within the Property. None of the specified indicator species were observed during the surveillance of the TA Property.

Shrub/Early Successional Bird Breeding Habitat

A substantial portion of the Property is characterized as shrub/early succession habitat (CUW/CUT) with total area greater than the established size criterion of >10 ha for this SWH type. One of the *indicator* species listed for this habitat (i.e., Brown Thrasher) and one of the *common* species (i.e., Eastern Towhee) were present within the Property during surveillance. This does not meet the stated criterion (i.e., confirmed nesting presence of one indicator species and at least two common species). In addition, the TA Property is occupied by Class 1 and 2 agricultural lands, and this specific SWH category is not applicable to such lands.

Special Concern and Rare Wildlife Species

As discussed in Section 4.8, there are three species Provincially designated as *Special Concern* and/or with a Provincial Rank of S3 that are confirmed as being present within the Property.

Isolated occurrences of the Monarch were recorded during surveillance of the Property, but there is general absence of habitat (including milkweed presence) that would support this species in meaningful abundance or through critical life stages.

The Eastern Wood-pewee and Wood Thrush, both listed as Special Concern in Ontario, were observed within or near the front portion of the TA Property. This species was present in very low abundance and there was no evidence to confirm nesting activity within the Property. Neither species is expected to be present within the TA Property to an extent that consideration of this specific category of SWH might be warranted.

4.9.5 Animal Movement Corridors

Amphibian Movement Corridors

Corridors that facilitate movement of select amphibians between aquatic breeding habitat and terrestrial habitat, usually woodlands, can be specified as SWH. There are no wetlands or woodland vernal pools within the TA Property. Surveillance has indicated a relatively low abundance and diversity of amphibians within the Property (see Section 4.5), and has not revealed any evidence of substantial breeding presence or migratory movement of those amphibians through the Property.

Deer Movement Corridors

Areas of continuous and appropriate vegetation cover may serve as corridors that facilitate movement of deer to and from wintering yards may constitute SWH. There are no identified deer wintering yards (LIO, MNRF) that overlap or abut the Property. The nearest mapped deer wintering yard is about 5 km northeast of the Property at the most proximate point. There is some theoretical possibility that deer moving to or from this or other wintering yards in the area might occasionally traverse the TA Property, but it is not anticipated to function as a primary corridor.

4.9.6 SWH Summary

The various plant community types that are present within the Property (FOD, CUM, CUT and CUW - see Section 4.2) can generally support a number of SWH functions, as follows:

- *Seasonal Concentration Areas* (seven categories of possible relevance),
- *Rare Vegetation Communities* (one category of possible relevance - i.e., *old growth forest*),
- *Specialized Habitat for Wildlife* (five categories of possible relevance),
- *Habitat for SOCC* (two categories of possible relevance), and
- *Animal Movement Corridors* (one category of possible relevance).

The ELC community characteristics (patch size, proximity to other features, maturity) and the wildlife species that have been recorded within the Property have been reviewed in context of the defining criteria for each of the 16 candidate SWH functions noted

above. In consideration of this information, *it is concluded that the TA Property does not support any of these SWH functions.*

5.0 ANALYSIS

As noted in Section 1.2, this EIS has been conducted to serve in general support of development planning and pending development applications for the Property. The analysis herein has been completed in light of this primary objective, and is based on two key considerations;

1. the detailed characterization of the site and key natural heritage elements of interest, and
2. broad objectives and key elements of the proposed Farm Co-Operative Site Plan (Appendix B).

For the analysis, the assessed risk of impacts of development is in part reflective of the anticipated scale and core characteristics of the Farm Co-Operative Site Plan . In summary, the Farm Co-Operative Site Plan (see Appendix B) encompasses the following key elements;

- Creation of 27 single family homesteads distributed throughout most of Parcel 1, and 10 additional homesteads (i.e., 37 in total) in the south half of Parcel 2. Typical of rural areas, the homesteads are relatively large (~0.6 ha) and serviced with private well and septic. The homestead layout also includes a 10-m environmental buffer. The total area proposed for homesteads is about 20 ha, (~33% of Property), inclusive of ~8.5 ha of buffer (14 % of Property).
- Installation of roughly 2 km of access and connective road, with points of entry on both Grey Road 2 and Grey Road 40. The total area of proposed road network is just over 4 ha (~7% of Property).
- Dedication of about 21 ha (34%) of the Property to agricultural use, including facilities and infrastructure, distributed roughly equally within the north ends of both Parcels 1 and 2.
- Retention of about 16 ha (26%) of the Property as recreational open space with minor amenities (e.g. trails, small pavilions).

At the highest level, the assessment of impact is conducted on the premise that the baseline "no-impact" scenario is that in which proposed use of the Property does not contravene any of the planning policies that are in place to protect the natural environment. Consistent with the Provincial Policy Statement (PPS), the Grey County OP and the TOBM OP both include a number of policies that constrain development in cases where specified natural heritage elements are present. Of potential relevance to the natural heritage features present within or near the TA Property, this includes the following:

- Significant Woodlands - no development or site alteration may occur within Significant Woodlands or their adjacent lands (120 m) unless it has been

demonstrated through an EIS that there will be no negative impacts on the natural features or their ecological functions. In addition, fragmentation of significant woodlands is generally discouraged.

- Significant Wildlife Habitat (SWH) - development and site alteration is not permitted within areas identified as SWH and their adjacent lands (120 m), unless it has been demonstrated through an EIS that there will be no negative impacts on the natural features or their ecological functions.
- Habitat of Species at Risk (SAR) - no development or site alteration will be permitted within the habitat of *Threatened* or *Endangered* species except in accordance with provincial and federal requirements. No development or site alteration will be permitted within the adjacent lands (120 m) to these areas unless it has been demonstrated through an EIS that there will be no negative impacts on the natural features or their ecological functions.
- Watercourses (specifically as fish habitat) - No development will be permitted within 30 m of the banks of a stream, river, or lake unless an EIS, or the Conservation Authority, concludes setbacks may be reduced.

As a general default, any development proposal that meets the specifications of these policies will not be considered as posing a meaningful risk of adverse effects on natural heritage features that are, or might be, present within the Property. The officially delineated constraints within the Property (see Appendix A) are such that policy compliance would be implicitly achieved if development were to occur in locations that are:

- at least 120 m away from the blocks of Significant Woodland mapped within and adjacent to Parcels 1 and 2, and
- at least 30 m away from the mapped watercourses within or immediately adjacent to the Property.

In events where these two conditions are not fully met, policy compliance can still be achieved, pending the findings of an EIS that addresses all relevant features.

In addition, policy compliance is achieved if the proposed development poses no risk to any occurrence of SAR or SWH within the Property. Official mapping of SWH and/or SAR is not provided in the County or TOBM OP, and their presence/absence is determined as part of the EIS. If SWH/SAR are determined to be absent, or are present but deemed to be unaffected by development, then compliance with relevant policies is achieved.

Each of the natural heritage elements of relevance are discussed further below, with an assessment of impacts potentially associated with the development proposed in the proposed Farm Co-Operative Site Plan. Conclusions and recommendations drawn from this analysis, including mitigation recommendations, are provided in Section 6.

5.1 Significant Woodlands

The assessment of potential impacts on Significant Woodlands is conducted partly in consideration of several functions or characteristics that are identified in the Natural Heritage Reference Manual (NHRM) (MNR, 2010) as core determinants of Significant Woodland designation. This includes woodland size, forest cover characteristics, the presence of Priority Species, ecological functions and linkages, and water protection functions. Table 1 includes a summary of the general characteristics of the woodland communities found within the Property.

As a first step herein, the observed characteristics of the Significant Woodland areas within the TA property have been analyzed in context of the established determinants of "significance" as identified in the NHRM. Subsequently, the risk of impacts of development within the TA property has been assessed in consideration of these same determinants and the overall "significance" of the woodland areas in question.

5.1.1 Analysis of Significance

Parcel 1 encompasses a single patch of Trembling Aspen forest (FOD8-1, see Figure 5), measuring about 5 ha, that has been mapped as Significant Woodland in Appendix B of the Grey County OP. In addition, about 7 ha in the south half of Parcel 2 is also mapped as Significant Woodland. This patch occupies the large majority of the Cultural Woodland (CUW) community within Parcel 2.

The County's assessment of woodland significance is based on a desktop review using data provided by the MNRF. According to the Grey County OP, the main criteria used in the assessment are size and proximity to special features (PSW, ANSI). It is acknowledge that the assessment in the OP is not based on ground-level surveillance, and any site-specific consideration of woodland significance is best served by more detailed ground-level assessment. The assessment herein considers the characteristics of the woodland patch in question as determined through ground-level assessment.

Size

For designation of "significance" specifically on the basis of size, a woodland must be ≥ 40 ha outside of settlement areas, or ≥ 4 ha within settlement areas. In the case of Parcel 2, the area mapped as Significant Woodland is continuous with a larger Significant Woodland block measuring about 80 ha (see map provided in Appendix A). This larger block does meet the size criterion for designation as Significant. In the case of the smaller isolated patch in Parcel 1, which is outside of any settlement area, the size criterion is not met.

Failing the size criterion, a woodland may also be "significant" if it meets any two of the following three criteria:

1. the woodland is within 30 m of another significant woodland,

2. the woodland overlaps the boundaries of a PSW or ANSI, or
3. the woodland encompasses "Interior" habitat of ≥ 8 ha, with a 100-m interior buffer on all sides.

As noted in Section 1.2, the nearest PSW and ANSI are in the order of 2 km away from the TA Property. The size and dimensions of the two woodland patches are such that there is an effective absence of forest that would classify as "interior", and direct surveillance has not revealed the presence of faunal assemblages that are considered to be forest interior communities.

For the patch in Parcel 1, the nearest other patch of Significant Woodland is located on the west side of Grey Road 2, about 165 m away at the most proximate point. The other nearby patches of Significant Woodland, including the patch in Parcel 2, are at least 270 m away. Overall, it does not appear that the ~5-ha Significant Woodland patch within Parcel 1 meets the assigned criteria for Significance that are related to size or proximity to other features. The ~9-ha Significant Woodland patch in Parcel 2 is connected to a larger (~80 ha) block, and does meet the noted criteria.

Function

Direct surveillance of the TA property, including focused forest characterization and detailed inventory of flora and fauna, has yielded the following observations in regard to the characteristics and functions of the Significant Woodland patches:

- the canopy is relatively young and unstructured, comprised predominantly of early succession species (White Ash, Trembling Aspen).
- the plant communities are characterized by relatively low diversity, with a notable presence of European Buckthorn (an invasive species) in the shrub layer.
- the abundance and diversity of fauna are relatively low, consisting of species that are relatively common in the region and without special habitat requirements.
- the forest patch in Parcel 1 does not meaningfully support any SAR or SOCC.
- specimens of Butternut (an SAR) are present along remnant fence-lines that border the north half of the woodland patch in Parcel 2.
- the patches in both Parcels 1 and 2 do contribute to a continuum of woody vegetation within and beyond the Property boundary, but there is no evidence to suggest that the forest serves any significant linkage function within the surrounding natural heritage system.
- the woodland areas do not appear to provide any meaningful water protection function.

Overall, the observed characteristics and functions of the Trembling Aspen forest patch within Parcel 1 are such that there is no apparent reason for a designation of "significant". The Significant Woodland patch in Parcel 2 meets size-related criteria, but generally does not appear to support ecological functions that are identified as conservation priorities or

would otherwise warrant a designation as "significant". The notable exception is the presence of Butternut trees in confined locations. The Butternut are subject to policies and regulations relating to their status as an SAR (see Section 5.3).

5.1.2 Impact Assessment

Direct Impacts

As a general guiding principle, this EIS adopts the premise that any reduction of total forest cover should be limited and/or mitigated to the extent possible, regardless of any considerations of Significance status.

About 20% (~12 ha) of the TA Property is mapped as Significant Woodland. The Farm Co-Operative Site Plan effectively retains the 5-ha Significant Woodland (FOD8-1) patch in Parcel 1. The plan does propose passage of the access road through the south end of this woodland area, resulting in clearance of ~0.1 ha. The plan does not result in increased isolation of this block of Significant woodland from other woodlands in the area.

In Parcel 2, there are 10 homesteads proposed in the current plan that are located largely within the CUW community where it is mapped as Significant Woodland. It is conservatively assumed that the large majority of this patch will be subject to direct impacts (i.e., alteration or loss) to accommodate the homesteads and access road. The alteration/loss of the 7 ha of Significant Woodland would represent <10% of the larger continuous block of Significant Woodland that overlaps the Property, and <5% of the ~150 ha of forest cover within 1 km of the Property. The ecological functions of the CUW community are limited and it is expected that those same functions are supported uniformly throughout the woodlands that overlap and surround the Property. The limited reduction in total size or form of the larger woodland area would not translate to any loss of priority functions or significant impairment of the overall function supported by that larger area. The potential significance of direct loss of ecological function of the woodlands in Parcel 2 is considered to be low. The notable exception in regard to potential significance of any direct impacts relates to the Butternut specimens that are found on the periphery of the CUW community. The risk of adverse effects of proposed development on this SAR are assessed in Section 5.3.

Indirect Impacts

In both Parcels 1 and 2, portions of the areas proposed for specific uses (residential, agricultural) are within 120 m of the mapped areas of Significant Woodland (i.e., within Adjacent Lands). Impacts on the integrity and function of woodlands, Significant or not, can occur as a result of indirect interference stemming from changes in the lands adjacent to the woodlands. The functional implications of interference depends in part on the functional attributes of that woodland area, the degree of functional connectivity with the Adjacent Lands, and also the pre- and post-development characteristics of the adjacent lands.

The available information suggests that the Significant Woodlands within and adjacent to the Property do not support significant or sensitive functions. There is no evidence of the presence of species or habitat functions that would be considered sensitive or of conservation concern. The noted exception is the presence of SAR (Butternut) specimens on the periphery of the CUW area in Parcel 2 (see Section 5.3).

The Adjacent Lands are occupied almost entirely by Cultural Thicket (CUT) or Cultural Meadow (CUM) communities, including Open Agriculture (OAG), and there is no evidence that there is important functional connectivity between these community types and the areas of forest or woodland cover. With the general absence of functions which would be considered conservation priorities or sensitive to disturbance, and also the limited degree of connectivity, the risk that development within the Adjacent Lands would result in loss or impairment of such functions is deemed to be low.

The level of such risk is also in part dependent on the scale and nature of development that may occur within the Adjacent Lands. In the proposed Farm Co-Operative Site Plan, about a dozen single family homesteads are situated within 120 m of area mapped as Significant Woodland in Parcel 1. These homesteads measure about 0.6 ha on average and it is anticipated that only a small portion of these homesteads would be occupied by built surface, with capacity for open space buffer on the perimeter of all homesteads. These lot characteristics confer a relatively low potential for indirect effects that could be associated with residential development, such as introduction of invasive species or the introduction of stimuli (light, sound) that may disturb some wildlife species.

Overall, the likelihood and potential significance of indirect adverse effects on Significant Woodland function in Parcel 1 is considered to be low. There are various mitigation measures, including naturalized buffers within adjacent homesteads, which can serve to further reduce the already low level of risk (see Section 6.3).

Summary

In summary, the 5-ha forest patch within the Parcel 1 that is mapped as Significant Woodland does not exhibit characteristics or support functions that would warrant the designation as Significant. In this context, development of the TA Property could occur without violating policy relating to Significant Woodlands. Notwithstanding this conclusion, this woodland patch is to remain effectively intact under the currently proposed plan for the TA Property. Development is proposed within Adjacent Lands, but there is no expectation that this will result in significant adverse effects on the woodland area or its functions.

In Parcel 2, the proposed creation of homesteads within the 7-ha patch of Significant Woodland is expected to result in initial loss or alteration of the large majority of this patch. This constitutes just over half of the total Significant Woodland Area within the confines of TA Property, but less than 10% of the larger Significant Woodland block that overlaps the Property. In terms of function, the loss of CUW community within the

Property is not expected to translate to any loss of function that would be considered significant.

Overall, the FCSP will result in the loss of a portion of the Significant Woodlands within the TA Property, but there is no expectation of significant functional loss or impairment. There are various mitigation measures which can serve to further reduce the already low level of risk (see Section 6.3).

5.2 Significant Wildlife Habitat

As discussed in Section 4.9, the TA Property has the general potential to support 16 specific categories of SWH, based simply on ELC community presence. However, analysis of all relevant information, including results of detailed on-site monitoring, indicates that the TA Property does not support any of these SWH functions. ***In absence of any confirmed SWH function, development within the Property can occur without meaningful impacts on SWH functions.*** The proposed Farm Co-Operative Site Plan retains the 5-ha patch of the most mature and structurally diverse woody vegetation community (FOD8-1) within the Property, which further limits the risk of adverse effects on SWH functions that are generally more likely to be associated with such communities. Various mitigation measures can be implemented to further reduce the overall risk (see Section 6.3).

5.3 Priority Species

There are a total of 19 Priority Species (*i.e.*, SOCC or SAR) on recent record within or near the TA Property (see Section 4.8 and Table 9). The Property does not exhibit the characteristics or specific habitat elements that would support local populations of most of the Priority Species that have been reported for the area. Direct surveillance of the Property produced evidence of some level of presence of seven Priority Species within or immediately adjacent to the Property. Almost all of these were observed in very limited abundance and distribution within or near the Property, and there is no expectation of meaningful presence of most of these species within the confines of the Property. There is also no expectation that local populations of these species rely on the Property for critical life cycle stages (e.g. reproduction). There are two species which are deemed to warrant some level of further consideration in the assessment of potential impacts.

The Eastern-wood Pewee (*Special Concern*) was observed in limited abundance and distribution only within Parcel 1, with no evidence to confirm nesting. The available information suggests that the Property does not serve as habitat for the Wood-pewee to a meaningful extent. However, in theory, this species could be found nesting in any portions of the Property where there is some meaningful presence of relatively mature (*i.e.*, non-sapling) tree cover. Any removal of such tree cover to facilitate development could result in direct harm of Eastern Wood-pewee nests that could be present. Based on the typical size of nesting territories (*i.e.*, 2 - 8 ha), it is likely that only a few nesting sites, at most, could be directly affected. This would not be considered a significant impact to the local population. Regardless, there are mitigation measures which can be

implemented as a precaution to avoid the theoretical direct impacts on individual birds and/or their nests.

The presence of multiple specimens of Butternut in isolated portions of Parcel 2 (see Section 4.8 and Figure 6) constitutes the only meaningful presence of a Priority Species within the Property. This species is listed as *Endangered* in Ontario and is subject to the Endangered Species Act (ESA) and regulatory prohibitions made under this Act. Section 9 of the ESA prohibits the killing, harming or taking of species that are *Endangered*, including Butternut.

The proposed Farm Co-Operative Site Plan has been developed in consideration of the Butternut inventory that has been completed as part of this EIS. By design, the plan does not include any elements which result in direct incursion into known locations of Butternut presence. Specifically, the positioning and configuration of Homesteads 28-32 has been planned to avoid direct incursion on Butternuts located along the remnant fence-line that laterally traverses Parcel 2, just to the north of these homesteads. Under these circumstances, there is no expectation of direct taking or killing of Butternuts in this location. In absence of detailed plans for the Agricultural lands proposed in the Farm Co-Operative Site Plan, there is a conservatively assumed risk of killing or taking of known Butternut specimens in the portion of Parcel 2 dedicated to agriculture.

In regard to Butternut specimens that are retained, there is a potential risk of harm as a result of any disturbance or alteration that might occur within the root zone of those trees. In absence of detailed plans for areas of proposed land-use changes (agricultural or residential) some level of risk of indirect harm is conservatively assumed for Butternuts in close proximity to those areas. In general, the risk of such harm can be fully mitigated by avoiding any disturbance of the root zone, as discussed further in Section 6.3.

Overall, development of the Property could occur without impact to any Priority Species, but in absence of detailed plans at this stage there is an assumed risk of adverse effects on Butternut specimens in Parcel 2. Due to its status as *Endangered*, the significance of any loss or harm of Butternut specimens is considered to be high. Section 6.3 discusses regulatory requirements and options pertaining to the presence of Butternuts as well as measures that could be implemented in later stages of planning and design to effectively mitigate any risks to Butternuts.

5.4 Watercourses

Direct surveillance has determined the presence of four linear drainage features within or very close to the Property (see Figure 4), which includes three features that have been mapped in the past by the GSCA as watercourses. These watercourses were found to convey intermittent event-based drainage within the Property. The drainage channels are devoid of physical and biological attributes associated with persistent aquatic habitats. Available evidence does not indicate any function as direct fish habitat.

The GSCA has recently completed ground-level examination of the two mapped drainage channels traversing the southern perimeter of Parcel 1. Based on this examination, these features are no longer recognized as features which warrant designation as Regulated Area under Regulation 151/06.

Development of a nature and scale consistent with the proposed Farm Co-Operative Site Plan (see Appendix B) would necessitate drainage and stormwater management (SWM) that would likely require direct incursion, redirection or loss of stretches of three of the noted drainage features. In absence of direct fish habitat function or other aquatic habitat functions associated with drainage features, any loss or alterations would not result in any impacts on such functions. *If SWM plans generally preserve the quantity, quality and eventual destination of runoff discharged from the property, the loss or alteration of existing drainage features within the Property would not have any impacts on downstream aquatic features.*

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Summary of Existing Conditions

The TA Property is occupied largely by early succession woody communities that are regionally and locally common. This includes Cultural Thickets and Woodlands that account for a bit more than 80% (~50 ha) of the Property. About 6 ha (~10%) of the Property is currently occupied by Cultural Meadow communities, largely in the form of active crop lands. Aside from the prevailing Cultural communities, there is a single 5-ha patch of Deciduous Forest community in Parcel 1. This forest patch is relatively young and dominated by a regionally common early succession species (i.e., Trembling Aspen). This deciduous forest patch has been mapped as Significant Woodland in the Grey County OP. About 7 ha of the Cultural Woodland community in Parcel 2 is also mapped as Significant Woodlands. The TA Property does not encompass any forest cover that is typical of the relatively mature and established forest communities that are prevalent in Grey County.

There is one plant species occurring within the Property that is considered herein to be a Priority Species. Multiple specimens of Butternut (*Endangered*) are found along remnant stone fence-lines in Parcel 2. Otherwise, the floral assemblages within the Property consist of a moderately diverse mix of common species, almost 40% of which are non-native and, in numerous cases, also invasive.

The faunal communities associated with the Property are comprised of a relatively modest diversity of species that have secure populations within Ontario and within Grey County. There are seven Priority Species of fauna (five birds, one amphibian one invertebrate) that have been confirmed as present within or near the TA Property. However, there is no evidence indicating that the Property directly supports these species in meaningful number or is otherwise important in sustaining local populations of these species.

In regard to Significant Wildlife Habitat (SWH) the findings of direct site surveillance do not indicate that any of the vegetation communities within the Property are supportive of SWH function.

There are four linear drainage features that are within or abut the Property that are characterized by intermittent event-based flow. These drainage features do not function as fish habitat or otherwise support communities of aquatic biota.

Aside from the confined presence of Butternuts, the TA Property supports a limited range of ecological functions that are not considered significant or sensitive, and which are not critical elements in the functional integrity of the local natural heritage system (NHS).

6.2 Risk Assessment

A summary of the potential impacts associated with possible development of the TA Property is provided in Table 10, reflecting the analysis presented in Section 5. The likelihood and significance of each category of potential impact are relatively ranked as either low, medium or high. For each environmental feature of interest, the overall risk is a function of both *likelihood* and *significance*. The likelihood and significance of any possible impacts of development of the Property are dependent on the natural heritage characteristics and also the characteristics of development. The proposed Farm Co-Operative Site Plan (see Appendix B) identifies the nature and scale of development that is considered in the risk analysis. In brief summary, the findings of the analysis of potential impacts are as follows:

- Development within the Property as proposed will not create meaningful risk of adverse effects on SWH;
- The proposed development will not create a meaningful risk of adverse effects on Priority Species other than specimens of Butternut (Endangered) in confined locations in Parcel 2;
- The proposed development will not create a meaningful risk of impact on watercourses or aquatic habitat function.
- The proposed development will result in direct impact (loss or alteration) of the large majority of the 7 ha of Significant Woodlands in Parcel 2. The 5-ha patch of Significant Woodland in Parcel 1 will be retained, and there is no expectation of indirect impacts on this patch. As proposed, and subject to mitigation measures, the proposed development could occur without significant loss or impairment of woodland function within the Property, and without significant diminishment of the overall presence and function of Significant Woodlands in the area.

Overall, development as proposed in the proposed Farm Co-Operative Site Plan could occur within the TA Property without loss or impairment of features and functions that are recognized as conservation priorities, and without compromising the functional integrity of the local natural heritage system.

6.3 Mitigation Recommendations

Regardless of the generally low levels of risk, there should be efforts to further mitigate the risk of any impacts potentially associated with development of the Property. Recommendations are provided herein to avoid, limit or otherwise mitigate the potential impacts on the various natural heritage features identified within and adjacent to the Property.

6.3.1 Woodlands

As noted in Section 5.1, the loss or impairment of some portion of the woodlands within the TA Property could occur without meaningful loss of ecological function at the local or regional level. However, as a standard objective, the TA Property should be developed with considerations to minimize loss of tree cover within the Property or otherwise seek to mitigate or compensate for any such losses. In this effort, it is recommended that a relative priority be assigned to the area occupied by Trembling Aspen forest community in Parcel 1 (FOD8-1, see Figure 5). The Cultural Woodland (CUW) community in Parcel 2 is deemed to be a lower Priority, with the exception of measures to protect Butternut specimens found along fence-lines on the perimeter of this community (see Section 6.3.3).

Specific measures recommended for consideration are as follows:

- Optimize the placement, size or configuration of all elements of development to optimize forest or woodland retention, with emphasis on placement and sizing of development elements involving built/impermeable surface or significant grading;
- Develop a Tree Preservation Plan (TPP) for the Property, with a focus on protection of Significant Woodland areas and Butternuts, and with the inclusion of compensation planting requirements if/where feasible;
- Develop a naturalization plan for the exposed perimeter of retained wooded areas, including edge planting and naturalized buffers where homesteads or agricultural lands border those areas; and
- Develop a plan to optimize ecological function of land assigned as recreational lands (15.7 ha total) and residential buffer (8.5 ha total), the majority of which is occupied by the CUT community. This plan should target to offset the area of loss of CUW in Parcel 2, with long term objectives of establishing primarily forest communities suited to site conditions. Key elements of such a plan should include;
 - removal of invasive species (especially buckthorn which is abundant in many parts of the Property),
 - management and long term replacement of Ash specimens affected by EAB, and
 - long-term transition to forest cover that is regionally representative and suited to site conditions (moist soils, even topography).

In consideration of the proposed Farm Co-Operative Site Plan , the layout and size of homesteads will generally facilitate the various mitigation measures identified. The inclusion of a naturalized buffer on the homestead perimeters, particularly along the edge of retained forest, would be a critical element in a TPP for eventual homestead development.

All areas of retained, managed or replaced natural vegetation should be planned and managed so as to maintain natural characteristics to the extent possible. Such planning should also seek to achieve a continuum of natural woody vegetation across the Property to facilitate connectivity with woody communities on adjacent lands to the south and east.

6.3.2 Aquatic Habitat

The adaptation of several standard mitigation measures is expected to effectively eliminate the relatively minor risk of impacts on the water bodies downstream of the Property and any of their habitat functions, including fish habitat.

To minimize the theoretical potential for any effects of development on downstream water bodies (e.g. Watercourse 34, Indian Brook), plans for grading and stormwater management should seek to maintain existing drainage patterns to the extent feasible, and avoid the potential for unattenuated stormwater discharge from the Property towards those water bodies. In general, a main element of risk to aquatic habitats is associated with possible sediment transport during construction. During any eventual construction or landscape alteration, an Erosion and Sediment Control (ESC) plan should be developed and implemented in accordance with established best practices. At a minimum, this would include installation of silt fencing between areas of disturbed ground and the points of stormwater discharge from the Property, and minimizing the time between initial exposure of soil and the final construction or restoration of a given area. Restoration should occur as soon as possible.

6.3.3 Priority Species

Site monitoring has determined that there are no Priority Species of animal that are expected to be present in meaningful number or distribution within or in close proximity to the TA Property. However, two bird species were observed on isolated occasions within the patch of Trembling Aspen forest. This included the Eastern Wood-pewee and the Wood Thrush. To reduce the risk of impacts on these and any other birds that would all be subject to prohibitions of the Migratory Bird Convention Act (MBCA), any clearing of existing natural vegetation should be timed to avoid the active bird nesting period (i.e., May to August).

In addition to the noted forest birds, the Western Chorus Frog was identified as having limited presence in wet pockets associated with the upper (west) end of the linear drainage feature in the northeast part of the Property (see Figure 4). This does not constitute a formal policy constraint. However, consideration should be given to possible retention of some of the area in question, and/or possible integration of this area or equivalent habitat conditions into stormwater management plans. Any removal or filling of any of the small wet pockets should occur outside the time when amphibians are most likely to be present at these features (April and May).

The only Priority Species found to have a meaningful presence within the TA Property is the Butternut. This trees species is listed as *Endangered* and is subject to the ESA and associated regulations. Butternut is one of several listed SAR that are widely encountered in Ontario, and regulations have evolved to account for this circumstance. In 2021, Ontario Regulation 830/21 was passed under the ESA, outlining various regulatory requirements and options specifically for Butternut and four bird species. The development of the TA property is to be undertaken in consideration of this regulation, and/or any regulation that is otherwise relevant, to ensure compliance with respect to the presence of this SAR within the Property.

At this stage, there are some general recommendations to avoid or limit regulatory constraints in regard to Butternuts within the Property;

- any change in existing land use should accommodate an effective root harm prevention zone (RHPZ) for each existing Butternut specimen. (as referenced in Ontario Regulation 830/21) - A butternut summary table is provided in Appendix C which identifies the RHPZ (as referenced in O. Reg. 830/21) for each of the 55 Butternut specimens that have been identified within the Property.
- the eventual layouts of homesteads 28-32 in Parcel 2 should be such that they can accommodate an effective naturalized buffer (based on RHPZ)
- the area proposed for agricultural use in Parcel 2 be planned and managed so that the existing fence-lines where Butternut are found are retained and augmented as natural features, and individual Butternuts are protected.
- Butternut specimen #55 (see Figure 6) is a sapling and may be amenable to transplant, as per O Reg. 830/21)

Otherwise, it is possible for development planning and approval to advance in consideration of options that could permit harming, killing of some butternuts (e.g. Overall Benefit Permit, Species Conservation Charge payments, other exemptions). Consultation with the Ministry of Conservation and Parks (MECP) is ultimately required to determine regulatory requirements and effectively assess options.

6.3.4 Significant Wildlife Habitat

No SWH functions have been confirmed within or near the TA Property. However, the Aspen Forest has the highest potential of all communities within the Property to support some SWH function. Mitigation measures implemented to preserve and protect the forest will contribute to the protection of potential SWH function.

6.4 Enhancement Opportunities

Development within the TA Property also affords some opportunity for ecological enhancement.

A standard recommendation for enhancement is control or removal of invasive plant species. Within the Property, several invasive species are present. European Buckthorn is present in relative abundance within the Property, including the patch of deciduous forest (FOD8-1, see Figure 5) which is to be retained. This species is also found in other parts of the Property, including the Cultural Thicket (CUT) area where development is largely anticipated to occur. Buckthorn should be a priority in any efforts to control or eliminate invasive species within the Property.

Where clearing occurs within existing wooded areas, consideration should be given to the installation of bat boxes on the edges of the clearing. If tall stumps of cleared trees could be retained in place, these may serve as good sites for bat box installation.

In the development and long-term management of the Property, establishment of a continuum of native tree cover along the south and east edge of the Property would enhance functional connectivity with woody communities on adjacent lands.

The majority of the existing vegetation communities within the Property exhibit an abundance of Ash. The presence of Emerald Ash Borer (EAB) is evident, and it is very likely that there will be large losses of the existing Ash in coming years. Any planning for tree protection or naturalization plantings should seek to establish long-term tree cover that addresses EAB implications.

6.5 Policy Interpretation

The Provincial Policy Statement (PPS) serves as the foundation for the various policies contained in the County and Municipal OPs, including those that are intended to protect and maintain the natural environment and its functions. The following summaries address the PPS and OP natural heritage policy elements that are of relevance to the Property.

Significant Woodlands

As per the PPS (Section 2.1.5), the Grey County OP (Section 7.4) and the TOBM OP (Section B5.2.1) no development or site alteration may occur within Significant Woodlands or their adjacent lands (within 120 m) unless it has been demonstrated through an EIS that there will be no negative impacts on the natural features or their ecological functions. In addition, fragmentation of significant woodlands is generally discouraged.

This EIS concludes that, with implementation of specified mitigation measures development will not fragment or otherwise result in adverse impacts on Significant

Woodlands as a functional component of the NHS that overlaps the Property and surrounding lands.

Habitat of Threatened/Endangered Species

The PPS (Section 2.1.7), Grey County OP (Section 7.10) and the TOBM OP (Section B5.2.1) state that no development or site alteration will be permitted within the habitat of Threatened or Endangered species except in accordance with provincial and federal requirements. No development or site alteration will be permitted within the adjacent lands (120 m) to these areas unless it has been demonstrated through an EIS that there will be no negative impacts on the natural features or their ecological functions.

The presence of multiple specimens of butternut is the only instance of a provincially Threatened or Endangered Species or its habitat within or in close proximity to the TA Property. There are 55 specimens of Butternut (Endangered) located along remnant stone fence-lines that traverse or border parts of Parcel 2. Advancement of development planning in consultation with MECP in regard to constraints and options under ESA regulations will ensure compliance with the PPS.

Significant Wildlife Habitat

In the PPS (Sections 2.1.5 and 2.1.8), the Grey County OP (Section 7.10), and the TOBM OP (Section B5.2.1), development and site alteration is not permitted within Significant Wildlife Habitat (SWH) and adjacent lands (120 m) unless it has been demonstrated through an EIS that there will be no negative impacts on the natural features or their ecological functions.

The EIS concludes that existing vegetation communities within the TA Property are not expected to support SWH function to any meaningful extent. Accordingly, no impacts on SWH function are expected.

Summary

The proposed development on the TA property meets the policy requirements in the PPS and the Grey County and TOBM OPs. It is expected that development would not result in significant adverse impacts on individual natural heritage features of interest or the Natural Heritage System (NHS). This conclusion is subject to the conditions and recommendations outlined in this EIS, particularly those pertaining to the Significant Woodland areas in Parcels 1 and 2 and Butternut (SAR) specimens in Parcel 2.

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TABLES

Table 1: Summary of ELC Community Characteristics

Community Type ¹	Approx. Area (ha)	Woody Vegetation Characteristics			Tree Size (DBH) Distribution ⁴			Summary of Functions ⁵
		Tree Cover ²	Composition ³	Age and Structure	<15 cm	15 to 30 cm	>30 cm	
Cultural Meadow/Open Agriculture (CUM/OAG)	6.0	<5%	row crop (rotation)	Not applicable (NA)	NA	NA	NA	Very limited diversity and abundance of common fauna. Effective absence of native flora. No evidence of Priority Species, except Butternut specimens in treelines. No confirmed SWH function.
Cultural Meadow (CUM)	0.6	<5%	mixed graminoids and dicots	Not applicable (NA)	NA	NA	NA	Limited diversity and abundance of common fauna. No evidence of Priority Species, except Butternut specimens in treelines. No confirmed SWH function.
Cultural Thicket (CUT) - Parcel 1	32.1	20%	Ash=Red Osier Dogwood>Elm	Early succession. Even-aged. No forest structure.	100%	0%	0%	Limited diversity and abundance of common fauna. No evidence of Priority Species except Butternut specimens confined to treelines. No confirmed SWH function.
Cultural Thicket (CUT) - Parcel 2	5.3	20%	Ash>Red Osier Dogwood>Elm	Early succession. Even-aged. No forest structure.	100%	0%	0%	Limited diversity and abundance of common fauna. No Priority Species except Butternut specimens confined to treelines. No confirmed SWH function.
Cultural Woodland (CUW) - Parcel 1	3.2	60%	Cedar=Pine=Spruce	Young and even aged. No structural layering.	80%	20%	0%	Small patch sizes (≤ 1 ha) in Parcel 1. Limited diversity and abundance of common fauna. No evidence of Priority Species or SWH function.
Cultural Woodland (CUW) - Parcel 2	9.0	50%	Ash>>Elm=Cedar	Young and even aged. Minor structural layering.	75%	25%	5%	Mapped mostly as Significant Woodlands. Limited diversity and abundance of common fauna. No evidence of Priority Species except Butternut specimens confined to treelines. No confirmed SWH function.
Fresh-Moist Poplar Deciduous Forest (FOD8-1)	4.7	85%	Trembling Aspen>>>White Ash	Relatively young and even aged. Limited layering.	40%	40%	20%	Mapped as Significant Woodlands. Limited diversity and abundance of common fauna. No confirmed SWH. Very limited presence of two Priority Species of bird, with no confirmation of breeding.

1 - Community type as per ELC (Lee et al., 1998). See Figure 4.

2 - estimate of average absolute cover of upper layer, as per Lee et al. 1998

3 - estimate of relative abundance of woody species, as per Lee et al., 1998

4 - estimated percentage of trees in the noted range of diameter at breast height (DBH)

5 - SWH = Significant Wildlife Habitat

Table 2: Plant Species Observed at the TA Property

Common Name	Scientific Name	Parcel 1	Parcel 2	Provincial Status (S-RANK) ¹	COSEWIC Status	COSSARO Status	Native vs Non-Native Status	Coefficient of Conservatism ²	Wetness Coefficient ²
Alder-leaved Buckthorn	<i>Endotropis alnifolia</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	7	-5
Alternate-leaved Dogwood	<i>Cornus alternifolia</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	6	3
American Basswood	<i>Tilia americana</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	3
American Water-horehound	<i>Lycopus americanus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	-5
Asparagus-fern	<i>Asparagus officinalis</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Awl-fruited Sedge	<i>Carex stipata</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	3	-5
Balsam Poplar	<i>Populus balsamifera</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	4	-3
Bebb's Sedge	<i>Carex bebbii</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	3	-5
Bebb's Willow	<i>Salix bebbiana</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	-3
Birdfoot Trefoil	<i>Lotus corniculatus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Black Knapweed*	<i>Centaurea nigra</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Black Locust*	<i>Robinia pseudoacacia</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Black Medic*	<i>Medicago lupulina</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Bladder Campion	<i>Silene cucubalus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Blessed Thistle	<i>Centaurea benedicta</i>		<input checked="" type="checkbox"/>	SNA	-	-	Non-native	NA	5
Blue-eyed Grass	<i>Sisyrinchium montanum</i>	<input checked="" type="checkbox"/>		S4/S5	-	-	Native	4	0
Boneset	<i>Eupatorium perfoliatum</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	2	-3
Broad-leaf Cattail	<i>Typha latifolia</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	1	-5
Brown Knapweed*	<i>Centaurea jacea</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Bull Thistle	<i>Cirsium vulgare</i>	<input checked="" type="checkbox"/>		NA	-	-	Non-native	NA	3
Butternut	<i>Juglans cinerea</i>		<input checked="" type="checkbox"/>	S2?	END	END	Native	6	3
Calico Aster	<i>Symphyotrichum lateriflorum</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	3	0
Canada Anemone	<i>Aneomone canadensis</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	3	-3
Canada Goldenrod	<i>Solidago canadensis</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	1	3
Canada Rush	<i>Juncus canadensis</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	6	-5
Chicory	<i>Chicorium intybus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Chinese Mustard	<i>Brassica juncea</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	4
Choke Cherry	<i>Prunus virginiana</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	2	3
Climbing Nightshade	<i>Solanum dulcamara</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	0
Cockspur Hawthorn	<i>Crataegus crus-galli</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S4	-	-	Native	4	0
Coltsfoot*	<i>Tussilago farfara</i>	<input checked="" type="checkbox"/>		NA	-	-	Non-native	NA	3
Common (Old-field) Cinquefoil	<i>Potentilla simplex</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	3	3
Common Burdock*	<i>Arctium minus</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Common Buttercup*	<i>Ranunculus acris</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	0
Common Chickweed	<i>Stellaria media</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Common Dandelion*	<i>Taraxacum officinale</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Common Elderberry	<i>Sambucus nigra</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	5	-3
Common Groundsel	<i>Senecio vulgaris</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5

Table 2: Plant Species Observed at the TA Property

Common Name	Scientific Name	Parcel 1	Parcel 2	Provincial Status (S-RANK) ¹	COSEWIC Status	COSSARO Status	Native vs Non-Native Status	Coefficient of Conservatism ²	Wetness Coefficient ²
Common Milkweed	<i>Asclepias syriaca</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	0	5
Common Mullein*	<i>Verbascum thapsis</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Common Pear	<i>Pyrus communis</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Common Plantain	<i>Plantago major</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Common Ragweed	<i>Ambrosia artemisiifolia</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	0	3
Common Sow-thistle	<i>Sonchus oleraceus</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Common Speedwell	<i>Veronica officinalis</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Common St. Johnswort	<i>Hypericum perforatum</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Common Strawberry	<i>Fragaria virginiana</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	2	3
Common Timothy	<i>Phleum pratense</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Common Yarrow	<i>Achillea millefolium</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Crested Sedge	<i>Carex cristatella</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	3	-3
Curly Dock	<i>Rumex crispus</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	0
Daisy Fleabane	<i>Erigeron annuus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	0	3
Deptford Pink	<i>Dianthus armeria</i>	<input checked="" type="checkbox"/>		NA	-	-	Non-native	NA	5
Dog Violet	<i>Viola conspersa</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	3	0
Domestic Apple	<i>Malus pumila</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Dotted Hawthorn	<i>Crataegus punctata</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	5
Downy Hawthorn	<i>Crataegus mollis</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S4/S5	-	-	Native	4	0
Downy Willowherb	<i>Epilobium strictum</i>	<input checked="" type="checkbox"/>		S4	-	-	Native	9	-5
Early Goldenrod	<i>Solidago juncea</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	3	5
Eastern Red Cedar	<i>Juniperus virginiana</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	3
Eastern White Cedar	<i>Thuja occidentalis</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	-3
Eastern White Pine	<i>Pinus strobus</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	4	3
Elecampane Flower*	<i>Inula helenium</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Enchanter's Nightshade	<i>Circaea lutetiana ssp. canadensis</i>		<input checked="" type="checkbox"/>	S5	-	-	Native	2	3
English Hawthorn*	<i>Crataegus monogyna</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
English Plantain	<i>Plantago lanceolata</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
European Buckthorn*	<i>Rhamnus cathartica</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	0
European Mountain-ash	<i>Sorbus aucuparia</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
European Red Currant	<i>Ribes rubrum</i>	<input checked="" type="checkbox"/>		NA	-	-	Non-native	NA	5
False Solomon's-seal	<i>Maianthemum racemosum</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	4	3
Field Bindweed*	<i>Convolvulus arvensis</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Field Horsetail	<i>Equisetum arvense</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	0	0
Field Pussetoes	<i>Antennaria neglecta</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	3	5
Field Sow-thistle	<i>Sonchus arvensis</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Forget-me-not*	<i>Myosotis scorpioides</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	na	-5
Fowl Bluegrass	<i>Poa palustris</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	5	-3

Table 2: Plant Species Observed at the TA Property

Common Name	Scientific Name	Parcel 1	Parcel 2	Provincial Status (S-RANK) ¹	COSEWIC Status	COSSARO Status	Native vs Non-Native Status	Coefficient of Conservatism ²	Wetness Coefficient ²
Fowl Mannagrass	<i>Glyceria striata</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	3	-5
Fox Sedge	<i>Carex vulpinoidea</i>		<input checked="" type="checkbox"/>	S5	-	-	Native	3	-5
Garlic Mustard*	<i>Alliaria petiolata</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	0
Gooseberry	<i>Ribes oxycanthoides</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	NA	3
Graceful Sedge	<i>Carex gracillima</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	3
Great-spurred Violet	<i>Viola selkirkii</i>		<input checked="" type="checkbox"/>	S5	-	-	Native	8	5
Green Ash	<i>Fraxinus pennsylvanica</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S4	-	-	Native	3	-3
Ground Ivy	<i>Glechoma hederacea</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Herb-Robert	<i>Geranium robertianum</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	2	3
Highbush Cranberry	<i>Viburnum trilobum</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	5	-3
Hop Sedge	<i>Carex lupulina</i>		<input checked="" type="checkbox"/>	S5			Native	6	-5
Indian Strawberry	<i>Duchesnea indica</i>	<input checked="" type="checkbox"/>		NA	-	-	Non-native	NA	3
King Devil	<i>Pilosella piloselloides</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Lady's Thumb	<i>Persicaria maculosa</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	-3
Lamb's Quarter*	<i>Chenopodium album</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Lance-leaved Goldenrod	<i>Euthamia graminifolia</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	2	0
Late Goldenrod	<i>Solidago gigantea</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	-3
Lilac*	<i>Syringa vulgaris</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Lyre-leaved Rockcress	<i>Arabis lyrata</i>		<input checked="" type="checkbox"/>	S4	-	-	native	7	3
Manitoba Maple*	<i>Acer negundo</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	0	0
Marsh Bedstraw	<i>Galium palustre</i>		<input checked="" type="checkbox"/>	S5	-	-	Native	5	-5
Meadow Fescue	<i>Lolium pratense</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Meadow Horsetail	<i>Equisetum pratense</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	8	-3
Mouse-ear Chickweed	<i>Cerastium fontanum</i>		<input checked="" type="checkbox"/>	S5	-	-	Non-native	NA	3
Multiflora Rose	<i>Rosa multiflora</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Narrow-leaved Cattail*	<i>Typha angustifolia</i>	<input checked="" type="checkbox"/>		NA	-	-	Native	NA	-5
Narrow-leaved Willowherb	<i>Epilobium leptophyllum</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	7	-5
New England Aster	<i>Symphotrichum novae-angliae</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	2	-3
Nipplewort	<i>Lapsana communis</i>		<input checked="" type="checkbox"/>	SE	-	-	Non-native	NA	3
Northern Bedstraw	<i>Galium boreale</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	7	0
Norway Spruce	<i>Picea abies</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Orange Hawkweed	<i>Hieracium aurantiacum</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Orchard Grass	<i>Dactylis glomerata</i>	<input checked="" type="checkbox"/>		NA	-	-	Non-native	NA	3
Oxeye Daisy*	<i>Leucanthemum vulgare</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Panicled Aster	<i>Symphotrichum lanceolatum</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	3	-3
Peach-leaved Willow	<i>Salix amygdaloides</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	6	-3
Pennsylvania Bittercress	<i>Cardamine pensylvanica</i>		<input checked="" type="checkbox"/>	S5	-	-	Native	6	-3
Philadelphia Fleabane	<i>Erigeron philadelphicus</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	1	-3

Table 2: Plant Species Observed at the TA Property

Common Name	Scientific Name	Parcel 1	Parcel 2	Provincial Status (S-RANK) ¹	COSEWIC Status	COSSARO Status	Native vs Non-Native Status	Coefficient of Conservatism ²	Wetness Coefficient ²
Pin Cherry	<i>Prunus pensylvanica</i>		✓	S5	-	-	Native	3	3
Poison Ivy	<i>Toxicodendron radicans</i>	✓	✓	S5	-	-	Native	2	0
Purple-leaved Willowherb	<i>Epilobium coloratum</i>	✓		S5	-	-	Native	3	-5
Purslane Speedwell	<i>Veronica peregrina</i>	✓		S5	-	-	Native	0	0
Pussy Willow	<i>Salix discolor</i>	✓	✓	S5	-	-	Native	3	-3
Red Clover*	<i>Trifolium pratense</i>	✓	✓	NA	-	-	Non-native	NA	3
Red Elderberry	<i>Sambucus racemosa</i>	✓		S5	-	-	Native	5	3
Red Pine	<i>Pinus resinosa</i>	✓		S5	-	-	Native	8	3
Red Raspberry	<i>Rubus idaeus</i>	✓	✓	S5	-	-	Native	2	3
Red-osier Dogwood	<i>Cornus sericea</i>	✓	✓	S5	-	-	Native	2	-3
Reed Canary Grass	<i>Phalaris arundinacea</i>	✓	✓	S5	-	-	Native	0	-3
Rough Avens	<i>Geum laciniatum</i>	✓	✓	S4	-	-	Native	4	-3
Rough Bedstraw	<i>Galium asprellum</i>	✓		S5	-	-	Native	6	-5
Rough Cinquefoil	<i>Potentilla norvegica</i>	✓	✓	S5	-	-	Native	0	0
Rough-fruited Cinquefoil*	<i>Potentilla recta</i>	✓	✓	NA	-	-	Non-native	NA	5
Rough-stemmed Goldenrod	<i>Solidago rugosa</i>	✓	✓	S5			Native	4	0
Round-leaved Dogwood	<i>Cornus rugosa</i>	✓	✓	S5	-	-	Native	6	5
Round-leaved Goldenrod	<i>Solidago patula</i>		✓	S4	-		Native	8	-5
Sandbar Willow	<i>Salix interior</i>	✓		S5	-	-	Native	1	-3
Scotch Thistle	<i>Onopordum acanthium</i>	✓	✓	NA	-	-	Non-native	NA	5
Scots Pine*	<i>Pinus sylvestris</i>	✓		NA	-	-	Non-native	NA	3
Self-heal	<i>Prunella vulgaris</i>	✓	✓	NA	-	-	Non-native	NA	0
Sensitive Fern	<i>Onoclea sensibilis</i>	✓	✓	S5	-	-	Native	4	-3
Shining Flatsedge (Nutgrass)	<i>Cyperus bipartitus</i>	✓		S5	-	-	Native	4	-3
Shining Willow	<i>Salix lucida</i>		✓	S5	-	-	Native	5	-3
Silverweed	<i>Argentina anserina</i>	✓		S5	-	-	Native	5	-3
Slender Willow	<i>Salix petiolaris</i>	✓		S5	-	-	Native	3	-3
Small White Aster	<i>Symphyotrichum lateriflorum</i>	✓	✓	S5	-	-	Native	NA	-3
Smooth Blackberry	<i>Rubus canadensis</i>		✓	S5	-	-	Native	2	5
Soft Rush	<i>Juncus effusus</i>	✓		S5	-	-	Native	4	-5
Soft-stemmed Bulrush	<i>Schoenoplectus tabernaemontani</i>	✓		S5	-	-	Native	5	-5
Spotted Joe-pye Weed	<i>Eupatorium maculatum</i>		✓	S5	-	-	Native	3	-5
Spreading Dogbane	<i>Apocynum androsaemifolium</i>	✓	✓	S5	-	-	Native	3	5
Starry False Solomon's-seal	<i>Maianthemum stellatum</i>	✓		S5	-	-	Native	6	0
Sugar Maple	<i>Acer saccharum</i>	✓	✓	S5	-	-	Native	4	3
Sweet Cicely	<i>Osmorhiza claytonii</i>		✓	S5	-	-	Native	5	0
Tall Goldenrod	<i>Solidago altissima</i>	✓	✓	S5	-	-	Native	1	3
Tatarian Honeysuckle*	<i>Lonicera tatarica</i>	✓	✓	NA	-	-	Non-native	NA	3

Table 2: Plant Species Observed at the TA Property

Common Name	Scientific Name	Parcel 1	Parcel 2	Provincial Status (S-RANK) ¹	COSEWIC Status	COSSARO Status	Native vs Non-Native Status	Coefficient of Conservatism ²	Wetness Coefficient ²
Trembling Aspen	<i>Populus tremuloides</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	2	0
Tufted Vetch*	<i>Vicia cracca</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Viper's Bugloss	<i>Echium vulgare</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Virginia Creeper	<i>Parthenocissus quinquefolia</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S4	-	-	Native	6	3
White Ash	<i>Fraxinus americana</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S4	-	-	Native	4	3
White Avens	<i>Geum canadense</i>		<input checked="" type="checkbox"/>	S5	-	-	Native	3	0
White Clover*	<i>Trifolium repens</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
White Elm	<i>Ulmus americana</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	3	-3
White Spruce	<i>Picea glauca</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	6	3
White Sweet Clover	<i>Melilotus albus</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	3
Wild Carrot*	<i>Daucus carota</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Wild Cucumber	<i>Echinocystis lobata</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	3	-3
Wild Grape	<i>Vitis riparia</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	0	0
Wolly Sedge	<i>Carex pellita</i>		<input checked="" type="checkbox"/>	S5	-	-	Native	2	-5
Woodland Agrimony	<i>Agrimonia striata</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S4	-	-	Native	3	3
Woodland Strawberry	<i>Fragaria vesca</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	4	3
Wool Grass	<i>Scirpus cyperinus</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	4	-5
Woolly Blue Violet	<i>Viola sororia</i>	<input checked="" type="checkbox"/>		S5	-	-	Native	4	0
Yellow Avens	<i>Geum aleppicum</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	S5	-	-	Native	2	0
Yellow Bedstraw	<i>Galium verum</i>		<input checked="" type="checkbox"/>	NA	-	-	non-native	NA	5
Yellow Goat's-beard	<i>Tragopogon pratensis</i>		<input checked="" type="checkbox"/>	NA	-	-	Non-native	NA	5
Yellow Sedge	<i>Carex flava</i>	<input checked="" type="checkbox"/>		S5	-	-	native	5	-5

* - species marked with an asterisk are considered by various sources to be invasive in Ontario

1. Provincial Rank: S4 - Apparently Secure, S5 - Secure, NA = not applicable (non-native species)

2. Coefficients as reported by Oldham et al., 1995

Table 3: BBS Point-Count Station Characteristics

Station ID	UTM Coordinates (Centroid) ¹		Main Habitat/Cover Type	Number of Species Observed ²
	Easting	Northing		
PC-1	545390	4931195	Deciduous Forest (FOD3)	5
PC-2	545550	4931435	CUT/CUW	11
PC-3	545750	4931190	CUT	10
PC-4	545940	4931595	CUM	12
PC-5	546040	4931370	CUT/CUW	10
PC-6	545950	4931150	CUW	8

1 - coordinates obtained using handheld GPS, NAD83 datum. Reported to the nearest 5 m.

2 - includes only those species recorded within 100 m of centre of Point-count station

Table 4: Bird Species Recorded at the TA Property¹

Species		Breeding Status			Conservation Status			Breeding Habitat
Common name	Scientific name	Parcel 1	Parcel 2	OBBA ²	SRANK ³	SARA ⁴	ESA ⁵	Preference ⁶
American Crow	<i>Corvus brachyrhynchos</i>	Possible	Possible	Confirmed	S5	-	-	general
American Goldfinch	<i>Carduelis tristis</i>	Probable	-	Confirmed	S5	-	-	general
American Redstart	<i>Setophaga ruticilla</i>	Possible	Possible	Confirmed	S5	-	-	early succession
American Robin	<i>Turdus migratorius</i>	Confirmed	Possible	Confirmed	S5	-	-	general
American Woodcock	<i>Scolopax minor</i>	Possible	Possible	Not Reported	S4	-	-	early succession
Barn Swallow	<i>Hirunda rustica</i>	Possible	Possible	Confirmed	S4	THR	THR	man-made structures
Black-and-White Warbler	<i>Mniotilta varia</i>	-	Possible	Probable	S5	-	-	forest
Black-capped Chickadee	<i>Poecile atricapillus</i>	Probable	Probable	Confirmed	S5	-	-	general
Blue Jay	<i>Cyanocitta cristata</i>	Probable	Possible	Confirmed	S5	-	-	forest
Bobolink	<i>Dolichonyx oryzivorus</i>	-	Possible	Possible	S4	THR	THR	grassland
Brown Thrasher	<i>Toxostoma rufum</i>	-	Possible	Probable	S4	-	-	early succession
Canada Goose	<i>Branta canadensis</i>	Possible	-	Confirmed	S5	-	-	wetland
Cedar Waxwing	<i>Bombycilla cedrorum</i>	-	Possible	Confirmed	S5	-	-	general
Chipping Sparrow	<i>Spizella passerina</i>	Possible	-	Confirmed	S5	-	-	general
Common Grackle	<i>Quiscalus quiscula</i>	Possible	Possible	Confirmed	S5	-	-	general
Common Raven	<i>Corvus corax</i>	Possible	Possible	Probable	S5	-	-	forest
Common Yellowthroat	<i>Geothlypis trichas</i>	Probable	Probable	Probable	S5	-	-	early succession, wetland
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Observed	-	Not Reported	S5	-	-	wetlands
Downy Woodpecker	<i>Picoides pubescens</i>	Possible	-	Confirmed	S5	-	-	forest
Eastern Meadowlark	<i>Sturnella magna</i>	-	Possible	Possible	S4	THR	THR	grassland
Eastern Phoebe	<i>Sayornis phoebe</i>	Probable	-	Confirmed	S5	-	-	general
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	Probable	Confirmed	Possible	S4	-	-	early succession
Eastern Wood-pewee	<i>Contopus virens</i>	Possible	-	Probable	S4	SC	SC	forest
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Observed	-	Possible	S5	-	-	forest
Golden-winged Warbler ⁷	<i>Vermivora chrysoptera</i>	-	Possible	Not Reported	S3	THR	SC	early succession
Gray Catbird	<i>Dumetella carolinensis</i>	Probable	Probable	Probable	S4	-	-	early succession
Great Crested Flycatcher	<i>Myiarchus crinitus</i>	Possible	Possible	Probable	S5	-	-	forest
Indigo Bunting	<i>Passerina cyanea</i>	Possible	Probable	Probable	S4	-	-	early succession
Killdeer	<i>Charadrius vociferus</i>	Possible	Probable	Confirmed	S5	-	-	open
Mallard	<i>Anas platyrhynchos</i>	Possible	-	Confirmed	S5	-	-	wetland
Mourning Dove	<i>Zenaida macroura</i>	Possible	Possible	Confirmed	S5	-	-	general
Northern Cardinal	<i>Cardinalis cardinalis</i>	Possible	Possible	Confirmed	S5	-	-	early succession
Northern Flicker	<i>Colaptes auratus</i>	Probable	Probable	Confirmed	S4	-	-	general
Northern Oriole	<i>Icterus galbula</i>	Possible	Possible	Confirmed	S5	-	-	general
Orange-crowned Warbler	<i>Oreothlypis celata</i>	Observed	-	Not Reported	S4	-	-	forest
Pileated Woodpecker	<i>Dryocopus pileatus</i>	-	Possible	Not Reported	S5	-	-	forest
Red-breasted Nuthatch	<i>Sitta canadensis</i>	Possible	-	Probable	S5	-	-	forest
Red-eyed Vireo	<i>Vireo olivaceus</i>	Probable	Probable	Probable	S5	-	-	forest
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Possible	Probable	Confirmed	S4	-	-	wetlands, grasslands
Ring-billed Gull	<i>Larus delawarensis</i>	Observed	Observed	Not Reported	S5	-	-	wetland
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	-	Possible	Probable	S4	-	-	forest
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	-	Possible	Probable	S5	-	-	general
Ruffed Grouse	<i>Bonasa umbellus</i>	Probable	Probable	Possible	S4	-	-	forest
Savannah Sparrow	<i>Passerculus sandwichensis</i>	-	Possible	Confirmed	S4	-	-	open
Song Sparrow	<i>Melospiza melodia</i>	Probable	Confirmed	Confirmed	S5	-	-	general
Turkey Vulture	<i>Cathartes aura</i>	Observed	Observed	Not Reported	S5	-	-	unassigned
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Confirmed	Probable	Possible	S5	-	-	forest
Wild Turkey	<i>Meleagris gallopavo</i>	Possible	Probable	Confirmed	S5	-	-	forest
Wood Thrush	<i>Hylocichla mustelina</i>	Possible	-	Possible	S4	THR	SC	forest
Yellow Warbler	<i>Setophaga petechia</i>	Possible	Possible	Confirmed	S5	-	-	early succession
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	-	Possible	Confirmed	S5	-	-	forest

1. includes adjacent lands within ~50 m of property perimeter
2. the highest breeding status reported in the OBBA for Square 17NK43
3. Provincial Rank: S3 - Vulnerable, S4 - Apparently Secure, S5 - Secure
4. Federal Status: THR = Threatened, SC = Special Concern
5. Provincial Status: THR = Threatened, SC = Special Concern
6. based on the Ontario Breeding Bird Atlas (OBBA)

Table 5: Priority Bird Species Reported in the OBBA¹

Species		SRank ²	SARO Status ³	SARA Status ⁴	Primary Habitat Association ⁵
Common Name	Scientific Name				
Bank Swallow	<i>Riparia riparia</i>	S4	THR	THR	river banks, sand piles
Barn Swallow	<i>Hirundo rustica</i>	S4	THR	THR	man-made structures
Bobolink	<i>Dolichonyx oryzivorus</i>	S4	THR	THR	grasslands, hayfields (usually > 5 ha)
Chimney Swift	<i>Chaetura pelagica</i>	S3	THR	THR	man-made structures
Common Nighthawk	<i>Chordeiles minor</i>	S4	SC	THR	rock outcrops, sand barrens, forest clearings
Eastern Meadowlark	<i>Sturnella magna</i>	S4	THR	THR	grasslands, hayfields (usually > 5 ha)
Eastern Wood-Pewee	<i>Contopus virens</i>	S4	SC	SC	deciduous and mixed forest, often near edges
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4	SC	SC	sparsely vegetated grasslands (at least 30 ha)
Wood Thrush	<i>Hylocichla mustelina</i>	S4	SC	THR	mature deciduous or conifer-deciduous forests

1 - reported as occurring in OBBA Square 17NK43

2 - Provincial Rank - S3 = Vulnerable, S4 = Apparently Secure

3 - Species at Risk in Ontario - SC = Special Concern, THR = Threatened

4 - Species at Risk Act (Canada) - SC = Special Concern THR = Threatened

5 - as reported in the Ontario Breeding Bird Atlas (OBBA)

Table 6: Amphibians Observed at the TA Property

Species		"S" Rank ¹	SARA Status ²	ESA Status ³	Preferred Breeding Habitat	Local Presence
Common Name	Scientific Name					
American Toad	<i>Anaxyrus americanus</i>	S5	-	-	Variety of warm, shallow waters	Low level vocalizations in northeast part of Parcel 1. Single adult specimens observed elsewhere within both Parcel 1 and Parcel 2.
Green Frog	<i>Lithobates clamitans</i>	S5	-	-	Shallow permanent waterbodies	A few adult specimens observed in relative isolation in Parcel 2. No evidence of breeding.
Northern Leopard Frog	<i>Lithobates pipiens</i>	S5	NAR	NAR	Relatively permanent ponds without fish	A few adult specimens observed in relative isolation in Parcel 2. No evidence of breeding.
Spring Peeper	<i>Pseudacris crucifer</i>	S5	-	-	Temporary woodland ponds, or swamps	Scattered low-level vocalizations in southwest and northeast of Parcel 1.
Western Chorus Frog	<i>Pseudacris triseriata</i>	S4	THR	NAR	Fishless temporary waterbodies with ≥10 cm of water	Scattered low-level vocalizations in southwest and northeast of Parcel 1.

1. Provincial Rank: S4 = Apparently Secure, S5 = Secure

2. Federal Status: NAR Not at Risk, THR = Threatened

3. Provincial Status: NAR = not at risk

Table 7: Reptile and Amphibian Species Reported in the OARA¹

Species		SRank ²	ESA Status ³	SARA Status ⁴	Primary Habitat Association ⁵
Common Name	Scientific Name				
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S4	-	SC	Ponds, marshes, lakes, or slow moving creeks with soft substrates and basking sites
Snapping Turtle	<i>Chelydra serpentina</i>	S4	SC	SC	Most freshwater habitats, most often with slow-moving water, soft substrates and abundant vegetation
Eastern Gartersnake	<i>Thamnophis sirtalis sirtalis</i>	S5	-	-	A generalist, occupying wide variety of habitats
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S4	NAR	SC	Open habitats - rocky outcrops, fields and forest edge
Green Frog	<i>Lithobates clamitans</i>	S5	-	-	Shallow permanent waterbodies
Northern Leopard Frog	<i>Lithobates pipiens</i>	S5	NAR	NAR	Relatively permanent ponds without fish
Spring Peeper	<i>Pseudacris crucifer</i>	S5	-	-	Temporary woodland ponds, or swamps
American Toad	<i>Anaxyrus americanus</i>	S5	-	-	Variety of warm, shallow waters
Western Chorus Frog	<i>Pseudacris maculata</i>	S4	NAR	THR	Fishless ponds with ≥10 cm of water
Eastern Red-backed Salamander	<i>Plethodon cinereus</i>	S5	-	-	Mature forests with abundant woody debris

1 - Includes species with more than 1 record of occurrence in OARA Square 17NK43

2 - Provincial Rank - S4 = Apparently Secure, S5 = Secure

3 - Endangered Species Act (Ontario) - NAR = Not at Risk, SC = Special Concern, THR = Threatened

4 - Species at Risk Act (Canada) - NAR = Not at Risk, SC = Special Concern, THR = Threatened

5 - as reported in the Ontario Amphibian and Reptile Atlas

Table 8: NHIC Element Occurrences (EO) near the TA Property

Common Name	Scientific Name	SRank ¹	SARO Status ²	SARA Status ³	Primary Habitat
Bobolink	<i>Dolichonyx oryzivorus</i>	S4	THR	THR	grasslands, hayfields (usually > 5 ha)
Eastern Meadowlark	<i>Sturnella magna</i>	S4	THR	THR	grasslands, hayfields (usually > 5 ha)
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S4	NAR	SC	Open habitats - rocky outcrops, fields and forest edge
Snapping Turtle	<i>Chelydra serpentina</i>	S3	SC	SC	varous types of standing freshwater
Butternut	<i>Juglans cinerea</i>	S2?	END	END	deciduous forests, often on slopes or stream banks
Smith's Bulrush	<i>Schoenoplectiella smithii</i>	S2/S3	-	-	moist sandy or muddy shorelines
Variegated Meadowhawk	<i>Sympetrum corruptum</i>	S3	-	-	ponds, marshy lakes, and swamps
Gypsy Cuckoo Bumble Bee	<i>Bombus bohemicus</i>	S1/S2	-	END	diverse habitats, including open meadows, farmlands, woodlands

1 - Provincial Status (S-Rank) - S1 = Extirpated, S2 = Imperiled, S3 = Vulnerable, S4 = Apparently Secure

2 - Species at Risk in Ontario - THR = Threatened

3 - Species at Risk Act (Canada) - THR = Threatened

EO records obtained for 21 NHIC 1-km squares within 3-4 km of the Property.

Table 9: Summary of Priority Species Status at the TA Property

Candidate Species ¹		Status in Ontario		Status within/near Property		
Common Name	Scientific Name	SRank ²	ESA Status ³	Habitat Available ⁴	Presence Confirmed ⁵	Notes
Butternut	<i>Juglans cinerea</i>	S2?	THR	Yes	Yes	Over 50 specimens identified in confined portions of Parcel 2. No specimens identified within Parcel 1.
Smith's Bulrush	<i>Schoenoplectiella smithii</i>	S2/S3	NA	No	No	Suitable habitat not available within Property
Western Chorus Frog	<i>Pseudacris triseriata</i>	S4	NAR	Yes	Yes	Low level vocalizations in isolated locations. No evidence to confirm breeding.
Midland Painted Turtle	<i>Chrysemys picta marginata</i>	S4	NA	No	No	No permanent standing water within Property to support turtle species
Snapping Turtle	<i>Chelydra serpentina</i>	S4	SC	No	No	No permanent standing water within Property to support turtle species
Eastern Milksnake	<i>Lampropeltis triangulum</i>	S4	NAR	No	No	Open habitat not present to any meaningful extent within Property.
Bank Swallow	<i>Riparia riparia</i>	S4	THR	No	No	No suitable nesting habitat (exposed river banks, sand piles) within Property
Barn Swallow	<i>Hirundo rustica</i>	S4	THR	No	Yes	No landed presence within Property. No suitable nesting habitat (man-made structures) within Property.
Bobolink	<i>Dolichonyx oryzivorus</i>	S4	THR	No	Yes	Observed only on adjacent property. Adequately sized patches of suitable grassland habitat not available within TA Property
Chimney Swift	<i>Chaetura pelagica</i>	S3	THR	No	No	No suitable nesting habitat (man-made structures) within property
Eastern Meadowlark	<i>Sturnella magna</i>	S4	THR	No	Yes	Observed only on adjacent property. Adequately sized patches of suitable grassland habitat not available within TA Property
Eastern Wood-pewee	<i>Contopus virens</i>	S4	SC	Yes	Yes	General nesting habitat available, but only isolated occurrences within the Property. Breeding within Property not confirmed.
Golden-winged Warbler	<i>Vermivora chrysoptera</i>	S3	SC	Yes	No	Vocalizations of a single specimen within Parcel 2. Species identity was not visually confirmed.
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	S4	SC	No	No	Adequately sized patches of grassland habitat not available within property
Wood Thrush	<i>Hylocichla mustelina</i>	S4	SC	No	Yes	Preferred habitat (mature interior forest) not found within Property. A single occurrence recorded during surveillance. No expectation of meaningful presence within Property
Common Nighthawk	<i>Chordeiles minor</i>	S4	SC	No	No	Preferred nesting habitat (barrens, forest clearings) not found within Property.
Monarch Butterfly	<i>Danaus plexippus</i>	S2/S4	SC	No	Yes	Only a few small patches of open habitat within Property that could support Monarchs. Very limited presence of milkweed.
Variegated Meadowhawk	<i>Sympetrum corruptum</i>	S3	NA	No	No	Suitable habitat not available within Property
Gypsy Cuckoo Bumble Bee	<i>Bombus bohemicus</i>	S1/S2	NA	Yes	No	This species not on record for the region for several decades. Presence within Property not expected.

1 - Species has been identified in existing databses (NHIC, OBBA, OARA) or through direct site surveillance as present within or near the Property

2 - Provincial Status (S-Rank) - S1 = Extirpated, S2 = Imperiled, S3 = Vulnerable, S4 = Apparently Secure

3 - THR = Threatened, SC = Special Concern, NA = Not Assessed, NAR = Not at Risk

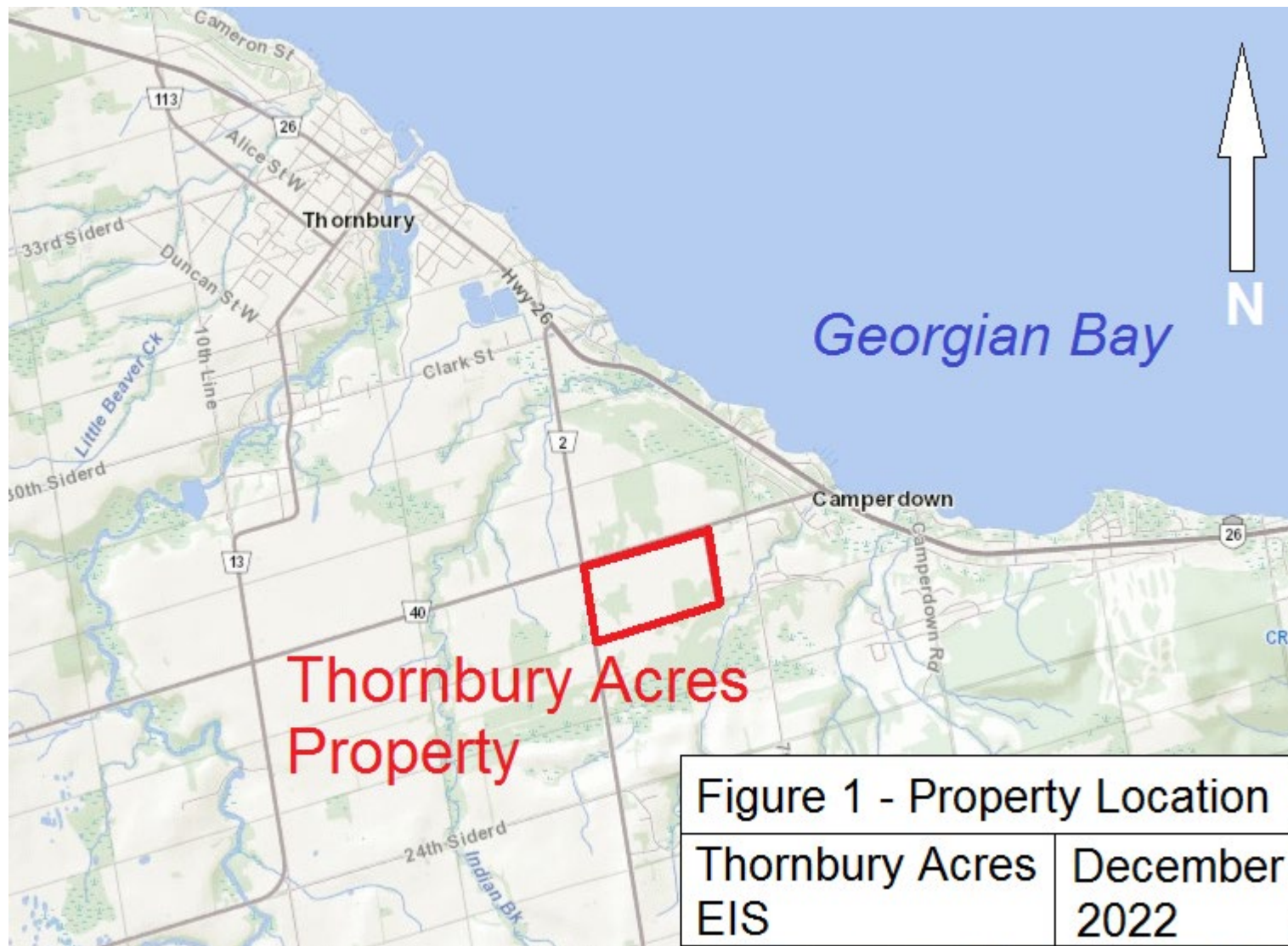
4 - sufficient quantity of preferred habitat is present within Property or in adjacent areas potentially affected by development

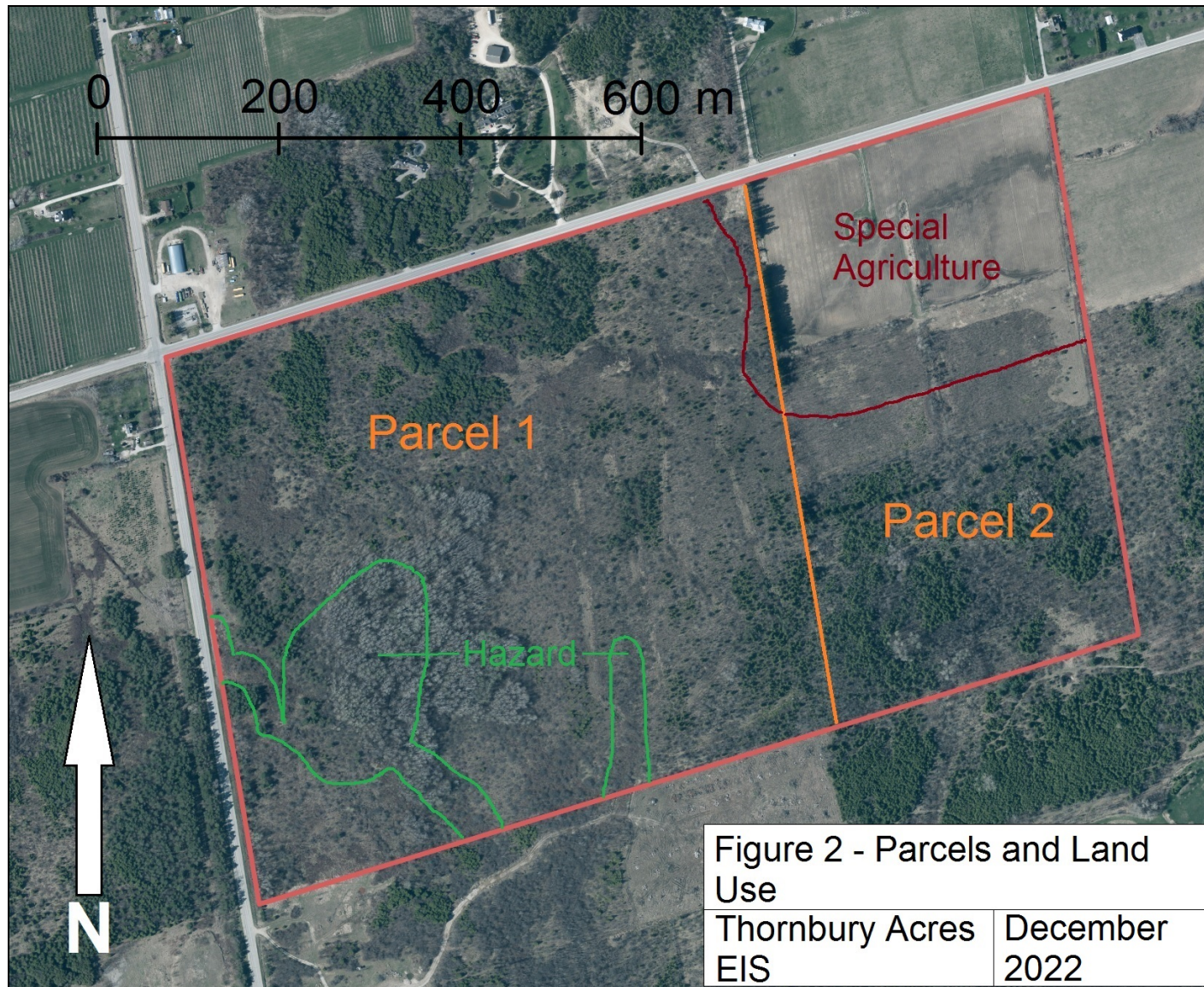
5 - species presence confirmed during monitoring of the Property or immediately adjacent lands

Table 10: Overview of Environmental Risks Associated with Development

Feature or Function	Potential Impact	Likelihood	Potential Significance	Limiting and Mitigating Factors
Significant Woodlands	Direct Loss of forest cover	High	Low	Aspen Forest (FOD8-1) in Parcel 1 to be retained. Cultural Woodland (CUW) in Parcel 2 subject to direct loss or alteration. Partial mitigation achievable through site design and post-development measures.
	Habitat Loss/Impairment	High	Low	Woodlands in Parcel 1 will remain intact. Plant and animal communities in Parcels 1 and 2 are not rare or sensitive. No SWH function. Partial mitigation through construction timing and final site design considerations.
	Loss/impairment of socio-economic function	Low	Low	Woodlands currently have no known socio-economic function
	Impaired Hydrological Function	Low	Low	Limited by inherent hydrological characteristics within and around Property. No wetlands or permanent watercourses with significant connectivity to woodlands within Property
Significant Wildlife Habitat	Loss or impairment of habitat function	Low	Low	No SWH function identified within property.
Species at Risk	Direct harm or impairment of habitat	Low	High	Multiple Butternut Specimens in confined portions of Parcel 2. Full mitigation through site plan/design and post-development land management. Subject to regulatory requirements. Consultation with MECP required.
Other Priority Species	Direct harm or impairment of habitat	Low	Low	Limited presence of Priority Species within and adjacent to the Property, especially within Cultural communities where development is being considered. Mitigation through construction timing, site design considerations.
Watercourses	Loss of watercourses	High	Low	Site planning anticipated to require removal/alteration of existing intermittent drainage channels within property.
	Loss/Impairment of ecological functions	High	Low	Watercourses do not serve as fish habitat or function otherwise to provide meaningful habitat in support of aquatic or terrestrial biota.

FIGURES





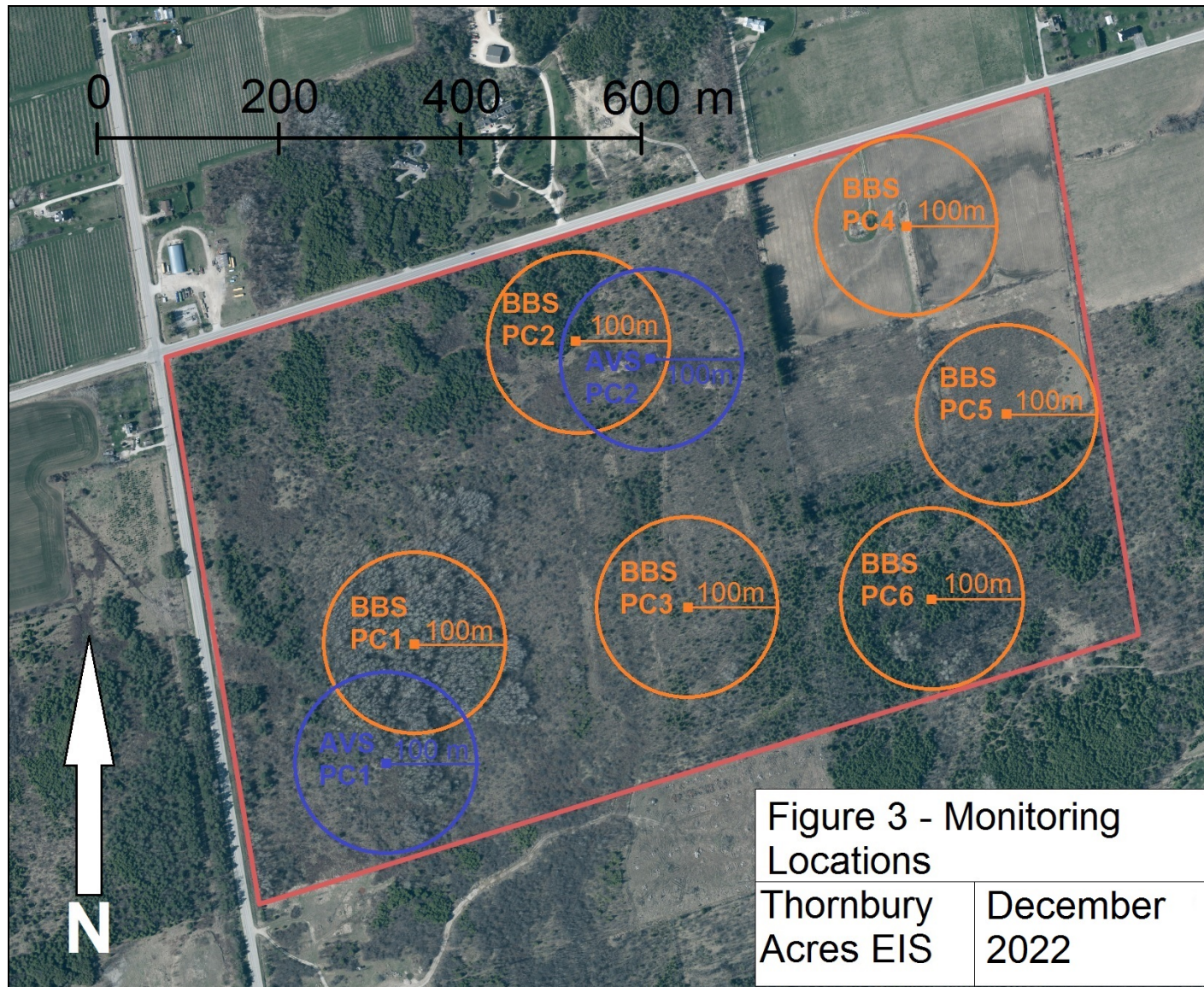
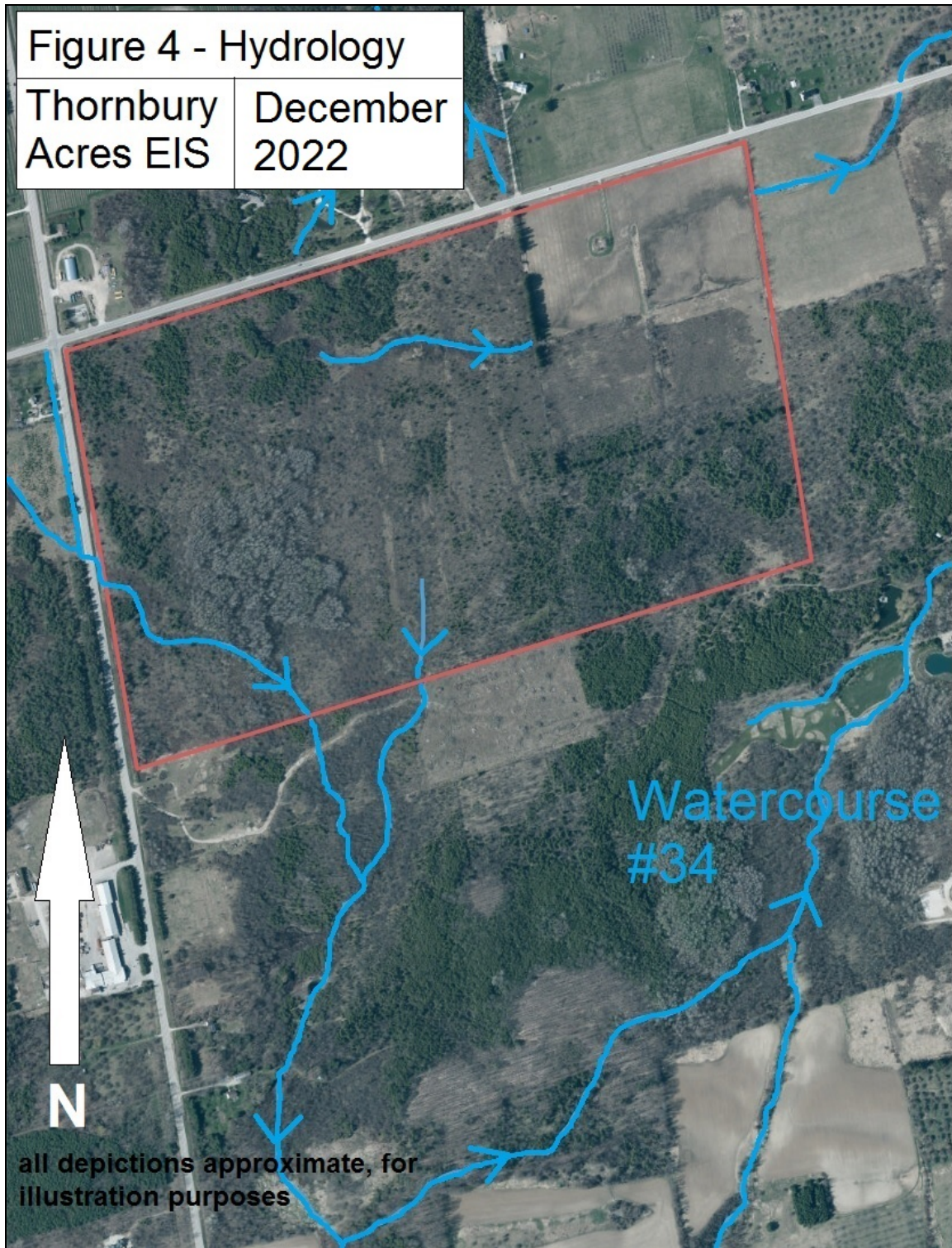
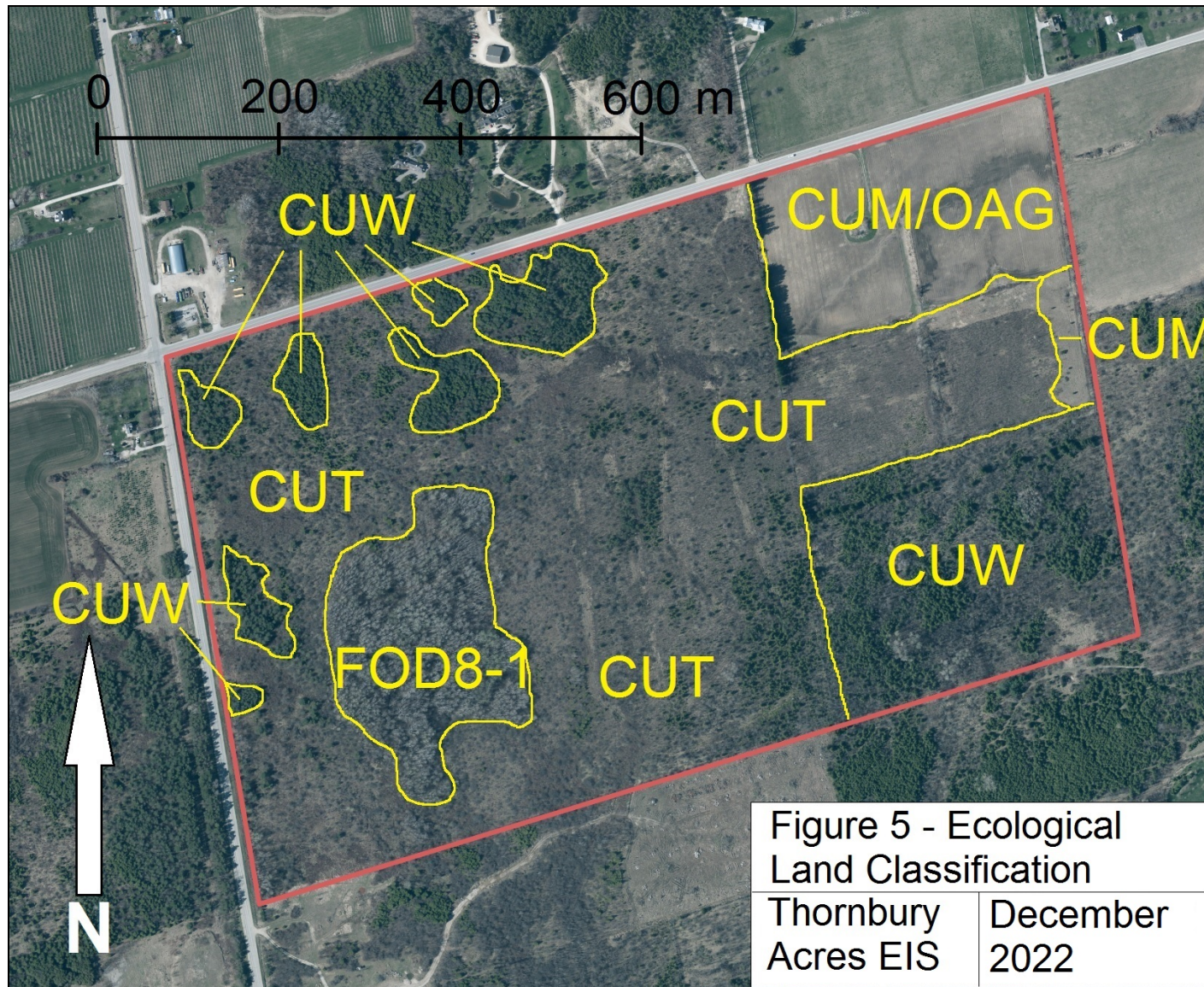


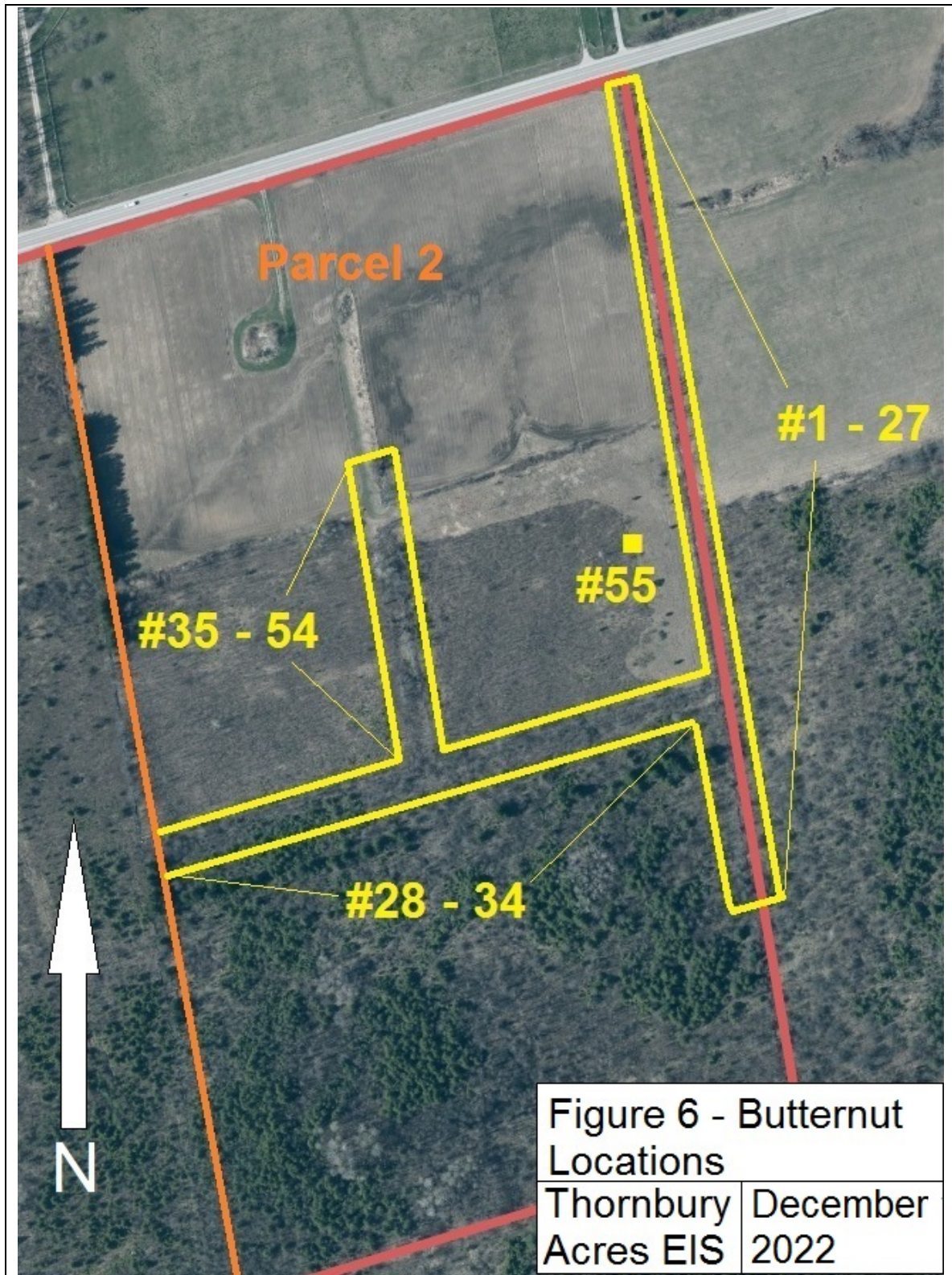
Figure 4 - Hydrology

Thornbury
Acres EIS

December
2022







See corresponding data in Appendix C

APPENDICES

APPENDIX A - EXISTING CONSTRAINTS MAPPING



Notes:

Enter map notes

1.3 0 0.65 1.3 Kilometres

This map should not be relied on as a precise indicator of routes or locations, nor as a guide to navigation. The Ontario Ministry of Natural Resources and Forestry(OMNRF) shall not be liable in any way for the use of, or reliance upon, this map or any information on this map.

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Legend

- NEP Boundary
- ANSI
- Earth Science Provincially Significant/sciences de la terre d'importance provinciale
- Earth Science Regionally Significant/sciences de la terre d'importance régionale
- Life Science Provincially Significant/sciences de la vie d'importance provinciale
- Life Science Regionally Significant/sciences de la vie d'importance régionale
- Evaluated Wetland
- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland



Legend

-  NEC Boundary
-  NHS Core
-  NHS Linkage
-  Grey County Boundary



Notes

1777 0 889 1777 Meters

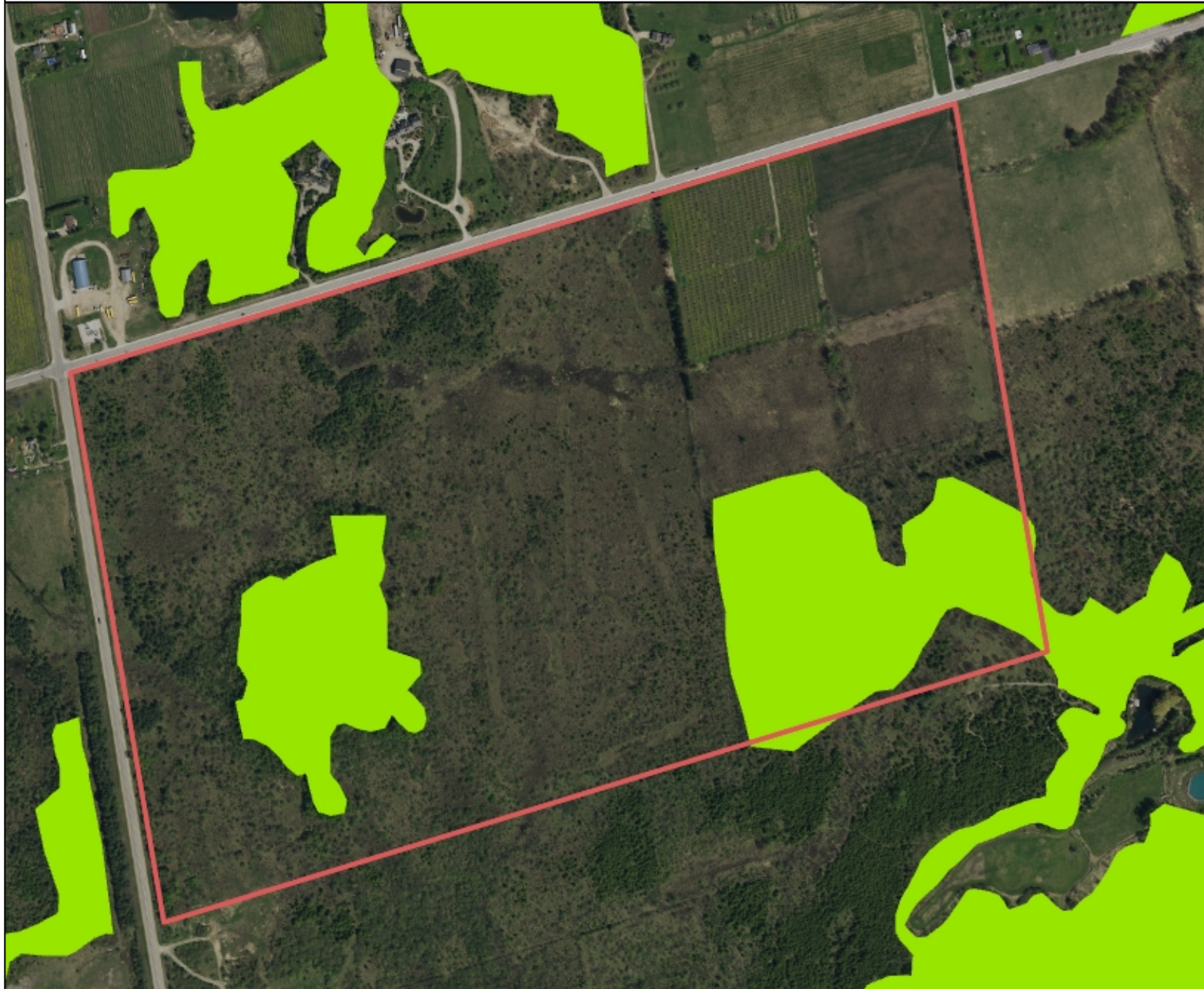
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Printed October 17, 2022





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Legend

ANSI

-  ANSI, Earth Life Science
-  ANSI, Earth Science
-  ANSI, Life Science

-  Other Wetlands
-  Significant Valleylands
-  Significant Woodlands
-  Grey County Boundary

Notes

444 0 222 444 Meters

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Legend

- Wet Areas - GSCA
- Wet Areas - GRCA
- Water Features
- Watercourses
- Floodplains - NVCA
- Floodplains - GRCA
- Approximate Regulated and Screen SVCA
- Approximate Regulated Area
- Approximate Screening Area
- Regulations - GSCA
- Regulations - NVCA
- Grey County Boundary

Notes

889 0 444 889 Meters

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Legend

Land use

- Primary Settlement Area
- Secondary Settlement Area
- Agricultural
- Escarpment Recreation Area
- Hazard Lands
- Escarpment Natural Area
- Inland Lakes & Shoreline
- Niagara Escarpment Plan Area
- Rural
- Space Extensive Industrial and Commercial
- Sunset Strip Area
- Industrial Business Park
- Special Agriculture
- Provincially Significant Wetlands
- Recreation Resort Area
- Grey County Boundary

Notes

444 0 222 444 Meters

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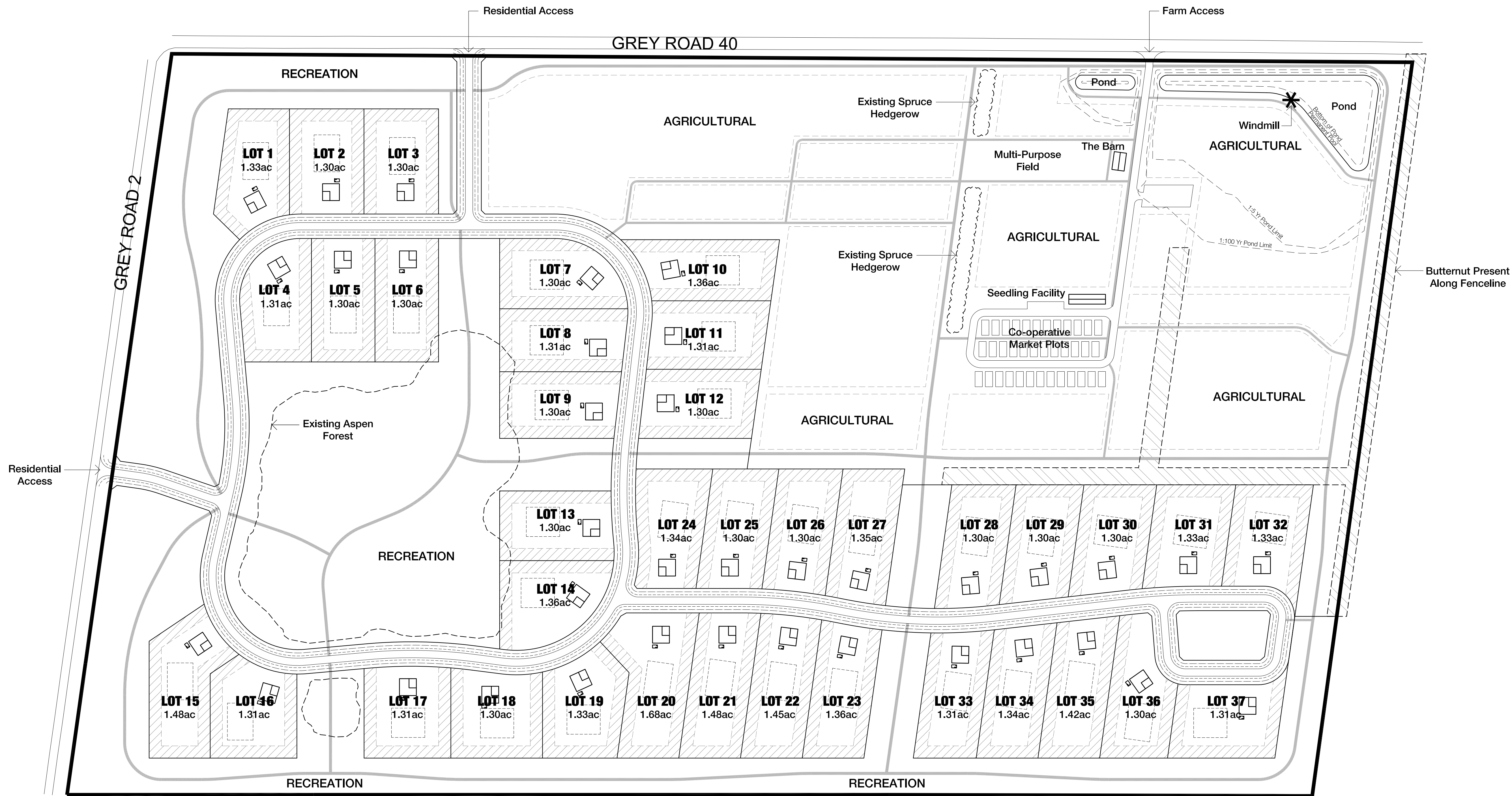
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Printed October 17, 2022

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APPENDIX B - FARM CO-OPERATIVE SITE PLAN

U:\Silvano\2021\21087 - Castlepoint NUMA - Thornbury Acres Master Plan Study\Design\2022-11-02_1st Submission\dwg\2022-11-28_Thornbury Acres_Concept Plan v8.dwg



CASTLEPOINT NUMA

THORNBURY ACRES

THORNBURY, ONTARIO

LEGEND

- Site Boundary
- Naturalized Lot Buffer
- Butternut Tree Presence
- Trails
- Site Feature

SUMMARY

Site Area: ±151.5ac

Total Lot Count: 37

Road Length: 2,205.4m

Trail Length: 7.1km

Total Residential: 49.6ac (32.8%)
Residential - Cleared Area 28.7ac (19.0%)
Residential - Naturalized Lot Buffer 20.9ac (13.8%)

Road: 10.9ac (7.2%)

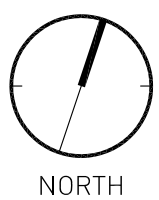
Residential + Road:
60.6ac (40.0%)

Agricultural Lands: 52.1ac (34.4%)

Recreational Lands: 38.8ac (25.6%)

Agricultural / Recreational Lands:
91.0ac (60.0%)

Total Open Space (Ag, Rec and Lot Buffer)
111.9ac (73.8%)



NAK
design strategies

421 RONCESVALLES AVENUE, TORONTO, ON M6R 2N1 CANADA
T 416.340.8700 F 416.340.7100 NAKDESIGNSTRATEGIES.COM

SCALE | 1:1750

0 25M 50M 75M

DATE | 12.02.2022

PROJECT | 21-087

SP-08

SITE PLAN v8.

APPENDIX C - SUPPORTING ECOLOGICAL DATA

BBS Point-count Results

Project: Thornbury Acres EIS

Station: PC-1

Date: 21-Jun-22

Start Time: 7:30

Wind (Beaufort): 0

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Crow		3				
American Robin	2			2		
Mourning Dove						1
Northern Flicker		1				
Red-winged Blackbird	2					
Ring-billed Gull	2					
Song Sparrow	1	1		2	1	
White-throated Sparrow						1
Wild Turkey		2				

Ring-billed gull observation consists of over-flight - no landed presence

slight traffic noise interference

Project: Thornbury Acres EIS

Station: PC-2

Date: 21-Jun-22

Start Time: 8:45

Wind (Beaufort): 0

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Crow		1	1			2
Northern Cardinal			1		1	
Northern Oriole					1	
Red-eyed Vireo					1	
Ring-billed Gull	1					
Song Sparrow		1	1		1	
White-throated Sparrow		1			1	

Ring-billed gull observation consists of over-flight - no landed presence

Project: Thornbury Acres EIS

Station: PC-3

Date: 21-Jun-22

Start Time: 7:55

Wind (Beaufort): 0

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Crow			1			1
American Robin			1			
Great Crested Flycatcher				1		
Northern Cardinal		1				
Red-eyed Vireo		1			1	
White-throated Sparrow		1			1	

Project: Thornbury Acres EIS

Station: PC-1

Date: 15-Jun-21

Start Time: 6:20

Wind (Beaufort): 0 - 1

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Robin						1
Black-capped Chickadee				1		
Great Crested Flycatcher					1	
Red-eyed Vireo	1	1		1	1	

moderate traffic noise interference

Project: Thornbury Acres EIS

Station: PC-2

Date: 15-Jun-21

Start Time: 7:05

Wind (Beaufort): 0 - 1

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Goldfinch					1	
Common Yellowthroat				1		
Eastern Phoebe	1	1		1	1	
Eastern Towhee				1		
Gray Catbird	1					
Red-eyed Vireo	1					
Song Sparrow	2			2		
White-throated Sparrow			1			1
Yellow Warbler	1			1		

moderate traffic noise interference

agitated pair of song sparrows

Project: Thornbury Acres EIS

Station: PC-3

Date: 15-Jun-21

Start Time: 7:50

Wind (Beaufort): 0 - 1

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
Black-capped Chickadee	2			1		
Eastern Phoebe		1			1	
Eastern Towhee	1		1	1		
Great Crested Flycatcher			1			
White-throated Sparrow		1	1	1	1	1

moderate traffic noise interference

Project: Thornbury Acres EIS

Station: PC-5

Date: 9-Jul-22

Start Time: 7:10

Wind (Beaufort): 0 - 1

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Crow			1			1
American Robin		3			3	
Barn Swallow					3	
Common Grackle	1					
Common Yellowthroat						1
Killdeer	1					
Mourning Dove					1	
Northern Cardinal		1				
Red-winged Blackbird						1
Song Sparrow	1	1		1	1	

Fields recently cultivated and planted

Project: Thornbury Acres EIS

Station: PC-5

Date: 9-Jul-22

Start Time: 7:40

Wind (Beaufort): 0

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Crow			1			
American Robin						1
Black-capped Chickadee		1				
Blue Jay					1	
Common Yellowthroat		1				
Eastern Towhee						1
Song Sparrow	1			1	1	
White-throated Sparrow		1			1	

Project: Thornbury Acres EIS

Station: PC-6

Date: 9-Jul-22

Start Time: 8:35

Wind (Beaufort): 0

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Crow						2
American Robin		1				1
Black-capped Chickadee		1				
Mourning Dove			1			1
Northern Cardinal			1			1
Northern Flicker			1			
Red-eyed Vireo	1			1		
White-throated Sparrow	1			1		

Project: Thornbury Acres EIS

Station: PC-1

Date: 5-Jul-21

Start Time: 6:15

Wind (Beaufort): 0

Sky: Clear, with light haze

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Robin					1	
Eastern Wood-pewee		1				
Mourning Dove			1			
Red-eyed Vireo	1				1	
White-throated Sparrow			1			1

moderate traffic noise

Project: Thornbury Acres EIS

Station: PC-2

Date: 5-Jul-21

Start Time: 7:00

Wind (Beaufort): 0

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Goldfinch		1			1	
American Robin	1			1	1	
Common Yellowthroat	1	1			1	
Eastern Phoebe		1			1	
Eastern Towhee					1	
Northern Cardinal			1			1
Song Sparrow		1				
White-throated Sparrow	1	1	1	1	1	1

light traffic noise

Project: Thornbury Acres EIS

Station: PC-3

Date: 5-Jul-21

Start Time: 7:55

Wind (Beaufort): 0

Sky: Clear

Species	First 5 minutes			Second 5 minutes		
Common name	0 - 50 m	50 - 100 m	>100 m	0 - 50 m	50 - 100 m	>100 m
American Goldfinch	1	1				
American Robin	1	1				
Common Grackle					1	
Common Yellowthroat		1			1	
Eastern Towhee		1			1	
Song Sparrow		1	1		1	
White-throated Sparrow	1			1		1

Butternut Inventory Results

Summary of Butternut Specimens at TA Property

ID #	Location (UTM) ¹		DBH (cm) ²	Root Harm Prevention Zone ³ (m)
	easting	northing		
1	546092	4931743	15	12
2	546113	4931624	12	9
3	546114	4931610	38	18
4	546114	4931600	23	12
5	546113	4931597	5	9
6	546120	4931571	97	25
7	546122	4931557	20	12
8	546122	4931557	38	18
9	546128	4931544	18	12
10	546127	4931542	16	12
11	546126	4931526	<3	6
12	546131	4931524	<3	6
13	546133	4931496	27	12
14	546132	4931492	3	9
15	546139	4931477	28	12
16	546142	4931402	25	12
17	546164	4931325	40	18
18	546162	4931300	6	9
19	546162	4931299	<3	6
20	546153	4931311	15	12
21	546163	4931293	7	9
22	546162	4931325	35	18
23	546160	4931302	7	9
24	546146	4931310	13	9
25	546136	4931344	13	9
26	546135	4931347	<3	6
27	546125	4931340	4	9
28	546122	4931393	25	12
29	546114	4931397	31	18
30	546097	4931373	43	18
31	546036	4931364	17	12
32	546022	4931367	7	9
33	545866	4931320	<3	6
34	545818	4931315	11	9
35	545982	4931396	8	9
36	545981	4931398	11	9
37	545987	4931405	13	9
38	545979	4931411	12	9
39	545977	4931420	50	25
40	545973	4931430	28	12
41	545972	4931461	49	18
42	545971	4931476	29	12
43	545971	4931476	27	12
44	545971	4931478	17	12
45	545962	4931488	17	12
46	545961	4931504	27	12
47	545958	4931510	26	12
48	545958	4931511	39	18
49	545953	4931526	12	9
50	545970	4931460	11	9
51	545984	4931450	<3	6
52	545977	4931445	<3	6
53	545988	4931371	41	18
54	545987	4931372	11	9
55	546102	4931488	<3	6

1 - Universal Transverse Mercator (UTM) coordinates, NAD83 datum. Generally accurate within 3 m or less

2 - rounded to nearest cm

3 - as per O.Reg. 830/21

APPENDIX D - SITE PHOTOS



Photo 1 - Looking south from Grey Rd 40 at CUM/OAG community in northwest corner of Parcel 2



Photo 2 - looking south at CUM community bordering east side of Parcel 2



Photo 3 - typical presentation of CUT community in Parcel 2



Photo 4 - typical presentation of CUT community in Parcel 1



Photo 5 - typical presentation of CUT community in Parcel 1



Photo 6 - typical presentation of conifer CUW community in northwest quadrant of Parcel 1



Photo 7 - typical presentation of CUW community in south half of Parcel 2



Photo 8 - typical presentation of CUW community in south half of Parcel 2 - note large Buckthorn specimen in left foreground



Photo 9 - Eastern White Cedar cluster within CUW community in Parcel 2



Photo 10 - typical presentation of Trembling Aspen forest (FOD8-1) in Parcel 1



Photo 11 - typical presentation of Trembling Aspen forest (FOD8-1) in Parcel 1



Photo 12 - typical Butternut specimen along remnant fence-line in Parcel 2