DILLON CONSULTING

TRIPLE CROWN LINE DEVELOPMENTS INC.

Environmental Impact Study

15717 Airport Road

September 2018

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1.0 Introduction

Dillon Consulting Limited (Dillon) was retained by Triple Crown Line Developments Inc. to complete an Environmental Impact Study (EIS) in support of an application for Draft Plan of Subdivision for a property legally described as Part of Lot 19, Concession 1, Town of Caledon, Regional Municipality of Peel (the "Study Area")(Figure 1). The Study Area is located at 15717 Airport Road in the community of Caledon East.

The purpose of the EIS is to document existing conditions of the natural environment; determine the potential limits of development; evaluate the potential for environmental impacts associated with the proposed development; and recommend mitigation, restoration, enhancement, and/or compensation measures to preserve and/or restore natural features.

This EIS has been prepared in general accordance with the Toronto and Region Conservation Authority (TRCA) Environmental Impact Statement Guidelines (October 2014), following the Terms of Reference (TOR) established in consultation with the TRCA and agreed to through correspondence between Dillon and TRCA on March 15, 2017 (Appendix A).

TRIPLE CROWN LINE DEVELOPMENTS

15717 Airport Road, Caledon

PROPERTY LOCATION

FIGURE 1

- Study Area
- Parcel Boundary
- Road
- Watercourse
- Waterbody

0 100 200 300 METRES

SCALE 1:10,000

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, TRCA, ESRI

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928

STATUS: DRAFT

DATE: 2018-09-12

FILE LOCATION: I:\GIS\174928 - Airport Road\MXDs\September2018_Updates\174928_Fig1_Study_Area.mxd

2.0 Policy Framework

The following sections have been prepared to identify the applicable land use planning policies related to the natural environment. Various regulatory agencies and legislative authorities have established a number of policies with the purpose of protecting ecological features and functions. Table 1 lists the relevant policies and legislation that apply to the protection of natural heritage features within the Caledon area; as well as supporting guidance documents and resources consulted respective to each policy. This table also includes additional background information sources used to help identify and define natural heritage features within the province of Ontario, and Eco-region 6E specifically. This section is not intended to constitute a complete land use planning assessment as it focuses on the relevant environmental policies and regulations. The documents referenced below can be read in their entirety for a more detailed understanding of the land use policy framework applicable to the Study Area.

Table 1: Policies, Legislation and Background Resources Searched

POLICY	GUIDELINES AND SUPPORTING DOCUMENTS
PROVINCE OF ONTARIO	
Planning Act, 1990: Provincial Policy Statement (2014)	Policies within Section 2.1 related to natural heritage features
	Ministry of Natural Resources and Forestry (MNRF) Aurora District · Records received from MNRF Aurora District relating to natural features and wildlife species May 1, 2017 (Appendix B)
	MNRF Natural Heritage Information Centre (NHIC) Square #17NJ157; 17NJ158; 17NJ257; 17NJ258 · Species of Conservation Concern; · Species at Risk; and · Natural heritage features.
	Ecological Land Classification for Southern Ontario, Second Approximation, 2008
	Natural Heritage Reference Manual, Second Edition, March 2010
	Ontario Wetland Evaluation System, Southern Manual, Third Edition, 2013
	MNRF Significant Wildlife Habitat Technical Guide (2000) · Significant Wildlife Habitat Eco-region 6E Criterion Schedules, 2015.
	Fisheries and Oceans Canada (DFO) · Ontario South West Map 9 of 33 (September 2016).
	Federal Species at Risk Public Registry, accessed March 2017
	Ontario Breeding Birds Atlas (OBBA) Square #17NJ95
	Ontario Reptile and Amphibian Atlas- online data accessed March 2017
	Ontario Butterfly Atlas- online data accessed March 2017
	Atlas of the Mammals of Ontario , 1994

POLICY	GUIDELINES AND SUPPORTING DOCUMENTS
Greenbelt Act, 2005: Greenbelt Plan (2017)	Policies 3.4, 1.4.2 and Green Belt Plan Area Mapping (Map 57)
Oak Ridges Moraine Conservation Act, 2001: Oak Ridges Moraine Conservation Plan (2002)	Section 18 and Land Use Designation Mapping · Technical Paper #4 Landform Conservation
Places to Grow Act, 2005: Places to Grow: Growth Plan for the Greater Horseshoe (2006)	Section 1.4 and Schedule 1
Endangered Species Act (2007)	MNRF Species at Risk in Ontario (SARO) List (O. Reg. 230/08), March 2017
	MNRF Aurora District · Records received from MNRF Aurora District relating to SAR May 1, 2017 (Appendix B).
	MNRF NHIC Square #17NJ157; 17NJ158; 17NJ257; 17NJ258 · SAR occurrence records.
	OBBA Square #17NJ95
	Ontario Reptile and Amphibian Atlas- online data accessed March 2017
TOWN OF CALEDON	
Town of Caledon Official Plan (2015)	Schedules A, D4, and Figure 16, Caledon East Secondary Plan
REGION OF PEEL	
Regional Official Plan (2014)	Schedules A, D3, D4, Figure 2
CONSERVATION AUTHORITY	
Conservation Authorities Act, 1990: Ontario Regulation 166/06	Toronto and Region Conservation Authority (TRCA) · Floodplain mapping; and · The Living City Policies, 2014.

Policies within each document that relate to the natural environment and apply to the Study Area are outlined in subsequent sections.

2.1 Provincial Policy Statement, 2014

The Provincial Policy Statement, 2014 (PPS) provides overall policy direction on matters of provincial interest related to land use planning and development in Ontario. The PPS sets forth a vision for Ontario's land use planning system by managing and directing land use to achieve efficient development and land use patterns, wise use and management of resources, and protecting public health and safety.

This report deals specifically with Policy 2.1, Natural Heritage, and Policy 2.2, Water, which provides for the protection and management of natural heritage and water resources, which include the following:

- Significant wetlands;
- Significant coastal wetlands;
- Significant woodlands;
- Significant valleylands;
- Significant wildlife habitat;
- Significant areas of natural and scientific interest (ANSIs);
- Fish habitat;
- Sensitive surface water features; and
- Sensitive ground water features.

The PPS defines "significant" to mean:

- In regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time;
- In regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history. These are to be identified using criteria established by the Ontario Ministry of Natural Resources; and
- In regard to other features and areas in policy in 2.1, 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 PPS defines "sensitive" to mean:

- In regard to surface water features and ground water features, means areas that are particularly susceptible to impacts from activities or events, including, but not limited to, water withdrawals, and additions of pollutants.

Potential significance of natural heritage features may be evaluated based on size, age, presence of rare or sensitive species, species diversity, and linkage functions, taking into consideration factors such as adjacent land use and degree of disturbance. Criteria for determining significance follow guidance outlined in the Natural Heritage Reference Manual (MNRF, 2010) and the Significant Wildlife Habitat Technical Guide Eco-Region 6E Criterion Schedules (MNRF, 2015), where applicable.

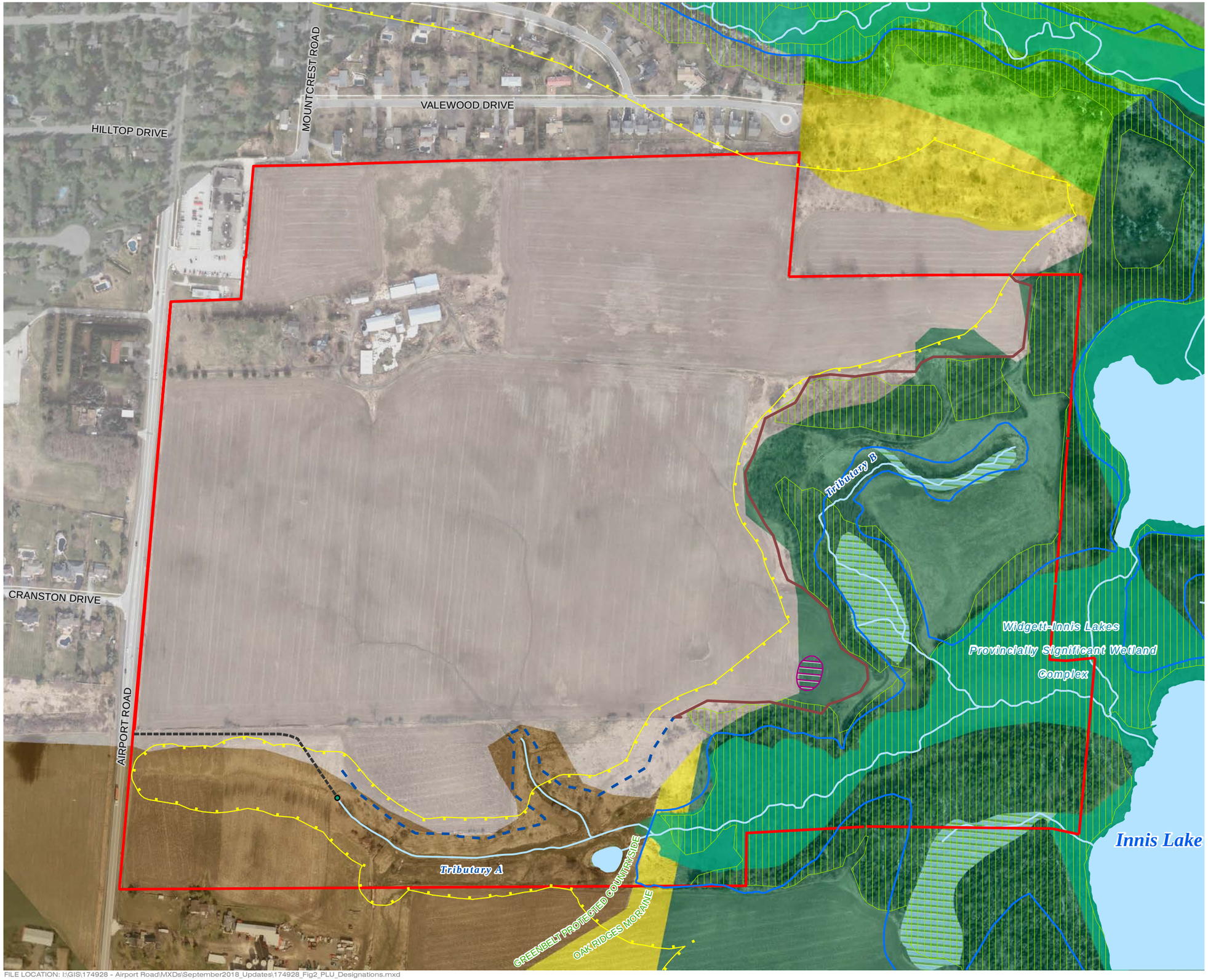
Significance of natural features identified within the Study Area is further discussed in Section 5.0 of this report.

2.2 Greenbelt Plan, 2017

The Greenbelt Plan, 2017, which came into effect on December 16, 2004, builds upon the policy framework established in the PPS to protect a broad area of land and provide direction regarding where and how future growth should be accommodated. While providing permanent agricultural and environmental protection, the Greenbelt also contains important natural resources and supports a wide range of recreational and tourism uses, areas and opportunities together with a vibrant and evolving agricultural and rural economy (MMAH, 2017a).

The Greenbelt Plan identifies areas where urbanization is prohibited in order to provide permanent protection to the agricultural land base and the ecological features and functions occurring throughout the landscape. The Protected Countryside lands identified by the Greenbelt Plan are intended to enhance the spatial extent of agriculturally and environmentally protected lands while improving linkages between these areas and the surrounding major lake systems and watersheds. The settlement areas, identified as Towns/Villages and Hamlets, vary in size, diversity and intensity of uses and are found throughout the Protected Countryside (MMAH, 2017a).

Portions of the Study Area fall within Towns and Villages, Oak Ridges Moraine (ORM) Area, and the Protected Countryside of the Greenbelt Plan (Figure 2). In accordance with Policy 2.1, the Protected Countryside policies do not apply to lands within the ORM, as the requirements of the ORMCP continue to apply. As per Policy 1.4.2 and 3.4.3, the Greenbelt Plan generally does not apply to lands within the boundaries of Towns and Villages and Hamlets. However, where expansions to settlement areas are proposed in the Greenbelt, the policies of the Greenbelt Plan apply. The Greenbelt Plan defers to municipal official plans for detailed delineation of settlement boundaries and to govern land use within these areas. For lands within the Protected Countryside, 4.0 *General Policies for the Protected Countryside* apply in their entirety.



TRIPLE CROWN LINE DEVELOPMENTS
15717 Airport Road, Caledon

PROVINCIAL LAND USE AND AGENCY DESIGNATIONS
FIGURE 2

- Study Area
- Headwall
- Storm Infrastructure Pipe
- Flood line
- Top of Bank
- Consolidated Top of Bank / Vegetation Limit
- Oak Ridges Moraine / Greenbelt Boundary
- 2021 Settlement Boundary
- Watercourse
- Waterbody
- Unevaluated Wetland
- Provincially Significant Wetland
- Wetland Removed by Previous Landowner (approx. 0.082ha)
- Unevaluated Woodland
- TRCA Regulation Limit

ORM Land Use Designation

- Countryside Area
- Natural Core Area
- Natural Linkage Area
- Settlement Area

Greenbelt Landuse Designation

- Towns and Villages
- Protected Countryside

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, TRCA, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

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FILE LOCATION: I:\GIS\174928 - Airport Road\MXDs\September2018_Updates\174928_Fig2_PLU_Designations.mxd

2.3 Oak Ridges Moraine Conservation Plan, 2017

The ORMCP, 2017, was developed as part of a comprehensive strategy for the ORM, which included passing of the Oak Ridges Moraine Conservation Act, 2001 on December 13, 2001. As stated in the Plan, the purpose of the ORMCP is to provide land use and resource management planning direction to provincial ministers, ministries, and agencies, municipalities, municipal planning authorities, landowners and other stakeholders on how to protect the Moraine's ecological and hydrological features and functions (MMAH, 2017b).

The ORMCP divides the Moraine into four land use designations;

- *Natural Core Areas*- protect those lands with the greatest concentrations of key natural heritage features which are critical to maintaining the integrity of the Moraine as a whole;
- *Natural Linkage Areas*- protect critical natural and open space linkages between the Natural Core Areas and along rivers and streams;
- *Countryside Areas*- provide an agricultural and rural transition and buffer between the Natural Core Areas and Natural Linkage Areas and the urbanized Settlement Areas; and
- *Settlement Areas*- reflect a range of existing communities planned by municipalities to reflect community needs and values (MMAH, 2017b).

Under the ORMCP, the Study Area falls within Settlement Area, Natural Core Area, and Countryside Area (Figure 2). Policies on creating and developing new lots in Natural Core Areas and Countryside Areas are restrictive, and development and site alteration with respect to land within a key natural heritage feature or the related minimum protection zone is restrictive. In Natural Core Areas only existing uses agricultural uses and very restricted new resource management, low intensity recreational, home businesses, and infrastructure uses are typically allowed in these areas (MMAH, 2017b). Uses typically allowed in agricultural and other rural areas of the Countryside Area are those which support agriculture and the rural economy. Within Settlement Areas urban uses and development as set out in municipal official plans are allowed, subject to the provisions of the ORMCP (MMAH, 2017b).

In addition, the Study Area falls within lands designated as Landform Conservation Area – Category 2, and therefore, is subject to the policies set out in Section 30(6) of the ORMCP. Section 30(6) requires applications for development to identify planning, design and construction practices that will keep disturbance to landform character to a minimum, including:

a) *Maintaining significant landform features such as steep slopes, kames, kettles, ravines and ridges in their natural undisturbed form;*
b) *Limiting the portion of the net developable area of the site that is disturbed to not more than 50 % of the total area of the site; and*
c) *Limiting the portion of the net developable area of the site that has impervious surfaces to not more than 20 % of the total area of the site.*

Landform conservation within the Study Area is discussed further in Section 3.2.1.

2.4 Growth Plan for the Greater Golden Horseshoe, 2017

Pursuant to the Places to Grow Act, 2005, the Growth Plan for the Greater Golden Horseshoe, 2006 (Growth Plan) was approved on June 16, 2006. The Growth Plan has been amended twice since its release in 2006. The first amendment was released in January 2012 and contains policies, schedules and definitions that apply in the Simcoe Sub-area. The second amendment was released in June 2013 to update and extend the Growth Plan's population and employment forecasts. The Growth Plan for the Greater Golden Horseshoe, 2017 came into effect on July 1, 2017, replacing the 2006 Growth Plan (MMAH, 2018). The 2017 Growth Plan builds upon the 2006 Growth Plan and provides enhanced policy directions to address ongoing regional challenges (MMAH, 2017c).

The Growth Plan requires the identification of water resource systems and the protection of key hydrologic features and key hydrologic areas, similar to the level of protection provided in the Greenbelt (MMAH, 2017c). This provides a consistent framework for water protection across the Greater Golden Horseshoe (GGH), and builds on existing plans and policies. The Growth Plan also provides for the identification and protection of natural heritage systems in the GGH outside of the Greenbelt Area and settlement areas in order to provide consistent and long-term protection for natural heritage systems across the GGH (MMAH, 2017c).

The Growth Plan recognizes the Study Area as "Greenbelt Area". Section 1.2.3 of the Growth Plan states that where there is a conflict between the Greenbelt, Oak Ridges Moraine Conservation, or Niagara Escarpment Plans and [the Growth Plan] regarding the natural environment or human health, the direction that provides more protection to the natural environment or human health prevails (MMAH, 2017c).

As mentioned in Section 2.2, the Study Area is identified as both Towns and Villages, and Protected Countryside in the Greenbelt Plan. Therefore, with respect to the natural environment, the applicable policies of the Greenbelt and ORMCP supersede those of the Growth Plan and will be assessed as such in this EIS.

2.5 Endangered Species Act, 2007

In June 2008, the *Endangered Species Act*, 2007 (ESA) came into effect in Ontario. The purpose of the ESA is to identify Species at Risk (SAR) based on the best available scientific information; to protect SAR and their habitats, to promote the recovery of SAR; and to promote stewardship activities to assist in the protection and recovery of SAR in Ontario. There are two applicable regulations under the ESA; *Ontario Regulation 230/08* (the SARO List); and, *Ontario Regulation 242/08* (General). These regulations serve to identify which species and habitat receive protection and provide direction on the current implementation of the ESA by the MNRF.

The potential for SAR and SAR habitat to be impacted as a result of the proposed development is discussed further in Section 3.2.8.1 and Section 5.2.8 of this report.

2.6 Region of Peel Official Plan, 2014

The Region of Peel Official Plan was adopted by Regional Council on July 11, 1996 through By-law 54-96. The Plan was subsequently approved with modifications on October 22, 1996 and the Regional Official Plan (ROP) was approved under the Planning Act, 1990. Appeals of the ROP were forwarded to the Ontario Municipal Board (OMB) and were separated into four OMB phases. Policies within the ROP direct a significant portion of new growth to the Built-up Areas of the community through intensification, to protect the surrounding protected countryside of the Greenbelt and ORM.

Based on the most recent consolidation of the ROP (December 2016), the Study Area is designated as Core Area of the Greenlands System Built-up Area (Schedule A); Protected Countryside, Rural Service Centre, and ORM Plan Area (Schedule D3); and Designated Greenfield Area and Greenbelt Area (Schedule D4, Figure 2) (Appendix C).

2.7 Town of Caledon Official Plan, 2018

The original Town of Caledon Official Plan came into effect in 1979. Since that time the Official Plan has been systematically reviewed and amended in order to ensure it reflects changing community needs and dynamics, address external influences, and to respond to new Regional and Provincial planning policies and legislation, including creation of the Caledon East Secondary Plan, in which the Study Area is located.

The majority of lands within the Study Area have been designated as Low Density Residential and Open Space/Institutional Policy Area, with a Conceptual Parkette Location, Conceptual Neighbourhood Park Location, and Conceptual Vehicle Connection, within the 2021 Settlement Boundary of the Caledon East Land Use Plan (Schedule D). The remainder of the Study Area has been designated as Environmental Policy Area (EPA) within the Caledon East Secondary Plan (Figure 16), and EPA in the Town of Caledon Land Use Plan (Schedule A) (Appendix C).

In accordance with the policies of the Official Plan, development activities within the Settlement Boundary are permitted provided they conform to the policies within Section 7.7, Caledon East Secondary Plan, of the Town of Caledon Official Plan. Where lands designated EPA are located within the ORMCP Area or the Greenbelt Protected Countryside, the requirements of the ORMCP or the Greenbelt Plan as contained in Sections 7.10 and 7.13, respectively, apply.

Where lands designated EPA are located within the ORMCP Area, refinements to the limits of lands designated EPA or extent of the feature is proposed for a wetland, area of natural and scientific interest and/or significant portions of the habitat of endangered, rare and threatened species, or their related

minimum vegetation protection zones, require formal confirmation of said refinement from the Province prior to any development. All development is restrictive within key natural heritage features and key hydrologic features as well as the greater minimum vegetation protection zone as established, except as otherwise permitted.

2.8 Toronto and Region Conservation Authority (Ontario Regulation 166/06)

In accordance with Section 28 of the Conservation Authorities Act, 1990, the Toronto and Region Conservation Authority (TRCA) is authorized to implement and enforce the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 166/06). Section 2(1) of this Regulation lists areas within TRCA's jurisdiction where development is prohibited without proper permissions from the TRCA. Such areas include, but are not limited to, river or stream valleys, hazardous lands, and wetlands.

In participating in the review of applications under the Planning Act and Environmental Assessment Act(s), TRCA ensures that applicants and approval authorities are aware of any Section 28 Regulation requirements under the Conservation Authorities Act, where applicable. Further, TRCA assists in the coordination of these applications to avoid ambiguity, conflict and unnecessary delay or duplication in the process.

The Study Area is located within TRCA's Regulated Area (see Figure 2).

2.8.1 Toronto and Region Conservation Authority Living City Policies

The Living City Policies for Planning and Development in the Watershed of the TRCA, November 2014 (LCP) is a conservation authority policy document that guides the implementation of TRCA's legislated and delegated roles and responsibilities in the planning and development approvals process (TRCA, 2016). The LCP supersedes the Valley and Stream Corridor Management Program (1994), expanding on the foundation of principles and policy intent.

Policies within Section 7 of the LCP apply to applications circulated to TRCA for comment under the *Planning Act* and the *environmental assessment* process. Section 7 of the LCP is structured with protection policies (Section 7.3) that seek to set aside lands from development (the *Natural System* made up of natural features, natural hazards and water resources, and restoration areas), followed by a set of policies for management of developable lands (Section 7.4). These are followed by Section 7.5 (Input and Plan Review) that speaks to implementation of all Section 7 policies.

Overall, the policies in Section 7 respect the legislative framework for environmental planning, seeking to align with the objectives of municipalities and other partners for building sustainable communities (TRCA, 2014). The policies also reflect the unique characteristics of TRCA's watersheds, and are informed by an integrated approach to watershed management.

In addition to the LCP, TRCA has created the *Planning and Development Procedural Manual* (2008), which provides technical guidelines and procedural information for many of the policies found in the LCP. The intent of the manual in to enhance TRCA's working relationships with municipalities, developers, and permit applicants regarding the implementation of TRCA's planning and regulatory function, including opportunities to increase procedural transparency and streamline the review process where feasible. Further details on the role of conservation authorities in the planning and development process, can also be found in the Policies and Procedures for Conservation Authority Plan Review and Permitting Activities (MNRF 2010).

3.0 Results of Background Review

The following sections provide a brief summary of the existing environmental conditions within the Study Area. This information provides the background information upon which the EIS was based.

As mentioned in Section 2.1, several natural heritage features as defined under the PPS require consideration within the EIS and are discussed in subsequent sections. Consideration natural heritage features have been included in subsequent sections.

3.1 Aquatic Environment

3.1.1 Watershed Summary

The Study Area lies within the Centreville Creek subwatershed, forming part of the larger Humber River Watershed, flowing south into Lake Ontario. The Humber River is a Canadian Heritage River, as designated by the Canadian Heritage Rivers System in 1999. The Humber River Watershed encompasses 911 square kilometres; the largest in TRCA's jurisdiction.

Centreville Creek is a headwater tributary of the Humber River. The creek flows from the Niagara Escarpment and ORM, through Caledon East and into the main branch of the Humber River at the Albion Hills Conservation Area (TRCA, 2008). According to the subwatershed study, the Centreville Creek subwatershed contains a high concentration of natural features, such as large tracts of forest, numerous and extensive wetlands, and good quality cold water aquatic habitat, when compared to the more urbanized southern portions of the Humber River.

The Centreville Creek subwatershed drains an area of approximately 4662 ha (46.6 km^2) that lies entirely within the Town of Caledon. The subwatershed occurs within four main physiographic regions of the southern Ontario landscape; the ORM, the Niagara Escarpment; the Horseshoe Moraine; and the South Slope; the majority of the subwatershed occurring within the ORM (TRCA, 2008). As stated in the subwatershed study, the extensive natural areas associated with these major landforms serve important hydrological functions providing critical areas for groundwater recharge and discharge; and ecological functions providing sources of food and refuge for diverse communities of wildlife and native plants, helping to preserve the native biological diversity of the region.

The Centreville Creek subwatershed is predominantly rural in character with the majority of land being used for agricultural and forest management purposes. Approximately 2200 ha of natural cover (47%) exists within the subwatershed in the form of natural and managed forests, wetlands, meadows, and successional land cover (TRCA, 2008). According to the subwatershed study, urban areas including Caledon East and residential subdivisions comprised approximately 9% of the subwatershed as of 2008;

however, this number is anticipated to increase to 15% through full implementation of the Caledon East Secondary Plan.

3.1.2 Fish Habitat

As stated within the subwatershed study, fisheries data has been collected within the Centreville Creek for more than 50 years. The most recent sampling was conducted by TRCA in 2001, yielding a total of 16 species included in Table 2, below.

Table 2: Fish Species Identified in TRCA 2001 Surveys

SCIENTIFIC NAME	COMMON NAME	SARA	ESA	S-RANK[1]
Rhinichthys atratulus	Blacknose Dace	---	---	S5
Hybognathus hankinsoni	Brassy Minnow	---	---	S5
Culaea inconstans	Brook Stickleback	---	---	S5
Salvelinus fontinalis fontinalis	Brook Trout	---	---	S5
Salmo trutta	Brown Trout	---	---	SNA
Luxilus cornutus	Common Shiner	---	---	S5
Semotilus atromaculatus	Creek Chub	---	---	S5
Etheostoma flabellare	Fantail Darter	---	---	S4
Notemigonus crysoleucas	Golden Shiner	---	---	S5
Etheostoma nigrum	Johnny Darter	---	---	S5
Hypentelium nigricans	Northern Hog Sucker	---	---	S4
Phoxinus eos	Northern Redbelly Dace	---	---	S5
Ambloplites rupestris	Rock Bass	---	---	S5
Notropis hudsonius	Spottail Shiner	---	---	S5
Morone americana	White Perch	---	---	SNA
Catostomus commersoni	White Sucker	---	---	S5

[1]S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common. --- denotes no information or not applicable.

Background MNRF mapping indicates that tributaries of Centreville Creek are present within the northeastern/ southeastern portions of the Study Area. The most southeastern watercourse (*Tributary A*) consists of two branches, flowing northeast entering the Widgett-Innis Lakes PSW Complex and eventually Centreville Creek. The watercourse located within the northeastern portion of the Study Area originates within an area of unevaluated wetland flowing east into the Widgett-Innis Lakes PSW Complex and ultimately Centreville Creek and the Humber River (*Tributary B*) (Figure 1). The watercourses identified have potential to provide suitable habitat for fish.

3.2 Terrestrial Environment

3.2.1 Landform Features

The Study Area is located in the ORM physiographic region characterized by hummocky, kettle and kame topography. A review of the Soil Survey of Peel County (Hoffman and Richards, 1953) indicates that the general area consists of rolling hills to steeply sloping hills, comprised of limestone and shale till. The topography within the Study Area consists of rolling hills; the highest elevation associated with the existing farm residence within the northwestern portion of the Study Area; the lands generally sloping southeast from that point.

As stated in ORM Technical Paper# 4, Landform Conservation, the ORM contains a diversity of landform types that directly affect the complex ecological and hydrological character of the moraine. Within the ORMCP Area, significant landform features are defined as areas of steeply sloping lands with slopes of 15% or greater; a vertical height of 5 meters (m) or greater; and a continuous distance of 50 m or greater. A portion of the Study Area is located within the ORM Landform Conservation Area- Category 2 (Moderately Complex Landform). In accordance with Section 30(6) of the ORMCP, Landform Conservation Areas- Category 2 are areas identified within the ORM that have significant portions of their land surface dominated by complex landform patterns. They have been identified by the province as areas having 20% to 50% of the land surface comprised of:

- *lands with slopes in excess of 10%;*
- *land with distinctive landform features such as ravines, kames and kettles, and /or;*
- *land with a diversity of land slope classes.*

Other land areas within the ORM not dominated by complex or distinctive landform features are not subject to the Landform Conservation requirements of the ORMCP. Such features constitute less than 20% of the land surface.

A Landform Conservation Plan has been prepared for the Study Area in order to determine whether significant landform features are present within the Study Area and potential impacts of development related to significant landform features identified. The Landform Conservation Plan was prepared in accordance with Section 30(6) of the ORMCP and associated ORM Technical Paper #4: Landform Conservation. The Landform Conservation Plan is further discussed in Section 6.4 and Appendix D of this report.

3.2.2 Soils and Geology

The Study Area is located within an area of glacial till moraine immediately south of a spillway known as the Caledon East Meltwater Channel (TRCA, 2008). Soils within the Town of Caledon generally exhibit the characteristics of the Grey-Brown Podzolic Great Soil Group. These soils can susceptible to sheet erosion particularity in steeply sloping areas.

Overburden deposits in the area consist of silt, sand, gravel, clay and till units. According to the Centreville Creek Subwatershed Study Synthesis Report (TRCA, 2008) (referred to as the "subwatershed study" for the purposes of this report), this area may be one of the most geologically complex areas on the ORM, showing evidence of multiple periods of glaciofluvial, glaciolacustrine, and moraine deposition and erosion including kettle depressions that occur some of which occur within the areas many Provincially Significant Wetland (PSW) complexes. Bedrock geology of the area consists of Upper Ordovician bedrock consisting of shale, limestone, dolostone and siltstone of the Queenston Shale Formation (Ministry of Northern Development and Mines 1991; OGS, 1991).

While the majority of the area contains highly permeable soils providing a high capacity for groundwater infiltration, the Halton Till which underlies the Study Area is of low permeability and therefore limits recharge where present (TRCA, 2008). Soils within the Study Area are mainly comprised of clay loam soils, typically imperfectly drained and exhibit moderate to slow permeability. These soils have high moisture holding capacities and moderate to rapid surface run off characteristics. Their fine and medium textured surface materials make these soils susceptible to water erosion. These soils are therefore moderately to highly productive for agriculture (TRCA, 2008). The low permeability of the soils provides protection to the underlying ORM coarse sediments, which form a regional aquifer (TRCA, 2008).

A desktop review indicates that the Study Area is primarily comprised of agricultural lands, with an expansive area of woodland/ wetland to the northeast. The Study Area is bounded by Airport Road to the southwest and residential area along Valewood Drive to the northwest, with agricultural land continuing southeast of the Study Area.

A review of historic aerial photos dating back several decades indicates that land use within the Study Area has not changed since at least the 1970's (National Air Photo Library)(refer to Appendix E). Further, natural features to the northeast and southeast of the Study Area have not experienced notable changes over that time. It appears as though the development of Valewood Drive to the northwest of the Study Area occurred sometime between 1980 and 1988, and development of the subdivision to the southwest of the Study Area, across Airport Road occurred sometime in the early 1990's.

3.2.3 Wetlands

Wetlands within the Study Area are considered southern wetlands based on their location south of the northern limit of Ecoregions 5E, 6E, and 7E as shown on Figure 1 of the PPS, 2014. A portion of the Widgett-Innis Lakes Provincially Significant Wetland (PSW) Complex was identified within the northeastern portion of the Study Area (Figure 2). The Widgett-Innis Lakes PSW originates at Airport Road and Mountcrest Road northwest of the Study Area, continuing northeast along the Centreville Creek corridor toward Gore Road.

The Widgett-Innis Lakes PSW Complex is located within the headwater reaches of Centreville Creek, and covers a mix of rolling hills, forested lands, and kettle lakes. The PSW consists of a diverse mix of wetland

types and includes floating-leaved aquatic vegetation communities dominated by duckweeds and water-meal, other pondweeds, and water-lilies (TRCA, 2008). Wetland units within this PSW are linked by woodlands, riparian habitat, and open fields. Wildlife movements occur between the wetlands within the complex and to and from the surrounding uplands.

A few small areas of unevaluated wetland were also identified within the Study Area. Based on the proximity of these unevaluated wetland units to the Widgett-Innis Lakes PSW Complex, these would likely be considered part of the PSW complex, subject to a wetland evaluation following the *Ontario Wetland Evaluation System for Southern Ontario* (2013), and confirmation from the MNRF; and have been treated as such for the purposes of this project.

3.2.4 Woodlands

No significant woodlands were specifically identified within or adjacent to the Study Area; however, there is a large tract of unevaluated woodland associated with the Widgett-Innis Lakes PSW Complex, extending into the northeastern and eastern portions of the Study Area.

Significance of woodlands is discussed further in Section 5.2.5.

3.2.5 Valleylands

No significant valleylands were specifically identified within or adjacent to the Study Area through background review. Based on the presence of the woodland/ PSW to the northeast and east of the Study Area in addition to the sloping topography of the area, there is potential for significant valleylands to exist within the northeastern and southeastern portions of the Study Area where lands slope down toward the wetland complex.

Significance of valleylands will be considered further in Sections 5.2.6.

3.2.6 Areas of Natural and Scientific Interest

No significant ANSIs were identified within or adjacent to the Study Area.

3.2.7 Significant Wildlife Habitat

The Significant Wildlife Habitat Technical Guide (MNRF, 2000) defines Species of Conservation Concern as globally, nationally, provincially, regionally, or locally rare (S-Rank of S2 or S3); as well as species listed as endangered or threatened federally; but do not include SAR (listed as endangered or threatened under the ESA, 2007). The Species of Conservation Concern listed in Table 3 have been identified with the potential to occur within or adjacent to the Study Area and have been considered in determining the potential for Significant Wildlife Habitat (SWH) within the Study Area.

Table 3: Species of Conservation Concern with potential to occur within the Study Area

SCIENTIFIC NAME	COMMON NAME	SARA	ESA	S-RANK[1]	INFO SOURCE[2]
VASCULAR PLANTS					
Asplenium scolopendrium var. americanum	Hart's Tongue Fern	SC	SC	S3	MNRF
Pterospora andromedea	Woodland Pinedrops	---	---	S2	NHIC
BIRDS					
Ammodramus savannarum	Grasshopper Sparrow	---	SC	S4B	OBBA
Contopus virens	Eastern Wood-pewee	---	SC	S4B	OBBA, MNRF
Hylocichla mustelina	Wood Thrush	---	SC	S4B	OBBA, MNRF
Melanerpes erythrocephalus	Red-headed Woodpecker	THR	SC	S4B	OBBA
Vermivora chrysoptera	Golden-winged Warbler	THR	SC	S4B	OBBA
HERPETOZOA					
Chelydra serpentina	Snapping Turtle	SC	SC	S3	ON, MNRF
Graptemys geographica	Northern Map Turtle	SC	SC	S3	MNRF
Lampropeltis triangulum	Eastern Milksnake	SC	---	S3	ON
Pseudacris triseriata pop. 1	Western Chorus Frog (Great Lakes/ St. Lawrence- Canadian Shield Population)	THR	SC	S3	ON
Thamnophis sauritus septentrionalis	Eastern Ribbonsnake	SC	SC	S3	MNRF
LEPIDOPTERA					
Danaus plexippus	Monarch	SC	SC	S2N, S4B	TEA
ODONATA					
Somatochlora tenebrosa	Clamp-tipped Emerald	---	---	S2S3	NHIC

[1]S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common. [2]Information sources include: MNRF = Ministry of Natural Resources and Forestry; OBBA = Ontario Breeding Bird Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas; SARA = Species at Risk Act; TEA = Toronto Entomologists' Association; --- denotes no information or not applicable.

A review of the MNRF background data suggests that the following SWH types may occur in association with woodland and wetland communities within the Study Area:

- Bat maternity colonies;
- Raptor wintering areas;
- Turtle wintering areas;
- Colonially- nesting bird breeding habitat (trees/shrubs);
- Old growth forest;
- Waterfowl nesting;
- Bald Eagle and Osprey nesting, foraging, and perching habitat;
- Woodland Raptor nesting habitat;
- Amphibian breeding habitat (woodlands);

- Amphibian breeding habitat (wetlands);
- Seeps and springs;
- Woodland-area sensitive bird breeding habitat;
- Special concern and rare wildlife species; and
- Amphibian movement corridors.

A discussion on SWH has been included in Section 5.2.7.

3.2.8 Species at Risk

Based on the background review, a number of SAR listed as *endangered* and *threatened* under the ESA have been identified with potential to occur within the vicinity of the Study Area (Table 4).

Table 4: Species at Risk with potential to occur within the Study Area

SCIENTIFIC NAME	COMMON NAME	SARA	ESA	S-RANK[1]	INFORMATION SOURCE[2]
VASCULAR PLANTS					
Juglans cinerea	Butternut	END	END	S3?	MNRF, NHIC
BIRDS					
Chaetura pelagica	Chimney Swift	THR	THR	S4B, S4N	OBBA
Dolichonyx oryzivorus	Bobolink	---	THR	S4B	MNRF, OBBA
Hirundo rustica	Barn Swallow	---	THR	S4B	MNRF, OBBA
Protonotaria citrea	Prothonotary Warbler	END	END	S1B	OBBA
Riparia riparia	Bank Swallow	---	THR	S4B	OBBA
Setophaga cerulea	Cerulean Warbler	SC	THR	S3B	MNRF
Sturnella magna	Eastern Meadowlark	---	THR	S4B	MNRF, OBBA
MAMMALS					
Myotis lucifugus	Little Brown Myotis	END	END	S4	MNRF, OMA
Myotis septentrionalis	Northern Myotis	END	END	S3	MNRF, OMA
FISH					
Clinostomus elongatus	Redside Dace	---	END	S2	MNRF
HERPETOZOA					
Emydoidea blandingii	Blanding's Turtle	THR	THR	S3	MNRF, ON

[1]S-Rank is an indicator of commonness in the Province of Ontario. A scale between 1 and 5, with 5 being very common and 1 being the least common. [2]Information sources include: MNRF = Ministry of Natural Resources and Forestry; NHIC = Natural Heritage Information Centre; OBBA = Ontario Breeding Bird Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas; --- denotes no information or not applicable.

3.2.8.1 Species at Risk Habitat

Based on background review as part of this EIS, and the SAR screening received from the MNRF Aurora District on May 1st, 2017, the following SAR and/or SAR habitat may be found within the Study Area and warrant further consideration as part of the EIS:

- Butternut;
- Bobolink;
- Eastern Meadowlark;
- Chimney Swift;
- Eastern Small-footed Myotis;
- Tri-coloured bat;
- Little Brown Myotis; and
- Northern Myotis.

These species are discussed further in Section 5.2.8.

3.2.9 Incidental Wildlife

A review of aerial photos and local knowledge suggests that there are several common wildlife species found within the general area with potential to occur in the Study Area.

Incidental wildlife occurrences are discussed further in Section 5.2.9.

4.0 Field Work Methodology

The results of the review of background materials and resources, were used to assist in scoping the 2018 field program.

In accordance with the TOR, the 2017-2018 field program included the following:

- Headwater Drainage Feature (HDF) Assessment;
- Tree Inventory;
- Ecological Land Classification (ELC) of vegetation communities;
- Single-season botanical survey (summer);
- Breeding bird surveys;
- Amphibian breeding surveys;
- Aquatic Assessment; and,
- Barn Swallow nest search.

Fieldwork conducted for the EIS occurred in 2017 and 2018 between the months of March and July when weather conditions and timing were deemed suitable based on the survey protocols being implemented (Table 5). Incidental wildlife observations made during the surveys were also documented and used to identify potential SWH. These studies were undertaken to identify baseline conditions within the Study Area, confirm the results of the background review, and help to identify potential impacts and/or mitigation measures.

Table 5: Field Survey Dates and Weather Conditions

DATE	WEATHER CONDITIONS	AIR TEMP (°C)	PURPOSE OF VISIT
2017			
February 2	Windy, no precipitation	-5.0	Barn Swallow Nest Search
March 8	Clear, strong winds, no precipitation	5.4	HDF Assessment
March 17	Clear, light breeze, no precipitation	-0.8	Tree Inventory
March 26	Moderate to heavy precipitation	3.2	HDF Assessment
June 5	Fog, light air[1], no precipitation	12-13	Breeding Bird Survey #1
June 21	0-10% cloud cover, light air[1], precipitation within last 24 hours	13-17	Breeding Bird Survey #2
July 23	100% cloud cover, light air, no precipitation	21	ELC/Vegetation Inventory
2018			
April 26	10% cloud cover, light breeze[2], no precipitation	9	Amphibian Breeding Survey #1

DATE	WEATHER CONDITIONS	AIR TEMP (°C)	PURPOSE OF VISIT
May 28	10% cloud cover, light breeze[2], no precipitation	23	Amphibian Breeding Survey #2
June 19	100% cloud cover, gentle to moderate breeze[3,4], no precipitation	30	Amphibian Breeding Survey #3
July 26	20% cloud cover, light breeze[2], no precipitation	22	Aquatic Assessments

[1]Light air = Beaufort Scale 1
[2]Light breeze = Beaufort Scale 2
[3]Gentle breeze = Beaufort Scale 3
[4]Moderate breeze = Beaufort Scale 4

The following sub-sections outline the survey methodologies used for the EIS.

4.1 Aquatic Assessments

4.1.1 Headwater Drainage Features Assessment

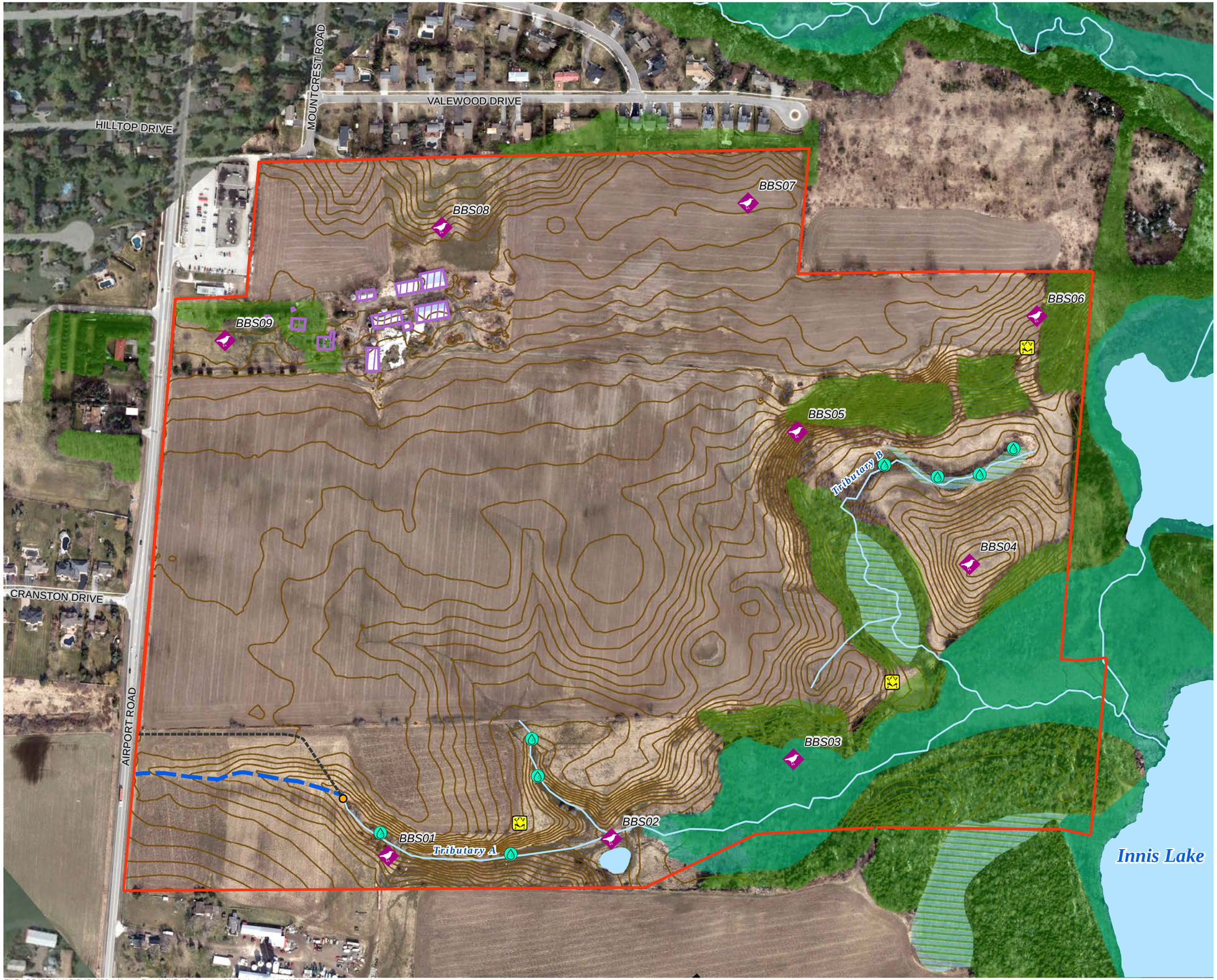
A HDF assessment occurred on March 8, 2017 following methods outlined in the *Evaluation, Classification, and Management of Headwater Drainage Features* (TRCA & Credit Valley Conservation 2014). Due to weather conditions during the month of February and the resulting lack of snow and ice to contribute to spring freshet; the first site visit was done after rain events on March 6th and 7th in order to try and recreate spring freshet-like conditions. During the first visit the site was walked to inventory and assess any potential HDF's present within the Study Area boundaries, specifically focussing on an area identified by the TRCA during initial consultations as a potential HDF (Figure 3).

A second site visit was conducted on March 26th, 2017, after the Town of Caledon had received over 18 mm of rain over a 3-day period to confirm whether features surveyed during the first assessment exhibited flow characteristics after heavy rain events.
Field data was collected regarding the flow, channel form, aquatic and habitat potential, and vegetation of potential HDFs within the Study Area (refer to Appendix F).

4.1.2 Aquatic Assessment

An aquatic assessment was conducted at *Tributary A* and *Tributary B* on July 26, 2018. Weather conditions during the surveys are shown in Table 5.

Information collected during the assessment included (where applicable): channel form, presence/absence of flow, substrate type, channel dimensions (e.g., width and depth), and riparian vegetation. This data was used, in part, to determine the overall health and sensitivity of each drain. The locations of aquatic surveys are shown on Figure 3.



TRIPLE CROWN LINE DEVELOPMENTS
15717 Airport Road, Caledon

2017 & 2018 SURVEY LOCATIONS
FIGURE 3

- Study Area
- Breeding Bird Survey Location
- Amphibian Breeding Survey Location
- Aquatic Assessment Location
- Headwall
- Storm Infrastructure Pipe
- Contour
- Headwater Drainage Feature Assessment Location
- Watercourse
- Waterbody
- Unevaluated Woodland
- Unevaluated Wetland
- Provincially Significant Wetland
- Barn Swallow Survey Area

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, TRCA, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928
STATUS: DRAFT
DATE: 2018-09-12

FILE LOCATION: I:\GIS\174928 - Airport Road\MXDs\September2018_Updates\174928_Fig3_Survey_Locations.mxd

4.2 Terrestrial Assessments

4.2.1 Ecological Land Classification

Vegetation communities were assessed using ELC as a first step to identify and assess potential natural heritage features within the Study Area. During the field investigations, vegetation was characterized using the ELC System for Southern Ontario (Lee et al., 1998) in order to classify and map ecological communities to the vegetation level. The ecological community boundaries were determined through the review of aerial photography and then further refined through on site vegetation and tree surveys. Soil samples were also taken in each of the vegetation communities.

The ELC protocol recommends that a vegetation community be a minimum of 0.5 ha in size before it is defined. Based on the composition of vegetation communities within the Study Area, patches of vegetation less than 0.5 ha or disturbed/planted vegetation were described, provided they clearly fit within an ELC vegetation type.

Results of the ELC survey are included in Section 5.2.1.

4.2.2 Vegetation Inventory

A single-season (summer) vegetation survey was conducted during the appropriate seasonal blooming period. The Survey consisted of wandering transects and/or area searches to determine the presence, richness and abundance of floral species within the Study Area as well as presence/absence of botanical SAR. Species nomenclature recorded is based on the Ontario Plant List (Newmaster *et al,.* 1998).

Results of the botanical surveys are discussed in Section 5.2.2.

4.2.3 Tree Inventory

On March 17, 2017, an International Society of Arboriculture (ISA) Certified Arborist conducted a Tree Inventory within tablelands within the Study Area, not including the watercourse valley to the southeast. The basic assessment completed for trees within the Study Area consisted of a detailed visual inspection of the tree and surrounding area to obtain an opinion of the health condition of each tree or stand. It included a non-invasive inspection of each tree; looking at the site conditions, buttress roots, trunk, and branches. This basic assessment is the standard assessment that is performed by arborists, though only includes conditions that are readily detected from the ground.

The following information was collected during the Tree Inventory:

- Identification of species;
- Measurement of diameter-at-breast-height (DBH) at 1.38 m from the ground;
- Application of a numbered, aluminum identification tag to trees > 10 cm DBH, where applicable;
- A Level 2 (basic) qualitative visual assessment to determine tree/grouping condition;

- Coordinates of trees using a handheld Global Positioning System (GPS) unit; and
- If determinable and/or applicable, recommendations regarding preservation, protection, or removal.

Due to the size of the Study Area stand classification was conducted for dense groupings of trees, which involved a tally of each tree and associated DBH. For those tree species where the foliage characteristics are the primary distinguishing feature, the positive identification of tree species may have been hindered due to timing of the surveys occurring during the leaf-off period (March). Trees were identified using reasonable assumptions based on form, bark, bud, and branch orientations, to determine species type. The full Tree Inventory and Preservation Plan have been included in Appendix G of this report. Results of the Tree Inventory are summarized in Section 5.2.3.

4.2.4 Wetlands

The boundaries of wetland units within the Study Area were delineated in conjunction with ELC surveys.

Further details on wetlands within the Study Area are discussed in Section 5.2.4.

4.2.5 Woodlands

Woodlands within the Study Area were investigated as part of the ELC and vegetation surveys.

Results of field studies relating to woodlands are discussed in Section 5.2.5.

4.2.6 Valleylands

The top of bank of the valleylands was staked as part of preliminary studies with the Town and TRCA. Results of the Top of Bank staking have been incorporated into the mapping and used for delineating and evaluating features.

Significance of valleylands is discussed in Section 5.2.6.

4.2.7 Significant Wildlife Habitat

In order to establish baseline conditions to determine whether SWH exists within the Study Area, breeding bird surveys and amphibian breeding surveys were completed during the 2017 and 2018 field season respectively (Figure 3). Since the woodland and PSW will be protected and no vegetation removal is expected to occur within those areas, specific snag/cavity trees density searches were not conducted within the valleylands. The trees within the residential portion of the Study Area were inventoried in which tree health conditions and form were recorded for trees within the tablelands portion of the Study Area. This information was then used to help identify possible snags and/or cavity trees suitable for bat maternity roosting, the potential for wildlife use of individual trees, or groups of trees within the Study Area.

These observations were paired with incidental wildlife observations throughout the field season to determine potential for wildlife habitat and habitat use within the Study Area.

4.2.7.1 Breeding Bird Survey

Diurnal breeding bird surveys conducted within the Study Area followed the methods outlined in the Ontario Breeding Bird Atlas Guide for Participants (Cadman et al 2007).

Specifically, surveys consisted of point counts generally conducted between dawn and five hours after sunrise to establish quantitative estimates of bird abundance in suitable habitat types within the Study Area. During the surveys evidence of breeding behaviour was recorded which generally includes, but is not limited to, males singing, nest building, egg incubation, territorial defence, carrying food, and feeding their young.

To supplement the surveys, area searches of the habitat were completed using binoculars to observe species presence and breeding activity between point counts. Area searches involved noting all individual bird species and their corresponding breeding evidence while traversing the habitat on foot. Point count locations are displayed on Figure 3.

Results of breeding bird studies within the Study Area are included in Section 5.2.7.1.

4.2.7.2 Amphibian Breeding Survey

Amphibian monitoring followed the Marsh Monitoring Program protocol (Bird Studies Canada, 2009). In accordance with the protocol, three different surveys were conducted between April 1 and June 30, with at least two-weeks between each survey. Surveys were completed between one half hour after sunset and midnight during evenings with a minimum night temperature of 5 ºC, 10 ºC, and 17 ºC for each of the three respective surveys. Survey points were located adjacent to Tributary A, Tributary B, and the PSW Complex within the south, east, and north-east portions of the Study Area (Figure 3).

The calling activity of individuals estimated to be within 100 m of the observation point were documented. All individuals beyond 100 m were recorded as outside the count circle and calling activity was not recorded. Calling activity was then ranked using one of the three abundance code categories:

Code 1: Calls not simultaneous, number of individual can be accurately counted;
Code 2: Some calls simultaneous, number of individuals can be reliably estimated; and,
Code 3: Calls continuous and overlapping, number of individuals cannot be estimated.

In areas were appropriate habitat exists vernal pools were also visually examined for egg masses and amphibian larvae in conjunction with other field surveys. These searches occurred between April and June when amphibians were concentrated around suitable breeding habitat.

Results of amphibian breeding studies within the Study Area are included in Section 5.2.7.2.

4.2.8 Species at Risk

The Study Area was surveyed for Butternut during ELC, vegetation surveys, and the Tree Inventory conducted in 2017.

Based on the presence of barns and other structures within the Study Area, a Barn Swallow nest search was conducted also on February 2nd, 2017 to confirm use of structures for nesting. During the survey 12 structures were inspected, which included various farm outbuildings and the two residential buildings. With the exception of the residential buildings, the exterior and interior of the buildings were inspected for nests. This involved slowly panning with a flashlight building frame components which included but not limited to the eaves, support beams, cross beams, corners, and joints of each building frame (where safely accessible).

With respect to SAR bats, as described in Section 4.5.3, since the woodland and PSW will be protected and no vegetation removal is expected to occur within those areas, specific snag/cavity trees density searches were not conducted within the valleylands. The trees within the residential portion of the Study Area were inventoried in which tree health conditions and form were recorded for trees within the tablelands portion of the Study Area. This information was then used to help identify possible snags and/or cavity trees suitable for bat maternity roosting, the potential for wildlife use of individual trees, or groups of trees within the Study Area.

Surveys for Chimney Swift, Bobolink and Eastern Meadowlark will be completed in conjunction with diurnal breeding bird surveys in 2017.

Results of SAR surveys conducted to date have been included in Section 5.2.8.

4.2.9 Incidental Wildlife

During site visits conducted to date incidental observations of wildlife were noted, as well as other wildlife evidence such as dens, tracks, and scat. For each observation, notes, and when possible, photos were taken. These observations helped to determine potential ecological functions, linkages, etc. within the Study Area.

Results related to incidental wildlife are included in Section 5.2.9.

5.0 Results of Field Work

A biophysical inventory of natural features within the Study Area was completed in accordance with the methods detailed in Section 4.0. The analysis of data collected from secondary source information and during field surveys in 2017 and 2018 was used to evaluate the significance of natural heritage features within the Study Area.

5.1 Aquatic Environment

5.1.1 Headwater Drainage Features Assessment

During the HDF assessment conducted in March 2017, no flow was observed within the potential HDF identified by TRCA and depicted on Figure 3. Further, the potential feature had no defined bed or banks, no evidence of previous downstream flow, and no connections upstream or downstream.

The potential feature is a topographical depression within an agricultural field collecting a minimal amount of sheet flow at its lowest point. As mentioned in Section 3.1, soils within the Study Area have high moisture holding capacities and moderate to rapid surface run off characteristics, which is the reason they make productive agricultural lands. Therefore, it is assumed that the majority of snow melt and precipitation within these agricultural fields is absorbed and, as a result, no measurable flow is conveyed downstream.

Tributary A is located downstream of this feature, originating from a stormwater outfall (refer to Photos 4 and 11 in Appendix F). During the assessment, a connection between the potential feature and *Tributary A* was not observed. It appeared as though *Tributary A* receives inputs by way of sheet flow from adjacent agricultural fields and lands within the stream valley; evidenced by the presence of rills along the banks of the tributary. In the area where the potential feature meets *Tributary A*, the surface flattens out and sheet flow accumulating this area appears to spread out rather than outlet directly into the tributary at a given point (see Photos 5, 9 and 10 in Appendix F).

Through background review, it was noted that this potential feature is not recognized as a watercourse in provincial mapping. Furthermore, a review of historic air photos dating back to 1974 determined that this this potential feature has been in active agriculture for at least the past 50 years, with no observable connection to *Tributary A,* downstream (i.e., this has been the existing condition of the potential feature for the past several decades)(refer to Appendix E). Prior to development of the subdivision to the west of Airport Road in the early 1990's, there were no stormwater inputs to *Tributary A*, and the tributary was likely fed by spring melt and sheet flow alone. Through planning and development of the subdivision to the west it was determined that the stormwater outfall would be piped underground, bypassing the potential feature and outletting directly into *Tributary A.* This suggests that at that time,

the feature was not considered a watercourse or considered suitable to effectively convey flow downstream to Centreville Creek.

Since no flow was observed during the first site visit on March 8, 2017, a second site visit was conducted on March 26th, 2017, after a large rain event, in order to replicate spring-freshet conditions and to determine whether the potential feature conveys flow at any time. A total of 18.4 mm of rain was recorded in Caledon East over a 3-day period from March 24-26, 2017. At the time of the site visit the soils were wet, but no flow was observed. Evidence of sheet flow collection is evident along the bottom of the feature, as shown in Photo 3 of Appendix F, however, no channel was observed. During the second site visit, the condition of flow *Tributary A* was also noted, to determine if flows were greater after the rain event, when compared to the first site visit.

While soils were wet and holding more moisture during the second site visit when compared to the first site visit, flows observed in *Tributary A* during the second site visit were similar to the first site visit, and no flow was observed during within the potential feature. This observation correlates to determinations about soils presented in the subwatershed study; stating that the highly permeable soils and underlying surficial geology in the majority of the Centreville Creek subwatershed area favour inflation over surface runoff. As a result, the stream flow regime in Centreville Creek is less influenced by precipitation than streams of the South Slope and Peel Plain to the south. During dry period many of the first, second, and third order streams within the subwatershed continue to exhibit flow due to groundwater discharge inputs from springs and outcrops of the Oak Ridges Aquifer Complex which has a significant positive influence on surface water quality conditions overall.

The TRCA and CVC Guidelines define HDFs as "*non-permanently flowing drainage features that may not have defined bed or banks; they are first-order and zero-order intermittent and ephemeral channels, swales and connected headwater wetlands, but do not include rills or furrows."* Furthermore, the TRCA & CVC Guidelines note that HDFs located in farm fields are typically evident due to lack of plowing, tractor inaccessibility due to wetness, and unsuitable conditions for crop growth, which is not the case in this area (in this case the entire "feature" is cropped with no evidence of stunted crop growth).

As per the TRCA and CVC Guidelines, in order for this "feature" to receive a management recommendation of "Mitigation" it would have to have "Contributing Functions", defined as, *"Provides ephemeral flow or water storage after spring freshet and following large rain events only."* This was not demonstrated through our site investigations. Under the HDF Guidelines, "No Management is Required" for "Limited Functions," which are defined as: *"The pre-screened drainage feature has been field verified to confirm that no flow occurs during any of the flow assessment periods outlined. Generally characterized by no flow, no groundwater seepage or wetland functions, and evidence of cultivation, furrowing, presence of a seasonal crop, lack of natural vegetation, and fine textured soils (clay, silts, etc.)."*

Existing conditions meet the criteria for "Limited Functions" based on the 2017 site investigations, which found there to be no flow, no defined bed or banks, no evidence of previous downstream flow, and no connections upstream or downstream. Lastly, as previously mentioned, a SWM infrastructure pipe was constructed as part of a previous development to the west of Airport Road which completely bypasses this area. If a drainage feature were present here it is presumed that it would have been incorporated into the SWM facility, instead of being bypassed. Consequently, "No Management Required" is an appropriate management recommendation, as no HDF (or other natural feature) is present.

Refer to Appendix F for further details.

5.1.2 Aquatic Assessment

Tributary A is an intermittent channelized stream that originates from an outfall headwall. At the time of the aquatic assessment, the channel was dry except for the first 10 m immediately downstream of the headwall. There was minimal flow and it can be described as flat. The assessed area (approximately 60 m) had a mean bankfull width of approximately 0.45 m and a mean bankfull depth of approximately 0.20 m. The mean wetted width was approximately 0.40 m and wetted depth was 0.05 m. Both banks appeared protected and there were no signs of erosion. The dominant substrate was cobble and boulders with areas of sand and gravel. There was no in-stream habitat cover other than the boulder and cobble substrate. However, the stream was 60-90% shaded by the dense overhanging terrestrial vegetation. There were sparse riparian trees along the assessed segment as well. The riparian community was meadow on both banks for the first 10 m and agricultural fields beyond that point. Approximately 100 m downstream of the headwall, the channel widened (approximately 4 m in width) and cobble had been uniformly placed as a substrate. The channel then loses definition. The dry channel and loss of definition are both migratory obstructions for fish.

During the site visit, *Tributary B* had no channel definition and consisted of muddy pools of water a metre downstream of a blocked and crushed corrugated steel pipe. No flow was observed.

5.2 Terrestrial Environment

5.2.1 Ecological Land Classification

A total of 24 ecological communities were observed within the Study Area during the ELC survey, 19 of which are considered natural vegetation communities (Table 6). The location, type, and boundaries of these communities are delineated in Figure 4. Each of the vegetation communities surveyed within the Study Area are considered common in Ontario. Table 5 outlines the communities documented during ELC surveys and summarizes the dominant vegetation cover. Reference photos for each of the vegetation communities observed can be found in Appendix H.

The majority of the Study Area was agricultural land consisting of annual row crops, open cattle pastures or agricultural facilities. Natural communities were confined to the significant valleyland located on the

eastern extents of the Study Area. Natural communities located on the valley slope and within pastures have been disturbed due to anthropogenic uses (i.e., grazing, noise, etc.) and contained higher abundances of invasive species such as Common Buckthorn (*Rhamnus cathartica*), Black Locust (*Robinia pseudoacacia*), and Garlic Mustard (*Alliaria petiolata*) than observed in other communities within the Study Area.

Mixed and deciduous forests were the most common type of terrestrial community observed, with mixed meadows also being documented. Forest communities within the significant valley land and not on the valley slope were relatively undisturbed. Vegetation composition and overall densities varied between forest communities with Eastern White Cedar (*Thuja occidentalis*), American Basswood (*Tilia Americana*), Paper Birch (*Betula papyrifera*), Trembling Aspen (*Populus tremuloides*) and Green Ash (*Fraxinus pennsylvanica*) being common observations. Common groundcover species were Herb-Robert (*Geranium robertianum*), False Solomon's-seal (*Maianthemum racemosum*), Enchanters Nightshade (*Circaea lutetiana*) and Virginia Creeper (*Parthenocissus quinquefolia*).

The wetlands within the Study Area were observed to be in a relatively undisturbed state, especially those within the Widgett-Innis Lakes Provincially Significant Wetland Complex. Mixed and conifer swamps were the primarily community type, with meadow marshes, thickets swamps and shallow marshes also being observed. Vegetation composition was variable between communities, with common observations being Black Ash *(Fraxinus nigra),* Eastern White cedar *(Thuja occidentalis),* Yellow Birch (*Betula alleghaniensis*), Speckled Alder (*Alnus incana*). Red-osier Dogwood (*Cornus sericea*) Fowl Manngrass (*Glyceria striata*), Spotted Jewelweed (*Impatiens capensis*), Sensitive Fern (*Onoclea sensibilis)* and Dwarf Raspberry *(Rubus pubescens).* Invasive wetland species were minimal overall; however, the presence of Common Reed (*Phragmites australis*), Narrow-leaved Cattail (*Typha angustifolia*) and Reed Canary Grass (*Phalaris arundinacea*) was documented, with occurrences mostly confined to the meadow marsh communities. In addition, the majority of wetlands were dominated by organic soils.

Potential impacts to vegetation communities are discussed further in Section 8.1.1.

5.2.2 Vegetation Inventory

A total of 159 plant species were documented during the 2017 field studies. All of the plant species identified are considered to be common (S4) to very common (S5) in the province of Ontario or are listed as introduced species; therefore, a status ranking is not applicable as the species is not a suitable target for conservation activities (SRank of SE or SNA). No SAR or SCC plants were identified during vegetation surveys.

The Co-efficient of Conservatism (CC) provides additional information on the nature of the vegetation communities within the Study Area. The CC values range from 0 to 10 and represent an estimated probability that a plant is likely to occur in a landscape that is relatively unaltered or is in a pre-settlement condition. For example, a CC of 0 is given to plants such as Manitoba Maple (*Acer negundo*)

that demonstrate little fidelity to any remnant natural community, i.e. may be found almost anywhere. Similarly, a CC of 10 is applied to plants like Shrubby Cinquefoil (*Potentilla fructicosa*) that are almost always restricted to a pre-settlement remnant, i.e. a high quality natural area. Introduced plants were not part of the pre-settlement flora, so no CC values have been applied to these species.

Of the 159 species identified within the Study Area, seven have a CC value of 7 or greater;

1. Crested Wood Fern (*Dryopteris cristata*)(7);
2. Marsh Horsetail (*Equisetum palustre*)(10);
3. Black Ash (*Fraxinus nigra*)(7);
4. Common Oak Fern (*Gymnocarpium dryopteris*)(7);
5. American Larch (*Larix laricina*)(7);
6. Interrupted Fern (*Osmunda claytoniana*)(7); and,
7. Smooth Aster (*Symphyotrichum laeve var. laeve*)(7).

The mean CC value for the site was 4.04 out of a possible 10, indicating an altered landscape. This is typical of an urban environment as compared to naturally occurring environments. A full list of the vegetation species observed within the Study Area has been included in Appendix I.

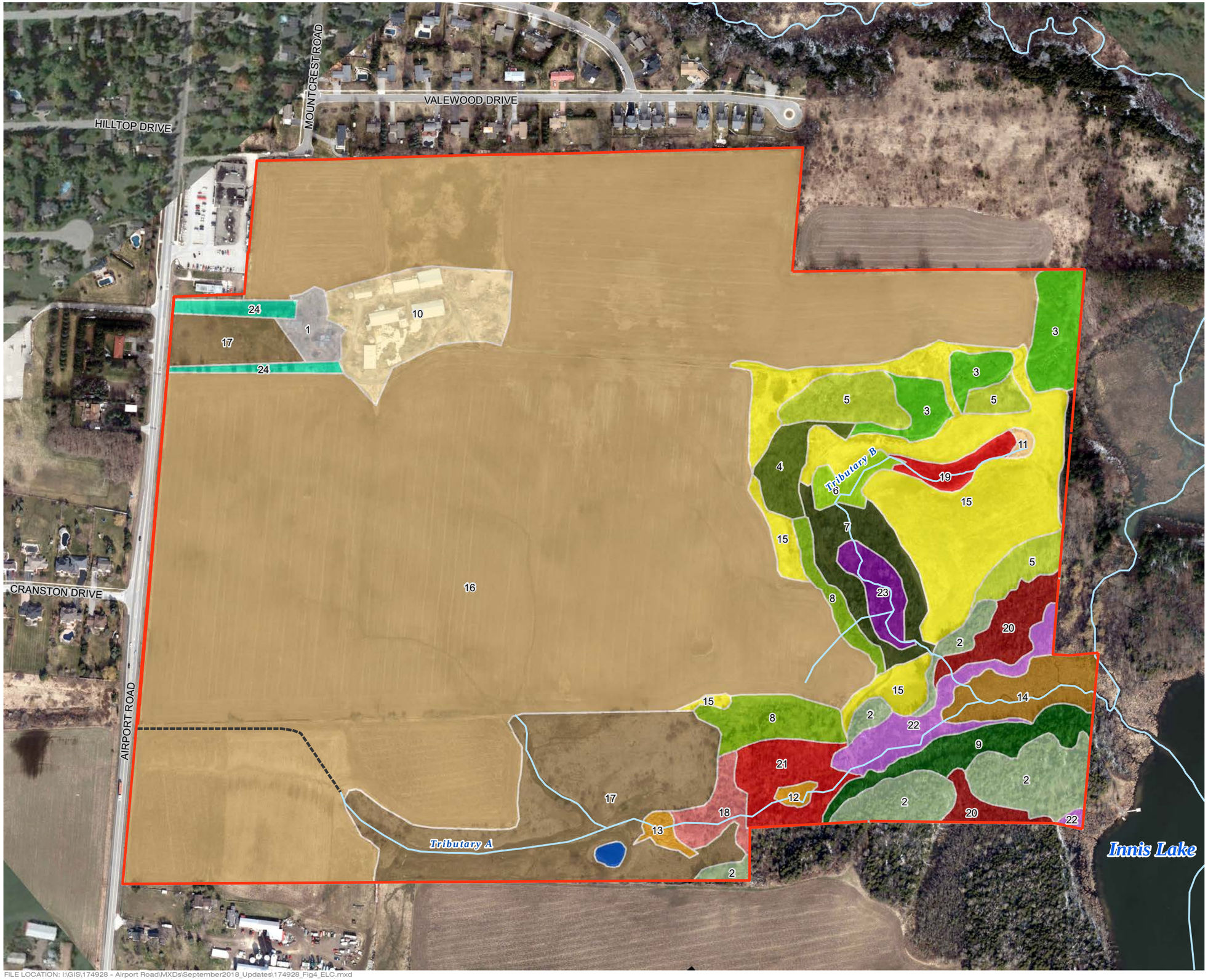
Potential impacts related to vegetation within the Study Area are included in Section 8.1.3.

Table 6: Ecological Land Classification

ELC Code	Classification	Total Within Study Area (ha)	Vegetation	Comments	Photo Appendix G
FOCM2-2	Dry – Fresh White Cedar Coniferous Forest	1.90	This community was present in several locations within and adjacent to the Study Area. Eastern White Cedar (*Thuja occidentalis*) was dominant within the canopy and sub-canopy with few other mature tree species being present. Additional tree species that were observed in sparse occurrences were: Red Maple (*Acer rubrum*), Balsam Fir (*Abies balsamea*), American Basswood (*Tilia Americana*), Paper Birch (*Betula papyrifera*) and Black Cherry (*Prunus serotina*). Groundcover was sparse in most areas consisting of common upland species such as Green Ash (*Fraxinus pennsylvanica*), Herb-Robert (*Geranium robertianum*) and False Solomon's-seal (*Maianthemum racemosum*). The dominant soil texture within these communities was fine sandy clay loam with observations of sparse mottles between 40-60 cm. Gley was not observed.	N/A	1
FODM4-2	Dry - Fresh White Ash - Hardwood Deciduous Forest	1.20	White Ash (*Fraxinus americana*) was the sole dominant species within the canopy or was present with Trembling Aspen (*Populus tremuloides*), Black Cherry, Black Walnut (*Juglans nigra),* Green Ash and Red Maple. Groundcover was dominated by Enchanters Nightshade (*Circaea lutetiana*), Virginia Creeper (*Parthenocissus quinquefolia*), young Common Buckthorn (*Rhamnus cathartica*) and several species of grasses, sedges and goldenrods. The dominant soil texture within these communities was fine sand with no observations of mottles or gley.	N/A	2
FODM4-10	Dry - Fresh Hawthorn - Apple Deciduous Forest	1.34	This community was present along the valley slopes and was dominated by several species of apple (*Malus sp.)* and Hawthorn (*Crataegus sp.*) in addition to occasional occurrences of Common Buckthorn and young Black Walnut, Green Ash, Sugar Maple (*Acer saccharum*), Black Locust (*Robinia pseudoacacia*) and Black Cherry. The dominant soil texture within these communities was a fine sandy loam with observations of sparse mottles at 70 cm. Gley was not observed.	N/A	3
FODM4-11	Dry - Fresh Black Locust Deciduous Forest	0.49	This area contained a stand of Black Locust that was the sole dominant species within the majority canopy and understory with other occurrences consisting of Trembling Aspen, Manitoba Maple, Black Walnut, Crab Apple (*Malus sylvestris*) and White Elm (*Ulmus americana*). The dominant soil texture was a very fine sandy loam with observations of sparse mottles at 80 cm. Gley was not observed.	N/A	4
FODM7-3	Fresh – Moist Willow Lowland Deciduous Forest	0.30	This community was located adjacent to a Willow Mineral Swamp on a higher topographic area. White Willow (*Salix alba*) was the overall dominant tree species with sparse occurrences of Green Ash, Manitoba Maple, American Basswood (*Tilia americana*) and Red Maple. Groundcover consisted primarily of American Black Currant (*Ribes americanum*), Spotted Jewelweed (*Impatiens capensis*), Virginia Creeper, Enchanters Nightshade and Ostrich Fern (*Matteuccia pensylvanica*). The dominant soil texture was fine sand with no observations of mottles or gley.	N/A	5
FODM8-1	Fresh – Moist Poplar Deciduous Forest Type	1.03	This community was located on a minor slope adjacent to the Red-osier Organic Deciduous Thicket Swamp. Species composition within the canopy was variable, but overall Trembling Aspen was the most abundant. Other tree species observed consisted of Balsam Poplar (*Populus balsamifera*), Green Ash, Black Cherry, Black Walnut and White Cedar (*Thuja occidentalis*). Understory vegetation consisted of saplings of the above listed tree species in addition to Common Buckthorn, Chokecherry (*Prunus virginiana*) and Grey Dogwood (*Cornus racemosa*). Groundcover contained several sedge species, Field Horsetail (*Equisetum arvense*), Virginia Creeper, Wood Fern (*Dryopteris carthusiana*), Enchanters Nightshade and seedlings of Common Buckthorn and Green Ash. The dominant soil texture was a very fine sandy loam with observations of sparse mottles at 80 cm. Gley was not observed.	N/A	6
FOMM4-2	Dry – Fresh White Cedar – Poplar Mixed Forest	1.01	This community was present along the northern edge of the open cattle pasture and to the northwest and west of the moist poplar forest located in the centre of the Study Area. Both communities were also located on a moderate slope. The composition of the canopy was variable across this community but overall White Cedar and Poplars (Trembling Aspen, Balsam Poplar) were dominant with American Beech (*Fagus grandifolia*), Yellow Birch (*Betula alleghaniensis*) American Basswood, Black Cherry and Sugar Maple present as associates. Ground cover contained common upland species such as Herb Roberts, Enchanters Nightshade and Virgiana Creeper. The dominant soil texture was very fine silty sand with no observations of mottles or gley.	N/A	7

ELC Code	Classification	Total Within Study Area (ha)	Vegetation	Comments	Photo Appendix G
FOMM7-2	Fresh – Moist White Cedar – Hardwood Mixed Forest	0.83	This community was present along the terrestrial wetland interface and was located on a minor slope. Overall White Cedar was dominant with Paper Birch and Green Ash as associates. Sparse occurrences of Trembling Aspen and Black Ash (*Fraxinus nigra*) were also observed. The understory consisted of saplings of trees present in the canopy in addition to Common Buckthorn and Chokecherry. Groundcover was composed mainly of Field horsetail, Virginia Creeper, and several species of sedges. The dominant soil texture was a medium sandy clay loam with observations of mottles at 30 cm. Gley was not observed.	N/A	8
MAMM1-2	Cattail Graminoid Mineral Meadow Marsh	0.06	This was a small inclusion present immediately adjacent to the Willow Mineral Deciduous Swamp. This community was dominated almost entirely by Narrow-leaved and Broad-leaved Cattail (*Typha Latifolia, Typha Angustifolia*) with some Reed Canary Grass (*Phalaris arundinacea)* and Joe-Pye Weed (*Eutrochium purpureum*) also present.	N/A	9
MAMM2-5	Purple Loosestrife Forb Mineral Meadow Marsh	0.08	The community was an inclusion of the larger adjacent Yellow Birch – Conifer Organic Mixed Swamp. Tree and shrub cover became spare >25% and soil texture shifted from primarily organic to mineral. Vegetation consisted of sparse tree and shrub cover consisting of Speckled Alder (*Alnus incana*), Yellow Birch, White Elderberry (*Sambucus nigra*) and Red-osier Dogwood (*Cornus sericea*). The dominate vegetation was composed of several forb species with Purple Loosestrife (*Lythrum salicaria*) composing the majority of the community. Other species present included Joe-Pye Weed, Blue Vervain (*Verbena hastata*), Broad-leaved Cattail, Fowl Managrass (*Glyceria striata*), Northern Blue Flag (*Iris versicolor*), American Mannagrass (*Glyceria grandis*) Swamp Aster (*Symphyotrichum puniceum*) and Boneset (*Eupatorium perfoliatum*). The dominant soil texture was a Silty Clay with observations of mottles at 5 cm and gley at 5 cm.	N/A	10
MAMO1-2	Cattail Graminoid Organic Meadow Marsh	0.14	This community was located just below the outflow of a manmade cattle pond located within the open pasture community. Vegetation consisted almost entirely of Broad-leaved Cattail (*Typha latifolia*).	N/A	11
MASO1-1	Cattail Organic Shallow Marsh	0.85	This community was located on the eastern extent of the Study Area. Tree and shrub cover were sparse, being confined to the transition zone around the edges of the community, and consisted of: Green Ash, Black Ash, Red-osier Dogwood, Speckled Alder, Peach-leaved Willow (*Salix amygdaloides*) and Heart-leaved Willlow (*Salix eriocephala*). Groundcover was dominated by Broad-leaved Cattail with other abundant species consisting of Marsh Bell Flower (*Campanula aparinoides*), Fowl Manna Grass, American Mannagrass, Northern Blue Flag, Marsh Fern (*Thelypteris palustris*) and Spotted Jewelweed. Small patches of Common Reed (*Phragmites australis*), mainly located around the edges of the community were also observed. Open water areas were limited to the channel of the watercourse. The dominant soil texture was organic (Om) with a subsoil of silty clay observed at 50 to 70 cm below the organic soil. Mottles and gley were also observed within the silty clay after the transition from organic soil	This community may also serve as a migratory corridor for species such as turtles between the large open water bodies located to the north and south of the Study Area.	12
SWCO1-2	White Cedar - Conifer Organic Coniferous Swamp	0.45	This swamp community was located within an active cattle pasture. White Cedar was the overall dominant species present, with White Willow, White Elm and American Basswood occurring as associate species. The understory consisted of young White Cedar, Speckled Alder, Red-osier Dogwood and White Elder Berry. A mix of graminoid and forbs composed the groundcover consisting of Boneset, Joe-pye Weed, Purple Loosestrife, Swamp Aster, Lance-leaved Aster (*Symphyotrichum lanceolatum*), Rice Cutgrass (*Leersia oryzoides*), Fringed Loosestrife (*Lysimachia ciliata)* and Fowl Mannagrass. Soils consisted of an organic soil (Om) that was mixed with and sandy clay at lower depths	Grazing from cattle has likely reduced the amount of deciduous shrubs and young trees.	13
SWDM4-1	Willow Mineral Deciduous Swamp	0.33	This area was dominated by a species of White Willow that based on its overall form may be a type of cultivar. Green Ash was also present in sparse occurrences within the canopy. The understory consisted of Red-osier Dogwood, Heart-leaved Willow and White Willow. Groundcover was sparse due to the extent of standing water and where present consisted of Common Reed, Purple loosestrife, Reed Canary Grass and Spotted Jewelweed. The dominant soil texture was either a very fine sandy clay loam or very fine sandy clay. Both mottles and gley were observed at 10 cm with water observed at 0 cm.	This community was located within a low-topographic area between two mixed meadow communities. Standing water 10-20 cm in depth was observed and may provide suitable amphibian breed habitat	14
SWMO1-1	White Cedar - Hardwood Organic Mixed Swamp	0.86	The dominant canopy and sub-canopy species within this swamp community was White Cedar, with Yellow Birch, Trembling Aspen and Black Ash present as associates. The understory contained saplings of the canopy trees in addition to Speckled Alder and Red-osier Dogwood. Groundcover consisted of several species of ferns (Sensitive, Marsh, Ostrich), Spotted	N/A	15

ELC Code	Classification	Total Within Study Area (ha)	Vegetation	Comments	Photo Appendix G
			Jewelweed, Dwarf Raspberry (*Rubus pubescens*), Fowl Mannagrass and Marsh Marigold (*Caltha palustris*). Soils consisted of an organic soil (Om) to 120 cm.		
SWMO3-1	Yellow Birch -Conifer Organic Mixed Swamp	0.88	This community was co-dominated by White Cedar and Yellow Birch with Yellow Birch being slightly more dominant within the canopy. Additional tree species present consisted of Black Ash, Paper Birch, Red Maple and Balsam Fir (*Abies balsamea*). The understory contained young trees in addition to Speckled Alder and Red-osier Dogwood. Groundcover was mainly dominated by Sensitive fern, Spotted Jewelweed, Marsh Marigold, Fringed Loosestrife and Dwarf Raspberry The dominant soil texture was an organic soil (Om) to 120 cm.	N/A	16
SWTO1-1	Speckled Alder Organic Deciduous Thicket Swamp	0.89	The canopy and sub-canopy (>10 m) within this community was sparse and consisted of Black Ash, White Elm and White Willow. Speckled Alder was the overall dominant species with Red-osier Dogwood and several willow species (*Salix. amygdaloides, Salix eriocephala*). Groundcover was primarily composed of Spotted Jewelweed, Sensative Fern, Swamp Aster, Lance-leaved Aster and Fowl Mannagrass. The dominant soil texture was an organic soil (Om) to 120 cm.	N/A	17
SWTO4-1	Red-osier Organic Deciduous Thicket Swamp	0.46	The canopy and sub-canopy (>10 m) within this community was sparse and where present consisted of Trembling Aspen, Balsam Poplar and White Willow. Red-osier Dogwood was the overall dominant species with Speckled Alder, Green Ash and several Willow species (*Salix. amygdaloides, Salix eriocephala*) present as associates. Groundcover consisted of Spotted Jewelweed, Sensitive Fern, Reed Canary Grass, Fowl Mannagrass and Dwarf Raspberry. The dominant soil texture was an organic soil (Om) to 120 cm.	N/A	18
MEMM3:	Dry - Fresh Mixed Meadow	4.77	This community contained no tree cover and was dominated by a mixture of forb and grass species. The most common species observed consisted of several grass species (*Poa, Bromus, Fescua),* Cow Vetch (*Vicia cracca*), Wild Carrot (*Daucus carota*), Tall Golden Rod (*Solidago altissima*), Alfalfa (*Medicago sativa*), and aster species. The dominant soil texture was a fine sandy loam with mottle and gley not being observed.	N/A	19
OAGM1:	Annual Row Crop	46.21	These areas consisted of an annual row crop that has been planted with soy beans.	N/A	20
OAGM4	Open Pasture	5.43	This area was composed of an active cattle pasture that was primarily a meadow community with inclusion of deciduous forest and wetlands.	N/A	21-22
IAGM1	Agricultural Buildings	1.80	This area consisted of old agricultural buildings and associated facilities.	Several pairs of Barn Swallow were observed flying adjacent to and entering the old barn.	23
CVR_4	Rural Property	0.36	This area contained a single family dwelling and lawn.	N/A	---
TAGM5	Fencerow	0.42	This area consisted of tree rows that were planted adjacent to the residential dwelling and laneway.	N/A	---



TRIPLE CROWN LINE DEVELOPMENTS
15717 Airport Road, Caledon

ECOLOGICAL LAND CLASSIFICATION
FIGURE 4

- Study Area
- Watercourse

Ecological Land Classification

1. CVR_4: Rural Property
2. FOCM2-2: Dry – Fresh White Cedar Coniferous Forest
3. FODM4-10: Dry - Fresh Hawthorn - Apple Deciduous Forest
4. FODM4-11: Dry - Fresh Black Locust Deciduous Forest
5. FODM4-2: Dry - Fresh White Ash - Hardwood Deciduous Forest
6. FODM7-3: Fresh – Moist Willow Lowland Deciduous Forest
7. FODM8-1: Fresh – Moist Poplar Deciduous Forest
8. FOMM4-2: Dry – Fresh White Cedar – Poplar Mixed Forest
9. FOMM7-2: Fresh – Moist White Cedar – Hardwood Mixed Forest
10. IAGM1: Agricultural Buildings
11. MAMM1-2: Cattail Graminoid Mineral Meadow Marsh
12. MAMM2-5: Purple Loosestrife Forb Mineral Meadow Marsh
13. MAMO1-2: Cattail Organic Meadow Marsh
14. MASO1-1: Cattail Organic Shallow Marsh
15. MEMM3: Dry - Fresh Mixed Meadow
16. OAGM1: Annual Row Crop
17. OAGM4: Open Pasture
18. SWCO1-2: White Cedar – Conifer Organic Coniferous Swamp
19. SWDM4-1: Willow Mineral Deciduous Swamp
20. SWMO1-1: White Cedar – Hardwood Organic Mixed Swamp
21. SWMO3-1: Yellow Birch – Conifer Organic Mixed Swamp
22. SWTO1-1: Speckled Alder Organic Deciduous Thicket Swamp
23. SWTO4-1: Red-osier Organic Deciduous Thicket Swamp
24. TAGM5: Fencerow
- Cattle Pond

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, TRCA, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928
STATUS: DRAFT
DATE: 2018-09-12

FILE LOCATION: I:\GIS\174928 - Airport Road\MXDs\September2018_Updates\174928_Fig4_ELC.mxd

5.2.3 Tree Inventory

The Tree Inventory and condition assessment documented individual trees along with two groupings of trees, totalling 320 trees with a DBH 10 cm or greater within and/or adjacent to the Study Area.

Manitoba Maple (*Acer negundo*) was the dominant species, representing 22.5% of all trees inventoried. Sugar Maple (*Acer saccharum*) was second most common (20.9%), followed by Eastern White Cedar (*Thuja occidentalis*) at 18.12%, and Apple (*Malus sp.*) species at 5.6%. The remaining 32.88% of trees inventoried were distributed across other species, includingthe following:

- Basswood (*Tilia americana*);
- Scots Pine (*Pinus sylvestris*);
- White Ash (*Fraxinus americana*);
- Red Oak (*Quercus rubra*);
- Colorado Blue Spruce (*Picea pungens*);
- Hawthorn Species (*Crataegus sp.*);
- White Spruce (*Picea glauca*);
- Balsam Fir (*Abies balsamea*);
- Austrian Pine (*Pinus nigra*);
- Trembling Aspen (*Populus tremuloides*);
- Eastern White Pine (*Pinus strobus*);
- White Birch (*Betula papyrifera*); and
- Black Cherry (*Prunus serotina*).

Overall, trees were found to be in fair to good condition. Typical defects of individual trees included co-dominant stems, poor growth form (e.g. lean or curved form), and dieback due to competition with adjacent trees or vegetation.

Refer to Appendix F for the detailed Tree Inventory and Preservation Report including photos of representative trees in the Study Area.

5.2.4 Wetlands

As mentioned in Section 3.2.4, portions of the Widgett-Innis Lakes PSW Complex, as well as several small pockets of unevaluated wetland were identified within the Study Area. Within the Study Area, the Widgett-Innis Lakes Wetland PSW Complex provides ecological and hydrological functions, providing habitat to a number of native plants, wildlife, and fish species. As this wetland is considered PSW, it is protected under the policies of both the PPS and the ORMCP.

During the preliminary site visits and preconsultation, it was noted that the pocket of wetland identified within the table lands of Study Area had been tilled and planted in row crop by the farmer in recent years, and therefore, is no longer considered a wetland. At that time MNRF had requested

compensation for loss of this wetland within the Study Area boundaries as part of the development plan.

Wetland compensation is discussed further in Section 9.3.

5.2.5 Woodlands

In accordance with the policies of the ORMCP, in order for woodland to be significant it must have either:

a) *A tree crown cover of over 60% of the ground, determinable from aerial photography; or*
b) *A tree crown cover of over 10% of the ground, determinable from aerial photography, together with on-ground stem estimates of:*
   - 1,000 trees of any size per hectare. Or
   - 750 trees measuring over five centimetres in diameter, per hectare, or
   - 500 trees measuring over 12 centimetres in diameter, per hectare, or
   - 250 trees measuring over 20 centimetres in diameter, per hectare.

If these minimum standards are met, the woodland is then evaluated based on size criterion. Significant woodlands must have a minimum average width of 40 m or more measured to crown edges; and must meet one or more of the following criteria:

c) *4 hectares or larger in size located in the Countryside or Settlement Areas of the ORMCP; or*
d) *0.5 hectare or larger in size located in the Natural Core or Natural Linkages Areas of the ORMCP; or*
e) *0.5 hectare or larger located within or intersecting with a key natural heritage feature or hydrologically sensitive feature or their vegetation protection zone.*

Since woodlands within the Widgett-Innis Lakes PSW meet all of the criteria outlined above, the woodland within the Study Area, depicted on Figure 5, is considered significant. In addition, based on its size and association with the PSW, this woodland meets several other significance criteria outlined in the NRHM, including proximity to other woodlands or other habitats, linkages, and water protection.

Potential impacts related to Significant Woodlands within the Study Area are included in Section 8.1.3.

5.2.6 Valleylands

The ORMCP defines a valleyland as a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. The NHRM (MNRF, 2010) includes several recommended criteria for evaluating significance of valleylands. Of the criteria listed in the NHRM, the valleylands within the Study Area meet several of the standards for significance, including the following:

- Associated wetlands important to water attenuation, storage and release;
- Areas contributing to groundwater infiltration; areas that made an important contribution to infiltration in the region;
- Areas with well-defined valley morphology, having average widths of 25 m or more;
- Distinctive landforms based on their representation of geomorphological processes and features, quality, and rarity;
- Areas of contiguous woodland, wetland and/or meadow considered cumulatively; and
- Riparian vegetation greater than 30 m in width of each side of surface water features.

Based on the standards listed above in addition to the association with the PSW and Significant Woodlands, this valleyland is considered Significant Valleyland (Figure 5).

The area west of *Tribuatry A* was staked on-site by TRCA in the preliminary stages of the project in order to identify areas that required further analysis/ evaluation using applicable criteria (Figure 2). Dillon utilized the staked limit and feedback from the TRCA to assess this area using applicable criteria, and found this area did not meet the criteria to be considered a natural heritage feature and did not contain a permanent or intermittent watercourse. As a result, the staked Top of Bank in this particular area is not applicable (Figure 5).

As stated by the TRCA's Living City Policies (LCP) (2014), *"Confined systems, regardless of whether or not they contain a watercourse, are those depressional features associated with a river or stream that are well defined valley walls."* The feature is not associated with a river or stream that is well defined by valley walls; rather it exists within the rolling topography of the area characteristic of the Caledon landscape and therefore does not meet the criteria/definition for Confined Valley System within the LCP (p.96). Further, as stated by TRCA in Comment #15 from the previous submission, as well as in the TRCA and CVC Evaluation, Classification and Management of Headwater Drainage Features Guidelines (2014), HDF's are not typically associated with valleylands.

This feature was also analyzed through a Landform Conservation Plan, required for portions of the Study Area located within the Oak Ridges Moraine (ORM), and it did not meet the criteria for a significant landform feature as per the ORM Conservation Plan policies (Technical Paper #4). Refer to Appendix D. Furthermore, this "feature" does not meet the criteria for a significant valleyland (or valleyland in general) as per the criteria within the Natural Heritage Reference Manual of the PPS (MNRF 2005). The NHRM describes valleylands as the following:

Valleylands: Means a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year. Significance criteria includes:

- Surface water functions (catchment areas of 50 ha or greater, eroded riverbanks, wetlands etc.)
- Groundwater functions (contribution to groundwater infiltration and release)
- Landform prominence (floodplains, meander belts, valley slopes 25 m or more)

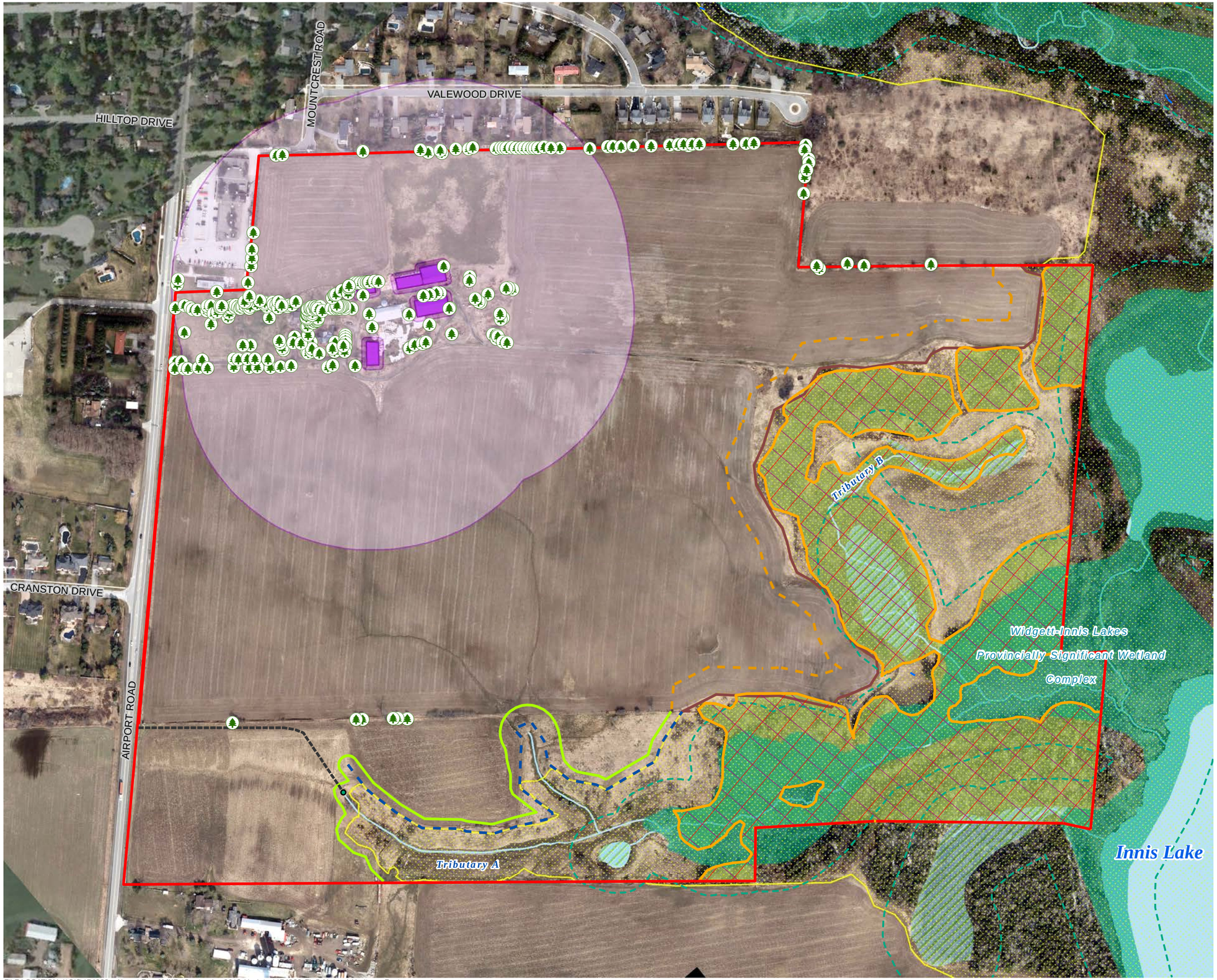
- Distinctive geomorphic landforms (oxbows, bottomlands, terraces, deltas etc.)

As a result, no valleyland, HDF, or intermittent/permanent watercourse exists in this area. Therefore, no KNHF is present.

Lastly, through development of the lands to the west of Airport Road, a SWM infrastructure pipe was permitted and installed bypassing this "feature", outletting at a constructed headwall into *Tributary A* to the east. If water were flowing within this "feature" in the past, it is assumed that this would have been incorporated into the SWM management facility and not bypassed by the pipe.

The LCP policies apply to valleylands, landform features, and other designated feature types.

This "feature" is not associated with a river or stream that is well defined by valley walls; rather it exists within the rolling topography of the area characteristic of the Caledon landscape and therefore does not meet the criteria/definition for Confined Valley System within the LCP (p.96). All appropriate evaluations were completed (landform analysis, valleyland evaluation, HDF) and it was determined that this feature is not considered a valleyland or landform feature, and does not contain an HDF. Therefore, based on our findings, a Top of Bank limit is not warranted in this particular area.



TRIPLE CROWN LINE DEVELOPMENTS

15717 Airport Road, Caledon

NATURAL HERITAGE FEATURES

FIGURE 5

- Study Area
- Tree
- Headwall
- Storm Infrastructure Pipe
- Flood line
- Watercourse
- Top of Bank
- Consolidated Top of Bank / Vegetation Limit
- 30m Top of Bank / Vegetation Limit Setback
- Consolidated 10m Top of Bank Setback/ 30m Watercourse Setback
- Significant Valleyland
- Unevaluated Wetland
- Provincially Significant Wetland
- 30m Wetlands Buffer
- Waterbody
- Significant Woodland
- Candidate Significant Wildlife Habitat for Bat Maternity Colonies
- Significant Wildlife Habitat for Amphibian Breeding Habitat (Woodlands)
- Significant Wildlife for Special Concern and Rare Wildlife Species
  - Eastern Wood-pewee
  - Golden-winged Warbler

Barn Swallow Nest Habitat

- Category 1: Nest
- Category 2: Area within 5m of nest
- Category 3: Area within 200m of nest

0 50 100 METRES

SCALE 1:4000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, TRCA

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928

STATUS: DRAFT

DATE: 2018-09-12

FILE LOCATION: I:\GIS\174928 - Airport Road\MXDs\September2018_Updates\174928_Fig5_Natural_Heritage_Features.mxd

5.2.7 Significant Wildlife Habitat

With respect to SAR bats, as described in Section 4.2.7, since the woodland and PSW will be protected and no vegetation removal is expected to occur within those areas, specific snag/cavity trees density searches were not conducted within the valleylands. The trees within the residential portion of the Study Area were inventoried in which tree health conditions and form were recorded for trees within the tablelands portion of the Study Area. As fencerows do not meet the criteria for Bat Maternity Roosting habitat in accordance with the Ecoregion 6E Criterion Schedules (MNRF 2015), SWH for bats is not present within the proposed development area. However, because the valleylands were not surveyed for presence of bats, we have considered the Significant Woodlands as Candidate SWH for Bat Maternity Roosting habitat for the purposes of this EIS (Figure 5).

Based on the results of the 2017-2018 field surveys, none of the SWH types below were confirmed within the Study Area:

- Raptor wintering areas;
- Turtle wintering areas;
- Colonially- nesting bird breeding habitat (trees/shrubs);
- Old growth forest;
- Waterfowl nesting;
- Bald Eagle and Osprey nesting, foraging, and perching habitat;
- Woodland Raptor nesting habitat;
- Amphibian breeding habitat (wetlands);
- Seeps and springs;
- Woodland-area sensitive bird breeding habitat; and
- Amphibian movement corridors.

Two types of SWH were confirmed within the Study Area:

- Amphibian Breeding Habitat (Woodland); and
- Habitat for Special Concern and Rare Wildlife Species.

These are described in sections below.

5.2.7.1 Breeding Bird Survey

A total of 56 bird species were observed during breeding bird surveys (Table 7). Of the 56 species observed, one SAR, Barn Swallow (THR), was observed. In addition, two SCC, Easter Wood-pewee (SC) and Golden-winged Warbler (SC) were identified. The remaining 53 birds observed are considered common and secure (S4) to very common (S5) in the province of Ontario based on the provincial conservation rankings assigned by the NHIC.

Table 7: Breeding Bird Survey Results

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Breeding Evidence
Actitis macularius	Spotted Sandpiper	---	---	S5	H
Agelaius phoeniceus	Red-winged Blackbird	---	---	S4	FY, CF
Aix sponsa	Wood Duck	---	---	S5	X
Anas platyrhynchos	Mallard	---	---	S5	X
Ardea Herodias	Great Blue Heron	---	---	S4	X
Bombycilla cedrorum	Cedar Waxwing	---	---	S5B	F/O
Branta Canadensis	Canada Goose	---	---	S5	F/O
Agelaius phoeniceus	Red-winged Blackbird	---	---	S4	FY
Cardellina pusilla	Wilson's Warbler	---	---	S4	S
Cardinalis cardinalis	Northern Cardinal	---	---	S5	P, S
Carduelis tristis	American Goldfinch	---	---	S5B	H
Catharus fuscescens	Veery	---	---	S4B	S
Catharus guttatus	Hermit Thrush	---	---	S5B	S
Charadrius vociferus	Killdeer	---	---	S5B, S5N	H
Coccyzus erythropthalmus	Black-billed Cuckoo	---	---	S5B	S
Colaptes auratus	Northern Flicker	---	---	S4B	CF
Columba livia	Rock Pigeon	---	---	SNA	H
Contopus virens	Eastern Wood-pewee	---	SC	S4B	X
Corvus brachyrhynchos	American Crow	---	---	S5B	H
Corvus corax	Common Raven	---	---	S5	F/O
Cyanocitta cristata	Blue Jay	---	---	S5	H
Dumetella carolinensis	Gray Catbird	---	---	S4B	S
Geothlypis trichas	Common Yellowthroat	---	---	S5B	S
Hirundo rustica	Barn Swallow	---	THR	S4B	H
Icterus galbula	Baltimore Oriole	---	---	S4B	X
Larus delawarensis	Ring-billed Gull	---	---	S5B,S4N	F/O
Melanerpes carolinus	Red-bellied Woodpecker	----	---	S4	X
Melospiza melodia	Song Sparrow	---	---	S5B	P/S, A
Mniotilta varia	Black-and-white Warbler	---	---	S5B	S
Molothrus ater	Brown-headed Cowbird	---	---	S4B	S

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Breeding Evidence
Myiarchus crinitus	Great Crested Flycatcher	---	---	S4B	S
Oreothlypis peregrina	Tennessee Warbler	---	---	S5B	X
Sayornis phoebe	Eastern Phoebe	---	---	S5B	S
Setophaga magnolia	Magnolia Warbler	---	---	S5B	S
Setophaga pensylvanica	Chestnut-sided Warbler	---	---	S5B	S
Setophaga petechia	Yellow Warbler	---	---	S5B	S
Setophaga ruticilla	American Redstart	---	---	S4B	S
Sitta carolinensis	White-breasted Nuthatch	---	---	S5	S
Spizella pallida	Clay-colored Sparrow	---	---	S4B	X
Spizella passerina	Chipping Sparrow	---	---	S4B	S
Spizella pusilla	Field Sparrow	---	---	S4B	S
Tachycineta bicolor	Tree Swallow	---	---	S4B	H
Toxostoma rufum	Brown Thrasher	---	---	S4B	S
Troglodytes aedon	House Wren	---	---	S5B	X, A
Turdus migratorius	American Robin	---	---	S5B	P, A
Tyrannus tyrannus	Eastern Kingbird	---	---	S4B	H
Passerina cyanea	Indigo Bunting	---	---	S4B	S
Passerculus sandwichensis	Savannah Sparrow	---	---	S4B	S
Poecile atricapillus	Black-capped Chickadee	---	---	S5	H
Quiscalus quiscula	Common Grackle	---	---	S5B	X , F/O
Sturnus vulgaris	European Starling	---	---	SNA	CF, FY
Turdus migratorius	American Robin	---	---	S5B	S
Vermivora chrysoptera	Golden-winged Warbler	THR	SC	S4B	S
Vireo gilvus	Warbling Vireo	---	---	S5B	S
Vireo olivaceus	Red-eyed Vireo	---	---	S5B	S
Zenaida macroura	Mourning Dove	---	---	S5	F/O

1 Federal Species at Risk Act (SARA) Registry Status
2 Ontario Endangered Species Act (ESA) Species at Risk List Status
3 Provincial Conservation Rank (Srank)
THR = Threatened, SC= Special Concern; "---" denotes no information or not applicable.

Breeding Bird Codes from Breeding Bird Atlas of Ontario (Cadman *et al.* 2007)

Observed
X Species observed in its breeding season (no breeding evidence)

Confirmed
NB Nest-building or excavation of nest hole by a species

Possible
H Species observed in its breeding season in suitable nesting habitat
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season
Probable
P Pair observed in suitable nesting habitat in nesting season
T Permanent territory presumed through registration of territorial song, or the occurrence of an adult bird, at the same place, in breeding habitat, on at least two days a week or more apart, during its breeding season.
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation
V Visiting probable nest site
A Agitated behaviour or anxiety calls of an adult
B Brood Patch on adult female or cloacal protuberance on adult male
N Nest-building or excavation of nest hole, except by a wren or a woodpecker
F/0 Flyover
other than a wren or a woodpecker
DD Distraction display or injury feigning
NU Used nest or egg shells found (occupied or laid within the period of the survey)
FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight
AE Adult leaving or entering nest sites in circumstances indicating occupied nest
FS Adult carrying fecal sac
CF Adult carrying food for young
NE Nest containing eggs
NY Nest with young seen or heard

Preferred habitat for Eastern Wood-pewee includes the mid-canopy layer of forest clearings and edges of deciduous and mixed forests. The species is most abundant in intermediate-age mature forest stands with little understory vegetation (MNRF, 2018a). Therefore, habitat for this species may exist in association with the significant woodland within the Study Area.

Habitat for Golden-winged Warbler includes recently disturbed areas with young shrubs surrounded by mature forests, such as field edges, hydro right-of-ways, and logged areas (MNRF, 2018b). Habitat for the species may exist in association with the field edges and the Significant Woodland.

The Significant Woodland therefore also meets the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E for SWH for Special Concern and Rare Wildlife Species for Eastern Wood-pewee and Golden-winged Warbler (Figure 5).

Results of SAR surveys and a discussion of SAR are discussed in Section 5.2.8.

Impacts to general wildlife including breeding birds are discussed further in Section 8.1.5.

5.2.7.2 Amphibian Breeding Survey

Potential amphibian breeding habitat was identified within wetland ecosites. In accordance with the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF 2015), the Study Area was considered for amphibian breeding woodland habitat given the potential for amphibian breeding in association with the woodland and PSW Complex. Consistent with the Criterion Schedule, in order for amphibian breeding habitats to be significant, they must contain one or more of the listed newt/salamander species; at least two or more of the listed frog/toad species with at least 20 individuals (adults or egg masses) of each species; or at least two of the listed frog/toad species with Call Code 3. Results from the amphibian breeding surveys are provided below in Table 7.

Table 8: Amphibian Breeding Survey Results

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Survey 1	Survey 2	Survey 3
Anaxyrus americanus	American Toad	---	---	S5	---	---	1 individual
Hyla versicolor	Gray Treefrog	---	---	S5	---	Full chorus (number of individuals could not be reliably estimated)	---
Lithobates catesbeianus	American Bullfrog	---	---	S4	---	---	2 individuals
Lithobates clamitans	Green Frog	---	---	S5	---	2 individuals	3 individuals
Lithobates sylvaticus	Wood Frog	---	---	S5	6 individuals	---	---
Pseudacris crucifer	Spring Peeper	---	---	S5	Full chorus (number of individuals could not be reliably estimated) and 1 individual	---	---

1 Federal Species at Risk Act (SARA) Registry Status
2 Ontario Endangered Species Act (ESA) Species at Risk List Status
3 Provincial Conservation Rank (Srank)

Given that both Gray Treefrog and Spring Peeper are species listed under Amphibian Breeding (Woodland) within the Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E (MNRF 2015); and a call code of 3 was observed for both species, the Significant Woodlands are also considered SWH for Amphibian Breeding (Woodlands) (Figure 5).

5.2.8 Species at Risk

No Butternut trees were identified during the vegetation and Tree Inventory work in 2017. The majority of trees inventoried were in good or fair condition. The majority of deciduous trees inventoried were assessed to be in good condition and/or have a DBH of <25 cm; or were identified as hazard trees (leaning, central leader broken off, had evidence of Emerald Ash Borer, Beech Bark Disease with woodpecker damage etc.). Further, during the Barn Swallow nest search it was noted that barns and other structures within the Study Area had no attic spaces for which bats to roost (i.e., were open structures, and/or had open rafter spaces).Therefore, the potential for SAR bats to be found within the Study Area is low, and no impacts are anticipated.

During the Barn Swallow nest search, a total of seven nests were observed and appeared to be in relatively good condition. In addition, several pairs of Barn Swallow were incidentally observed flying adjacent to and entering a barn during the ELC survey in 2017. See Figure 5 for the locations of the Category 1, 2 and 3 Barn Swallow Nesting Habitat observed within the Study Area. A Notice of Activity

has been submitted to the MNRF Registry for removal of the nests, and a mitigation plan and compensation activities have been completed as of 2018. See Figure 5 for locations of compensation structures.

No other SAR or SAR habitat was identified within the Study Area.

5.2.9 Incidental Wildlife

Incidental wildlife species observed within the Study Area are listed below in Table 8. One SAR (Barn Swallow) and one SCC (Western Chorus Frog) were incidentally observed during the 2017 and 2018 field surveys.

Table 9: Incidental Wildlife Observations

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]
Herptiles				
Anaxyrus americanus	American Toad	---	---	S5
Hyla versicolor	Gray Treefrog	---	---	S5
Lithobates catesbeianus	American Bullfrog	---	---	S4
Lithobates clamitans	Green Frog	---	---	S5
Lithobates pipiens	Northern Leopard Frog	---	---	S5
Lithobates sylvaticus	Wood Frog	---	---	S5
Pseudacris crucifer	Spring Peeper	---	---	S5
Pseudacris triseriata pop. 1	Western Chorus Frog (Great Lakes / St. Lawrence - Canadian Shield Population)	THR	---	S3
Thamnophis sirtalis sirtalis	Eastern Gartersnake	---	---	S5
Birds				
Ardea herodias	Great Blue Heron	---	---	S4
Carduelis tristis	American Goldfinch	---	---	S5B
Columba livia	Rock Pigeon	---	---	SNA
Colaptes auratus	Northern Flicker	---	---	S4B
Corvus	American Crow	---	---	S5B

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]
brachyrhynchos				
Corvus corax	Common Raven	---	---	S5
Cyanocitta cristata	Blue Jay	---	---	S5
Dryocopus pileatus	Pileated Woodpecker	---	---	S5
Dumetella carolinensis	Gray Catbird	---	---	S4B
Hirundo rustica	Barn Swallow	---	THR	S4B
Megaceryle alcyon	Belted Kingfisher	---	---	S4B
Melospiza melodia	Song Sparrow	---	---	S5B
Mniotilta varia	Black-and-white Warbler	---	---	S5B
Myiarchus crinitus	Great Crested Flycatcher	---	---	S4B
Passer domesticus	House Sparrow	---	---	SNA
Passerina cyanea	Indigo Bunting	---	---	S4B
Setophaga ruticilla	American Redstart	---	---	S5B
Sialia sialis	Eastern Bluebird	---	---	S5B
Spizella passerina	Chipping Sparrow	---	---	S5B
Mammals				
Sciurus carolinensis	Eastern Gray Squirrel	---	---	S5
Sylvilagus floridanus	Eastern Cottontail	---	---	S5
Tamias striatus	Eastern Chipmunk	---	---	S5

1 Federal Species at Risk Act (SARA) Registry Status
2 Ontario Endangered Species Act (ESA) Species at Risk List Status
3 Provincial Conservation Rank (Srank)

Potential impacts related to wildlife and SAR within the Study Area are included in Section 8.1.5.

6.0 Ecological Function

Natural features within the Study Area were analyzed to determine their ecological function. At the larger landscape scale, the Study Area exists as part of the Widgett-Innis Lakes PSW Complex, situated to the east and northeast of the Study Area. As stated in Section 3.2.3, the Widgett-Innis Lakes PSW Complex is located on the ORM and includes a diverse mix of wetland types. Wetlands within this PSW are linked by woodlands, riparian habitat, and open fields.

The portion of the Widgett-Innis Lakes PSW Complex within the Study Area provides ecological and hydrological function, through the protected valleylands continuing down the Centreville Creek corridor, providing habitat to a number of native plant and wildlife species. General ecological functions of natural features within the Study Area include prevention of erosion and runoff (densely wooded valleylands), facilitating hydrological and nutrient cycling, and improving localized soil, water and air quality. Within the Study Area, treed fencerows provide limited cover, foraging, refuge, and nesting habitat for urban terrestrial wildlife.

6.1 Hydrological Function

As indicated in the subwatershed study, regional groundwater flow is generally southward through the ORM Aquifer complex in Caledon East, except through a portion of the Caledon East Meltwater Channel, where flows change direction and head east. As Centreville Creek passes through highly permeable sediments of the Caledon East Meltwater Channel (to the northwest of the Study Area), the stream becomes a groundwater recharge area. The stream channel continues to function as a recharge area to the Caledon East Meltwater Channel and underlying aquifer complex until it enters the Widgett-Innis Lakes PSW Complex, where the channel is believed to resume functioning as a groundwater discharge area (TRCA, 2008).

Wetlands such as the Widgett-Innis Lakes PSW Complex provide a large amount of water storage capacity during spring run-off events and also slow runoff, thereby minimizing the frequency that streams and rivers reach flood levels. By trapping and holding water wetlands can store nutrients and pollutants, allowing cleaner water to flow to downstream receivers, providing a better environment for aquatic life within the watershed.

Wetland hydrology and ecology are tied to a two-phase process; the first phase being spring flooding, and the second being summer drawdown. In a swamp, for example, spring flooding leads to the creation of vernal pools, which maintain water until the late spring/early summer, and provide habitat for breeding amphibians. The limit of this flooding is set by outlets of the wetland; in this case, Centreville Creek, eventually outletting into the Humber River. Summer draw-down then occurs when there is a water deficit and evapotranspiration exceeds precipitation. In the absence of a significant source of groundwater, standing water is lost to evaporation and the swamp dries up. This is an

important time in the swamps seasonal cycle as the trees that form the canopy of the swamp are able to oxygenate their roots, and understory vegetation is able to grow. Understory vegetation such as wild flowers and other ground cover provides food and protection for wildlife in the swamp during the summer months.

In order to maintain the swamp ecology, both of these phases must be maintained in the seasonal hydrological cycle. If spring flooding is lost or greatly diminished, the system will evolve towards a drier, upland forest community. This will result in the loss of wetlands ecological function, especially related to amphibian breeding habitat. If on the other hand the summer's draw-down period changes significantly, the trees and seasonal understory will be affected and the canopy will be lost.

According to the subwatershed study, the stream flow regime in Centreville Creek is less influenced by precipitation than streams of the South Slope and Peel Plain due to the highly permeable soils and underlying surficial geology in the Centreville Creek subwatershed that favour infiltration over surface runoff. During dry periods many of the first, second and third order streams continue to exhibit flow due to groundwater discharge inputs from springs and outcrops of the ORM Aquifer Complex. This stream flow regime has a significant positive influence on surface water quality conditions as low rates of surface runoff and high rates of infiltration reduce the transport of pollutants from the land surface to the creek and groundwater discharge input help to keep surface water contaminant levels low and temperatures cool.

6.2 Aquatic and Terrestrial Habitat Function

The ecological function of wetlands is well-documented. As mentioned above, hydrology and ecology of wetlands are directly related. Many species of amphibians utilize wetlands for mating, food sources, and protective cover. This is particularly true of larger wooded swamp wetlands as they provide habitat for the full life cycle of amphibians. In addition to amphibians, many animals depend on wetlands for shelter and feeding. Reptiles, aquatic insects and certain mammals need wetlands as a place that supports growth and development of young. Both swamps and marshes provide important nesting habitat for bird species. As swamps are treed by definition, they provide additional cover for larger animals and nesting sites for large bird species.

The Widgett-Innis Lakes PSW Complex provides important habitat for wildlife in the form of winter cover for deer, nesting and foraging habitat for breeding birds, breeding populations of amphibians and reptiles, and spawning and nursery habitat for fish species. Based on the results of the 2017 and 2018 field program, SWH for amphibians is not present within 100 m of the amphibian breeding survey point count locations; however, due to the presence of two avian SCC, the significant woodland is Candidate SWH for Special Concern and Rare Wildlife Species. Aquatic and terrestrial habitat functions within the tablelands portion of the Study Area, however, are limited due to current agricultural land use and lack of cover or protection by natural features.

The east side of the Study Area, the Widgett-Innis Lakes PSW Complex is relatively undisturbed and exists in a reasonably natural state across an otherwise agricultural landscape. Urban development has not extended to the west into the PSW from Caledon East, although few rural residences and roadways interrupt the PSW complex in select areas.

6.3 Connectivity and Linkage Function

The Widgett-Innis Lakes PSW Complex is situated in the midst of a major east-west corridor of the ORM; the largest such corridor in southern Ontario (MNRF, 2015). The ORM band of wetlands, fields, and forests provides connections to the Niagara Escarpment to the west, and to headwater streams flowing south to Lake Ontario, and north to Lake Simcoe/Georgian Bay (MNRF, 2015). As a result, there are wildlife connections beyond the Widgett-Innis Lakes PSW to wetlands and forests both upstream to the Caledon East PSW Complex, and downstream to the Humber River, a major north-south corridor from the ORM and the Niagara Escarpment to Lake Ontario.

The deciduous significant woodlands and wetlands within the Study Area form part of the Widgett-Innis Lakes PSW Complex and the Centreville Creek corridor. Airport Road marks the current western limit of the PSW complex. Roadways and residential development within Caledon East has resulted in the loss of a natural connection between the Widgett-Innis Lakes PSW Complex and the Caledon East Wetland Complex PSW upstream; and a connection through surface flow residential area, restricted by crossings and stormwater management (SWM) infrastructure is all that remains. However, the Centreville Creek corridor extending downstream from Airport Road remains relatively intact, providing important habitat for fish, plants, and wildlife, and acting as a throughway and mechanism of dispersal for plant and wildlife species to downstream reaches of the subwatershed, toward the Humber River.

6.4 Landform Features

As stated in Section 3.2.1, portions of the Study Area are located within ORM Landform Conservation Area- Category 2. Through analysis of slope and elevation within the Study Area to identify areas with greater than 15% slope, 5 metre vertical height, and greater than 50 metres in length in accordance with the ORM Technical Paper #4, significant landform features have been identified within the Study Area (Appendix D).

Aside from their aesthetic appeal, landform features have several ecological functions. Within the Study Area, landform features contain significant valleylands, protected significant woodland corridors, hydrologically sensitive features (PSW, watercourses, etc.) and have potential to host various significant wildlife habitat types (to be confirmed through field studies in 2017).

7.0 Description of Proposed Development

The proposed 15717 Airport Road project consists of single family residential lots, decked townhouses, courtyard townhouses, high density, a condominium block, with roads, open space, walkways and parkettes (Figure 6).

Three access points into the development are proposed via residential street (Figure 6). Construction of the proposed development would include the removal of trees and vegetation from the development area, construction of dwellings, placement of hardscape (driveways, sidewalks) and underground servicing for stormwater and sanitary water. Landscaping would include, but is not limited to, the the insallation of patios, fencing, sod, and tree plantings.

The potential impacts of the development and the mitigation measures will be discussed in Sections 8 and 9.

TRIPLE CROWN LINE DEVELOPMENTS

15717 Airport Road, Caledon

PROPOSED DEVELOPMENT PLAN AND IMPACT ASSESSMENT

FIGURE 6

- Study Area
- Approximate Barn Swallow Nesting Box
- Tree to be Removed
- Headwall
- Proposed Site Plan and Grading
- Southern Retaining Wall (approx.)
- Watercourse
- Top of Bank
- Consolidated Top of Bank / Vegetation Limit
- 30m Top of Bank / Vegetation Limit Buffer
- Consolidated 10m Top of Bank Setback/ 30m Watercourse Setback
- Significant Valleyland
- Unevaluated Wetland
- Provincially Significant Wetland
- Residential
- Roadway
- Parkland / Open Space
- Potential Stormwater Management Facility
- Significant Woodland
- Waterbody
- Potential Wetland Compensation Area (approx. 0.082ha)
- Barn Swallow Nest Removal
- Buffer (approx. 3.63 ha)
- Candidate Significant Wildlife Habitat for Bat Maternity Colonies
- Significant Wildlife Habitat for Amphibian Breeding Habitat (Woodlands)
- Significant Wildlife for Special Concern and Rare Wildlife Species
  - Eastern Wood-pewee
  - Golden-winged Warbler

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, TRCA

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928

STATUS: DRAFT

DATE: 2018-09-13

FILE LOCATION: I:\GIS\174928 - Airport Road\MXDs\September2018_Updates\174928_Fig6_Development_Plan_Impacts.mxd

8.0 Impact Assessment

8.1 Potential Direct Impacts

Potential direct impacts are those that are immediately evident as a result of a development. Typically, the adverse effects of potential direct impacts are most evident during the site preparation and construction phase of a development. Potential direct impacts of the proposed residential development include the following:

- Diversion of surface water flows;
- Erosion and sedimentation into natural features (PSW);
- Potential Impacts to Landform Features;
- Tree and vegetation removal;
- Removal of structures containing nesting habitat for SAR; and
- Loss of/ disturbance to wildlife and general wildlife habitat.

As there is a regulated buffer from the Significant Woodland, Significant Valleyland, SWH, PSW within the ORMCP Area, as well as a buffer from watercourses within the Greenbelt Area, potential direct impacts of the development are generally limited to the Study Area/tablelands area that consists of active agricultural fields.

The proposed site plan and environmental impacts of development are shown in Figure 6.

8.1.1 Diversion of Surface Water Flows

The Study Area generally drains in a north to south-southeast direction through sheet flow over agricultural fields toward watercourses, valleylands and the PSW (See Schaeffers Engineering (Schaeffers) Figure 5-1). The existing watercourse (*Tributary A*) within the southern portion of the Study Area discharges to Innis Lake located just downstream on the west side of Innis Lake Road. As Schaeffers has stated in the FSR, existing drainage infrastructure in the vicinity of the Study Area is quite limited. There is external drainage that crosses Airport road through a steel pipe and is conveyed to Innis Lake through *Tributary A*. Under existing conditions, approximately 4.73 ha of land drains northerly into the existing residential subdivision located to the north of the Study Area.

The most notable difference is the addition of impervious surfaces (i.e., roads, parking lots, driveways, rooftops, etc.). Impervious surfaces prevent infiltration of water into the soils and the removal of the vegetation removed the evapotranspiration component of the natural water balance. These changes affect the watersheds capacity to infiltrate precipitation and detain run off and, therefore, to attenuate stream flow (TRCA, 2008). Alteration to water quality regimes within the Study Area as a result of development activities could impacts wetland communities and resident plant and wildlife species.

An approach to calculating a water balance has been included in the Functional Servicing Report (FSR) prepared by Schaeffers Environmental Consultants (Schaeffers) in September 2018. Surface flow from the development area contributing to the PSW would be expected to be maintained through the use of an integrated SWM system as well as incorporation of low impact development (LID) techniques, such as infiltration of clean roof drainage throughout the development plan.

Refer to Section 9.1 for mitigation relating to surface flows.

8.1.2 Erosion and Sedimentation of Natural Features

The FSR prepared for the proposed development (Schaeffers, 2017) determined that topographic relief on the site is in excess of 17 m, ranging from 295.5 masl at the southern Study Area boundary, to 213.25 masl within the north-eastern portion of the site. Grade changes become significant near the southern limit of the site where sheet flow is collected in *Tributary A* before discharging to Innis Lake.

There is the potential for wetlands, forests, and watercourses to be impacted as a result of development if construction best practices are not implemented. Potential impacts to the natural features are generally associated with sedimentation during construction and may include the following:

- Reduced water quality and degradation of downstream aquatic habitat (e.g. surface water flow into the Widgett-Innes Lakes PSW Complex and Centreville Creek); and
- Disturbance to or loss of additional vegetation due to the deposition of dust and/or overland mobilization of soil.

These potential impacts are preventable with the use of best construction practices, an erosion and sediment control plan and monitoring of the plan. In addition, in order to decrease peak volumes, LID measures have been recommended in Section 9.1 and 9.2.

8.1.3 Tree and Vegetation Removal

The proposed development plan indicates tree and ground vegetation removal limited to the development area as shown on Figure 6 to facilitate grading and construction of the development.

The proposed development is not anticipated to require the removal of any natural vegetation communities, however, approximately table land 320 trees are proposed for removal within the development area (Figure 6). Trees proposed for removal are associated with the existing residence and various hedgerows within the Study Area.

Tree removal will result in a reduction of tree cover, marginal wildlife habitat loss, and alteration of soil conditions. On a site level, the impacts of tree and vegetation removal may include:

- Direct loss of trees, including mature trees;
- Decreased floral species richness and abundance;

- Altered soil conditions and water availability;
- Alteration of microclimate;
- Loss of native seed banks; and
- Physical injury, root damage, and compaction of trees not intended for removal that may result from construction operations

As previously stated, the proposed development area (table lands) provides minimal ecological function and thus, the removal of select trees will result in minimal habitat loss, minimal reduction of natural cover in the area, and minimal reduction in ecological function.

Refer to Section 9.3 and 9.4 for mitigation and enhancement opportunities.

8.1.4 Potential Impacts to Landform Features

As stated in Section 8.1, development is restricted to the tablelands. As a result, significant landform features identified within the Study Area fall outside of the limit of development and outside of the buffer area (Figure D5 of Appendix D). These landforms will be protected thought the development process and will maintain their ecological functions and connectivity post-development. Therefore impacts to significant landform features of the ORM are not anticipated as a result of development activities.

8.1.5 Loss of and/or Disturbance to Wildlife and Wildlife Habitat

Flora and fauna may be impacted due to vegetation clearing during construction within the proposed development area including SWH for Eastern Wood-pewee and Golden-winged Warbler, Bat Maternity Colonies, and Amphibian Breeding Habitat located in association with the Significant Woodlands.

Habitat for flora and fauna may be impacted by construction in the following ways:

- Displacement, injury, or death resulting from contact with heavy equipment during clearing and grading activities;
- Disturbance to wildlife as a result of noise associated with construction activities, particularly during breeding periods; and
- Loss of general wildlife habitat.

Accordingly, wildlife impact mitigation measures have been recommended for the development area and are included in Section 9.6.

8.1.6 Removal of Structures Providing Species at Risk Habitat

The proposed development plan includes removal of structures within the Study Area that contain nesting habitat for Barn Swallow. This will result in loss of Category 1, 2, and 3 habitat for Barn Swallow, as shown on Figure 5. Since Category 2 Habitat includes the structures and the immediate area around

the structures; and Category 3 Habitat consists of agricultural lands, the farm residence, and developed area, removal of this habitat is not anticipated to cause a negative impact to the species, and habitat is not limited within the general area.

As mentioned, the removal of Barn Swallow nests and the required MNRF Registry and compensation has been completed in consultation with the MNRF in 2018.

8.2 Potential Indirect Impacts

Potential indirect impacts are those that do not always manifest in the core development area, but in lands adjacent to the development. Indirect impacts can begin in the construction phase; however, they can continue post-construction. Potential indirect impacts of the proposed development include anthropogenic disturbance and colonization of non-native and/or invasive species.

8.2.1 Anthropogenic Disturbance

Disturbance to local wildlife communities due to indirect impacts on the lands adjacent to the proposed development could result if left unmitigated. Noise, light, vibration and human presence are indirect impacts that can adversely influence the population size and breeding success of local wildlife. These effects are more pronounced when new development is introduced in non-urban areas.

Mitigation measures relating to anthropogenic disturbances have been included in Section 9.3.

8.2.2 Colonization of Non-native and/or Invasive Species

Physical site disturbance may increase the likelihood that non-native and/or invasive flora species will be introduced to the surrounding vegetation communities. Invasive flora can establish in disturbed sites more efficiently than native flora and can then encroach into adjacent undisturbed areas.

As the buffer area currently consist of agricultural fields, colonization of invasive species areas is possible if left in their current state. In order to prevent the colonization of invasive species and maximize ecological function within the buffer area, planting of native species is recommended.

Mitigation measures relating to invasive species have been included in Section 9.3.

9.0 Mitigation and Opportunities for Enhancement

Mitigation involves the avoidance or minimization of developmental impacts through good design, construction practices and/or restoration and enhancement activities. The feasibility of mitigation options has been evaluated based on the natural features within and adjacent to the Study Area. The impact assessment highlighted six potential direct impacts, which include diversion of surface water flows; erosion and sedimentation of natural features; tree and vegetation removal; potential impacts to landform features; loss of or disturbance to wildlife and wildlife habitat; and removal of structures proving habitat for SAR.

A variety of mitigation techniques can be used to minimize or eliminate the above-mentioned impacts. These measures include a restoration/compensation planting plan, a wildlife impact mitigation plan, a SWM plan, erosion and sediment control plan and an environmental monitoring plan. Each mitigation measure is introduced below. Detailed mitigation measures will be finalized in consultation with the TRCA and Town of Caledon as part of the preliminary and detailed design of the development.

9.1 Integrated Stormwater Management Plan, Low Impact Design and Water Balance

Effective SWM measures are required for all new development projects within the Town of Caledon. One dry pond SWM facility exists in the subwatershed, to the west side of Airport Road, opposite the Study Area, which provides treatment to approximately 20% of Caledon East. Remaining areas were developed prior to requirements for SWM and run-off from those areas is discharging, untreated, into Centreville Creek (TRCA, 2008).

An FSR has been prepared by Schaeffers in September 2018 that includes a SWM plan for the proposed development. According to the FSR, A SWM 'wet pond' is proposed to provide water quantity and quality control for the majority of the development area. Due to the grading constraints, a portion of the development area in the south-southeast portion of the development area, adjacent to the valley, cannot drain by gravity to the proposed SWM pond. This area is proposed to be serviced through the use of underground storage and orifice control, LID infiltration (Schaeffers, 2017). Storm sewers are to be designed to accommodate the 10-year design storm if foundation drains are to be connected and 5-year design if they are not to be connected.

SWM Pond Drainage Area

The proposed SWM facility will provide a combination of water quality, erosion, and quantity control. For the SWM Pond drainage area, quality control will be provided by the SWM pond permanent pool.

Erosion control requirements in accordance with TRCA Guidelines have been calculated and provide in Section 5.4.2 of the FSR; the SWM Pond has been designed to the meet these requirements and mitigate potential erosion concerns with regards to *Tributary A*. Additional erosion threshold analysis by a Geomorphologist is anticipated at the Detail Design stage.

Further, within the SWM Pond drainage area, the majority of lots will be serviced with either front or back-yard Storm-Tech infiltration chambers (See FSR Figure 5-2). The Storm-Tech chambers have been sized to retain a runoff volume exceeding the total runoff generated by a 25 mm rain event, and they account for 3.94 ha of roof area. This proposed infiltration plan will assist with pond sizing, ground water table, water balance, and potential base flow contributions to the tributaries and wetlands.

LID Controlled Area

As previously mentioned, there is also an area referred to as the LID Controlled Area (Section 5.5) in the FSR. Due to grading constraints this cannot drain by gravity to the proposed SWM Pond. This area is divided into two similar systems, both comprising of back-yard Storm-Tech infiltration chambers and a super pipe system in combination with a perforated stretch for additional infiltration with orifice control. Both systems will have a treatment train approach for "enhanced" level treatment. Pre-treatment in both systems will be achieved through the installation of Catchbasin Shields and infiltration trenches. Catchbasin Shields are EVT approved to 50% TSS removed within the minor system.

System 1 has a slightly larger super pipe design, and approximately 120 m of the downstream length will be perforated with a gravel bed underneath to provide the required storage. Further details are provided in the FSR (September, 2018). In addition, as a precautionary measure, an Oil and Grit Separator (OGS) is proposed to further treat any excess drainage that may not infiltrate. The eastern outlet location of System 1 is provided on Figure 6 and in the FSR (east of Park Block 570).

System 2 has a slightly smaller super pipe design, and approximately 48 m of perforated pipe and infiltration trench with a gravel bed underneath to provide the required storage. Further details are provided in the FSR (September, 2018). In addition, as a precautionary measure, an Oil and Grit Separator (OGS) is proposed to further treat any excess drainage that may not infiltrate. The central outlet of System 2 is located in Park Block 571, and this outlet pipe connects to the realigned/existing outlet pipe which services the dry pond on the west side of Airport Road. The existing headwall will remain in place.

Storage calculations and Allowable Release Rates calculation for both Systems are provided in the FSR in accordance with TRCA guidelines which address potential erosion and ecological concerns of the receiving features. Additional erosion threshold analysis by a Geomorphologist is anticipated at the Detail Design stage.

Water Balance

An approach to calculating a water balance is presented in the FSR (September 2018) in order to determine the characteristics of water movement, including runoff and groundwater recharge under existing conditions. The objective of this water balance is to ensure the level of post-development infiltration within the subdivision meets the pre-development levels. The water balance analysis utilizes precipitation, evapotranspiration, infiltration, soil types, and land uses.

The results of the preliminary water balance show an annual infiltration deficit post-development of 42,559 m^3. This can be mitigated through the proposed use of Storm-Tech galleries, additional topsoil and disconnected roof leaders for a total post-development annual infiltration volume of 67,569 m^3/year. For a conservative analysis, this does not include the infiltration achieved through trenches below the box culverts/super pipes.

Refer to the FSR (Schaeffers, September 2018) for further details.

9.2 Erosion and Sediment Control Plan

Construction activity, especially operations involving the handling of earthen material, increases the availability of sediment for erosion and transport by surface drainage. In order to mitigate the adverse environmental impacts caused by the release of sediment-laden runoff into receiving watercourses, measures for erosion and sediment control are required for construction sites. This is an important component of land development that plays a large role in the protection of downstream watercourses and aquatic habitat. Control measures must be selected that are appropriate for the erosion potential of the site and it is important that they be implemented and modified on a staged basis to reflect the site activities. Furthermore, their effectiveness decreases with sediment loading and therefore, inspection and maintenance is required.

As mentioned in Section 8.1.4, the grade difference within the proposed development area is such that potential sedimentation of adjacent natural features to the southeast is possible as a result of the development activities. A preliminary grading plan designed in accordance with the Town of Caledon Design Criteria has been prepared by Schaeffers as part of the FSR for the development area. Due to changes in grading throughout the site, certain areas have been proposed for grading in order to better match the development area for various purposes including servicing, or to create transition between elevations at a natural stable slope (i.e., 3:1). This includes select areas within the first 10 m of the buffer (shown on Figure 6).The lots will be graded to allow a sufficient envelope to accommodate the homes, amenities, as well as the proposed LID techniques and SWM facilities. Refer to the FSR competed by Schaeffers in September 2018 for details related to the preliminary grading plan.

In addition, an Erosion and Sediment Control Plan will be developed as part of Detail Design for the proposed development. The plan may include, but is not limited to measure such as installation of

geotextile silt fences, rock check dams, ditch checks, temporary sediment ponds, designated topsoil stockpile areas, and cut-off swales and ditches to divert surface flows to the appropriate sediment control area. More specifically, the plan may include the following measures:

- Standard duty silt fencing (OPSD 219.110) and/ or other equivalent erosion and sediment controls should be installed around the perimeter of the work area to clearly demarcate the development area and prevent erosion and sedimentation into adjacent habitats. Erosion and sediment control measures should be monitored regularly to ensure they are functioning properly and if issues are identified should be dealt with promptly;
- Stockpiling of excavated material should not occur outside the delineated work area. If stockpiling is to occur outside of this area, silt fencing should be used to contain any spoil piles to prevent sedimentation into adjacent areas. Further, stockpiling of excavated materials will not occur within 30 m of watercourses;
- A spill response plan should be developed and implemented as required; and
- The use of silt socks, dewatering ponds, etc. should be implemented to avoid sedimentation and erosion in adjacent areas as required. If dewatering requires more than 50,000 L of water to be pumped per day, appropriate permits must be obtained from the Ministry of Environment and Climate Change prior to the dewatering.

9.3 Natural Heritage Feature Buffers

The proposed development area will be limited to the boundaries shown on Figure 6, with a buffer of greater than 30 m from the Widgett-Innis Lakes PSW Complex and approximately 30 m from the consolidated Significant Valleyland (top of bank) and Significant Woodland (dripline) staked limit, following the policies in the ORMCP. These limits were consolidated in the field during a staking exercise with TRCA, as shown in Figure 6.

Within the Greenbelt Plan area, the buffer is shown as a consolidated 10 m from Top of Bank (as staked by TRCA where appropriate (see Section 5.2.6), 10 m from valleylands (landform analysis), and 30 m from watercourses.

The buffer areas currently consists of active agricultural land, and therefore, no natural vegetation communities are present or at risk for impacts.

In order to off-set the minimal encroachment proposed within the buffer proposed mainly by the grading plan, enhanced landscaping and planting measures will be utilized to ensure successful survivorship of the buffer plantings. A summary of the Landscaping and Planting Plan is provide in Section 9.4, and more details will be prepared at Detail Design.

9.4 Landscaping and Planting Plan

The proposed development plan will require the removal of approximately 320 trees, ranging in size and health condition. To off-set the removal of trees from within the development, native species will be planted within the buffer area, naturalizing the current agricultural nature of lands within the buffer, and providing additional habitat plant and wildlife species. Compensation plantings of trees are generally based on the number of removals required to facilitate construction of the development. The number of trees to be compensated may be required at 2:1.

In addition, since areas of grading are proposed within the buffer, additional measures will be outlines in the Landscaping and Planting Plan to ensure the success of the planted species in those areas (i.e., increase topsoil depth, scarification, etc.).

Details of the buffer enhancement plantings will be outlined in a Landscaping and Planting Plan, to be prepared during Detail Design and may include, but are not limited to, the following recommendations:

- A mix of native deciduous and coniferous trees and shrubs;
- A mix of native low and tall deciduous shrubs; and
- A native seed mix recommended by suppliers for enhancement of early successional meadow habitats.

The following monitoring and maintenance measures may also be recommended for within the buffer areas and enhancement area:

- Removal of invasive tree and shrubs (i.e., Buckthorn), where applicable;
- Watering and weeding of newly planted areas as required for proper establishment of plantings; and
- Replacement of dead material from previous year's planting.

An Edge Management Plan may also be required where tree removal is proposed. This would be prepared through Detailed Design.

9.5 Wetland Compensation Plan

As mentioned in Section 5.2.4 wetland compensation will be required for an approximately 0.082 ha area of wetland previously removed by the previous farmer within the development area. This area will be compensated for at a 1:1 ratio within the Study Area. See Figure 5 for the proposed compensation area, to be confirmed during the Detailed Design stage. This location was selected based on the existing adjacent wetland unit and also due to the accessibility for required equipment, as the existing laneway will be used to prevent impacts to existing natural features.

In order to create this area of wetland, grading techniques (i.e, digging, trenching, etc.) will be used to generally match the adjacent wetland unit, therefore accessing groundwater inputs. The created wetland unit will then then supplemented with organic topsoil and wetland vegetation plantings. The details of the wetland creation will be established in consultation with the TRCA and finalized during detailed design. Following wetland creation, the unit will be monitored to record growth of plant species and establishment of wetland vegetation communities.

9.6 Wildlife Impact Mitigation Plan

Strategies to mitigate potential impacts to general wildlife prior to and during construction are proposed. These may include (but are not limited to):

- Clearing trees and vegetation outside the breeding bird season (April 1st to August 31st). Should any clearing be required during the breeding bird season, nest searches conducted by a qualified person must be completed 48 hours prior to clearing activities. If nests are found, work within 10 m of the tree should cease until the nest has fledged. If no nests are present, clearing may occur. This is in accordance with the federal *Migratory Birds Convention Act*;
- Schedule vegetation clearing and grading activities to avoid disturbance to breeding amphibians and other sensitive wildlife species where possible;
- Where possible, maximize the distance of construction equipment used from the woodland/wetland edge to avoid disturbing wildlife;
- Limit the use of lighting where possible. Avoid light effects entering the woodland/wetland (eliminate light trespass) where possible.
- Installation of wildlife exclusion fencing and escape routes, which direct wildlife away from the construction area and to more suitable habitat (e.g. PSW corridor);
- Visual monitoring for wildlife species and avoidance where encountered if possible;
- If necessary, have a qualified biologist monitor construction in the areas of potential wildlife habitat. If wildlife are found within the construction area they will be re-located to an area outside of the development into an area of appropriate habitat, as necessary;
- Construction crews working on site should be educated on local wildlife and take appropriate measures for avoiding wildlife; and
- Should an animal be injured or found injured during construction they should be transported to an appropriate wildlife rehabilitation center.

9.7 Environmental Monitoring Plan

The Environmental Monitoring Plan (EMP) will be carried out through the duration of construction activities on-site to ensure that the erosion and sediment control measures operate effectively and to monitor the potential impact, if any, upon the natural environment. The duration of construction is defined as the period of time from the beginning of earthworks until the site is stabilized. Site

stabilization is defined as the point in time when the roads have been paved, buildings have been built, lawns have been sodded and restoration plantings have been completed.

The EMP would consist of monitoring the erosion and sediment measures and the restoration/compensation plantings. Erosion and sediment control measures would be regularly monitored and they will require periodic cleaning (e.g. removal of accumulated silt), maintenance and/or re-construction. Inspections of all of the erosion and sediment controls on the construction site should be undertaken by a certified sediment and erosion control monitor. If damaged control measures are found they should be repaired and/or replaced promptly. Site inspection staff and construction managers should refer to the *Erosion and Sediment Control Inspection Guide* (2008) prepared by the Greater Golden Horseshoe Area Conservation Authorities. This guide provides information related to the inspection reporting, problem response and proper installation techniques.

The EMP will be implemented during active construction periods in the development area with the following frequency:

- On a bi-weekly basis; and/or,
- After every 10 mm or greater rainfall event.

Restoration planting and protected vegetation areas will require periodic monitoring to ensure that they are not impacted by adjacent development. Should any impacts be observed, necessary steps will be taken to ensure that the impacted vegetation is either restored or replaced.

10.0 Summary

This EIS was prepared for the proposed development located at 15717 Airport Road in the Town of Caledon. The EIS was required due to the presence of natural heritage features designated by the Town as Environmental Protection Zone and Natural Core Area of the ORMCP within the Study Area boundaries, and therefore, potential to be impacted by development activities. The findings of the biophysical inventory, which consisted of secondary source reviews supported by multiple field studies, are presented in this EIS.

The majority of lands within the proposed development area consist of agricultural fields. Significant Woodlands, Significant Valleylands, SWH and PSW within the ORM and Greenbelt will be protected from development, with establishment of appropriate buffers as per the policies of the ORMCP and Greenbelt Plan, along with enhancement through planting of native species within the buffer area. In addition, a Landform Conservation Plan is being prepared in order to determine if significant landform features are present within the Study Area, and to identify potential impacts and recommend mitigation measures to avoid potential negative impacts, in accordance with the ORM Technical Paper #4. Therefore, anticipated potential impacts of development are minimal.

Potential ecological impacts of development may include tree and vegetation removal, diversion of surface water flows, sedimentation of wetland and forest areas, and loss of potential wildlife habitat. These impacts will be avoided or minimized by implementing the mitigation, restoration, and management measures described in this report.

This EIS was prepared in general accordance with the Toronto and Region Conservation Authority (TRCA) Environmental Impact Statement Guidelines (October 2014), following the TOR established in consultation with the TRCA and agreed to through correspondence between Dillon and TRCA on March 15, 2017. Based on the information available to date and presented in this report, proposed development generally confers with the intent of the applicable policies outlines in Section 2.0 of this report.

Appendix A

Terms of Reference

MEMO

TO: Adam Miller, Toronto and Region Conservation Authority
FROM: Allen Benson, Dillon Consulting Limited
cc: Jordan Archer, Triple Crown Line Developments Inc.
DATE: February 2, 2017
SUBJECT: Environmental Impact Study Terms of Reference for the Triple Crown Line Developments Inc. property located at 15717 Airport Road in Caledon.
OUR FILE: 17-4928

Introduction

Dillon Consulting Limited (Dillon) has been retained by Triple Crown Line Developments Inc. (TCLD) to undertake environmental studies for a proposed residential development at 15717 Airport Road in Caledon. As such, TLCD and Dillon are taking a pro-active approach to environmental-first planning and undertaking the appropriate environmental studies that are required to complete an Environmental Impact Study (EIS) and utilizing the results in the planning of this property. The subject property is a parcel of land located on the east side of Airport Road, south of Walker Road. A figure outlining the location of the subject property is attached.

In keeping with the general policies of the Toronto and Region Conservation Authority (TRCA) Environmental Impact Statement Guidelines (2014), we have prepared the following Terms of Reference (TOR). Below, we present the TOR in a check-list format to ensure that the required work and/or studies are known and agreed to prior to the commencement of work, to facilitate a stream-lined and timely review process.

Terms of Reference

General Policies

☒ The EIS must be undertaken by a qualified professional in environmental or related sciences to the satisfaction of the Authority.

☒ A visit to the site may be required by the Authority prior to, during, or upon receipt of the EIS.

Note: A site visit was conducted by TRCA on September 14th, 2016 in which the Consolidated Top of Bank/Vegetation Limit was staked.

☒ The staking of significant natural features (i.e., woodlands, etc.) by the Authority occurred on September 14th, 2016.

Note: The Ministry of Natural Resources and Forestry (MNRF) and TRCA also staked wetland(s) within the woodland feature during the September 14th site visit. This information will be requested from the MNRF and included in the EIS.

Existing Conditions

☒ The existing conditions of the subject site must be clearly described and clearly mapped on aerial photographs.

☒ The description must include the zoning and all designations of all Official Plan(s) (OP) on the subject site. This includes any land use designations from other municipal planning documents, such as Secondary Plans.

☒ Land use designations from any other applicable planning documents (i.e., Oak Ridges Moraine Conservation Plan, Greenbelt Plan) must be clearly described and the limits identified in the mapping.

☒ The EIS shall identify the components of the Regional Greenlands System (should it be located on the subject lands). The boundaries of the Greenlands System shall be confirmed in the field by the proponent, mapped on a figure in the report and approved by the Authority and the planning authority.

☒ All designated environmental features (i.e., the Greenlands System or natural features identified in the OPs) must be identified in the mapping and described in the report. These features include provincial or regional Areas of Natural and Scientific Interest (ANSIs), Provincially and Locally Significant Wetlands (PSWs and LSWs), Environmentally Significant Areas (ESAs), etc.

☒ A description of the soils, landforms and surficial geology based on a review of available mapping and literature must be described in the report. Any staking done to date as well as the calculated hazard limits will be provided on constraints mapping. If available, topographical information will be provided on constraints mapping.

☒ Hydrological and hydrogeological resources and issues, including surface water features, recharge/discharge zones, groundwater quality and quantity, groundwater elevations and flow directions, and connections between groundwater and surface water features will be identified based on the information available from the consulting team.

☒ The vegetation communities must be identified using the Ecological Land Classification (ELC) system to vegetation type, where possible. The communities must be identified in the mapping, using the appropriate ELC codes, as well as described in the text. As a component of the ELC, a plant list must be included as an appendix. The list must include an analysis for the presence of federal, provincial, regional and/or watershed rare, threatened or endangered species. This should include information from the MNRF district office and NHIC.

☒ A single-season (summer) plant survey is required and must be included as an appendix. The list must include an analysis for the presence of federal, provincial, regional and/or watershed rare, threatened or endangered species. This should include information from the MNRF district office and NHIC.

☒ The EIS requires a breeding bird survey. The survey must be conducted during the breeding bird season at an appropriate time of day in appropriate weather conditions and by a qualified professional. A minimum of two surveys are required and they must follow generally accepted scientific protocols, not necessarily atlasing methods. A list of the breeding birds is required as an appendix. The list must include an analysis for the presence of federal or provincial rare, threatened or endangered species. Watershed rarity status shall be determined in conjunction with the Conservation Authority.

☒ The EIS requires a breeding amphibian/reptile survey. The survey must be conducted during the breeding amphibian season and by a qualified professional. For calling amphibians a minimum of three surveys are required. These surveys must span the full amphibian breeding season to ensure that the peak periods of activity for early and late breeding species are accounted for. For non-calling amphibians, appropriate methodology must be used. A list of the breeding amphibians is required as an appendix. The list must include an analysis for the presence of federal, provincial, threatened or endangered species. Watershed rarity status shall be determined in conjunction with the Conservation Authority.

☒ A fisheries assessment shall be provided due to the presence of potential suitable fish habitat as identified in the Greenlands System and confirmed on-site by the TRCA and MNRF. Existing data regarding fish species shall be obtained from TRCA and/or the MNRF and used for the fisheries assessment. The assessment shall include a description of watercourses or other fish habitat on and/or adjacent to the property (where site access is permitted).

Note: The only potential watercourses were identified within the Innis lands to the south of the subject property. These watercourses will be assessed as part of the EIS for the subject property, as requested by the client.

☐ The fisheries assessment will include community sampling through electrofishing and/or netting during the appropriate season, under a collection permit issued by the MNRF.

Note: Fish community sampling is not proposed. Fish dot records will be requested from the MNRF. If TRCA has fish community information, we request that it be provided.

☒ A Headwater Drainage Features Assessment is required for potential headwater drainage features within the Innis lands, to the south of the subject property, as per the *Evaluation, Classification, and Management of Headwater Drainage Features Guidelines* (TRCA & CVC, 2014).

☒ All incidental wildlife observed shall be reported on and listed in an appendix. The list must include an analysis for the presence of federal or provincial rare, threatened or endangered species. Watershed rarity status shall be determined in conjunction with the Conservation Authority.

☒ A functional assessment of the subject site describing the ecology of the natural heritage features and functions (including components of the natural heritage system) within and adjacent to the subject site should be provided. The functional assessment may include ecological function, wetland functions, natural heritage features and landscapes, benefits of importance to humans, and corridors and linkages, as required.

Evaluation of the Ecological Impacts

☒ Mapping (at a minimum) shall consist of the following:

a) All mapping must have a title, figure number, north arrow, legend and scale or scale bar.
b) A site location map that provides the regional or watershed context of the subject site.
c) The extent of the Greenlands System and its components must be clearly demarcated on an air photo base, if applicable.
d) The locations of all watercourses and waterbodies and an indication of their flow and thermal regimes.
e) Vegetation communities must be delineated and identified using ELC.
f) The location of any rare, threatened or endangered species and/or populations shall be identified, if appropriate.
g) The location of any important wildlife features (i.e., hibernacula, den, stick nest, etc.) shall be identified.

☒ The potential impacts to the features and functions of natural areas shall be identified and discussed.

☒ An assessment of the potential impact on wildlife at a local, watershed and provincial (if applicable) level shall be provided.

☒ In the case of significant natural features (as confirmed through field studies), the EIS must demonstrate that there is no development or site alteration within the feature with the exception of uses as specified in the OP and/or prior approvals. The EIS must determine appropriate buffers from significant natural features.

☒ If applicable, a description of the natural features proposed for removal shall be provided. The quantity of removal shall also be included.

☒ An assessment of the potential impact on the Greenlands System, including any Linkage areas that have been identified shall also be included.

Recommendations and Mitigation Measures

☒ Avoidance of any Greenlands System feature is the preferred approach to mitigation unless otherwise specified in the OP and/or prior approvals.

☒ Determine adequate buffers through the identification of the critical function and protection zones of any identified natural areas.

☒ Where avoidance of a feature is not feasible or possible, mitigation approaches/techniques must be provided. These may include edge management plans, buffer plantings, fencing, low impact designs (LID), etc.

☒ In cases where a Linkage area has been identified on a property, the EIS must demonstrate how it will be integrated into the proposed development plan.

☒ Recommendations for Best Management Practices during construction should be provided. This may include silt fencing, tree protection, fencing, identification of timing or seasonal constraints to construction or restoration, etc.

☒ Mitigation for negative impacts on the natural features or their ecological functions (or to achieve no net negative impact) may include, at the discretion of the planning authority in conjunction with the Conservation Authority, approaches to replace lost areas or functions. If acceptable, replacement shall, to the extent possible, occur within the same subwatershed as the proposed development or site alteration. The appropriate amount of replacement will be determined through discussions with the Conservation Authority and the planning authority and will be agreed to by all parties in writing.

☒ If monitoring is required, the details of a monitoring program must be agreed to in writing by the Authority, planning authority and other parties.

Conclusions

The EIS must demonstrate the following:

☒ Conformity with the policies and requirements of the Town of Caledon and the Region of Peel Official Plans.

☒ Conformity with the policies and requirements of other applicable planning documents (i.e., ORMCP, Greenbelt Plan, etc.)

☒ Conformity with the requirements of the TRCA.

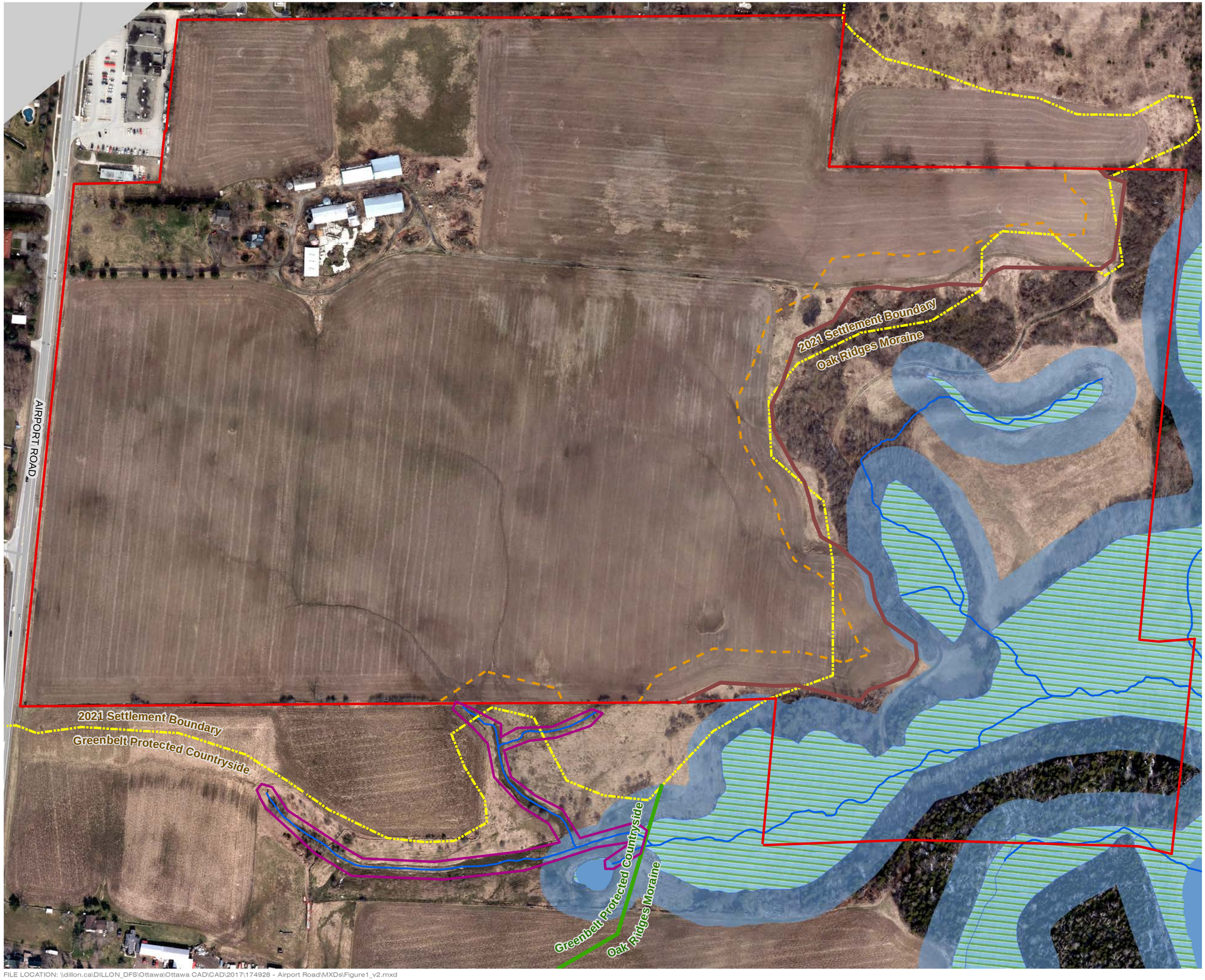
Species at Risk

Should any Species at Risk or their habitat be identified during the EIS process and confirmed in the field, the MNRF will be notified and we will address any species at risk requirements as outlined in the *Endangered Species Act, 2007* under separate cover with MNRF. The TRCA will be informed of MNRF approvals that are acquired.

Information Request

At this time we are requesting any of the following background information, if available:

- watercourse/drain classifications and thermal stream classifications
- fish community information
- natural environment studies in and/or adjacent to the subject property
- regionally or locally significant/rare flora, fauna, vegetation communities
- any additional natural environment data you may have for the indicated area
- GIS Mapping
    - regulation limits,
    - floodplain mapping.



15717 AIRPORT ROAD, CALEDON

PROJECT LOCATION

- Property Line
- Road
- Oak Ridges Moraine/Greenbelt Boundary
- 2021 Settlement Boundary
- Consolidated Top of Bank/Vegetation Limit (as staked by TRCA/MNRF Sept. 14, 2016)
- 30m Setback from Consolidated Top of Bank/Vegetation Limit
- Watercourse (Base Mapping)
- Waterbody
- Wetlands
- 30m Wetland Buffer
- Stream Assessment Area

0 25 50 100 m

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, TRCA

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928
STATUS: DRAFT
DATE: 2017-01-27

FILE LOCATION: \\dillon.ca\DILLON_DFS\Ottawa\Ottawa CAD\CAD\2017\174928 - Airport Road\MXDs\Figure1_v2.mxd

Appendix B

MNRF Correspondence

Ministry of
Natural Resources
and Forestry
Aurora District Office
50 Bloomington Road
Aurora, Ontario L4G 0L8

Ministère des
Richesses naturelles
et des Forets

Telephone: (905) 713-7400
Facsimile: (905) 713-7361

Ontario

May 1, 2017

Whitney Moore
Dillon Consulting Limited
177 Colonnade Road South, Suite 101
Ottawa, ON K2E 7J4
613-745-2213 ext. 3040
WMoore@dillon.ca

Re: 15717 Airport Road, Caledon

Dear Whitney Moore,

In your email of February 17, 2017 you requested information regarding the above location. Apologies for the delay.

Species at risk recorded in the vicinity include Butternut (endangered), Bobolink (threatened), Chimney Swift (threatened), Eastern Meadowlark (threatened), Snapping Turtle (special concern), Eastern Wood-pewee (special concern) and Wood Thrush (special concern). There is potential for endangered bats (i.e., Eastern Small-footed Myotis, Little Brown Myotis, Northern Myotis, Tri-colored Bat) in cavities. The eastern portion of the property contains part of the provincially significant Widgett-Innis Lakes Wetland Complex, significant woodlands and part of the Innis-Gibson Lakes Kettles candidate life science Area of Natural and Scientific Interest. A map of available fish dot information is attached if you wish to investigate further.

Absence of information provided by MNRF for a given geographic area, or lack of current information for a given area or element, does not categorically mean the absence of sensitive species or features. Many areas in Ontario have never been surveyed and new plant and animal species records are still being discovered for many localities. Appropriate inventory work is needed depending on the undertakings proposed. Approval from MNRF may be required if work you are proposing could cause harm to any species that receive protection under the *Endangered Species Act 2007*.

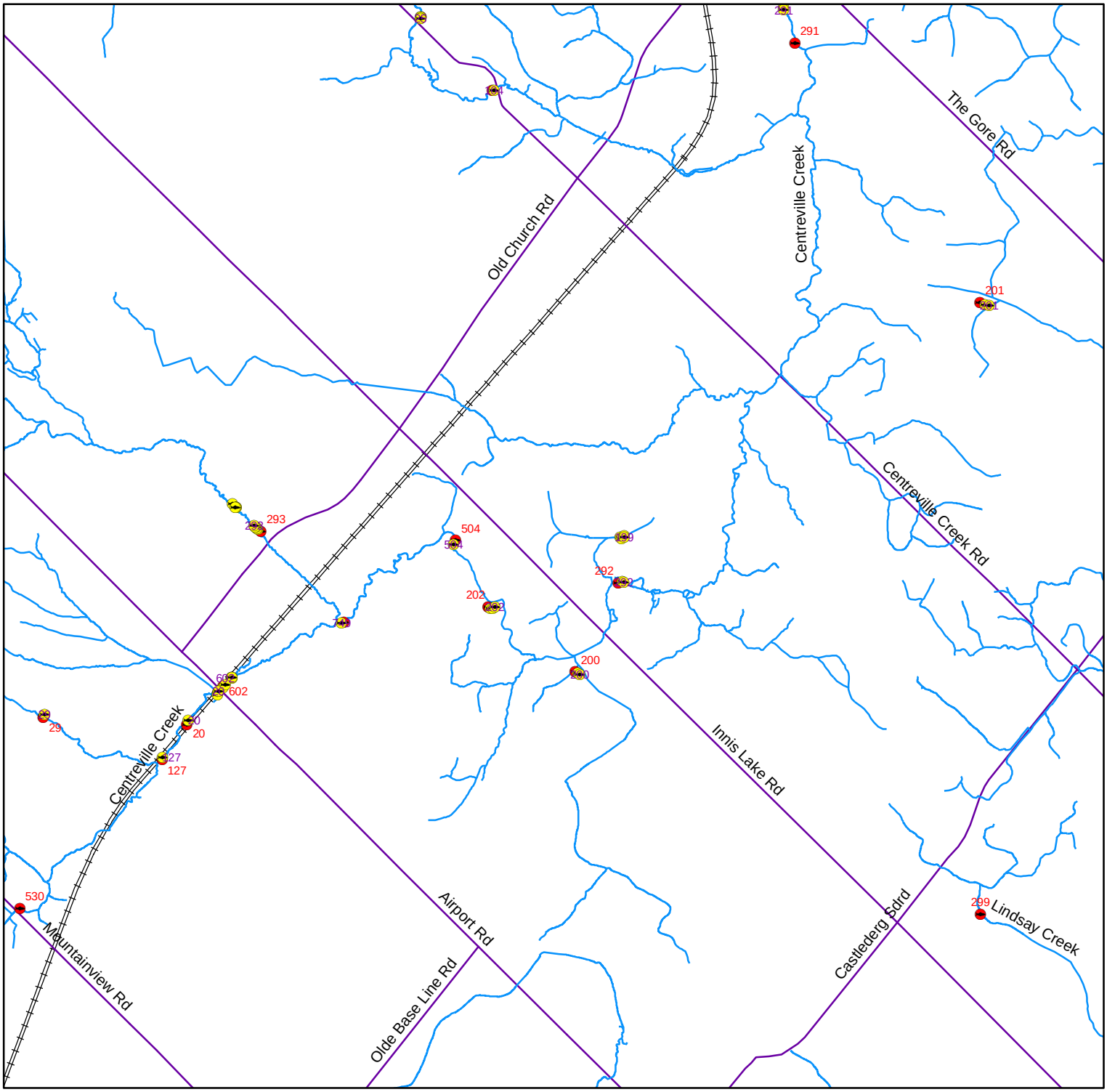
Species at risk information is highly sensitive and is not intended for any person or project unrelated to this undertaking. Please do not include any specific sensitive information in reports that will be available for public record. As you complete your fieldwork in these areas, please report all information related to any species at risk to our office. This will assist with updating our database and facilitate early consultation regarding your project.

If you have any questions or comments, please do not hesitate to contact ESA.aurora@ontario.ca or Bohdan.Kowalyk@Ontario.ca.

Sincerely,

B. Kowalyk

Bohdan Kowalyk, R.P.F.
Technical Specialist, Aurora District, Ontario Ministry of Natural Resources and Forestry



Legend

- Survey Point
- fishdots_Aurora
- Watercourse_Virtual_Segment
- Roads_Major2
- Roads_Major1
- Aurora_Railway

0 0.25 0.5 1 Kilometers

N W E S

Map Created

SOURCE OF INFORMATION

Information provided by the Ministry of Natural Resources & Forestry district office in Aurora.
Ministry of Natural Resources & Forestry- Aurora District 50 Bloomington Road West, Aurora, ON L4G 0L8

Base information derived from the Ontario Base Map, 1983 at a scale of 1:10,000 and the Natural Resources Values Information System (NRVIS).

NOTE

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should be viewed as illustrative only. Do not rely on it as being a precise indicator of routes, locations of features, nor as a guide to navigation.

For detailed information on natural features such as their location, size or status, the individual files held by the Aurora district office of the Ministry of Natural Resources & Forestry should be consulted.

Imagery capture date Spring 2013. Copyright, J.D.Barnes and Land Information Ontario.

PUBLICATION

Printed in Ontario, Canada
May, 2014.

Cartography by Aurora District Geomatics.

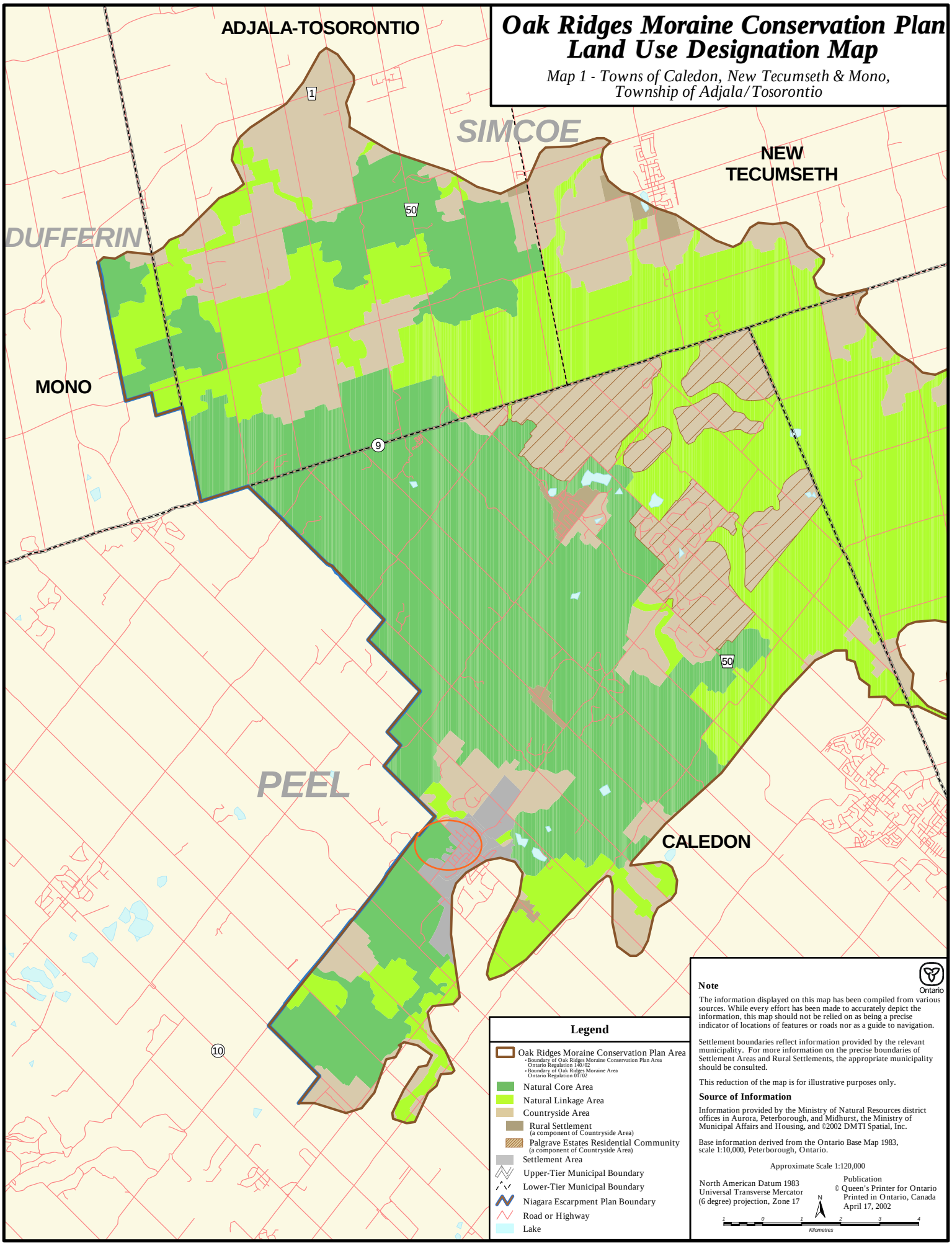
Universal Transverse Mercator (6 degree) projection, Zone 17. North American Datum 1983

Appendix C

Background Mapping

Oak Ridges Moraine Conservation Plan
Land Use Designation Map

Map 1 - Towns of Caledon, New Tecumseth & Mono, Township of Adjala/Tosorontio



Legend

- Oak Ridges Moraine Conservation Plan Area
  - Boundary of Oak Ridges Moraine Conservation Plan Area Ontario Regulation 140/02
  - Boundary of Oak Ridges Moraine Area Ontario Regulation 01/02
- Natural Core Area
- Natural Linkage Area
- Countryside Area
- Rural Settlement (a component of Countryside Area)
- Palgrave Estates Residential Community (a component of Countryside Area)
- Settlement Area
- Upper-Tier Municipal Boundary
- Lower-Tier Municipal Boundary
- Niagara Escarpment Plan Boundary
- Road or Highway
- Lake

Ontario

Note

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations of features or roads nor as a guide to navigation.

Settlement boundaries reflect information provided by the relevant municipality. For more information on the precise boundaries of Settlement Areas and Rural Settlements, the appropriate municipality should be consulted.

This reduction of the map is for illustrative purposes only.

Source of Information

Information provided by the Ministry of Natural Resources district offices in Aurora, Peterborough, and Midhurst, the Ministry of Municipal Affairs and Housing, and ©2002 DMTI Spatial, Inc.

Base information derived from the Ontario Base Map 1983, scale 1:10,000, Peterborough, Ontario.

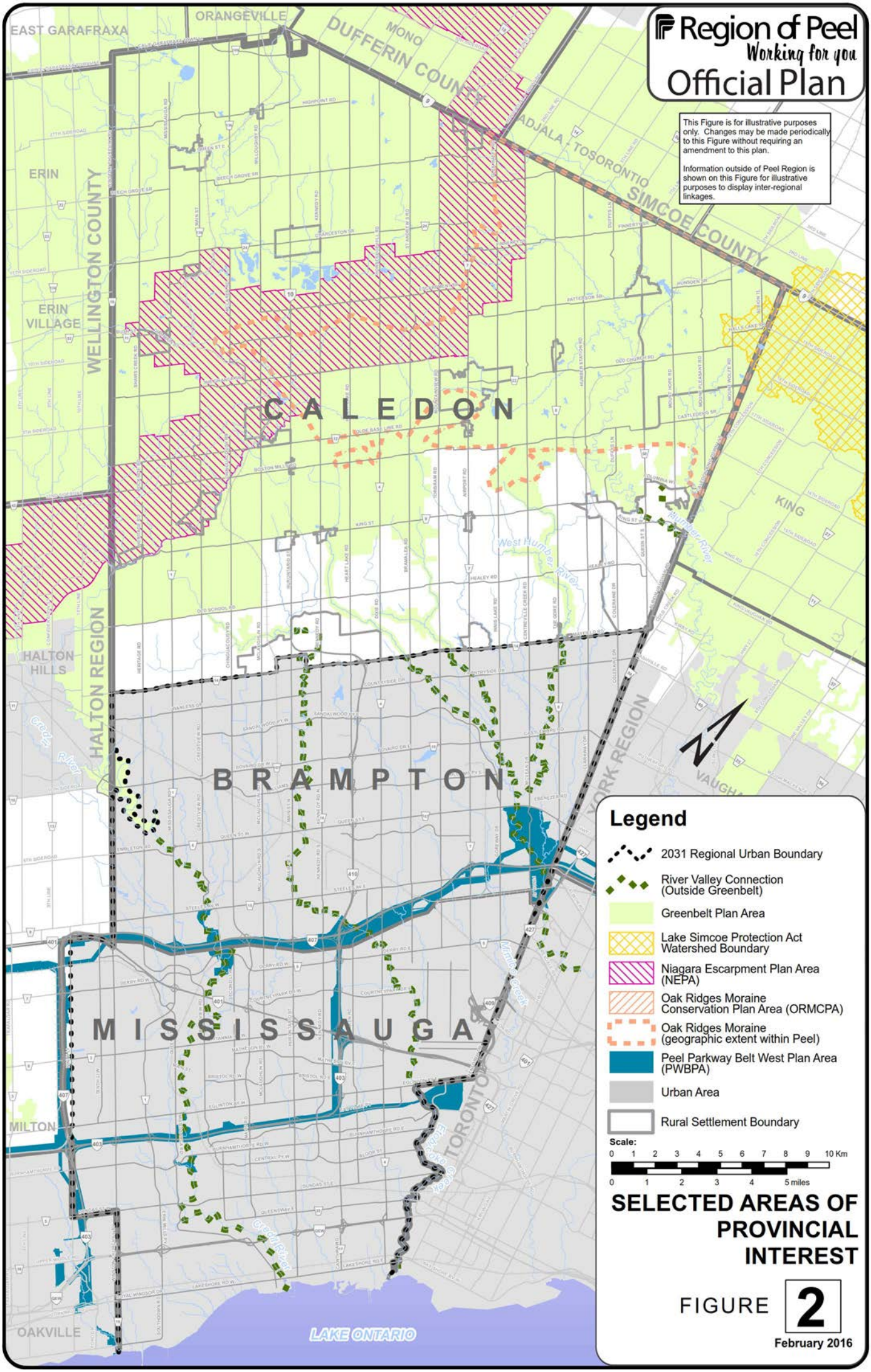
Approximate Scale 1:120,000

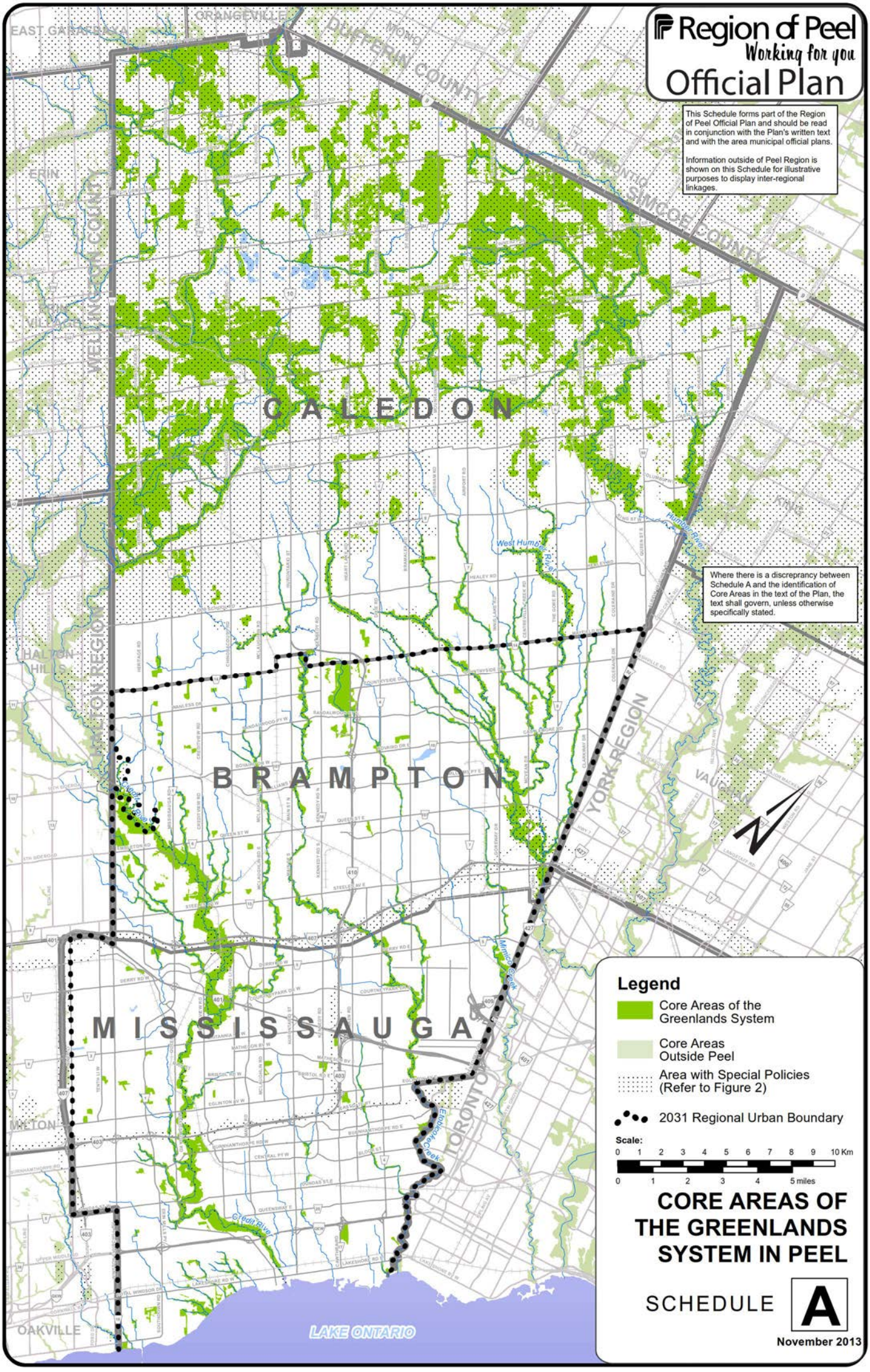
North American Datum 1983
Universal Transverse Mercator
(6 degree) projection, Zone 17

Publication
© Queen's Printer for Ontario
Printed in Ontario, Canada
April 17, 2002

N

1 0 1 2 3 4
Kilometres


Region of Peel
Working for you
Official Plan
This Figure is for illustrative purposes only. Changes may be made periodically to this Figure without requiring an amendment to this plan.
Information outside of Peel Region is shown on this Figure for illustrative purposes to display inter-regional linkages.
EAST GARAFRAXA
ORANGEVILLE
MONO
DUFFERIN COUNTY
ADJALA-TOSORONTIO
SIMCOE COUNTY
ERIN
WELLINGTON COUNTY
ERIN VILLAGE
CALEDON
KING
HALTON REGION
HALTON HILLS
BRAMPTON
YORK REGION
MISSISSAUGA
MILTON
OAKVILLE
TORONTO
LAKE ONTARIO
West Humber River
Humber River
Credit River
Etobicoke Creek
Mimico Creek
Legend
2031 Regional Urban Boundary
River Valley Connection (Outside Greenbelt)
Greenbelt Plan Area
Lake Simcoe Protection Act Watershed Boundary
Niagara Escarpment Plan Area (NEPA)
Oak Ridges Moraine Conservation Plan Area (ORMCPA)
Oak Ridges Moraine (geographic extent within Peel)
Peel Parkway Belt West Plan Area (PWBPA)
Urban Area
Rural Settlement Boundary
Scale:
0 1 2 3 4 5 6 7 8 9 10 Km
0 1 2 3 4 5 miles
SELECTED AREAS OF PROVINCIAL INTEREST
FIGURE 2
February 2016


Region of Peel
Working for you
Official Plan
This Schedule forms part of the Region of Peel Official Plan and should be read in conjunction with the Plan's written text and with the area municipal official plans.
Information outside of Peel Region is shown on this Schedule for illustrative purposes to display inter-regional linkages.
Where there is a discrepancy between Schedule A and the identification of Core Areas in the text of the Plan, the text shall govern, unless otherwise specifically stated.
CALEDON
BRAMPTON
MISSISSAUGA
DUFFERIN COUNTY
SIMCOE COUNTY
WELLINGTON COUNTY
HALTON REGION
YORK REGION
TORONTO
ORANGEVILLE
ERIN
OAKVILLE
MILTON
LAKE ONTARIO
West Humber River
Humber River
Mimico Creek
Etobicoke Creek
Credit River
Legend
Core Areas of the Greenlands System
Core Areas Outside Peel
Area with Special Policies (Refer to Figure 2)
2031 Regional Urban Boundary
Scale:
0 1 2 3 4 5 6 7 8 9 10 Km
0 1 2 3 4 5 miles
CORE AREAS OF THE GREENLANDS SYSTEM IN PEEL
SCHEDULE A
November 2013

Region of Peel

Working for you

Official Plan

This Schedule forms part of the Region of Peel Official Plan and should be read in conjunction with the Plan's written text and with the area municipal official plans.

Information outside of Peel Region is shown on this Schedule for illustrative purposes to display inter-regional linkages.

Legend

- Urban Growth Centre (As defined by Mississauga and Brampton)
- Built-up Area
- Settlement with Undelineated Built Boundary
- Designated Greenfield Area
- Palgrave Estate Residential Community
- Agricultural and Rural Area
- Urban Area outside Peel Region
- Greenbelt
- Ninth Line Lands *
- Municipal Boundary
- Regional Boundary
- Regional Urban Boundary

* These lands are identified in the Region of Halton Official Plan as the Ninth Line Corridor Policy Area. Currently, the policies of the Region of Halton and the Town of Milton official plans apply to these lands. A future amendment will bring these lands into conformity with the Region of Peel Official Plan.

Scale:

0 1 2 3 4 5 6 7 8 9 10 Km

0 1 2 3 4 5 miles

THE GROWTH PLAN POLICY AREAS IN PEEL

SCHEDULE **D4**

October 2015

Region of Peel
Working for you

Official Plan

This Schedule forms part of the Region of Peel Official Plan and should be read in conjunction with the Plan's written text and with the area municipal official plans.

Information outside of Peel Region is shown on this Schedule for illustrative purposes to display inter-regional linkages.

Legend

- Greenbelt Area *
- Protected Countryside
- Natural Heritage System
- Rural Service Centre
- Village/Industrial-Commercial Centre
- Hamlet
- Niagara Escarpment Plan Area
- Oak Ridges Moraine Plan Area
- Settlement Areas Outside the Greenbelt
- River Valley Connections Outside the Greenbelt
- Ninth Line Lands **

* As identified in Ontario Regulation 59/05

** These lands are identified in the Region of Halton Official Plan as the Ninth Line Corridor Policy Area. Currently, the policies of the Region of Halton and the Town of Milton official plans apply to these lands. A future amendment will bring these lands into conformity with the Region of Peel Official Plan.

Scale:

0 1 2 3 4 5 6 7 8 9 10 Km

0 1 2 3 4 5 miles

GREENBELT PLAN AREA LAND USE DESIGNATIONS

SCHEDULE **D3**

February 2016

Schedule D
CALEDON EAST LAND USE PLAN

TOWN OF CALEDON

- Low Density Residential
- Medium Density Residential
- Special Residential
- Policy Area - Residential
- General Commercial
- Special Study Area
- Flood Potential Study Area
- Institutional
- Special Use Area
- Environmental Policy Area
- Open Space/Institutional Policy Area
- Open Space Policy Area
- Oak Ridges Moraine Conservation Plan Area
- 2021 Settlement Boundary
- Open Space Link
- Conceptual Vehicle Connection
- Caledon Trailway
- Conceptual Parkette Location
- Conceptual Neighbourhood Park Location
- Gateway Feature
- Regional Road
- Local Road

Commercial Core Area

South Commercial Area

See Section 6.2.13.3.1 h) i)

Base Data Source: Town of Caledon

0 50 100 200 300 400 500 m

THE GRANGE SIDE RD
HUNTSMILL DR
MCKEE DR
PRINCE ANDREW DR
GEORGE CRES
JOSEPH CT
MARILYN ST
MCKEE DR S
WALKER RD E
WALKER RD W
FILTON RD
PUTNEY DR
MILES DR
OCEAN S
POND CT
MCCANDLESS CT
PAISLEY GREEN AVE
BOYCES CREEK CT
ATCHISON DR
FALLIS CR
ANTRIM CT
OLD CHURCH RD
GREER ST
LITTLEBROOK LN
BORLAND CRES
OLIVERS LN
COLLEEN C.RES
IVAN AVE
ELLA ST
PARSONS AVE
MAPLE AVE
CEDAR ST
EMMA ST
ROBERT CARSON DR
MOUNTAINVIEW RD
Centreville Cr.
LARRY ST
VALLEYGREEN CRES
MOUNTCREST RD
MARION ST
JEAN ST
ORSI RD
VALEWOOD DR
HILLTOP DR
AIRPORT RD
DAMASCUS DR
MAN O WAR CT
SUMMERGATE CT
CRANSTON DR
INNIS LAKE RD
Centreville Cr.
Widgett Lake
Innis Lake
OAK RIDGES MORAINE
A
B
C
D
7
22

SAVED: 2 April 2018
FILE: S:\POLICY SECTION\GIS\official_plan\mxd\9-april_2018
SAVED BY: bloverock

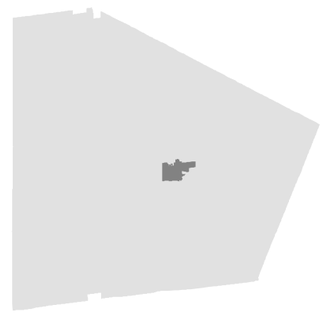
TOWN OF CALEDON

Figure 16

CALEDON EAST SECONDARY PLAN

EPA & SUPPORTIVE NATURAL SYSTEMS

- Supportive Natural Systems & Linkages (revised November 1999)
- Environmental Policy Area (revised November 1999)
- Study Area Boundary
- 2021 Settlement Boundary
- Lot & Concession Line
- Caledon Trailway
- Regional Road
- Local Road



Base Data Source: Town of Caledon

0 50 100 200 300 400 500 m

PATTERSON SIDE RD
THE GRANGE SIDE RD
OLD CHURCH RD
OLDE BASE LINE RD
CASTLEDERG SIDE RD
BOSTON MILLS RD
HORSESHOE HILL RD
ST ANDREW'S RD
MOUNTAINVIEW RD
AIRPORT RD
CENTREVILLE CREEK RD
INNIS LAKE RD
TORBRAM RD
BRAMALEA RD
DIXIE RD
7
22
12
4

SAVED: 2 April 2018

FILE: S:\POLICY SECTION\GIS\official_plan\mxd\9-april_2018

SAVED BY: bloverock

Schedule A

TOWN OF CALEDON LAND USE PLAN

The Town of Orangeville has undertaken studies, which have not been supported by the Region of Peel and the Town of Caledon, relating to the possibility of an expansion of the Orangeville settlement area into its neighbouring municipalities, including the Town of Caledon

Refer to OPA #150
See Section 5.2.3.2
See Section 5.2.3.7
Refer to Explanatory Notes of the Official Plan
Refer to OPA #161/124
Refer to OPA #163
Refer to OPA #133
See Section 3.2.4.16
For details of this area refer to the Caledon Village Land Use Plan Schedule "E"
Refer to OPA #98
Refer to OPA #171
Reddington Retirement Community
For details of this area refer to the applicable Palgrave Estate Residential Community Schedules "G, H, & I"
Refer to OPA #122
Refer to OPA #241
Refer to OPA #210
Refer to OPA #217
Refer to OPA #156
For details of this area refer to the Caledon East Land Use Plan Schedule "D"
Bolton Golf Course Estate Residential
Refer to OPA #234
Refer to OPA #195
Refer to OPA #65
For details of this area refer to Inglewood & Area Land Use Plan Schedule "M"
For details of this area refer to Sandhill Secondary Plan Schedule "T"
Refer to OPA #227
Terra Cotta Special Residential Area
See Section 5.1.3.1.5
For details of this area refer to Victoria Business Park Land Use Plan Schedule "R"
For details of this area refer to Bolton Land Use Plan Schedule "C"
Refer to OPA #148
Refer to OPA #2
For details of this area refer to Tullamore Secondary Plan Schedule "N"
Refer to OPA #101 and OPA #232
For details of this area refer to Schedule B-2 Mayfield West Phase 2 Secondary Plan Land Use Plan
For details of this area refer to Mayfield West Land Use Plan Schedule "B"

Alton
Melville
Caledon Village
Cataract
Belfountain
Inglewood
CALEDON EAST
Mono Mills
Mono Road
Claude
Cheltenham
Campbells Cross
Victoria
Terra Cotta
Sandhill
BOLTON
Palgrave
Albion
Tullamore
Wildfield
MAYFIELD WEST
Tottenham
Nobleton

- General Agricultural Area
- Prime Agricultural Area
- Rural Lands
- Extractive Industrial Area
- Waste Management Area
- Open Space Policy Area
- Environmental Policy Area
- Estate Residential Area
- Retirement Community Area
- Settlement Area
- Mayfield West Study Area Boundary
- Boundary of Greenbelt Plan Area
- Oak Ridges Moraine Conservation Plan Area
- Niagara Escarpment Plan Area

- Provincial Road
- Regional Road
- Local Road
- Railway
- Caledon Trailway

Base Data Source: Town of Caledon

0 0.5 1 2 3 4 5 km

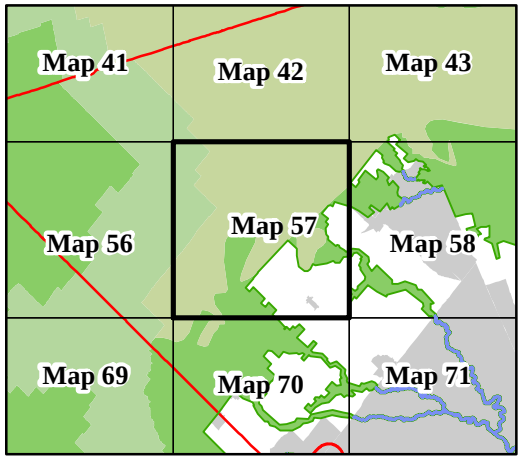
SAVED: 2 April 2018

FILE: S:\POLICY SECTIONGIS\official_plan\mxd\9-april_2018

SAVED BY: bloverock

April 2018 Office Consolidation

greenbelt



LEGEND

Ontario

- Greenbelt Area*
  - Protected Countryside
    - Natural Heritage System
    - Towns / Villages
  - Urban River Valleys
  - Niagara Escarpment Plan Area
  - Oak Ridges Moraine Area
- External Connections
- Settlement Areas Outside the Greenbelt
- Upper Tier Municipal Boundaries
- Lower & Single Tier Municipal Boundaries
- Lots and Concessions
- Major Road or Highway
- Minor Road
- F.N. First Nations

The information displayed on this map has been compiled from various sources. While every effort has been made to accurately depict the information, this map should not be relied on as being a precise indicator of locations of features or roads nor as a guide to navigation.

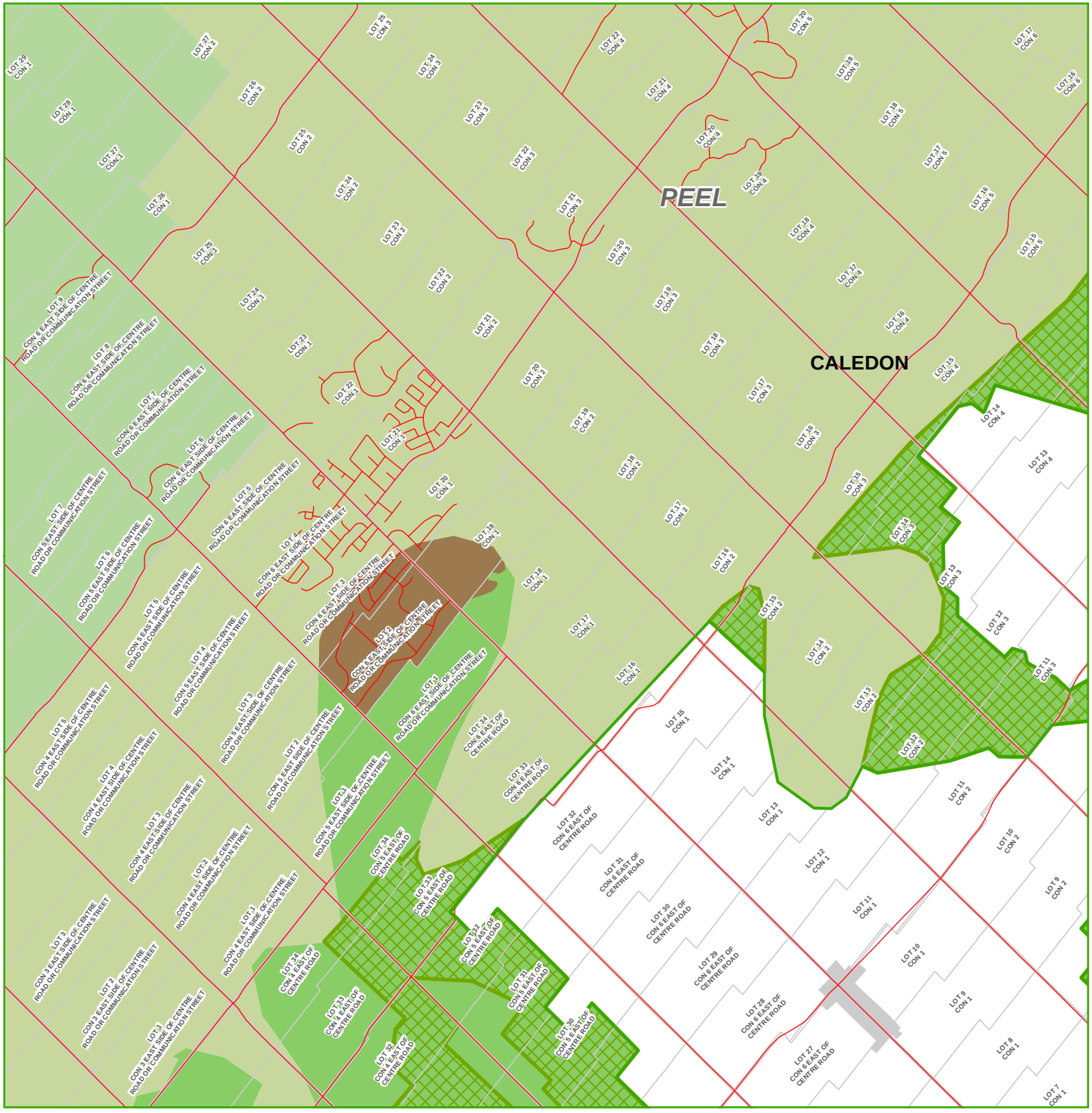
Settlement boundaries generally reflect information provided by the relevant municipality. For precise boundaries and locations of Settlement Areas (Greenbelt Towns/Villages and Hamlets) the appropriate municipalities should be consulted.

Source of Information:
Produced by and using data sources from the Ministry of Municipal Affairs, Ministry of Natural Resources and Forestry and the Ministry of Agriculture, Food and Rural Affairs.

Projection: UTM Zone17 NAD83

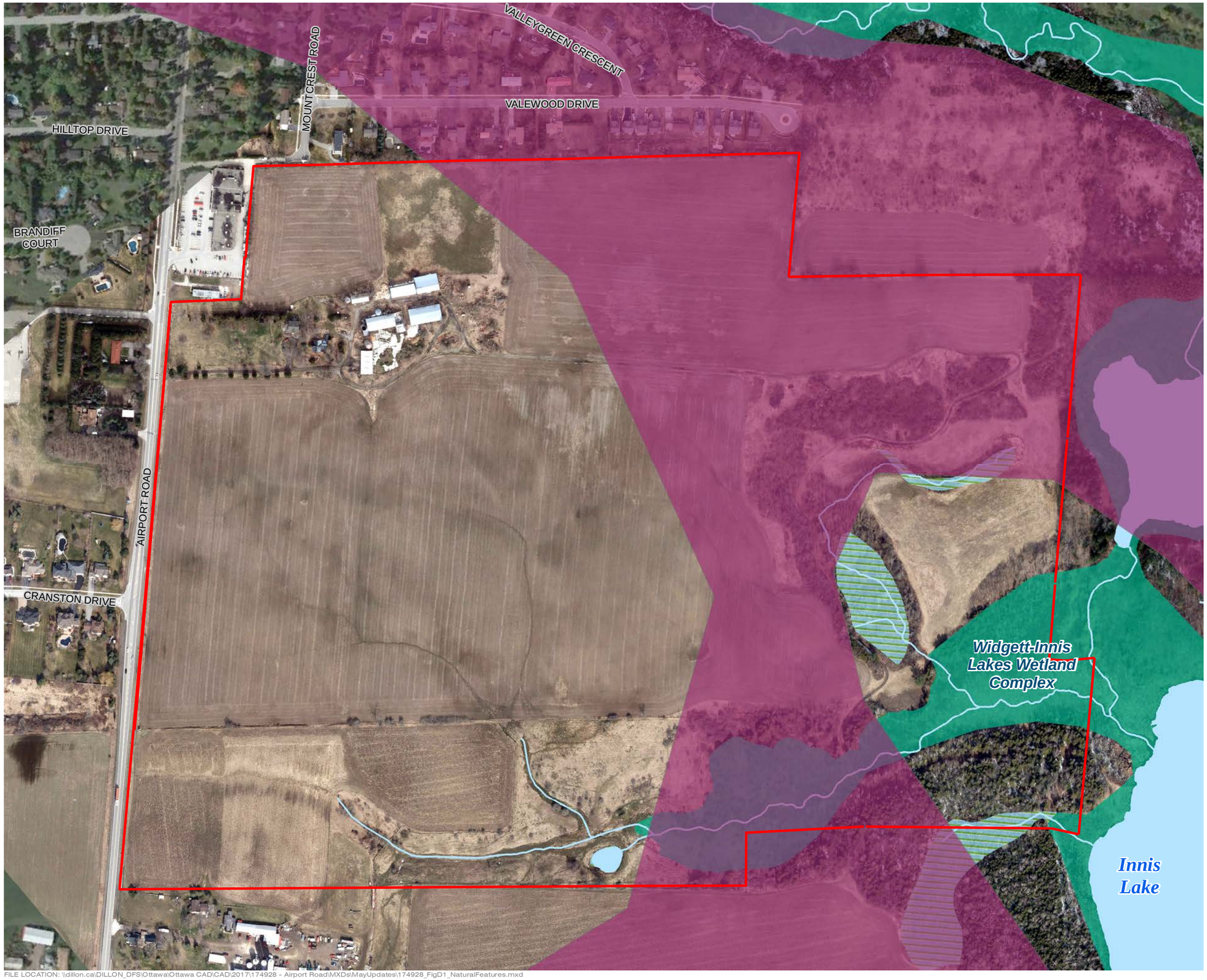
* Ontario Regulation 59/05, as amended.

0 0.25 0.5 1 1.5 2
Kilometres



Appendix D

Landform Conservation Plan Figures



TRIPLE CROWN LINE DEVELOPMENTS

15717 Airport Road, Caledon

LANDFORM CONSERVATION FEATURE ANALYSIS - NATURAL FEATURES

FIGURE D1

LEGEND

- Study Area
- Watercourse
- Waterbody
- Unevaluated Wetland
- Provincially Significant Wetland

Oak Ridges Moraine Conservation Plan

- Landform Conservation Area Category 2

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

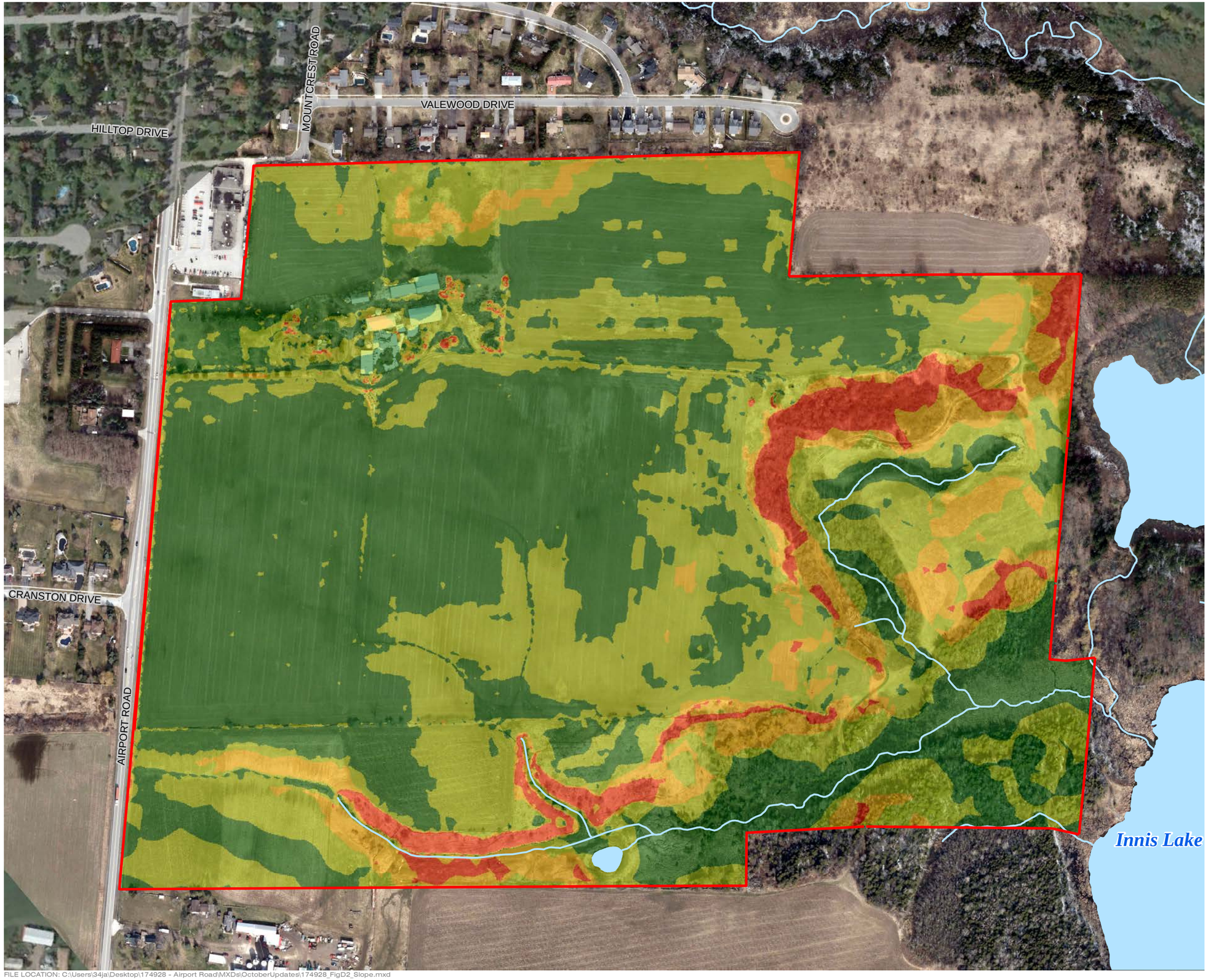
DILLON CONSULTING

PROJECT: 17-4928

STATUS: DRAFT

DATE: 2017-06-05

FILE LOCATION: \\dillon.ca\DILLON_DFS\Ottawa\Ottawa CAD\CAD\2017\174928 - Airport Road\MXDs\MayUpdates\174928_FigD1_NaturalFeatures.mxd



TRIPLE CROWN LINE DEVELOPMENTS

15717 Airport Road, Caledon

LANDFORM CONSERVATION FEATURE ANALYSIS - SLOPE

FIGURE D2

LEGEND

- Study Area
- Watercourse
- Waterbody

Slope (%)

- 0.001 - 5
- 5.001 - 15
- 15.001 - 25
- > 25

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

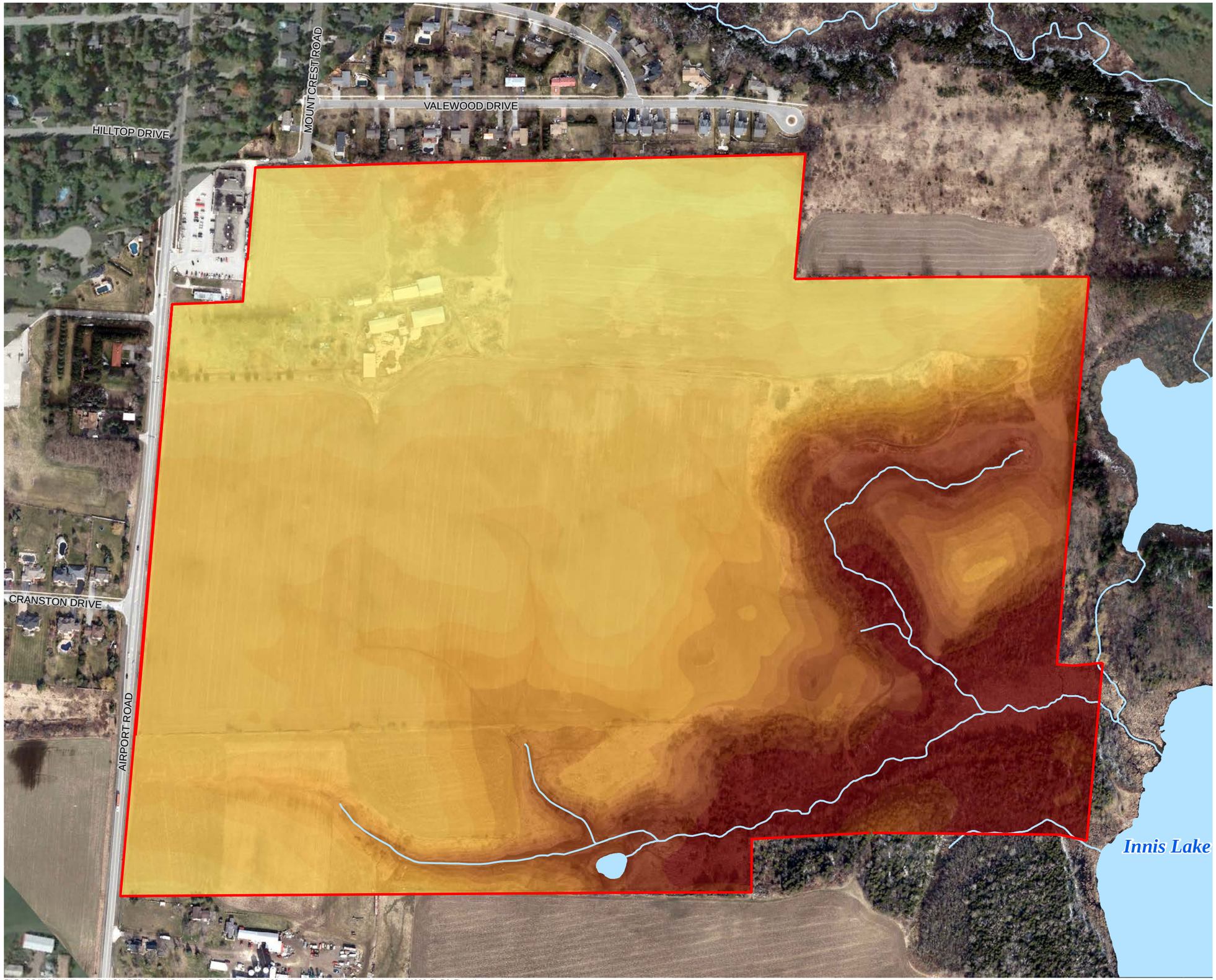
DILLON CONSULTING

PROJECT: 17-4928

STATUS: DRAFT

DATE: 10/26/2017

FILE LOCATION: C:\Users\34ja\Desktop\174928 - Airport Road\MXDs\OctoberUpdates\174928_FigD2_Slope.mxd



TRIPLE CROWN LINE DEVELOPMENTS

15717 Airport Road, Caledon

LANDFORM CONSERVATION FEATURE ANALYSIS - ELEVATION

FIGURE D3

LEGEND

- Study Area
- Watercourse
- Waterbody

Elevation (m)

- 279.64 - 282
- 282.01 - 284
- 284.01 - 286
- 286.01 - 288
- 288.01 - 290
- 290.01 - 292
- 292.01 - 294
- 294.01 - 296
- 296.01 - 298
- 298.01 - 300
- 300.01 - 302
- 302.01 - 304
- 304.01 - 306
- 306.01 - 308
- 308.01 - 310
- 310.01 - 312
- 312.01 - 314

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

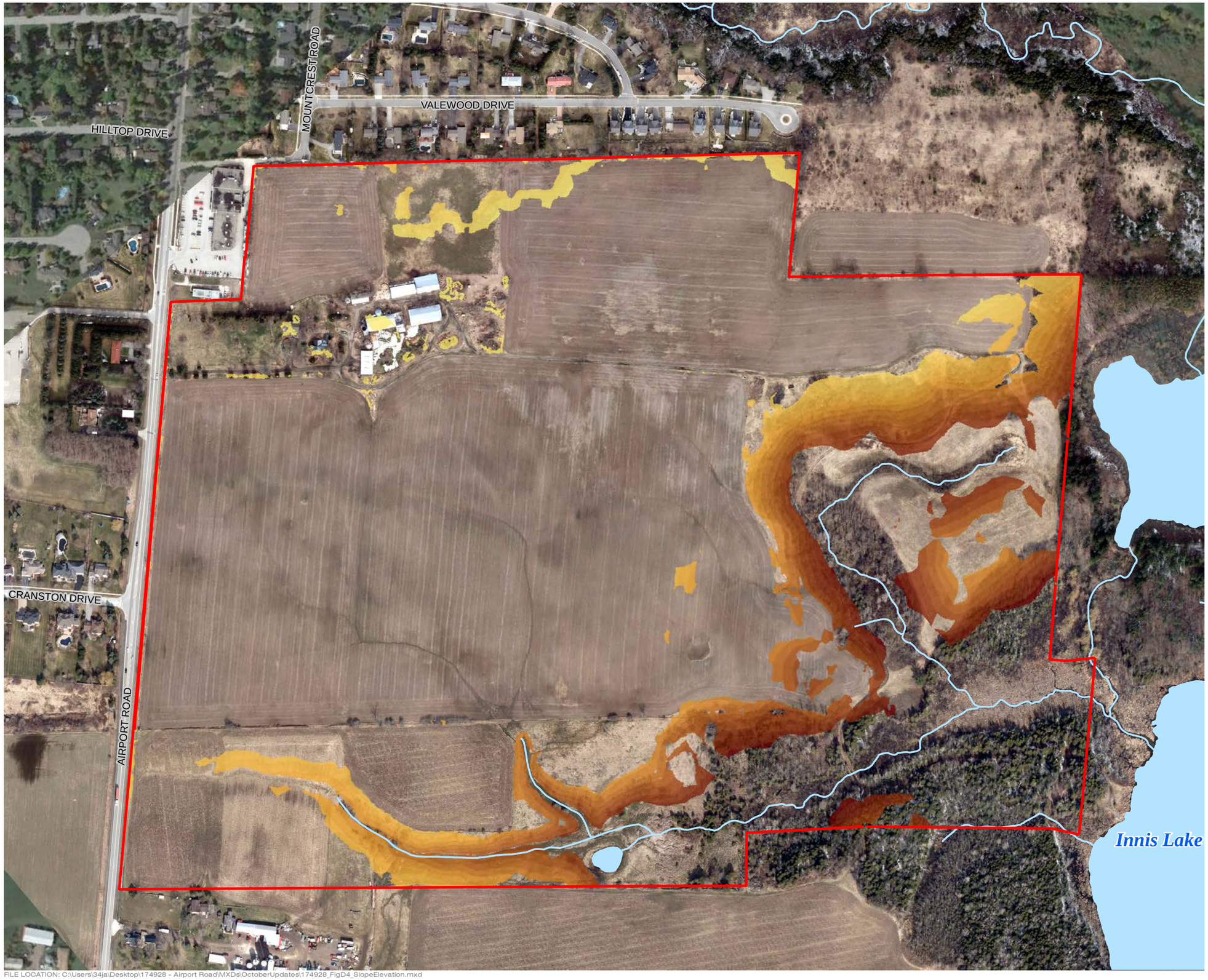
DILLON CONSULTING

PROJECT: 17-4928

STATUS: DRAFT

DATE: 2017-06-05

FILE LOCATION: \\dillon.ca\DILLON_DFS\Ottawa\Ottawa CAD\CAD\2017\174928 - Airport Road\MXDs\MayUpdates\174928_FigD3_Elevation.mxd



TRIPLE CROWN LINE DEVELOPMENTS
15717 Airport Road, Caledon

LANDFORM CONSERVATION FEATURE ANALYSIS - SLOPE AND ELEVATION
FIGURE D4

LEGEND

- Study Area
- Watercourse
- Waterbody

Elevation (m), where slope is greater than 15%

- 280.00 - 282
- 282.01 - 284
- 284.01 - 286
- 286.01 - 288
- 288.01 - 290
- 290.01 - 292
- 292.01 - 294
- 294.01 - 296
- 296.01 - 298
- 298.01 - 300
- 300.01 - 302
- 302.01 - 304
- 304.01 - 306
- 306.01 - 308
- 308.01 - 310
- 310.01 - 312
- 312.01 - 314

0 50 100 METRES
SCALE 1:4,000

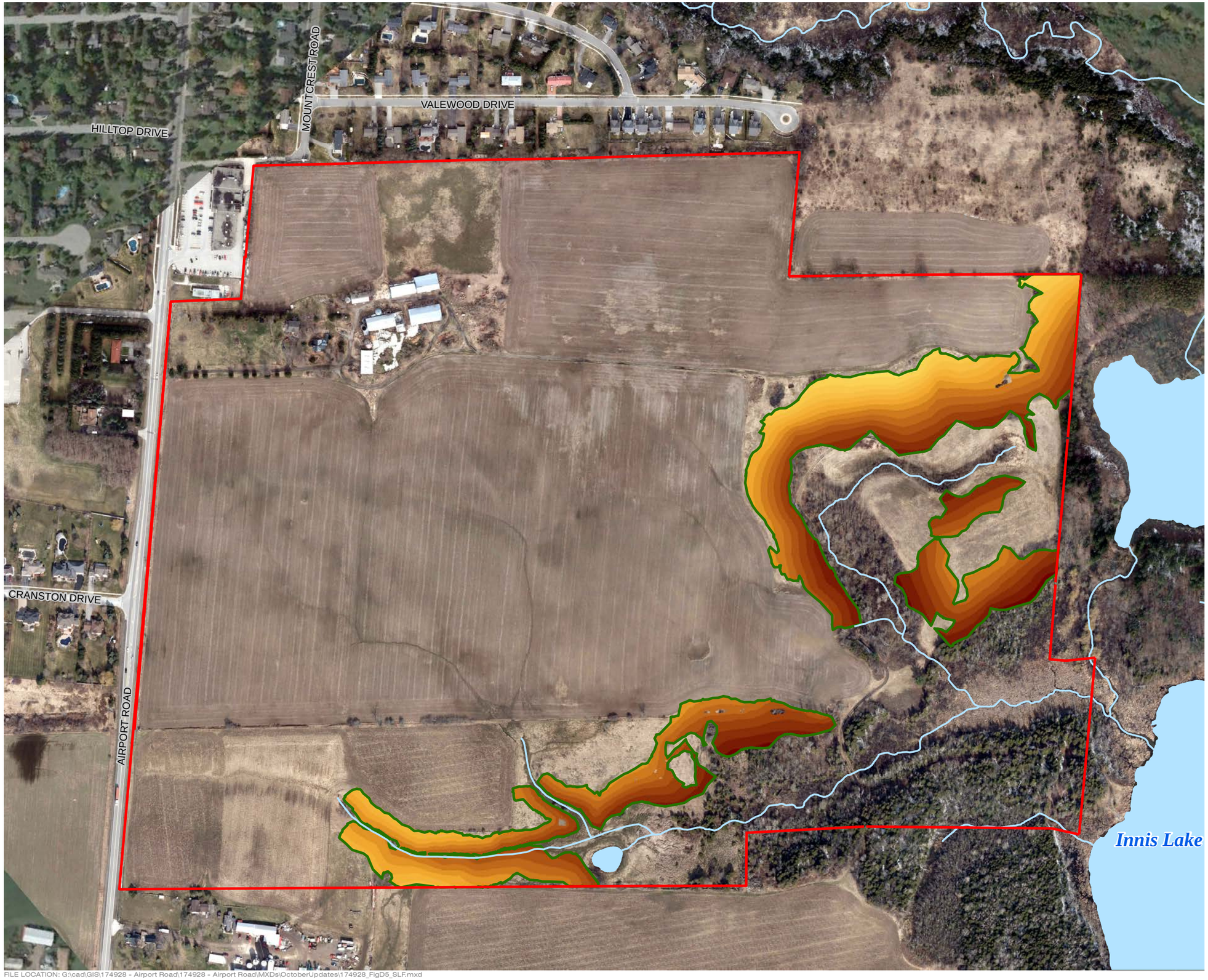
MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928
STATUS: DRAFT
DATE: 10/26/2017

FILE LOCATION: C:\Users\34ja\Desktop\174928 - Airport Road\MXDs\OctoberUpdates\174928_FigD4_SlopeElevation.mxd



TRIPLE CROWN LINE DEVELOPMENTS

15717 Airport Road, Caledon

LANDFORM CONSERVATION FEATURE ANALYSIS - SIGNIFICANT LANDFORM FEATURE

FIGURE D5

LEGEND

- Study
- Watercourse
- Waterbody
- Significant Landform Feature

Elevation (m)

- 280.00 - 282
- 282.01 - 284
- 284.01 - 286
- 286.01 - 288
- 288.01 - 290
- 290.01 - 292
- 292.01 - 294
- 294.01 - 296
- 296.01 - 298
- 298.01 - 300
- 300.01 - 302
- 302.01 - 304
- 304.01 - 306
- 306.01 - 308
- 308.01 - 310
- 310.01 - 312
- 312.01 - 314

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928

STATUS: DRAFT

DATE: 12/1/2017

FILE LOCATION: G:\cad\GIS\174928 - Airport Road\174928 - Airport Road\MXDs\OctoberUpdates\174928_FigD5_SLF.mxd

Appendix E

Historic Photos


1974


1980


1988

Appendix F

Headwater Drainage Features Assessment

Table E1: Details of Site Assessments

SITE VISIT	DATE OF FIELD WORK	FLOW ASSESSMENT	VEGETATION ASSESSMENT		CHANNEL FORM				SEDIMENT TRANSPORT		COMMENTS	PHOTO REFERENCES APPENDIX F
		FLOW INFLUENCE (FI) / CONDITION (FC) / TYPE (FT)	RIPARIAN	TERRESTRIAL	AVERAGE WETTED WIDTH (m)	AVERAGE DEPTH (m)	AVERAGE BANKFULL WIDTH (m)	SUBSTRATE*	SEDIMENT TRANS.	SEDIMENT DEP.**		
1	8-Mar-17	Flow observed FI: Baseflow (3) FC: Dry (2) FT: No Defined Feature (4)	Cropped (3)	Cropped (3)	N/A	N/A	N/A	Cl, Si, Sa	Sheet Erosion	Minimal	- Potential feature originating at the west side of Airport Road, continuing east for approximately 220 m before terrain flattens out and *Tributary A* begins. - No flow detected, damp substrates - Evidence of some water collection during rain events but no flow	1-3, 5
2	26-Mar-17	Same conditions observed during second visit.									- N/A	6-8

Table E2: Classification Summary

STEP 1		STEP 2	STEP 3	STEP 4	Management Recommendation
Hydrology	Modifiers	Riparian	Fish Habitat	Terrestrial Habitat	
Recharge Functions: Dry or Standing Water	Nutrient inputs from agricultural fields	Limited Function: cropped land	N/A no connections downstream	Limited Function: No terrestrial habitat present	NO MANAGEMENT REQUIRED

Appendix G

Tree Inventory

DILLON CONSULTING

TRIPLE CROWN LINE DEVELOPMENTS INC.

15717 Airport Road

Tree Inventory and Preservation Plan

September 2018 – 17-4928

September 13, 2018

SENT BY ELECTRONIC MAIL ONLY

Triple Crown Line Developments Inc.
30 Floral Parkway, Suite 200
Concord, Ontario
L4K 4R1

Attention: Trevor Hall, Project Manager – Planning
Jordan Archer, Project Manager – Engineering
Richard Tyler, Project Manager - Engineering

Tree Inventory and Preservation Plan for 15717 Airport Road

Please find enclosed the results of the Tree Inventory that were used to develop the Preservation Plan for the proposed development which is to be located on Part of Lot 19, Concession 1 in the Town of Caledon, Regional Municipality of Peel. The results of the Tree Inventory and recommendations are in support of a draft site plan application being prepared for submission to the Town of Caledon and Toronto Region Conservation Authority.

Sincerely,

DILLON CONSULTING LIMITED

Jonathan Harris
ISA Certified Arborist (ON-2069A)

Our file: 17-4928
Encls. Tree Inventory and Preservation Plan

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Dillon Consulting
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1.0 Introduction

Dillon Consulting Limited ("Dillon") was retained by DG Group, on behalf of Triple Crown Line Developments Inc. (the "applicant"), to undertake Arborist services in support of a proposed residential development. The proposed development is to be located at Part of Lot 19, Concession 1, Town of Caledon, and is located within the 2021 Settlement Boundary. The services provided by Dillon include a Tree Inventory within the anticipated footprint of the proposed development (the "Study Area") (Figure 1), and development of a Preservation Plan.

This report has been written in support of an Environmental Impact Study (EIS) to be submitted to the Toronto Region and Conservation Authority's (TRCA) and generally follows guidelines set forth in the TRCA's Environmental Impact Statement Guidelines (2014). In this regard, information (i.e. species, size, condition and general comments) has been collected for those individual trees and groupings of trees growing on or immediately adjacent to the Study Area.

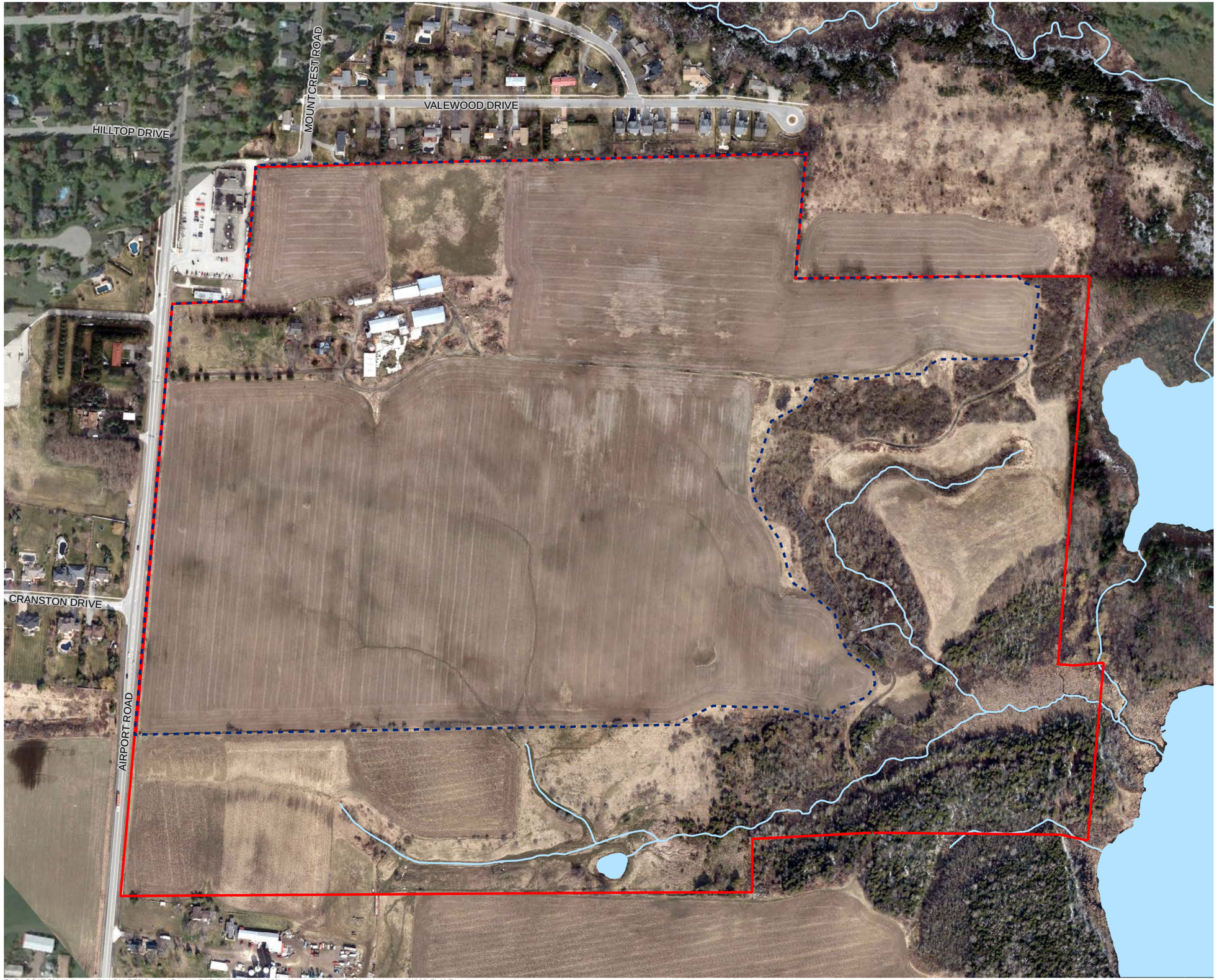
1.1 Development Description

The proposed development is located at 15717 Airport Road which is roughly bound by Airport Road to west, 15535 Airport Road to the south, single-family dwellings associated with Valewood Drive to the north, and natural features associated with the Oak Ridges Moraine to the east. Preliminary plans for the development indicate that low-density and medium-density residential areas are to be constructed along with parks, parkettes and infrastructure (i.e. roads, stormwater management).

1.2 Applicable Policy

The Town has a by-law (By-law No. 2000-100) intended to protect trees located within woodlands from removal. Upon review of By-law No. 2000-100, it was determined that that the Study Area does not contain any features that meet the definition of "woodland", as defined by the by-law. Therefore a permit for tree removal will not be required from the Town.

This Tree Inventory and Preservation Plan has been prepared in support of obtaining draft site plan approval from the Town. The Terms of Reference (ToR) developed for the Environmental Impact Study (EIS) requires detail relating to mitigation measures proposed to eliminate or reduce potential impacts of the proposed development (e.g. timing restrictions, design techniques, buffers, sediment control fencing, tree hoarding, edge or buffer plantings, etc.). This Tree Inventory and Preservation Plan were developed to meet the requirements outlined in the EIS ToR and are to be included as an appendix to the EIS.



TRIPLE CROWN LINE DEVELOPMENTS
15717 Airport Road, Caledon

TREE INVENTORY STUDY AREA
FIGURE 1

LEGEND

- Property Boundary
- Tree Inventory Study Area
- Watercourse
- Waterbody

0 50 100 METRES

SCALE 1:4,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNRF, TRCA, GOOGLE EARTH

MAP CREATED BY: LK
MAP CHECKED BY: WM
MAP PROJECTION: NAD 1983 UTM Zone 17N

DILLON CONSULTING

PROJECT: 17-4928
STATUS: DRAFT
DATE: 2017-05-02

FILE LOCATION: \\dillon.ca\DILLON_DFS\Ottawa\Ottawa CAD\CAD\2017\174928 - Airport Road\MXDs\MayUpdates\174928_FigX_Tree_Inventory.mxd

2.0 Methods

On March 17, 2017, an International Society of Arboriculture (ISA) Certified Arborist conducted a Tree Inventory within and adjacent to the Study Area.

The following information was collected during the inventory of trees that would need to be removed to facilitate the development or be retained and therefore protected during construction activities:

- Identification of species;
- Measurement of diameter-at-breast-height (DBH) at 1.38 m from the ground;
- Application of a numbered, aluminum identification tag to trees ≥ 10 cm DBH, where applicable;
- A Level 2 (basic) qualitative visual assessment to determine tree/grouping condition, following the condition health rating system detailed in Table 1;
- Coordinates of trees using a handheld Global Positioning System (GPS) unit; and,
- If determinable and/or applicable, providing recommendations regarding preservation, protection, or removal.

Due to the size of the Study Area stand classification was conducted for dense groupings of trees, which involved a tally of each tree and associated DBH.

The basic assessment completed for trees within the Study Area consisted of a detailed visual inspection of the tree and surrounding area to obtain an opinion of the health condition of each tree or stand. It included a non-invasive inspection of each tree; looking at the site conditions, buttress roots, trunk, and branches. This basic assessment is the standard assessment that is performed by arborists, though only includes conditions that are readily detected from the ground. Therefore, it should be noted that the results from a basic assessment should not be relied on for internal, below-ground, and/or upper-crown condition or defects as these areas may be impossible to see or difficult to assess from ground-level. In the event of a significant change in site conditions prior to development activities, such as severe weather events (e.g. ice storm, tornado, etc.), all trees within the Study Area should be reassessed.

The condition rating designated to each tree was based the results of the basic assessment. The hazard potential of trees were assessed using the method outlined in the International Society of Arboriculture publication *A Photographic Guide to the Evaluation of Hazard Trees in Urban Area - 2nd Edition* (Mattheny and Clark, 1994). Using this guide, an overall condition rating (i.e. dead, poor, fair, good or excellent) was given to each inventoried tree or stand. These condition ratings are useful when evaluating the retention and/or replacement value of individual trees.

For those tree species where the foliage characteristics are the primary distinguishing feature, the positive identification of tree species may have been hindered due to timing of the surveys occurring during the leaf-off period (March). Trees were identified using reasonable assumptions based on form, bark, bud, and branch orientations, to determine species type.

Table 1: Tree/Stand Condition Rating Categories

Condition	Description
Dead	A specimen tree/stand is considered dead when it has no living tissue.
Hazard	The specimen tree could either be alive or dead but the tree in its part could pose an imminent hazard to people or property during normal weather conditions. These trees have the potential for splitting, breaking and/or falling over during inclement weather, and because of their proximity to various targets (i.e. people or property), could cause personal injury and/or severe damage to municipal infrastructure and/or private property.
Poor	Trees in poor condition show major symptoms of decline. At least 50% of main scaffold branches are dead, missing or in diseased state. The trunk shows evidence of advanced rot, deadwood or is hollow throughout. Twig development on the main branches or throughout the canopy is poor and may have limited sucker growth. Callus growth around wounds is minimal. A tree in poor condition could decline further to become a safety hazard. Removal prior to development should be considered if it is considered a hazard tree.
Fair	Trees in fair condition show moderate symptoms of decline in lower canopy or scaffold branches, but more than 50% of scaffold branches are present and viable. The trunk shows limited evidence of rot or insect damage. Good callus growth is present near wound areas. Trees that have scaffold branches that are healthy, but are in a "Y" formation, may also be included in this category, if “included-bark” is evident as the risk of splitting or breakage increases as the tree matures. Removal or preservation of these trees depends on the location of the specimen and associated target potential, and would depend on the species, and its tolerance to grading, trenching and surviving in an urban environment. Some major arboricultural maintenance may be required and may include major scaffold or secondary branch removal, bracing and/or cabling.
Good	Trees in good condition show no symptoms of decline in the trunk, and all scaffold branches are present and are in good condition. Most scaffold branches are at right angles to the trunk, and show good vigour. Small amounts of dead wood may be present in secondary branches, but account for less than 25% of the canopy. Depending on the grading in the immediate area, a tree in good condition would be recommended for preservation. Such a tree would typically survive to maturity without major arboricultural maintenance.
Excellent	Trees in excellent condition show no symptoms of decline in trunk, scaffold or secondary branches. Trees in this condition have an excellent growth habit and should typically survive to maturity without major arboricultural maintenance.

3.0 Results

The Tree Inventory and condition assessment documented individual trees along with two groupings of trees, totalling 320 trees with a DBH 10 cm or greater within and/or adjacent to the Study Area. Refer to *Appendix A* for the locations of identified tree stands.

Tree groupings were found in the form of small hedgerows (referred to as Group 1 and Group 2 within *Appendix C*). Generally, non-native, early-successional species dominated both groupings, a possible indication of past agricultural disturbance within the Study Area.

Manitoba Maple (*Acer negundo*) was the dominant species, representing 22.5% of all trees inventoried. Sugar Maple (*Acer saccharum*) was second most common (20.9%), followed by Eastern White Cedar (*Thuja occidentalis*) at 18.12%, and Apple (*Malus sp.*) species at 5.6%. The remaining 32.88% of trees inventoried were distributed across other species. This includes the following:

- Basswood (*Tilia americana*)
- Scots Pine (*Pinus sylvestris*)
- White Ash (*Fraxinus americana*)
- Red Oak (*Quercus rubra*)
- Colorado Blue Spruce (*Picea pungens*)
- Hawthorn Species (*Crataegus* sp.)
- White Spruce (*Picea glauca*)
- Balsam Fir (*Abies balsamea*)
- Austrian Pine (*Pinus nigra*)
- Trembling Aspen (*Populus tremuloides*)
- Eastern White Pine (*Pinus strobus*)
- White Birch (*Betula papyrifera*)
- Black Cherry (*Prunus serotina*)

Overall, trees were found to be in good to fair condition. Typical defects of individual trees included co-dominant stems, poor growth form (e.g. lean or curved form), and dieback due to competition with adjacent trees or vegetation.

Photos of the representative trees can be found in *Appendix B*. Detailed tree inventory results, including species, DBH, condition and other relevant information recorded during the Tree Inventory are provided in *Appendix C*.

4.0 Potential Impacts to Trees

Of the 320 trees identified within and adjacent to the Study Area all are proposed for removal, as removal is either necessary to accommodate the construction working zone, or they pose a hazard due to their poor condition.

4.1 Compensation for Tree Removals

A Landscaping and Planting Plan should be prepared for submission during the detail design stage will detail landscape and restoration plantings.

Upon finalization of the Landscaping and Planting Plan, and subject to discussion with the Town of Caledon and TRCA, compensation in the form of landscape trees (e.g. within parks, lots or boulevards) and/or restoration plantings (e.g. adjacent to stormwater management ponds and/or watercourses) on or off-site may be required.

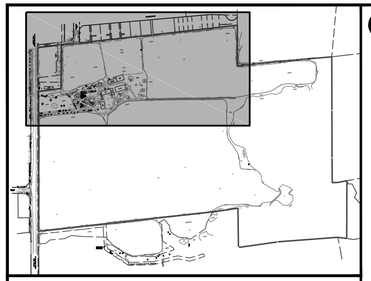
Species, condition, size/DBH and other characteristics of existing tree groupings or individual trees should be considered in discussions regarding fair compensation for removals. Due to the scale of the development and number of tree removals, area of tree cover lost (or a portion thereof) due to the development may be a more appropriate method of determining compensation than individual trees. However, if individual tree compensation is the agreed approach a compensation ratio of 2:1 in addition to the standard plantings may be required.

5.0 Conclusion

DG Group, on behalf of Triple Crown Line Developments Inc., retained Dillon to undertake Arborist services in support of a proposed residential development at Part of Lot 19, Concession 1 in the Town of Caledon, Regional Municipality of Peel. A Tree inventory was completed on March 17, 2017 and a total of 320 trees were documented. To facilitate construction of the proposed development, all 320 private trees are required to be removed.

Appendix A

Preservation Plan Drawing



OVERVIEW PLAN
SCALE 1:10,000

VALEWOOD DRIVE
(BY REGISTERED PLAN 43M-559)

AIRPORT ROAD
REGION ROAD No. 51

MOUNTCREST RC
(BY REGISTERED PLAN 43M-

STREET A
STREET B
STREET D
STREET N
LANEWAY 11
Amenity Area

SCALE 1:1000
0 5 10 20 50m

Conditions of Use

Verify elevations and/or dimensions on drawing prior to use. Report any discrepancies to Dillon Consulting Limited.

Do not scale dimensions from drawing.

Do not modify drawing, re-use it, or use it for purposes other than those intended at the time of its preparation without prior written permission from Dillon Consulting Limited.

LEGEND

- TREES TO BE PRESERVED
- TREES TO BE REMOVED
- PROPERTY LINE
- TREE GROUPINGS TO REMAIN
- TREE GROUPINGS TO BE REMOVED
- PROPOSED RETAINING WALL (DG GROUP)
- TREE PROTECTION FENCING

DILLON CONSULTING

No.	ISSUED FOR	DATE	BY
2	REVISED PER SUBDIVISION DESIGN PLANS PROVIDED BY DG GROUP	09.05.2018	CMC
1	REVISED PER SUBDIVISION DESIGN PLANS PROVIDED BY DG GROUP	05.29.2018	CMC

DESIGN: JH	REVIEWED BY: JH
DRAWN: CMC	CHECKED BY: JH
DATE: MARCH 29, 2017	
SCALE: 1:1000	

15717 AIRPORT ROAD, CLAREDON ON

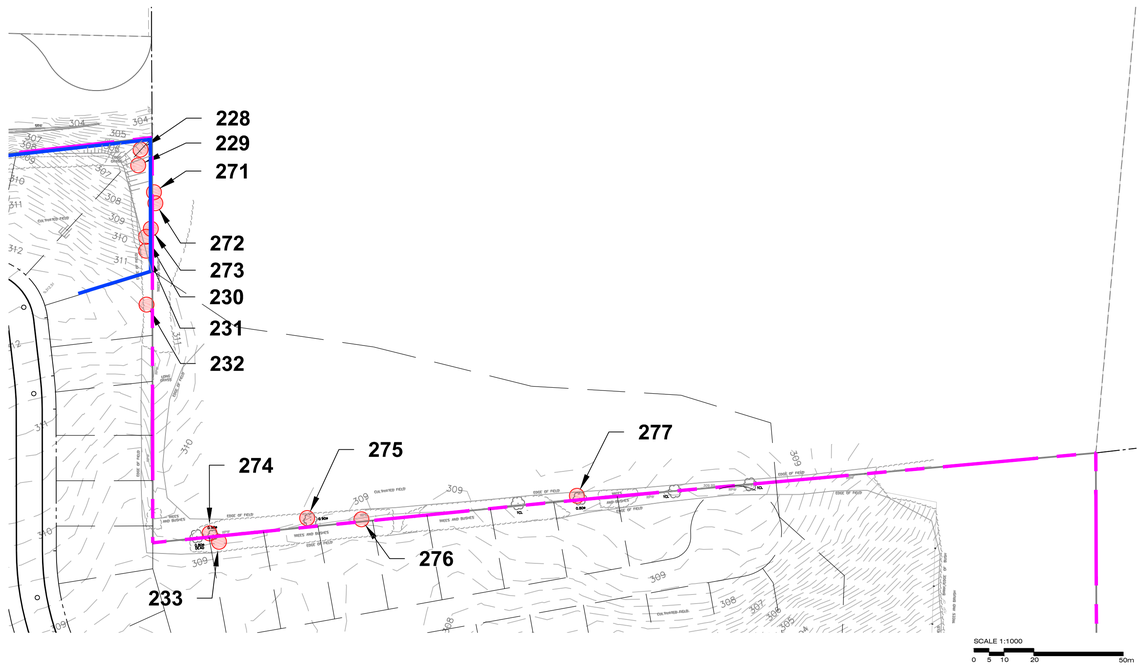
PROJECT NO. 17-4928

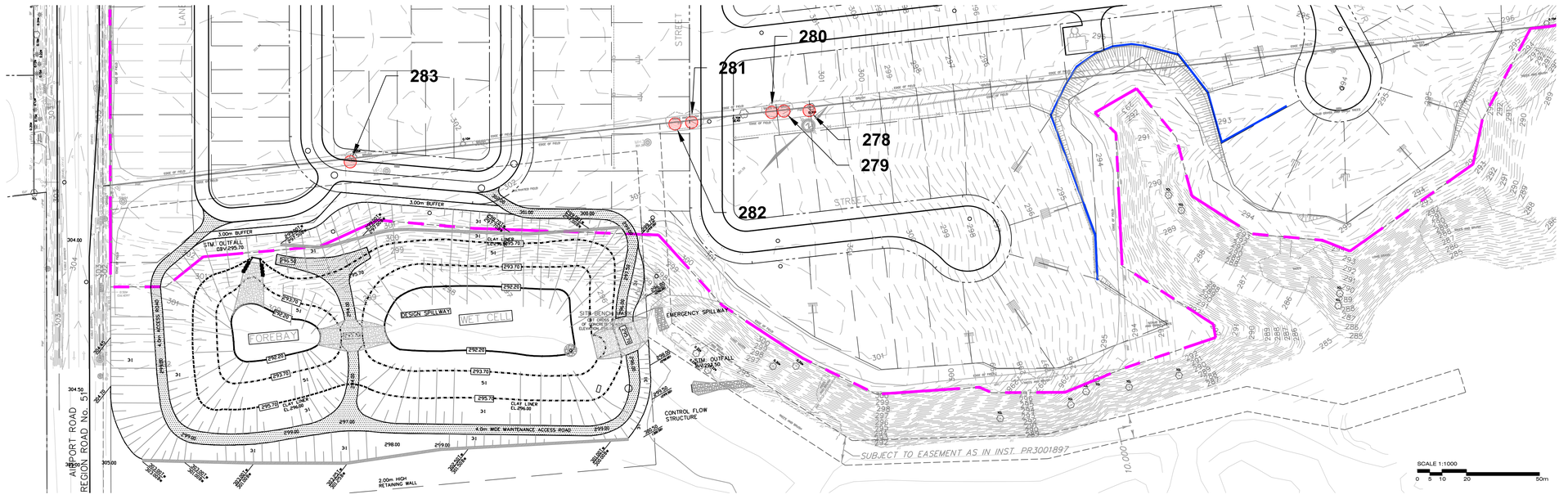
TREE INVENTORY AND PRESERVATION PLAN

SHEET NO. 1

FILENAME: C:\PROJECTWISE WORKING DIRECTORY\ACTIVE\20CMC\D0459689\17492B-05-TREE INVENTORY.DWG PLOTTED BY: CARRERAS, CHAD
PLOT DATE: 2018-09-07 @ 3:10:54 PM PLOT SCALE: 1:25.4 PLOT STYLE: DILLON-NAMED.STB
TORONTO

OVERVIEW PLAN
SCALE 1:10,000





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LEGEND

- PROPERTY LINE
- TREES TO BE PRESERVED
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- TREE GROUPINGS TO BE REMOVED
- TREES TO BE REMOVED
- PROPOSED RETAINING WALL (DG GROUP)
- TREE PROTECTION FENCING

DILLON CONSULTING

No.	ISSUED FOR	DATE	BY
1	REVISED PER SUBDIVISION DESIGN PLANS PROVIDED BY DG GROUP	05.29.2018	CMC

DESIGN	JH
REVIEWED BY	JH
DRAWN	CMC
CHECKED BY	JH
DATE	MARCH 29, 2017
SCALE	1:1000

15717 AIRPORT ROAD, CLAREDON ON

TREE INVENTORY AND PRESERVATION PLAN

PROJECT NO. 17-4928

SHEET NO. 2

Appendix B

Photo Appendix

	
Tree #2 (Tag 002) – Sugar Maple – fair condition	Tree #8 (Tag 008) – Colorado Blue Spruce – good condition

	
Tree #25 (Tag 025) – Apple – poor condition	Tree #31 (Tag 031) – Eastern White Cedar – dead

Grouping #1 – Scots Pine, White Ash, Norway Maple, Manitoba Maple – fair condition

Grouping #1 – Scots Pine, White Ash, Norway Maple, Manitoba Maple – fair condition

Appendix C

Detailed Tree Inventory

Appendix C - Detailed Tree Inventory

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
1	*Pinus strobus*	Eastern White Pine	63	Fair	Dieback in top of crown 20%	Remove	Within construction footprint	n/a
2	*Acer saccharum*	Sugar Maple	101	Fair	Three large scaffolds have died back, general dieback of crown is 25%	Remove	Within construction footprint	n/a
3	*Pinus strobus*	Eastern White Pine	74	Fair	Dieback in top of crown 20%; large scaffold is larger than central leader	Remove	Within construction footprint	n/a
4	*Acer platanoides*	Norway Maple	10	Good		Remove	Within construction footprint	n/a
5	*Picea glauca*	White Spruce	21	Good		Remove	Within construction footprint	n/a
6	*Picea pungens*	Colorado Blue Spruce	34	Good		Remove	Within construction footprint	n/a
7	*Picea pungens*	Colorado Blue Spruce	27	Good		Remove	Within construction footprint	n/a
8	*Picea pungens*	Colorado Blue Spruce	40	Good		Remove	Within construction footprint	n/a
9	*Picea pungens*	Colorado Blue Spruce	40	Fair	Top of crown is leaning/curved	Remove	Within construction footprint	n/a
10	*Picea pungens*	Colorado Blue Spruce	42	Good		Remove	Within construction footprint	n/a
11	*Picea pungens*	Colorado Blue Spruce	32	Good		Remove	Within construction footprint	n/a
12	*Picea pungens*	Colorado Blue Spruce	37	Good		Remove	Within construction footprint	n/a
13	*Picea pungens*	Colorado Blue Spruce	33	Good		Remove	Within construction footprint	n/a
14	*Picea pungens*	Colorado Blue Spruce	47	Good		Remove	Within construction footprint	n/a
15	*Quercus rubra*	Red Oak	31	Good		Remove	Within construction footprint	n/a
16	*Malus* sp.	Apple species	15,12,13	Fair	Co-dominant stems starting from 0.3 m	Remove	Within construction footprint	n/a
17	*Malus* sp.	Apple species	22	Fair	Three scaffolds are merging together	Remove	Within construction footprint	n/a
18	*Malus* sp.	Apple species	16,14,15	Fair	Co-dominant stems starting at 1 m with included bark	Remove	Within construction footprint	n/a
19	*Acer saccharum*	Sugar Maple	87	Fair	Co-dominant stems starting at 1 m	Remove	Within construction footprint	n/a
20	*Acer saccharum*	Sugar Maple	16,11	Fair	Lights hanging in crown; co-dominant stems at 60 cm	Remove	Within construction footprint	n/a
21	*Acer saccharum*	Sugar Maple	17	Good	Lights hanging in crown	Remove	Within construction footprint	n/a
22	*Acer saccharum*	Sugar Maple	15	Good	Lights hanging in crown	Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
23	*Acer saccharum*	Sugar Maple	19	Good	Lights hanging in crown	Remove	Within construction footprint	n/a
24	*Malus* sp.	Apple species	55	Poor	Central leader died back; large cavities in trunk; deadwood and rot at base; lots of suckers at base	Remove	Within construction footprint	n/a
25	*Malus* sp.	Apple species	67	Poor	Central leader died back; large scaffold broken	Remove	Within construction footprint	n/a
26	*Malus* sp.	Apple species	76	Poor	Large cavity in trunk; dieback of crown >50%	Remove	Within construction footprint	n/a
27	*Malus* sp.	Apple species	76	Fair		Remove	Within construction footprint	n/a
28	*Malus* sp.	Apple species	56,46	Fair	Co-dominant stems at 1 m with included bark	Remove	Within construction footprint	n/a
29	*Malus* sp.	Apple species	38	Poor	Dieback of crown >50%	Remove	Within construction footprint	n/a
30	*Malus* sp.	Apple species	53	Poor	Dieback of crown >50%	Remove	Within construction footprint	n/a
31	*Thuja occidentalis*	Eastern White Cedar	27	Dead	Live crown is <10%	Remove	Within construction footprint	n/a
32	*Ulmus americana*	White Elm	48	Poor	Sloughing bark; lots of woodpecker damage, dieback >50%	Remove	Within construction footprint	n/a
33	*Thuja occidentalis*	Eastern White Cedar	33	Poor	Live crown 40%; bark is peeling off	Remove	Within construction footprint	n/a
34	*Thuja occidentalis*	Eastern White Cedar	26	Poor	Live crown 40%; bark is peeling off	Remove	Within construction footprint	n/a
35	*Fagus grandifolia*	American Beech	72,61	Poor	Beech Bark Disease present; fungal bodies on trunk; dieback is >50%; deadwood observed at base; several scaffolds are dead	Remove	Within construction footprint	n/a
36	*Thuja occidentalis*	Eastern White Cedar	31,31	Fair	Co-dominant stems starting from the base	Remove	Within construction footprint	n/a
37	*Thuja occidentalis*	Eastern White Cedar	28	Fair		Remove	Within construction footprint	n/a
38	*Thuja occidentalis*	Eastern White Cedar	48	Fair		Remove	Within construction footprint	n/a
39	*Malus* sp.	Apple species	67	Poor	Central leader has lots of large cavities; die back is >50%	Remove	Within construction footprint	n/a
40	*Malus* sp.	Apple species	50	Poor	Dieback of >50%; central leader is dead and scaffolds are dying back	Remove	Within construction footprint	n/a
41	*Malus* sp.	Apple species	35,60	Poor	Co-dominant stems; smaller stem is growing horizontal and has a broken off tip; dieback is >50%	Remove	Within construction footprint	n/a
42	*Acer negundo*	Manitoba Maple	13	Fair	Growing into a chainlink fence	Remove	Within construction footprint	n/a
43	*Thuja occidentalis*	Eastern White Cedar	43	Fair		Remove	Within construction footprint	n/a
44	*Thuja occidentalis*	Eastern White Cedar	32	Poor	>50% dieback of crown	Remove	Within construction footprint	n/a
45	*Thuja occidentalis*	Eastern White Cedar	29,15,12	Fair		Remove	Within construction footprint	n/a
46	*Thuja occidentalis*	Eastern White Cedar	20,21,22	Poor		Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
47	*Thuja occidentalis*	Eastern White Cedar	26,25,21,21,18	Fair		Remove	Within construction footprint	n/a
48	*Thuja occidentalis*	Eastern White Cedar	39,21,15	Fair		Remove	Within construction footprint	n/a
49	*Thuja occidentalis*	Eastern White Cedar	37	Good		Remove	Within construction footprint	n/a
50	*Thuja occidentalis*	Eastern White Cedar	19,9,10,8	Good		Remove	Within construction footprint	n/a
51	*Thuja occidentalis*	Eastern White Cedar	21,18	Fair		Remove	Within construction footprint	n/a
52	*Thuja occidentalis*	Eastern White Cedar	23,23,28	Fair		Remove	Within construction footprint	n/a
53	*Thuja occidentalis*	Eastern White Cedar	35,22,21	Good		Remove	Within construction footprint	n/a
54	*Thuja occidentalis*	Eastern White Cedar	38	Good		Remove	Within construction footprint	n/a
55	*Thuja occidentalis*	Eastern White Cedar	20,11,24	Good		Remove	Within construction footprint	n/a
56	*Thuja occidentalis*	Eastern White Cedar	11	Poor	Shaded by other trees	Remove	Within construction footprint	n/a
57	*Thuja occidentalis*	Eastern White Cedar	35,16,40	Good		Remove	Within construction footprint	n/a
58	*Thuja occidentalis*	Eastern White Cedar	25,13	Poor		Remove	Within construction footprint	n/a
59	*Thuja occidentalis*	Eastern White Cedar	50	Fair	Grown into fence	Remove	Within construction footprint	n/a
60	*Thuja occidentalis*	Eastern White Cedar	23,25,20	Fair		Remove	Within construction footprint	n/a
61	*Thuja occidentalis*	Eastern White Cedar	27	Fair		Remove	Within construction footprint	n/a
62	*Thuja occidentalis*	Eastern White Cedar	49	Good		Remove	Within construction footprint	n/a
63	*Thuja occidentalis*	Eastern White Cedar	40	Fair		Remove	Within construction footprint	n/a
64	*Thuja occidentalis*	Eastern White Cedar	45	Good		Remove	Within construction footprint	n/a
65	*Thuja occidentalis*	Eastern White Cedar	29,19,21	Good		Remove	Within construction footprint	n/a
66	*Thuja occidentalis*	Eastern White Cedar	23	Good		Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
67	*Thuja occidentalis*	Eastern White Cedar	33,40	Good		Remove	Within construction footprint	n/a
68	*Thuja occidentalis*	Eastern White Cedar	41	Good		Remove	Within construction footprint	n/a
69	*Thuja occidentalis*	Eastern White Cedar	43	Good		Remove	Within construction footprint	n/a
70	*Thuja occidentalis*	Eastern White Cedar	22,21	Good		Remove	Within construction footprint	n/a
71	*Thuja occidentalis*	Eastern White Cedar	40	Good		Remove	Within construction footprint	n/a
72	*Thuja occidentalis*	Eastern White Cedar	44	Poor	Live crown 15%	Remove	Within construction footprint	n/a
73	*Thuja occidentalis*	Eastern White Cedar	30,21	Poor	Severe lean of 70 degrees	Remove	Within construction footprint	n/a
74	*Acer negundo*	Manitoba Maple	37	Poor	Severe lean to the trunk; live crown 30%; co-dominant stems starting at 2 m	Remove	Within construction footprint	n/a
75	*Aesculus hippocastanum*	Horsechesnut	17	Good		Remove	Within construction footprint	n/a
76	*Thuja occidentalis*	Eastern White Cedar	43	Fair		Remove	Within construction footprint	n/a
77	*Thuja occidentalis*	Eastern White Cedar	23	Good		Remove	Within construction footprint	n/a
78	*Thuja occidentalis*	Eastern White Cedar	23,18	Good		Remove	Within construction footprint	n/a
79	*Thuja occidentalis*	Eastern White Cedar	52	Good		Remove	Within construction footprint	n/a
80	*Thuja occidentalis*	Eastern White Cedar	61	Good		Remove	Within construction footprint	n/a
81	*Thuja occidentalis*	Eastern White Cedar	18	Fair	Co-dominant stems starting from the base	Remove	Within construction footprint	n/a
82	*Malus* sp.	Apple species	13,13,17	Fair	Deadwood at base; large cavity in the trunk	Remove	Within construction footprint	n/a
83	*Acer saccharum*	Sugar Maple	88	Good		Remove	Within construction footprint	n/a
84	*Acer saccharum*	Sugar Maple	34	Good		Remove	Within construction footprint	n/a
85	*Acer saccharum*	Sugar Maple	18,13	Fair	Co-dominant stems	Remove	Within construction footprint	n/a
86	*Acer saccharum*	Sugar Maple	19	Good		Remove	Within construction footprint	n/a
87	*Acer saccharum*	Sugar Maple	46	Good		Remove	Within construction footprint	n/a
88	*Acer saccharum*	Sugar Maple	23,19	Fair	Co-dominant stems	Remove	Within construction footprint	n/a
89	*Aesculus hippocastanum*	Horsechesnut	63	Poor	Central leader died back and broken off	Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
90	*Aesculus hippocastanum*	Horsechesnut	63	Poor	Central leader died back and broken off	Remove	Within construction footprint	n/a
91	*Acer saccharum*	Sugar Maple	71	Good		Remove	Within construction footprint	n/a
92	*Thuja occidentalis*	Eastern White Cedar	32	Good		Remove	Within construction footprint	n/a
93	*Picea pungens*	Colorado Blue Spruce	30	Good		Remove	Within construction footprint	n/a
94	*Acer saccharum*	Sugar Maple	38	Poor	Half the trees has died back; potential rot in the lower trunk	Remove	Within construction footprint	n/a
95	*Acer saccharum*	Sugar Maple	108	Fair		Remove	Within construction footprint	n/a
96	*Acer saccharum*	Sugar Maple	46	Good		Remove	Within construction footprint	n/a
97	*Acer saccharum*	Sugar Maple	67	Good		Remove	Within construction footprint	n/a
98	*Acer saccharum*	Sugar Maple	112	Good		Remove	Within construction footprint	n/a
99	*Malus* sp.	Apple species	13,18,17	Good		Remove	Within construction footprint	n/a
100	*Malus* sp.	Apple species	17	Good		Remove	Within construction footprint	n/a
101	*Thuja occidentalis*	Eastern White Cedar	20,10,11,11	Good		Remove	Within construction footprint	n/a
102	*Thuja occidentalis*	Eastern White Cedar	30	Good		Remove	Within construction footprint	n/a
103	*Thuja occidentalis*	Eastern White Cedar	21	Good		Remove	Within construction footprint	n/a
104	*Thuja occidentalis*	Eastern White Cedar	20	Good		Remove	Within construction footprint	n/a
105	*Thuja occidentalis*	Eastern White Cedar	14	Good		Remove	Within construction footprint	n/a
106	*Thuja occidentalis*	Eastern White Cedar	11	Good		Remove	Within construction footprint	n/a
107	*Acer saccharum*	Sugar Maple	25	Good		Remove	Within construction footprint	n/a
108	*Acer saccharum*	Sugar Maple	43	Good		Remove	Within construction footprint	n/a
109	*Acer saccharum*	Sugar Maple	33,47	Fair	Co-dominant stems with included bark	Remove	Within construction footprint	n/a
110	*Acer saccharum*	Sugar Maple	40	Good		Remove	Within construction footprint	n/a
111	*Acer saccharum*	Sugar Maple	30	Good		Remove	Within construction footprint	n/a
112	*Acer saccharum*	Sugar Maple	33	Good		Remove	Within construction footprint	n/a
113	*Acer saccharum*	Sugar Maple	25	Good		Remove	Within construction footprint	n/a
114	*Acer saccharum*	Sugar Maple	28	Good		Remove	Within construction footprint	n/a
115	*Acer saccharum*	Sugar Maple	44	Good		Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
116	*Acer saccharum*	Sugar Maple	22	Good		Remove	Within construction footprint	n/a
117	*Acer saccharum*	Sugar Maple	12	Good		Remove	Within construction footprint	n/a
118	*Acer saccharum*	Sugar Maple	21	Good		Remove	Within construction footprint	n/a
119	*Acer saccharum*	Sugar Maple	10	Good		Remove	Within construction footprint	n/a
120	*Acer saccharum*	Sugar Maple	21	Good		Remove	Within construction footprint	n/a
121	*Acer saccharum*	Sugar Maple	48,40	Good		Remove	Within construction footprint	n/a
122	*Acer saccharum*	Sugar Maple	15	Good		Remove	Within construction footprint	n/a
123	*Acer saccharum*	Sugar Maple	32	Good		Remove	Within construction footprint	n/a
124	*Acer saccharum*	Sugar Maple	14	Good		Remove	Within construction footprint	n/a
125	*Acer saccharum*	Sugar Maple	18	Good		Remove	Within construction footprint	n/a
126	*Acer saccharum*	Sugar Maple	13	Good		Remove	Within construction footprint	n/a
127	*Acer saccharum*	Sugar Maple	14	Good		Remove	Within construction footprint	n/a
128	*Acer saccharum*	Sugar Maple	20	Good		Remove	Within construction footprint	n/a
129	*Acer saccharum*	Sugar Maple	30	Good		Remove	Within construction footprint	n/a
130	*Acer saccharum*	Sugar Maple	17	Good		Remove	Within construction footprint	n/a
131	*Acer saccharum*	Sugar Maple	17	Fair	Shaded by larger trees	Remove	Within construction footprint	n/a
132	*Acer saccharum*	Sugar Maple	32	Good		Remove	Within construction footprint	n/a
133	*Acer saccharum*	Sugar Maple	11	Good		Remove	Within construction footprint	n/a
134	*Acer saccharum*	Sugar Maple	33	Good		Remove	Within construction footprint	n/a
135	*Acer saccharum*	Sugar Maple	20	Good		Remove	Within construction footprint	n/a
136	*Acer saccharum*	Sugar Maple	26	Good		Remove	Within construction footprint	n/a
137	*Acer saccharum*	Sugar Maple	30	Good		Remove	Within construction footprint	n/a
138	*Acer saccharum*	Sugar Maple	13	Good		Remove	Within construction footprint	n/a
139	*Acer saccharum*	Sugar Maple	10	Good		Remove	Within construction footprint	n/a
140	*Acer saccharum*	Sugar Maple	16,20	Fair	Co-dominant, one stem starting to girdle the other	Remove	Within construction footprint	n/a
141	*Acer saccharum*	Sugar Maple	31	Good		Remove	Within construction footprint	n/a
142	*Acer saccharum*	Sugar Maple	48	Good		Remove	Within construction footprint	n/a
143	*Picea abies*	Norway Spruce	42	Fair		Remove	Within construction footprint	n/a
144	*Abies balsamea*	Balsam Fir	12	Fair	Shaded by adjacent maples	Remove	Within construction footprint	n/a
145	*Tilia americana*	Basswood	16	Good		Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
146	*Picea abies*	Norway Spruce	52	Good		Remove	Within construction footprint	n/a
147	*Pinus sylvestris*	Scots Pine	15	Poor	Curved central leader	Remove	Within construction footprint	n/a
148	*Pinus sylvestris*	Scots Pine	22	Fair		Remove	Within construction footprint	n/a
149	*Picea abies*	Norway Spruce	52	Fair	Top of crown broken off	Remove	Within construction footprint	n/a
150	*Picea abies*	Norway Spruce	52	Poor	Debris piled in root zone; live crown is <50%	Remove	Within construction footprint	n/a
151	*Acer negundo*	Manitoba Maple	12,16	Poor	Two stems with lots of suckers; main stem was growing into a piece of farm equipment (since moved)	Remove	Within construction footprint	n/a
152	*Thuja occidentalis*	Eastern White Cedar	12	Poor	Curvature of the trunk	Remove	Within construction footprint	n/a
153	*Thuja occidentalis*	Eastern White Cedar	10	Fair		Remove	Within construction footprint	n/a
154	*Thuja occidentalis*	Eastern White Cedar	12	Fair		Remove	Within construction footprint	n/a
155	*Thuja occidentalis*	Eastern White Cedar	12	Fair		Remove	Within construction footprint	n/a
156	*Thuja occidentalis*	Eastern White Cedar	21	Good		Remove	Within construction footprint	n/a
157	*Thuja occidentalis*	Eastern White Cedar	11	Fair		Remove	Within construction footprint	n/a
158	*Thuja occidentalis*	Eastern White Cedar	13,11,11	Fair		Remove	Within construction footprint	n/a
159	*Thuja occidentalis*	Eastern White Cedar	17	Fair		Remove	Within construction footprint	n/a
160	*Acer negundo*	Manitoba Maple	11	Good		Remove	Within construction footprint	n/a
161	*Acer negundo*	Manitoba Maple	12	Good		Remove	Within construction footprint	n/a
162	*Fraxinus americana*	White Ash	14,12	Fair	Multi-stem tree	Remove	Within construction footprint	n/a
163	*Acer negundo*	Manitoba Maple	16,15,15,22,12,13	Fair	Multi-stem tree; one larger stem growing into silo	Remove	Within construction footprint	n/a
164	*Acer saccharum*	Sugar Maple	14,10	Good	Co-dominant stems starting at ground	Remove	Within construction footprint	n/a
165	*Acer negundo*	Manitoba Maple	12	Good		Remove	Within construction footprint	n/a
166	*Populus tremuloides*	Trembling Aspen	18	Fair		Remove	Within construction footprint	n/a
167	*Fraxinus americana*	White Ash	33	Poor	>50% dieback of crown	Remove	Within construction footprint	n/a
168	*Populus tremuloides*	Trembling Aspen	39	Good		Remove	Within construction footprint	n/a
169	*Populus tremuloides*	Trembling Aspen	21	Good		Remove	Within construction footprint	n/a
170	*Acer negundo*	Manitoba Maple	12	Fair		Remove	Within construction footprint	n/a
171	*Acer negundo*	Manitoba Maple	22,21	Fair		Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
172	*Acer negundo*	Manitoba Maple	15,10,24,12	Fair		Remove	Within construction footprint	n/a
173	*Acer negundo*	Manitoba Maple	21,16	Fair		Remove	Within construction footprint	n/a
174	*Acer negundo*	Manitoba Maple	32,25,20	Fair		Remove	Within construction footprint	n/a
175	*Fraxinus americana*	White Ash	30,20,27	Poor	Abundant woodpecker damage; possible Emerald Ash Borer	Remove	Within construction footprint	n/a
176	*Acer negundo*	Manitoba Maple	14	Fair		Remove	Within construction footprint	n/a
177	*Acer negundo*	Manitoba Maple	12,19,11	Fair		Remove	Within construction footprint	n/a
178	*Acer negundo*	Manitoba Maple	12,15,20,25,20	Fair		Remove	Within construction footprint	n/a
179	*Acer negundo*	Manitoba Maple	15,14	Fair		Remove	Within construction footprint	n/a
180	*Acer negundo*	Manitoba Maple	17,18	Fair		Remove	Within construction footprint	n/a
181	*Acer negundo*	Manitoba Maple	28	Fair		Remove	Within construction footprint	n/a
182	*Acer negundo*	Manitoba Maple	16,16,12,12	Fair		Remove	Within construction footprint	n/a
183	*Acer negundo*	Manitoba Maple	21,14,25,30	Fair		Remove	Within construction footprint	n/a
184	*Acer negundo*	Manitoba Maple	23,19,18,23	Fair		Remove	Within construction footprint	n/a
185	*Acer negundo*	Manitoba Maple	14	Fair		Remove	Within construction footprint	n/a
186	*Acer negundo*	Manitoba Maple	18,19	Fair		Remove	Within construction footprint	n/a
187	*Acer negundo*	Manitoba Maple	10,10,14,19	Fair		Remove	Within construction footprint	n/a
188	*Acer negundo*	Manitoba Maple	25,25,22	Fair		Remove	Within construction footprint	n/a
189	*Acer negundo*	Manitoba Maple	16,14,16,9	Fair		Remove	Within construction footprint	n/a
190	*Acer negundo*	Manitoba Maple	27	Fair		Remove	Within construction footprint	n/a
191	*Acer negundo*	Manitoba Maple	24	Fair		Remove	Within construction footprint	n/a
192	*Acer negundo*	Manitoba Maple	23,20	Fair		Remove	Within construction footprint	n/a
193	*Acer negundo*	Manitoba Maple	22	Fair		Remove	Within construction footprint	n/a
194	*Acer negundo*	Manitoba Maple	28,22	Poor	Splitting at base	Remove	Within construction footprint	n/a
195	*Acer negundo*	Manitoba Maple	23	Fair		Remove	Within construction footprint	n/a
196	*Acer negundo*	Manitoba Maple	14	Poor	Growing out of debris pile	Remove	Within construction footprint	n/a
197	*Acer negundo*	Manitoba Maple	20	Fair	Growing out of debris pile	Remove	Within construction footprint	n/a
198	*Acer negundo*	Manitoba Maple	13	Fair	Growing out of debris pile	Remove	Within construction footprint	n/a
199	*Acer negundo*	Manitoba Maple	12,16,15	Poor	Growing out of debris pile	Remove	Within construction footprint	n/a
200	*Betula papyrifera*	White Birch	13,13,13,13	Good		Remove	Within construction footprint	n/a
201	*Betula papyrifera*	White Birch	18	Good		Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
202	*Acer negundo*	Manitoba Maple	12,10,10	Fair		Remove	Within construction footprint	n/a
203	*Acer negundo*	Manitoba Maple	24	Fair		Remove	Within construction footprint	n/a
204	*Acer negundo*	Manitoba Maple	15,14	Fair		Remove	Within construction footprint	n/a
205	*Acer negundo*	Manitoba Maple	19,13,13,10	Fair		Remove	Within construction footprint	n/a
206	*Acer negundo*	Manitoba Maple	14,13	Fair		Remove	Within construction footprint	n/a
207	*Acer negundo*	Manitoba Maple	16,14,10	Fair		Remove	Within construction footprint	n/a
208	*Acer negundo*	Manitoba Maple	11,11,11,10	Fair		Remove	Within construction footprint	n/a
209	*Acer negundo*	Manitoba Maple	15,15,15,16,13	Fair		Remove	Within construction footprint	n/a
210	*Acer negundo*	Manitoba Maple	17	Fair		Remove	Within construction footprint	n/a
211	*Acer negundo*	Manitoba Maple	13	Fair		Remove	Within construction footprint	n/a
212	*Acer negundo*	Manitoba Maple	12,10	Fair		Remove	Within construction footprint	n/a
213	*Acer platanoides*	Norway Maple	15	Good		Remove	Within construction footprint	n/a
214	*Acer platanoides*	Norway Maple	24	Good		Remove	Within construction footprint	n/a
215	*Acer negundo*	Manitoba Maple	10,12	Good		Remove	Within construction footprint	n/a
216	*Fraxinus americana*	White Ash	13	Fair		Remove	Within construction footprint	n/a
217	*Acer negundo*	Manitoba Maple	28,28,30	Fair		Remove	Within construction footprint	n/a
218	*Acer negundo*	Manitoba Maple	11,11	Good		Remove	Within construction footprint	n/a
219	*Acer platanoides*	Norway Maple	12, 18, 13	Good		Remove	Within construction footprint	n/a
220	*Acer platanoides*	Norway Maple	16	Good		Remove	Within construction footprint	n/a
221	*Acer negundo*	Manitoba Maple	28,22,24,20	Fair		Remove	Within construction footprint	n/a
222	*Acer negundo*	Manitoba Maple	28,22	Fair		Remove	Within construction footprint	n/a
223	*Acer negundo*	Manitoba Maple	22	Good		Remove	Within construction footprint	n/a
224	*Acer negundo*	Manitoba Maple	19	Fair		Remove	Within construction footprint	n/a
225	*Acer negundo*	Manitoba Maple	13	Fair		Remove	Within construction footprint	n/a
226	*Acer saccharum*	Sugar Maple	25	Good		Remove	Within construction footprint	n/a
227	*Tilia americana*	Basswood	50	Good		Remove	Within construction footprint	n/a
228	*Tilia americana*	Basswood	63	Fair		Remove	Within construction footprint	n/a
229	*Tilia americana*	Basswood	39	Good		Remove	Within construction footprint	n/a
230	*Prunus serotina*	Black Cherry	27	Good		Remove	Within construction footprint	n/a
231	*Acer saccharum*	Sugar Maple	22	Good		Remove	Within construction footprint	n/a

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
232	*Acer saccharum*	Sugar Maple	26,22	Fair	Co-dominant stems	Remove	Within construction footprint	n/a
233	*Tilia americana*	Basswood	25,21,21,25	Fair	Central leader dead	Remove	Within construction footprint	n/a
234	*Acer platanoides*	Norway Maple	44	Fair		Remove	Within construction footprint	n/a
235	*Acer platanoides*	Norway Maple	29	Fair		Remove	Within construction footprint	n/a
236	*Populus tremuloides*	Trembling Aspen	17	Good		Remove	Within construction footprint	n/a
237	*Populus tremuloides*	Trembling Aspen	14	Good		Remove	Within construction footprint	n/a
238	*Acer negundo*	Manitoba Maple	44	Good		Remove	On adjacent property	5
239	*Pinus nigra*	Austrian Pine	30	Good		Remove	On adjacent property	4
240	*Acer negundo*	Manitoba Maple	38,32,32	Fair		Remove	On adjacent property	7
241	*Abies balsamea*	Balsam Fir	30	Good		Remove	On adjacent property	4
242	*Acer negundo*	Manitoba Maple	15	Good		Remove	On adjacent property	2
243	*Acer negundo*	Manitoba Maple	20,15	Fair		Remove	On adjacent property	3
244	*Acer negundo*	Manitoba Maple	14,14,15,20	Fair		Remove	On adjacent property	4
245	*Acer negundo*	Manitoba Maple	28,28	Fair		Remove	On adjacent property	5
246	*Acer negundo*	Manitoba Maple	30	Fair		Remove	On adjacent property	4
247	*Acer negundo*	Manitoba Maple	50	Fair		Remove	On adjacent property	6
248	*Acer platanoides*	Norway Maple	25	Good		Remove	On adjacent property	3
249	*Acer platanoides*	Norway Maple	25	Good		Remove	On adjacent property	3
250	*Acer platanoides*	Norway Maple	35	Good		Remove	On adjacent property	4
251	*Acer platanoides*	Norway Maple	40	Good		Remove	On adjacent property	5
252	*Acer platanoides*	Norway Maple	40	Good		Remove	On adjacent property	5
253	*Acer platanoides*	Norway Maple	35	Good		Remove	On adjacent property	4
254	*Acer platanoides*	Norway Maple	35	Good		Remove	On adjacent property	4
255	*Acer platanoides*	Norway Maple	35	Good		Remove	On adjacent property	4
256	*Acer negundo*	Manitoba Maple	50	Fair		Remove	On adjacent property	6
257	*Acer negundo*	Manitoba Maple	60,60	Fair		Remove	On adjacent property	10
258	*Acer saccharum*	Sugar Maple	80	Good		Remove	On adjacent property	9
259	*Acer saccharum*	Sugar Maple	60	Good		Remove	On adjacent property	7
260	*Tilia americana*	Basswood	16,18,20	Good		Remove	On adjacent property	4
261	*Acer saccharinum*	Silver Maple	112	Good	Tree house in canopy	Remove	On adjacent property	13

Tree ID	Scientific Name	Common Name	DBH (cm)	Condition	Level 2 Assessment Notes	Action	Rationale for Removal or Preservation	TPZ (m)
262	*Fagus grandifolia*	American Beech	25,15	Fair		Remove	On adjacent property	3
263	*Acer negundo*	Manitoba Maple	65	Fair		Remove	On adjacent property	8
264	*Prunus serotina*	Black Cherry	35	Fair		Remove	On adjacent property	4
265	*Prunus serotina*	Black Cherry	20,20	Fair		Remove	On adjacent property	3
266	*Acer negundo*	Manitoba Maple	18,20,21,21	Fair		Remove	On adjacent property	5
267	*Prunus serotina*	Black Cherry	35	Fair		Remove	On adjacent property	4
268	*Acer negundo*	Manitoba Maple	25	Fair		Remove	On adjacent property	3
269	*Acer negundo*	Manitoba Maple	16	Fair		Remove	On adjacent property	2
270	*Acer negundo*	Manitoba Maple	17,14	Fair		Remove	On adjacent property	3
271	*Acer saccharum*	Sugar Maple	80,90	Fair		Remove	Within construction footprint	n/a
272	*Acer saccharum*	Sugar Maple	90	Fair		Remove	Within construction footprint	n/a
273	*Fagus grandifolia*	American Beech	80	Poor	Beech Bark Disease present; fungal bodies on trunk	Remove	Within construction footprint	n/a
274	*Acer saccharum*	Sugar Maple	60	Fair		Remove	Within construction footprint	n/a
275	*Acer saccharum*	Sugar Maple	115	Good		Remove	Within construction footprint	n/a
276	*Acer saccharum*	Sugar Maple	120	Fair		Remove	Within construction footprint	n/a
277	*Acer saccharum*	Sugar Maple	100	Good		Remove	Within construction footprint	n/a
278	*Crataegus monogyna*	One-seeded Hawthorn	15,15,14	Good		Remove	Within construction footprint	n/a
279	*Crataegus monogyna*	One-seeded Hawthorn	15,15	Good		Remove	Within construction footprint	n/a
280	*Crataegus monogyna*	One-seeded Hawthorn	15	Good		Remove	Within construction footprint	n/a
281	*Crataegus monogyna*	One-seeded Hawthorn	15,15,15	Good		Remove	Within construction footprint	n/a
282	*Malus* sp.	Apple species	20	Good		Remove	Within construction footprint	n/a
283	*Malus* sp.	Apple species	30	Good		Remove	Within construction footprint	n/a
284 (Group 1)	*Pinus sylvestris*	Scots Pine	50, 40, 50, 50, 45, 50	Fair	Ash trees are in poor condition and likely infested with Emerald Ash Borer. Adjacent plaza appears to be dumping debris in the root zones of this grouping. Several trees appear to have physical damage to the trunk/scaffolds.	Remove	Within construction footprint	n/a
	Acer negundo	Manitoba Maple	30, 20, 15, 18, 50					
	Acer platanoides	Norway Maple	16, 16, 20, 25, 15, 30, 12, 40, 15					
	Fraxinus americana	White Ash	60, 20, 15					
285 (Group 2)	*Robinia pseudoacacia*	Black Locust	21, 16, 19, 13, 30, 40, 23, 31, 25, 55, 50, 50	Good		Remove	Within construction footprint	n/a
	Acer negundo	Manitoba Maple	18/16, 50					

References

Farrar, John Laird. 1995. Trees in Canada. Eighth Impression 2003. Fitzhenry & Whiteside Limited, Markham, Ontario and the Canadian Forestry Service, Natural Resource Canada, Ottawa, in cooperation with Public Works and Government Services Canada.

Mattheny, Nelda P. and James R. Clark. 1994. A Photographic Guide to the Evaluation of Hazard Trees in Urban Area - 2nd Edition. International Society of Arboriculture.

Smiley, E.T; Matheny, N.; Lilly, S. 2012. Tree Risk Assessment: Levels of Assessment. ISA News, April 2012 Issue. pp. 12-20

Appendix H

Site Photos

HEADWATER ASSESSMENT PHOTOS	
Photo 1 March 8, 2017 Facing southwest, looking directly at Airport Road standing within the feature.	
Photo 2 March 8, 2017 Facing southwest, looking directly at Airport Road standing within the feature.	
Photo 3 March 8, 2017 Facing northeast towards the storm drain outlet from within the feature.	

Photo 4 March 8, 2017 Looking directly at the storm drain outlet.	
Photo 5 March 8, 2017 Facing southwest, looking at the feature in its entirety and the storm drain outlet with Airport Road in the distance.	
Photo 6 March 26, 2017 Facing northeast, looking directly at the feature from edge of Airport Road embankment.	

Photo 7 March 26, 2017 Facing southwest, looking directly at Airport Road from within the feature.	
Photo 8 March 26, 2017 Facing northeast towards the storm drain outlet from within the feature.	
Photo 9 March 26, 2017 Facing southwest, looking directly at Airport Road from 'downstream' end of feature.	

Photo 10 March 26, 2017 Where agricultural field transitions to meadow, directly adjacent to the storm drain outlet (confluence).	
Photo 11 March 26, 2017 Looking directly at the storm drain outlet.	

AQUATIC ASSESSMENT PHOTOS	
Photo 1 July 26, 2018 Tributary A, facing upstream, outfall headwall.	
Photo 2 July 26, 2018 Tributary A, facing upstream, wetted streambed.	
Photo 3 July 26, 2018 Tributary A, facing downstream, dry streambed and braiding of channel.	

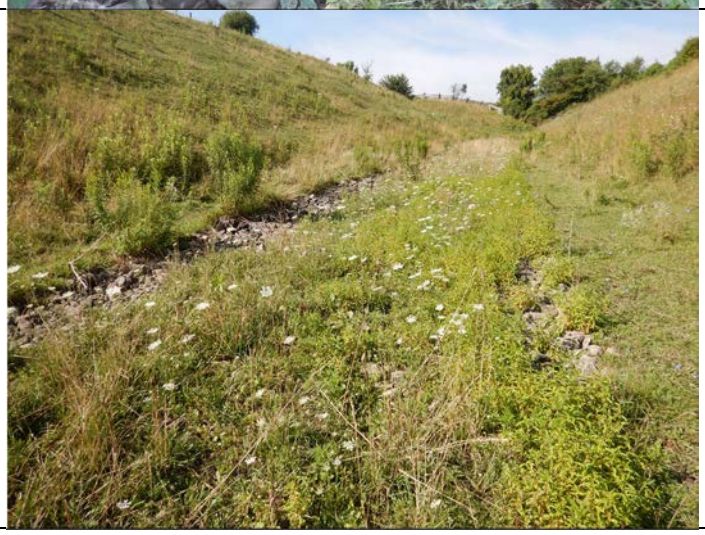
Photo 4 July 26, 2018 Tributary A, facing downstream, dry streambed and dense riparian vegetation.	
Photo 5 July 26, 2018 Tributary A, facing south, dry streambed and view of substrate.	
Photo 6 July 26, 2018 Tributary A, facing upstream, widened channel with uniform cobble substrate, >100 m from headwall.	

Photo 7 July 26, 2018 Tributary A, facing downstream, transition into swale/undefined channel, >100 m from headwall.	
Photo 8 July 26, 2018 Tributary B, facing upstream, blocked and crushed corrugated steel pipe with muddy pools directly downstream.	
Photo 9 July 26, 2018 Tributary B, facing downstream, no defined channel.	

ECOLOGICAL LAND CLASSIFICATIONS PHOTOS	
Photo 1 July 17, 2017 FOCM2-2: Dry – Fresh White Cedar Coniferous Forest	
Photo 2 July 17, 2017 FODM4-2: Dry - Fresh White Ash - Hardwood Deciduous Forest	
Photo 3 July 17, 2017 FODM4-10: Dry - Fresh Hawthorn - Apple Deciduous Forest	

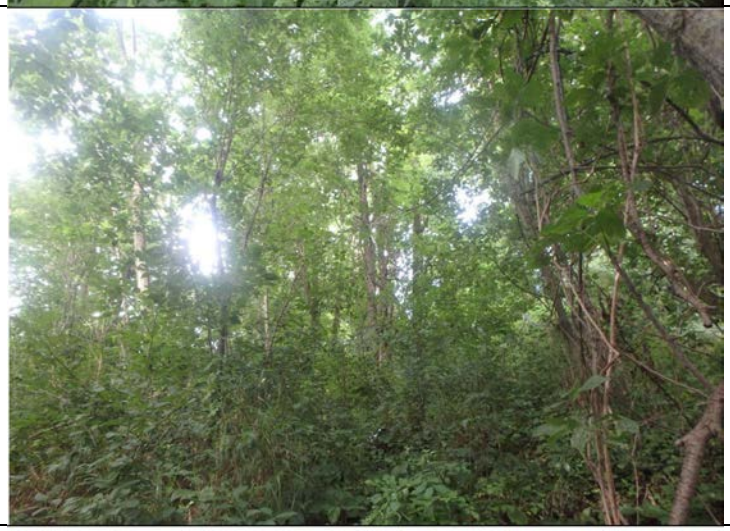
Photo 4 July 17, 2017 FODM4-11: Dry - Fresh Black Locust Deciduous Forest	
Photo 5 July 17, 2017 FODM7-3: Fresh – Moist Willow Lowland Deciduous Forest	
Photo 6 July 17, 2017 FODM8-1: Fresh – Moist Poplar Deciduous Forest Type	

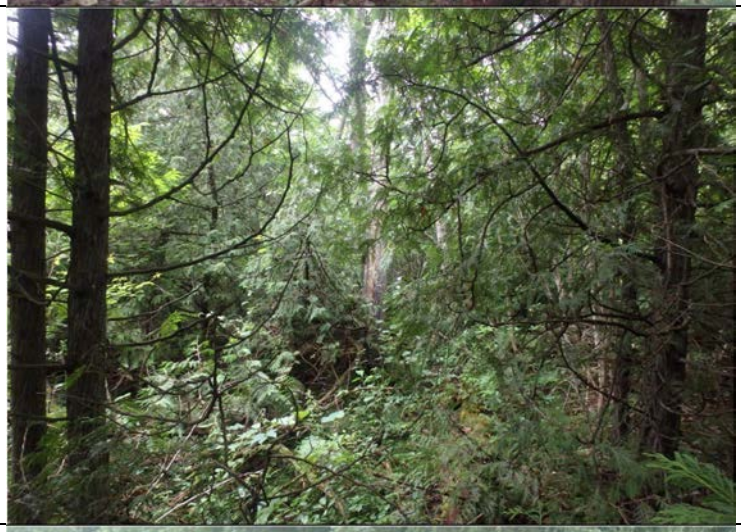
Photo 7 July 17, 2017 FOMM4-2: Dry – Fresh White Cedar – Poplar Mixed Forest	
Photo 8 July 17, 2017 FOMM7-2: Fresh – Moist White Cedar – Hardwood Mixed Forest	
Photo 9 July 17, 2017 MAMM1-2: Cattail Graminoid Mineral Meadow Marsh	

Photo 10 July 17, 2017 MAMM2-5: Purple Loosestrife Forb Mineral Meadow Marsh	
Photo 11 July 17, 2017 MAMO1-2: Cattail Graminoid Organic Meadow Marsh	
Photo 12 July 17, 2017 MASO1-1: Cattail Organic Shallow Marsh	

Photo 13 July 17, 2017 SWCO1-2: White Cedar - Conifer Organic Coniferous Swamp	
Photo 14 July 17, 2017 SWDM4-1: Willow Mineral Deciduous Swamp	
Photo 15 July 17, 2017 SWMO1-1: White Cedar – Hardwood Organic Mixed Swamp	

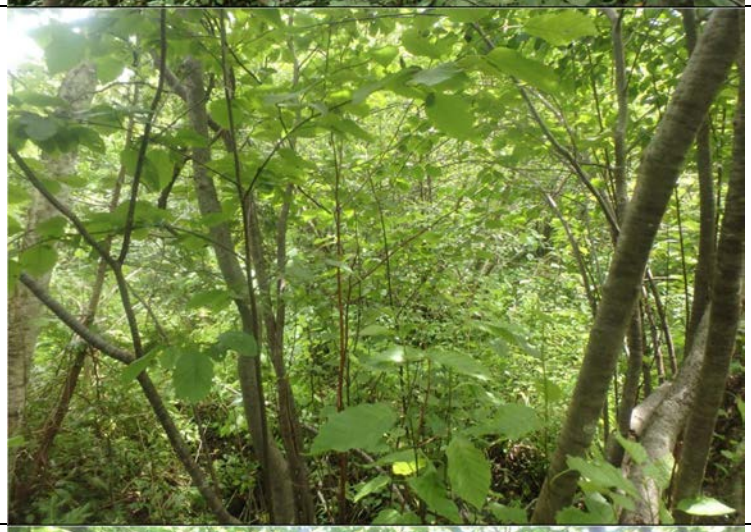
Photo 16 July 17, 2017 SWMO3-1: Yellow Birch -Conifer Organic Mixed Swamp	
Photo 17 July 17, 2017 SWT O1-1: Speckled Alder Organic Deciduous Thicket Swam p	
Photo 18 July 17, 2017 SWT O4-1: Red-osier Organic Deciduous Thicket Swamp	

Photo 19 July 17, 2017 MEMM3: Dry - Fresh Mixed Meadow	
Photo 20 July 17, 2017 OAGM1: Annual Row Crop	
Photo 21 July 17, 2017 OAGM4: Open Pasture	

Photo 22 July 17, 2017 Pond located within the cattle pasture.	
Photo 23 July 17, 2017 Shows agricultural buildings and barn swallows foraging above	

Appendix I

Vegetation Inventory

Vegetation Inventory Results

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Coefficient Conservation	Coefficient Wetness	Invasive Ranking
---	Apple sp.	---	---	---	---	---	---
Abies balsamea	Balsam Fir	---	---	S5	5	-3	---
Acer negundo	Manitoba Maple	---	---	S5	0	-2	4
Acer platanoides	Norway Maple	---	---	SNA	---	5	6
Acer rubrum	Red Maple	---	---	S5	4	0	---
Acer saccharinum	Silver Maple	---	---	S5	5	-3	---
Acer saccharum	Sugar Maple	---	---	S5	4	3	---
Acer spicatum	Mountain Maple	---	---	S5	6	3	---
Aesculus hippocastanum	Horse Chestnut	---	---	SNA	---	5	2
Agrostis stolonifera	Creeping Bentgrass	---	---	SNA	0	-3	---
Alliaria petiolata	Garlic Mustard	---	---	SNA	---	0	9
Alnus incana	Speckled Alder	---	---	S5	6	-5	---
Ambrosia artemisiifolia	Annual Ragweed	---	---	S5	0	3	---
Aralia nudicaulis	Wild Sarsaparilla	---	---	S5	4	3	---
Aruncus dioicus	Common Goatsbeard	---	---	SNA	---	3	---
Asclepias incarnata	Swamp Milkweed	---	---	S5	6	-5	---
Athyrium filix-femina var. *angustum*	Northeastern Lady Fern	---	---	S5	4	0	---
Betula alleghaniensis	Yellow Birch	---	---	S5	6	0	---
Betula papyrifera	Paper Birch	---	---	S5	2	2	---
Bromus inermis	Awnless Brome	---	---	SNA	---	5	4
Caltha palustris	Yellow Marsh Marigold	---	---	S5	5	-5	---
Carduus nutans ssp. *nutans*	Nodding Thistle	---	---	SNA	---	5	---
Carex aurea	Golden-fruited Sedge	---	---	S5	4	-4	---

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Coefficient Conservation	Coefficient Wetness	Invasive Ranking
Carex bebbii	Bebb's Sedge	---	---	S5	3	-5	---
Carex cristatella	Crested Sedge	---	---	S5	3	-4	---
Carex gracillima	Graceful Sedge	---	---	S5	4	3	---
Carex intumescens	Bladder Sedge	---	---	S5	6	-4	---
Carex lacustris	Lake-bank Sedge	---	---	S5	5	-5	---
Carex lupulina	Hop Sedge	---	---	S5	6	-5	---
Carex retrorsa	Retrorse Sedge	---	---	S5	5	-5	---
Carex stipata	Awl-fruited Sedge	---	---	S5	3	-5	---
Carex stricta	Tussock Sedge	---	---	S5	4	-5	---
Carex vulpinoidea	Fox Sedge	---	---	S5	3	-5	---
Cichorium intybus	Chicory	---	---	SNA	---	5	---
Cicuta bulbifera	Bulb-bearing Water-hemlock	---	---	S5	5	-5	---
Cicuta maculata var. *maculata*	Spotted Water-hemlock	---	---	S5	6	-5	---
Circaea canadensis	Broad-leaved Enchanter's Nightshade	---	---	S5	3	3	---
Cirsium arvense	Canada Thistle	---	---	SNA	---	3	6
Convallaria majalis	European Lily-of-the-valley	---	---	SNA	---	5	4
Cornus alternifolia	Alternate-leaved Dogwood	---	---	S5	6	5	---
Cornus racemosa	Gray Dogwood	---	---	S5	2	-2	---
Cornus sericea ssp sericea	Red-osier Dogwood	---	---	S5	2	-3	---
Crataegus monogyna	English Hawthorn	---	---	SNA	---	5	6
Cystopteris bulbifera	Bulblet Fern	---	---	S5	5	-2	---
Dactylis glomerata	Orchard Grass	---	---	SNA	---	3	4
Daucus carota	Wild Carrot	---	---	SNA	---	5	3
Diervilla lonicera	Northern Bush-honeysuckle	---	---	S5	5	5	---

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Coefficient Conservation	Coefficient Wetness	Invasive Ranking
Dryopteris cristata	Crested Wood Fern	---	---	S5	7	-5	---
Dryopteris marginalis	Marginal Wood Fern	---	---	S5	5	3	---
Echium vulgare	Common Viper's-bugloss	---	---	SNA	---	5	---
Elymus hystrix	Bottlebrush Grass	---	---	S5	5	5	---
Epilobium hirsutum	Hairy Willowherb	---	---	SNA	---	-4	---
Epipactis helleborine	Eastern Helleborine	---	---	SNA	---	5	---
Equisetum arvense	Field Horsetail	---	---	S5	0	0	---
Equisetum palustre	Marsh Horsetail	---	---	S5	10	-3	---
Euonymus obovata	Running Strawberry Bush	---	---	S5	6	5	---
Eupatorium perfoliatum	Common Boneset	---	---	S5	2	-4	---
Euphorbia esula	Leafy Spurge	---	---	SNA	---	5	9
Euthamia graminifolia	Grass-leaved Goldenrod	---	---	S5	2	-2	---
Eutrochium maculatum var. *maculatum*	Spotted Joe Pye Weed	---	---	S5	3	-5	---
Fagus grandifolia	American Beech	---	---	S4	6	3	---
Fragaria virginiana	Wild Strawberry	---	---	S5	2	1	---
Fraxinus americana	White Ash	---	---	S4	4	3	---
Fraxinus nigra	Black Ash	---	---	S4	7	-4	---
Fraxinus pennsylvanica	Green Ash	---	---	S4	3	-3	---
Galium asprellum	Rough Bedstraw	---	---	S5	6	-5	---
Galium palustre	Marsh Bedstraw	---	---	S5	5	-5	---
Geranium robertianum	Herb-Robert	---	---	S5	---	5	4
Geum aleppicum	Yellow Avens	---	---	S5	2	-1	---
Geum canadense	White Avens	---	---	S5	3	0	---

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Coefficient Conservation	Coefficient Wetness	Invasive Ranking
Glyceria grandis	Tall Mannagrass	---	---	S4S5	5	-5	---
Glyceria striata	Fowl Mannagrass	---	---	S5	3	-5	---
Gymnocarpium dryopteris	Common Oak Fern	---	---	S5	7	0	---
Hypericum perforatum	Common St. John's-wort	---	---	SNA	---	5	---
Impatiens capensis	Spotted Jewelweed	---	---	S5	4	-3	---
Juglans nigra	Black Walnut	---	---	S4	5	3	---
Juncus effusus	Soft Rush	---	---	S5	4	-5	---
Juniperus virginiana	Eastern Red Cedar	---	---	S5	4	3	---
Laportea canadensis	Wood Nettle	---	---	S5	6	-3	---
Larix laricina	American Larch	---	---	S5	7	-3	---
Leersia oryzoides	Rice Cutgrass	---	---	S5	3	-5	---
Leucanthemum vulgare	Oxeye Daisy	---	---	SNA	---	5	3
Maianthemum canadense	Wild Lily-of-the-valley	---	---	S5	5	0	---
Maianthemum racemosum	False Solomon's-seal	---	---	S5	4	3	---
Matricaria discoidea	Pineapple-weed Chamomile	---	---	SE5	---	---	---
Matteuccia struthiopteris	Ostrich Fern	---	---	S5	5	-3	---
Medicago lupulina	Black Medic	---	---	SNA	---	1	---
Medicago sativa	Alfalfa	---	---	SNA	---	5	---
Melilotus albus	White Sweet-clover	---	---	SNA	---	3	9
Mentha arvensis	Wild Mint	---	---	S5	3	-3	---
Mimulus ringens	Square-stemmed Monkeyflower	---	---	S5	6	-5	---
Myosotis scorpioides	True Forget-me-not	---	---	SNA	---	-5	4
Oenothera biennis	Common Evening Primrose	---	---	S5	0	3	---
Onoclea sensibilis	Sensitive Fern	---	---	S5	4	-3	---

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Coefficient Conservation	Coefficient Wetness	Invasive Ranking
Oryzopsis asperifolia	White-grained Mountain-ricegrass	---	---	S5	6	5	---
Osmunda claytoniana	Interrupted Fern	---	---	S5	7	-1	---
Parthenocissus quinquefolia	Virginia Creeper	---	---	S4?	6	1	---
Phalaris arundinacea	Reed Canary Grass	---	---	S5	0	-4	9
Phleum pratense	Common Timothy	---	---	SNA	---	3	---
Phragmites australis ssp. *americanus*	Common Reed	---	---	S4?	---	---	---
Picea abies	Norway Spruce	---	---	SNA	---	5	---
Picea glauca	White Spruce	---	---	S5	6	3	---
Picea pungens	Blue Spruce	---	---	SNA	---	---	---
Pinus strobus	Eastern White Pine	---	---	S5	4	3	---
Pinus sylvestris	Scotch Pine	---	---	SNA	---	5	2
Poa pratensis ssp. *pratensis*	Kentucky Bluegrass	---	---	S5	0	1	6
Populus balsamifera	Balsam Poplar	---	---	S5	4	-3	---
Populus tremuloides	Trembling Aspen	---	---	S5	2	0	---
Prunella vulgaris ssp. *vulgaris*	Self-heal	---	---	SNA	---	0	---
Prunus pensylvanica	Pin Cherry	---	---	S5	3	4	---
Prunus serotina	Wild Black Cherry	---	---	S5	3	3	---
Quercus macrocarpa	Bur Oak	---	---	S5	5	1	---
Quercus rubra	Northern Red Oak	---	---	S5	6	3	---
Ranunculus acris	Tall Buttercup	---	---	SNA	---	-2	---
Ribes americanum	Wild Black Currant	---	---	S5	4	-3	---
Ribes triste	Swamp Red Currant	---	---	S5	6	-5	---
Robinia pseudoacacia	Black Locust	---	---	SNA	---	4	4
Rosa multiflora	Multiflora Rose	---	---	SNA	---	3	6

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Coefficient Conservation	Coefficient Wetness	Invasive Ranking
Rubus allegheniensis	Alleghany Blackberry or Common Blackberry	---	---	S5	2	2	---
Rubus idaeus ssp. *idaeus*	Common Red Raspberry	---	---	SNA	---	5	---
Rubus occidentalis	Black Raspberry	---	---	S5	2	5	---
Rubus pubescens	Dewberry or Dwarf Raspberry	---	---	S5	4	-4	---
Sagittaria latifolia	Broad-leaved Arrowhead	---	---	S5	4	-5	---
Salix alba	White Willow	---	---	SNA	---	-3	3
Salix bebbiana	Bebb's Willow	---	---	S5	4	-4	---
Salix discolor	Pussy Willow	---	---	S5	3	-3	---
Salix eriocephala	Heart-leaved Willow	---	---	S5	4	-3	---
Sambucus canadensis	Common Elderberry	---	---	S5	5	-2	---
Sambucus racemosa ssp. *Pubens*	Red-berried Elderberry	---	---	S5	5	2	---
Securigera varia	Common Crown-vetch	---	---	SNA	---	5	4
Silene latifolia	White Campion	---	---	SNA	---	5	---
Silene vulgaris	Maiden's Tears	---	---	SNA	---	5	---
Solanum dulcamara	Climbing Nightshade or Bittersweet Nightshade	---	---	SNA	---	0	4
Solidago altissima ssp. *altissima*	Eastern Late Goldenrod	---	---	S5	1	3	---
Solidago canadensis var. *canadensis*	Canada Goldenrod	---	---	S5	1	3	---
Solidago rugosa var. *rugosa*	Northern Rough-leaved Goldenrod	---	---	S5	4	-1	---
Spiraea alba	White Meadowsweet	---	---	S5	3	-4	---
Stachys byzantina	Wooly Hedge-nettle	---	---	SNA	---	---	---
Symphyotrichum ericoides var. *ericoides*	White Heath Aster	---	---	S5	4	4	---
Symphyotrichum laeve var. *laeve*	Smooth Aster	---	---	S5	7	5	---

Scientific Name	Common Name	SARA[1]	ESA[2]	Srank[3]	Coefficient Conservation	Coefficient Wetness	Invasive Ranking
Symphyotrichum lanceolatum ssp. *lanceolatum*	Panicled Aster	---	---	S5	3	-3	---
Symphyotrichum novae-angliae	New England Aster	---	---	S5	2	-3	---
Symphyotrichum pilosum var. *pilosum*	Old Field Aster	---	---	S5	4	2	---
Symphyotrichum puniceum var. *puniceum*	Swamp Aster	---	---	S5	6	-5	---
Syringa vulgaris	Common Lilac	---	---	SNA	---	5	4
Taraxacum officinale	Common Dandelion	---	---	SNA	---	3	---
Thalictrum dioicum	Early Meadow-rue	---	---	S5	5	2	---
Thuja occidentalis	Eastern White Cedar	---	---	S5	4	-3	---
Tilia americana	American Basswood	---	---	S5	4	3	---
Trifolium pratense	Red Clover	---	---	SNA	---	2	---
Trifolium repens	White Clover	---	---	SNA	---	2	---
Trillium grandiflorum	White Trillium	---	---	S5	5	5	---
Typha latifolia	Broad-leaved Cattail	---	---	S5	3	-5	---
Ulmus americana	American Elm	---	---	S5	3	-2	---
Verbascum thapsus	Common Mullein	---	---	SNA	---	5	---
Verbena hastata	Blue Vervain	---	---	S5	4	-4	---
Viburnum lentago	Nannyberry	---	---	S5	4	-1	---
Vicia cracca	Tufted Vetch	---	---	SNA	---	5	---
Vitis riparia	Riverbank Grape	---	---	S5	0	-2	---

References

Environment Canada. Species at Risk Public Registry. http://www.sararegistry.gc.ca. Accessed March 2017.

Hoffman and Richards. 1953. Soil Survey of Peel County.

Lee, H.T., W.D. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario: First Approximation and Its Application.

Ontario Breeding Bird Atlas (OBBA). 2001. Guide for Participants. Atlas Management Board, Federation of Ontario Naturalists, Don Mills. Available at: http://www.birdsontario.org/atlas/download/obba_guide_en.pdf

Ontario Ministry of Municipal Affairs and Housing (MMAH). 2017a. Greenbelt Plan (2017). Available from http://www.mah.gov.on.ca/Page13783.aspx

Ontario Ministry of Municipal Affairs and Housing (MMAH). 2017b. Oak Ridges Moraine Conservation Plan 2017. Available from http://www.mah.gov.on.ca/Page13788.aspx

Ontario Ministry of Municipal Affairs and Housing (MMAH). 2017c. Growth Plan for the Greater Golden Horseshoe 2017. Available from https://www.placestogrow.ca/index.php?option=com_content&task=view&id=9

Ontario Ministry of Municipal Affairs and Housing (MMAH). Provincial Policy Statement. 2014. Available at http://www.mah.gov.on.ca/Page10679.aspx.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2018. Eastern wood-pewee. Updated June 28, 2018. Available from https://www.ontario.ca/page/eastern-wood-pewee.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2018. Golden-winged warbler. Updated June 28, 2018. Available from https://www.ontario.ca/page/golden-winged-warbler.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2015. Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E. Available at: http://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTE1ODc5&statusId=MTg4ODY4&language=en

Ontario Ministry of Natural Resources and Forestry (MNRF). Natural Heritage Information Centre Database. http://nhic.mnr.gov.on.ca/. Accessed March 2017.

Ontario Ministry of Natural Resources and Forestry (MNRF). 2000. Significant Wildlife Habitat Technical Guide. 151pp.

Ontario Ministry of Natural Resources and Forestry (MNRF). The Species at Risk in Ontario (SARO) List. http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080230_e.htm.
Accessed March 2017.

Ontario Nature. Ontario Reptile and Amphibian Atlas 2010. http://www.ontarionature.org/protect/species/reptiles_and_amphibians/index.php.
Accessed March 2017.

Ontario Nature 2016. Dragonfly and Damselfly (Odonata) Guide. http://onnaturemagazine.com/dragonfly-and-damselfly-odonata-guide.html

Natural Resources Canada. National Air Photo Library.

North-South Environmental Inc., Dougan & Associates, Sorenson Gravely Lowes. 2009. Peel – Caledon Significant Woodlands and Significant Wildlife Habitat Study.

Peel Regional Official Plan and Schedules. October 2014.

Toronto and Region Conservation Authority. Centreville Creek Subwatershed Study Synthesis Report. November 2008.

Toronto and Region Conservation Authority. The Living City Policies. 2014.

Toronto Entomologists Association. Ontario Butterfly Atlas Online. http://www.ontarioinsects.org/atlas_online.htm.
Accessed March 2017.

Town of Caledon Official Plan and Schedules. November 2016.