



**BROCK ROAD DUFFINS FOREST INC.**

# **Environmental Impact Study**

**2055 Brock Road, Pickering, Ontario**



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## 1.0

# Introduction

Dillon Consulting Limited (Dillon) was retained by Brock Road Duffins Forest Inc. to complete an Environmental Impact Study (EIS) in support of a development application for the proposed development at 2055 Brock Road (PIN 264390851, Parts of Lot 19, Concession 2) in the City of Pickering (the City), Ontario (the "Property"). Adjacent lands within 120 metres (m) of the Property boundary are considered the "Study Area" for the EIS (Figure 1).

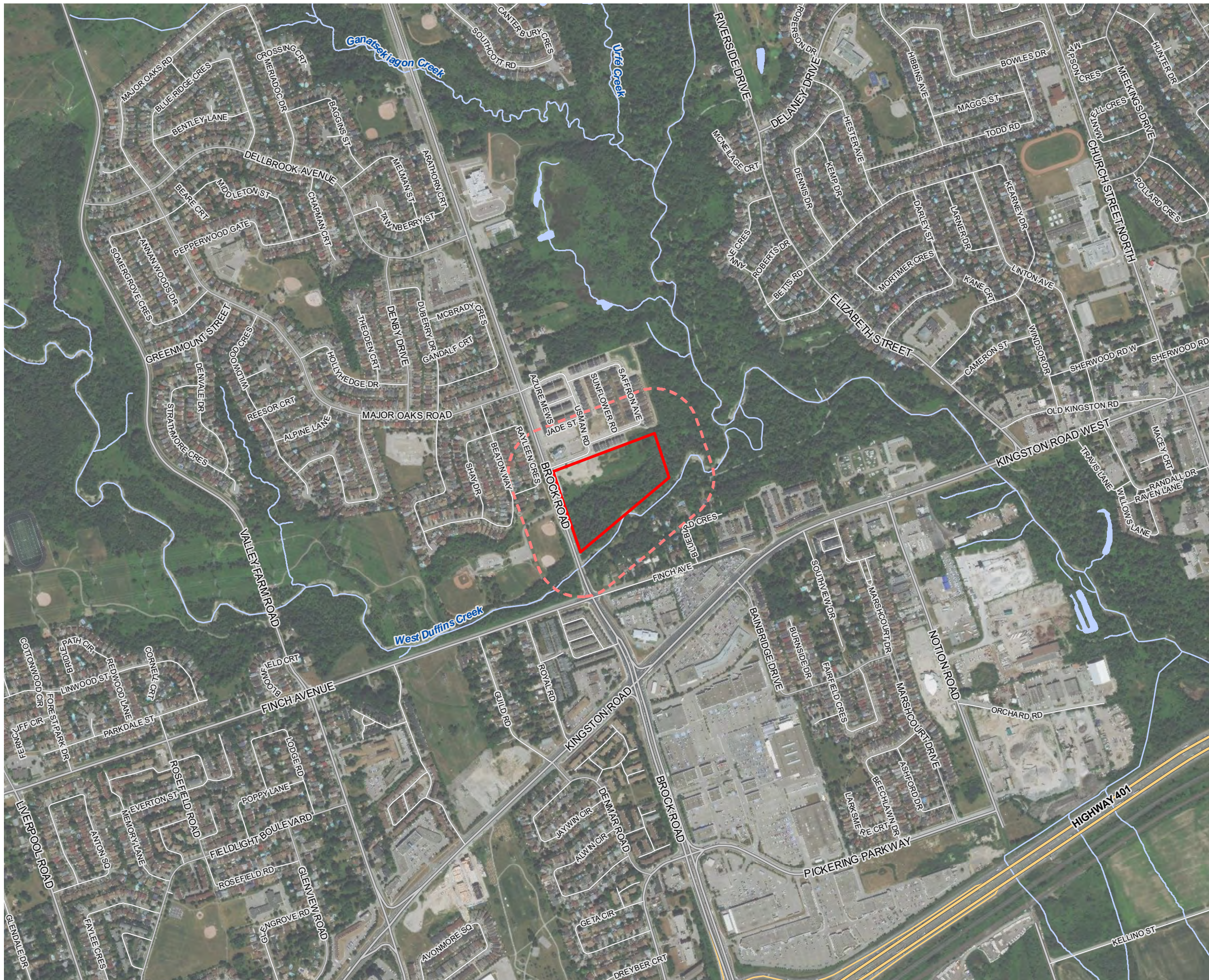
In brief, the Study Area consists of cultural and natural areas. While lands to the north and east in the Study Area consist of residential and transportation land uses, tablelands of the Property are currently vacant and consist of areas of disturbed meadow. Woodlands within the riparian corridor of the West Duffins Creek are located farther south and east within the Study Area. Parkland and Community Centres (i.e. the Pickering Islamic Centre) exist north and west within the Study Area.

The purpose of the EIS is to:

- a) Document existing conditions of the natural environment;
- b) Determine the potential limits of development;
- c) Evaluate the potential for environmental impacts associated with the proposed development; and,
- d) Recommend mitigation, restoration, enhancement measures to preserve and/or restore natural features, and if necessary, compensation.

An EIS update is required for the Study Area to support the new application for development as well as to account for Provincial and Municipal updates. The EIS produced by Dillon will update the 2009 EIS completed previously for the Study Area by Watershed Management Ecology (WME), and the 2012 EIS Update Letter prepared by Genivar. The EIS Update Letter (2012) provided a peer review of the submitted 2009 EIS against recent findings of the October 2011 Environmental Servicing Plan Update for the Duffins Precinct Southern Lands for the City of Pickering (ESPU; Sernas Associates) for which the Study Area is located.

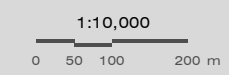
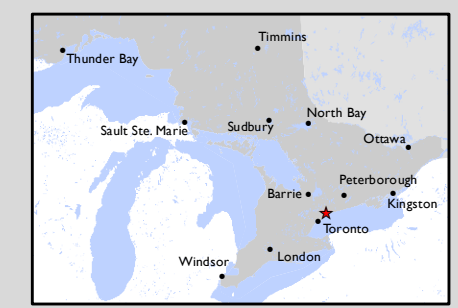
The 2009 EIS was initially drafted using feedback provided by the Toronto and Region Conservation Authority (TRCA); the 2009 EIS was submitted in support of a development application for a mixed use development. Consultation has continued for the Study Area since the first submission to ensure the updated EIS meets requirements of the Region, the City, and the TRCA.



**BROCK ROAD DUFFINS FOREST INC.  
2055 BROCK ROAD  
ENVIRONMENTAL IMPACT STUDY**

**FIGURE I  
PROJECT LOCATION**

- Property Boundary
- Study Area
- Water Body



MAP DRAWING INFORMATION:  
DATA PROVIDED BY MNRF  
IMAGERY DATE: 2018

MAP CREATED BY: GM/LK  
MAP CHECKED BY: CV  
MAP PROJECTION: NAD 1983 UTM Zone 17N



PROJECT: 19-1589  
STATUS: FINAL  
DATE: 2020-03-31

## 2.0 Overview of Policy Framework

The Study Area is subject to three levels of planning policies: federal, provincial, and municipal. For purposes of the following discussion, the most recent updated versions of the applicable documents have been reviewed. 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 should be read in their entirety for a more detailed understanding of the land use policy framework to the Study Area and surrounding area.

Policies within each document that relate to the natural environment and apply to the Study Area are outlined in subsequent sections. Relevant planning policy schedules and maps for the Study Area are provided in Appendix A for reference.

### 2.1 Federal Framework

#### 2.1.1 Migratory Birds Convention Act, 1994

The Migratory Birds Convention Act (MBCA) came into effect in Canada on June 23, 1994. The purpose of the MBCA is to protect and conserve migratory bird species (this definition includes species populations, individuals, and their nests). There are three applicable regulations under the MBCA: Designations of Regulatory Provisions for Purposes of Enforcement (SOR/2017-108), Migratory Bird Sanctuary Regulations (C.R.C., C. 1036), and Migratory Birds Regulations (C.R.C., C. 1035). These regulations serve to define protected Bird Sanctuary Areas that receive protection, and identify prohibited actions against Migratory Birds and within Migratory Bird Sanctuaries.

Migratory Bird Sanctuaries (MBS) are designated by the Act for each province and provide safe refuge for migratory birds in terrestrial and marine environments. No designated MBS are located within the Study Area; however, based on the location of the Study Area relative to Lake Ontario potential stop over habitat for migratory birds may be provided in woodlands and wetlands within the riparian corridor of West Duffins Creek. The potential for migratory birds to occur within the Study Area is discussed further in Section 4.3.4.



## 2.2 Provincial Framework

### 2.2.1 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 4.4 of this report.

### 2.2.2

#### **A Place to Grow: Growth Plan for the Greater Golden Horseshoe, 2019**

Pursuant to the Places to Grow Act, 2005, the Growth Plan for the Greater Golden Horseshoe, 2019 (Growth Plan) was approved on June 16, 2006 (MMAH, 2005). The Growth Plan has been amended four times 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 (MMHA, 2012). The second amendment was released in June 2013, to update and extend the Growth Plan's population and employment forecasts (MMAH, 2013). Following the third amendment (July 1, 2017); the fourth and most recent amendment came into effect on May 16, 2019 (MMAH, 2019).

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, 2019). 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, 2019).

Section 4.2.2 of the Greater Golden Horseshoe Growth Plan states that the Natural Heritage System mapping will exclude lands within settlement area boundaries that were approved and in effect as of May 16, 2019. As per Section 4.2.2(6), beyond the Natural Heritage System, including within settlement areas, the municipality will continue to protect any other natural heritage features in a manner that is consistent with the PPS.

As per Schedule 4 of the Greater Golden Horseshoe Growth Plan (Appendix A), the Study Area is designated as "Built-Up Area". Policies regarding Built-Up Areas are listed under Section 2.2.2 of the GPGGH, speak to minimum intensification targets for residential development in delineated Built-Up Areas.

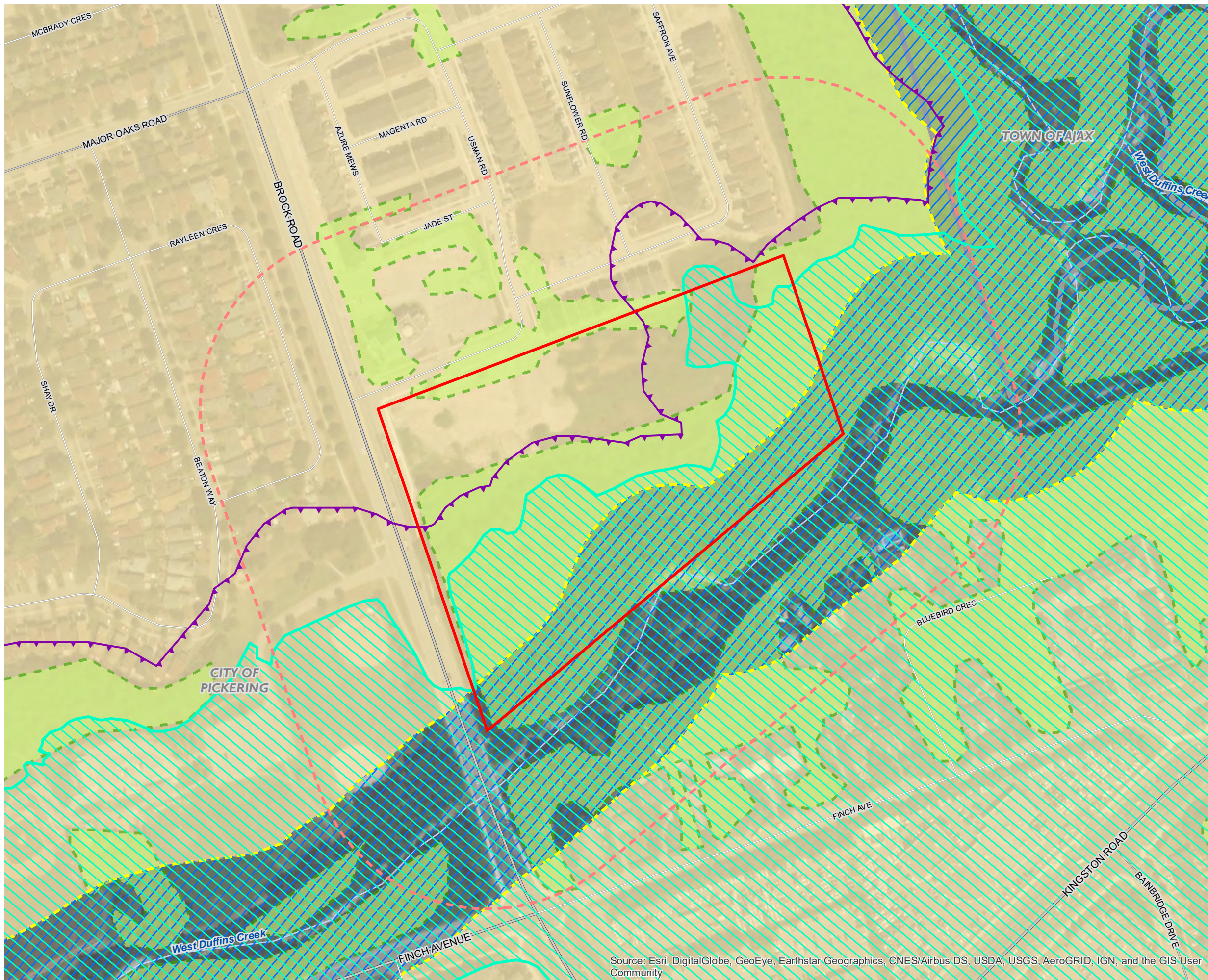
## 2.2.3

**The Greenbelt Plan, 2017**

Pursuant to the Greenbelt Act, 2005, the Greenbelt Plan was introduced in 2005 (MMAH) as a sub strategy to the original 2005 Growth Plan and the PPS (2014) to define growth and development within the GGH along with the Oakridge's Moraine Conservation Plan (ORMCP), and the Niagara Escarpment Plan (NEP). The Greenbelt Plan was recently updated in 2017; the update to the Greenbelt Plan was approved by the Lieutenant Governor in Council, Order in Council No. 1025/2017 as an amendment to the Greenbelt Plan on July 1, 2017.

Lands that fall within the Greenbelt Area are delineated in Ontario Regulation 59/05 and areas shown on Schedule 1 (Appendix A). Designated lands under Schedule 1 of the Greenbelt Plan protect agricultural resources as well as natural heritage and water resources. The entire Study Area is identified as "Settlement Areas Outside of the Greenbelt" (Map 63, Schedule 1; Appendix A). Within the Study Area, the ravine system located to the south and east within the West Duffins Creek riparian corridor are designated as "Urban River Valleys" ( Map 63, Schedule 1; Appendix A) of the Greenbelt Plan. The Urban River Valley designations of the Greenbelt Plan identified within the Study Area are depicted in Figure 2(Planning Policies).

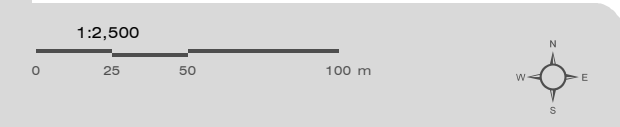
As per Policy 1 under Section 6.2 (Urban River Valley Policies) of the Greenbelt Plan, "Only publicly owned lands are subject to the policies of the Urban River Valley designation. Any privately owned lands within the boundary of the Urban River Valley area are not subject to the policies of this designation. For the purposes of this section, publicly owned lands means "lands in the ownership of the Province, a municipality or a local board, including a conservation authority."



**BROCK ROAD DUFFINS FOREST INC.  
2055 BROCK ROAD  
ENVIRONMENTAL IMPACT STUDY**

**FIGURE 2  
NATURAL HERITAGE**

- Property Boundary
- Study Area
- Watercourse
- Municipal Boundary
- Greenbelt Plan (2017)**
- Greenbelt Outer Boundary (Schedule I)
- Urban River Valley (Schedule I)
- Settlement Area Outside of the Greenbelt
- Ministry of Natural Resources and Forestry**
- MNRF Wooded Area
- Toronto and Region Conservation Authority**
- Conceptual Regulated Area Limit (2019, approx.)
- Floodplain (2019, approx.)



MAP DRAWING INFORMATION:  
DATA PROVIDED BY MNR, TRCA

MAP CREATED BY: GMLK  
MAP CHECKED BY: CV  
MAP PROJECTION: NAD 1983 UTM Zone 17N



PROJECT: 191589  
STATUS: FINAL  
DATE: 2020-03-31

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

#### 2.2.4 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 Ministry of Environment, Conservation and Parks (MECP).

The potential for SAR and SAR habitat to be present within the Study Area is discussed further in Section 3.2.3 and Section 4.4.6 of this report.

#### 2.2.5 Conservation Authority Act, 1990

Ontario Regulation 166/06, made under the authority of Section 28 of the Conservation Authorities Act, is intended to ensure public safety and protect property with respect to natural hazards and to safeguard watershed health by preventing pollution and destruction of sensitive environmental areas such as wetlands, shorelines and watercourses.

Ontario Regulation 166/06 establishes Regulated Areas where development could be subject to flooding, erosion or dynamic beaches, river or stream valley with depressional features associated with a river or stream, hazardous lands, wetlands, or other areas where development could interfere with the hydrologic function of a wetland. Under Ontario Regulation 166/06, any proposed development, interference or alteration within a Regulated Area requires a permit from TRCA.

The east and south boundaries of the Study Area associated with the riparian corridor and floodplain of the West Duffins Creek are located within the TRCA Regulated Area (Figure 2). Floodplain mapping provided by the TRCA is also depicted in Figure 2.

#### 2.2.5.1 Toronto and Region Conservation Authority Living City Policies, 2014

The Living City Policies (LCP) for Planning and Development in the Watershed of the TRCA, November 2014 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). Policies within Section 7 of the LCP apply to applications circulated to TRCA for comment under the Planning Act. 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.

Under Section 7.3.1.2, of the LCP, it is the policy of the TRCA:

- a) *That natural features and areas include: valley and stream corridors; wetlands; fish habitat, woodlands, wildlife habitat, habitat of endangered and threatened species, Species of Concern, Areas of Natural and Scientific Interest (ANSIs), key natural heritage features as per Provincial plans, Environmentally Significant Areas (ESAs).*
- b) *That all natural features and areas within the Natural System be protected from development, site alteration, and infrastructure in accordance with the Natural System policies in 7.3.1.*
- c) *That any natural feature or area isolated from the Natural System (e.g., tableland woodlands, tableland wetlands, headwater drainage features), be assessed in accordance with federal, provincial and municipal requirements, and TRCA standards, to determine the need to protect the natural feature or area and its functions, and any potential connection to the Natural System.*
- d) *To not support modifications to natural features and areas to accommodate or facilitate development except in accordance with this document, and in particular the policies in Section 7.4 (Environmental Management) and Sections 8.4 to 8.13 (Regulation).*

Under Section 7.3.1.3 Natural Hazards of the LCP, it is the policy of the TRCA:

- a) To implement the delegated responsibility to represent the "Provincial Interest" on natural hazards in the review of policy documents and development proposals processed under the Planning Act to ensure consistency with Section 3.1, Natural Hazards, of the PPS.
- b) That development and site alteration be directed to areas outside hazardous lands (flood hazard, erosion hazard, dynamic beach hazard) and hazardous sites (unstable soils, unstable bedrock), except as may be permitted by the policies under sections 7.4 and 7.5 and 8.4 to 8.13.
- c) That the limit and extent of hazardous lands and hazardous sites be determined in a manner consistent with Provincial standards and TRCA standards and in accordance with policies in Section 7.4.3 of the LCP. Such limits will be based on the natural state of the area without the use of mitigation or remediation works, unless the proposed works are consistent with the recommendations of an approved environmental assessment or comprehensive environmental study for the area, approved by the TRCA.
- d) That as components of the Natural System, a buffer be applied to the limit of hazardous lands and hazardous sites, in accordance with Section 7.3.1.4. This buffer shall include the applicable erosion access allowances.

- e) That TRCA will work with member municipalities to provide and update mapping of hazardous lands and hazardous sites and recommend to municipalities that these lands be designated and zoned appropriately in municipal planning documents.
- f) That no new lots be created within hazardous lands and hazardous sites, except for dedication to a public agency for protection purposes.
- g) That development, and site alteration not be permitted in areas that would be rendered inaccessible to people and vehicles due to hazardous lands and hazardous sites, unless the site has safe access appropriate for the nature of the development and the natural hazard.
- h) That development and site alteration not be permitted in hazardous lands and hazardous sites where the use is:
  - i. An institutional use including hospitals, long-term care homes, retirement homes, pre-schools, school nurseries, day cares and schools;
  - ii. An essential emergency service such as that provided by fire, police, and ambulance stations, and electrical substations; or
  - iii. Uses associated with the disposal, manufacture, treatment, or storage of hazardous substances.

As per Section 7.3.1.4 of the LCP, with regards to providing buffers to Valley or Stream Corridors, Wetlands, Woodlands and the Regional flood plain, it is policy of the TRCA:

- a) That all areas of potential natural cover be protected for restoration and enhancement, in accordance with the Natural System policies in 7.3.1.
- b) That when any of the following apply:
  - i. potential natural cover cannot be protected as described in policy 7.3.1.4 a); or
  - ii. there exists an isolated natural feature and/or a natural hazard that warrants protection but it is not captured, or not entirely captured, by 7.3.1 e) i) and ii), the limit of the Natural System be determined by the greater of the outer limits of the natural feature and/or natural hazard to development or site alteration, as follows:
    - Valley or Stream Corridors – a 10-metre buffer from the greater of the long term stable top of slope/bank, stable toe of slope, Regulatory flood plain, meander belt, and any contiguous natural features or areas;
    - Woodlands – a 10 m buffer from the dripline and any contiguous natural features or areas;
    - Wetlands – a 30-metre buffer from provincially significant wetlands and a 10-metre buffer for all other wetlands and any contiguous natural features or areas.

## 2.3 Municipal Framework

### 2.3.1 Durham Regional Official Plan, Consolidated 2017

The Durham Regional Official Plan (ROP) was adopted by Regional Council on July 14, 1976, and approved by the Minister of Housing on March 17, 1978. The ROP has been amended several times since it was first approved; the ROP was first replaced in November of 1993, and again in June of 2009. The most recent version of the ROP is represented by the Office Consolidation dated May, 2017; however, several Sections of the ROP are under appeal by the Ontario Municipal Board (OMB).

The ROP is the long-range strategic land use policy document for the Region. It provides policies to ensure an improved quality of life for residents of the Region, as well as a long-term regional strategic policy framework to guide growth and development for the area municipalities within the Region while living harmoniously with the natural environment to create healthy and complete, sustainable communities within livable urban spaces (ROP, 2017).

Land use designations assigned by the ROP reflect the anticipated land uses as identified by the Region and identify locations of existing natural features within the Study Area. Designations assigned to the tablelands of the Study Area identify areas for potential development and community growth. Proposed development and site alteration for the Study Area are also required to adhere to development policies of designations for natural features. ROP Schedules containing designations for the Study Area are available in Appendix A. ROP designations identified in the Study Area and their associated policies are discussed below (2017).

As depicted by the ROP (2017), tablelands within the Study Area are designated as “Living Areas” (Schedule A) and as “Urban Areas” within Schedule B. Whereas lands within the riparian corridor of West Duffins Creek are designated as “Major Open Space” within the Greenlands System under Schedule A and as “Key Natural Heritage and Hydrologic Features” within Schedule B. Tableland

Policies regarding Living Areas are discussed in Section 8B of the ROP (2017); these policies identify appropriate land uses for development and community growth. Living Areas comprise of lands consisting of the Regional Urban System (Schedule A). According to Sections 8.1.15 and 8.1.16, Living Areas are to provide “a full range of housing and safe and sustainable communities that exist in harmony with nature.” As described by Section 8B.1.2, Living Areas located along arterial roads are to be developed at higher densities through intensification. Policies for the protection of the “Environment, Greenlands System, and Major Open Space” are provided in Section 2 of the ROP (2017). As stated under Section 2.2.1, “Major Open Space Areas and Key Natural Heritage and Hydrologic Features shall be given paramount consideration in light of their ecological functions, and scientific, educational and health values.”



Additional policies for Major Open Space Areas of the Greenland System are discussed in Section 10A of the ROP (2017). As per Section 10A.1.1, Major Open Space Areas include Key Natural Heritage and Hydrologic Features; conservation is the predominant land use permitted within lands designated as Major Open Space.

As per Section 10A.2.2 of the ROP (2017), a proposal for development or site alteration within Major Open Space Areas must demonstrate that

- a) "There will be no negative effects on key natural heritage or hydrologic features or their functions;
- b) Connectivity between Key Natural Features or Hydrological Features is maintained, or where possible, enhanced for the movement of native plants and animals across the landscape;
- c) The removal of other natural features not identified as Key Natural Heritage or Hydrologic Features should be avoided. Such features should be incorporated into the planning and design of the proposed use wherever possible. "

Key Natural Heritage Features identified within the Study Area are protected under Section 2.3, which specifically states that "Woodlands, wetlands, and peat bogs shall be protected and managed to provide environmental, recreational, and economic benefits to the Region."

As per Section 2.3.15, the ROP states that "development or site alteration is not permitted in Key Natural Heritage and/or Hydrologic Features, including any associated vegetation protection zone." In accordance to Section 2.3.16, for Key Natural Heritage and/or Hydrologic Features designated within Urban Areas, "the vegetative protection zone shall be determined through an environmental impact study, in accordance with Policy 2.3.43. The scope of the environmental impact study for any development or site alteration shall be determined in accordance with the Council approved EIS Guideline".

### 2.3.2 City of Pickering Official Plan, Consolidated 2018

The most recent version of the City of Pickering Official Plan (OP; Office Consolidation 2018) incorporates two amendments to the former seventh edition of the OP (dated September 2017). The two amendments added new policies and schedules for the protection of the natural environment and countryside areas. The purpose of the City's OP (2018) as described by the Plan's introduction is to provide a "foundation for building a good community." As part of the foundation, the City's OP (2018) provides a program to monitor development within the area municipality under the Region and the ROP (2017).

In accordance to the ROP (2017), designations provided by the City OP (2018) for the Study Area reflect the anticipated land uses for community growth, as well as protection measures required for natural features identified.

The City's OP designates tablelands of the Study Area as "Urban Residential Areas (Medium Density Areas)", which identify these lands as potential areas for site alteration and development. Conversely, the riparian corridor of the West Duffins Creek is designated and therefore protected as "Natural Areas of the Open Space System" under Schedule I of the City's OP (2018). Schedules outlining designations of the City's OP (2018) for the Study Area are provided in Appendix A.

Urban Residential Areas identify potential areas for development within the Study Area. Policies regarding this designation are discussed in Section 3.9 of the City's OP (2018); these lands are used "primarily for housing and related uses, include home occupations and group homes." Low, medium and high densities are assigned to each area under this designation. Under Table 9 of the City's OP (2018), Medium Density Areas for which the Study Area is located can include a net residential density of over 30 and up to and including 80 dwellings per net hectare.

Riparian corridor areas designated as part of the Natural Areas of the Open Space System are protected and intended to be conserved or restored, and used for environmental education and recreation (2018). As per Chapter 3 of the City's OP, the Open Space System includes a variety of Key Natural Heritage and Key Hydrologic Features, such as "the Rouge-Duffins Wildlife Corridor, the Lake Iroquois shoreline, significant habitat of endangered species, threatened species and special concern species, the City's significant valleylands and stream corridors, shorelines, areas of natural and scientific interest, wetlands, significant woodlands, and significant wildlife and fish habitat." As per Section 3.5 of the City's OP (2018), City Council:

- a) "shall recognize as Open Space System on Schedule I, a connected and integrated natural heritage system of significant valleylands and stream corridors; shorelines; areas of natural and scientific interest; wetlands; significant woodlands; major parks, recreational and conservation areas; marina areas, and other major blocks of land comprising natural core areas, corridors; Natural Core Areas and Natural Linkage Areas on the Oak Ridges Moraine; and the Seaton Natural Heritage System within the Central Pickering Development Plan; and
- c) shall recognize that the Open Space System includes Key Natural Heritage and Key Hydrologic Features which have related minimum areas of influence and minimum vegetation protection zones."

Natural Areas of the Open Space System under Schedule I of the City's OP (2018) are further identified as part of the City's "Natural Heritage System (NHS)" under Schedule IIIA (The Natural Heritage System) (Appendix A). Key Natural Heritage and Hydrologically Sensitive Features which form the basis for the City's NHS are shown on Schedules IIB, IIC and IIID (Appendix A). Within the NHS, forest communities associated with the riparian corridor of West Duffins Creek are considered "Significant Woodlands" under Schedule IIIB (Key Natural Features). In addition, ravine areas of the West Duffins Creek riparian corridor are designated as "Shoreline, Significant Valleylands and Stream Corridors (Hazard Lands)" under Scheduled IIIC (Key Natural Features/Key Hydrologic Features). As per Table 3 of the City's OP

(2018), permissible uses within Natural Areas include “conservation, environmental protection, restoration, education, passive recreation, and similar uses” as well as “Stormwater management facilities and related works outside Key Natural Heritage and/or Key Hydrologic Features including any associated minimum vegetation protection zone, except for outfalls and related Low Impact Development (LID) works which may be in Key Natural Heritage and/or Key Hydrologic Features.”

## 3.0 Methodology

The existing conditions information contained in this EIS is based on prior field investigations completed in the Study Area, existing published data, and data made available through various public agencies and web-based mapping programs relating to the Study Area. Additional site reconnaissance activities were conducted by Dillon in 2019 to assist in the verification and further characterization of existing conditions for the Study Area.

### 3.1 Information Sources

To determine the existing conditions for the Study Area, secondary source information was reviewed to identify known environmental constraint areas, soils, landforms, geological features, significant natural heritage features such as watercourses, woodlands, wetlands and potential wildlife occurrences in relation to the Study Area. As identified in Section 2.2, several natural heritage features, as defined under the PPS (2014) require consideration within the EIS.

In addition, historic and current consultant reports were reviewed to further characterize existing conditions and natural heritage features within the Study Area, including:

- 2009 EIS : Phase 1 – 2055 Brock Road, prepared by WME;
- 2012 EIS Update Letter, prepared by Genivar;
- 2011 ESRU: prepared by Sernas Associates;
- 2019 Breeding Bird Surveys – 2055 Brock Road, prepared by Beacon;
- 2019 Geotechnical Investigation - Proposed Residential Development, 2055 Brock Road, prepared by Soil Engineers Ltd.
- 2019 Hydrogeological Assessment - Proposed Residential Development, 2055 Brock Road, prepared by Soil Engineers Ltd.

### 3.2 Field Methodology

Field reconnaissance activities conducted by Dillon in October, 2019 were to confirm existing conditions previously documented by Beacon (2019) and WRE (2009) as a result of past field investigations. During the October site visit, Dillon confirmed the presence/absence of vegetation communities and natural features within the Study Area. A list of dates for field investigations conducted within the Study Area by WME, Beacon and Dillon are provided in Table 1.

**Table 1: Dates and Times of Field Surveys**

Date	Purpose of Visit	Consultant
April, 2009	Natural Feature Staking Activities	WME and TRCA
April 27, 2009	Amphibian Breeding Survey #1	WME
May 6, 2009	Amphibian Breeding Survey #2	WME
May 14, 2009	Amphibian Breeding Survey #3	WME
June 23, 2009	Vegetation Community Assessment and botanical Inventory	WME
June 25, 2019	Breeding Bird Survey #1	Beacon
July 3, 2019	Breeding Bird Survey #2	Beacon
October 11, 2019	Confirmatory Site Visit	Dillon

Survey methodologies utilized in the 2009 EIS, as well as by Beacon (2019) and Dillon (2019) to conduct field investigations within the Study Area are described in the following sub-sections.

### 3.2.1 Ecological Land Classification

Vegetation communities described in the 2009 EIS were initially delineated using available open source data from the TRCA (2000). Vegetation communities identified by the TRCA were classified using the Ecological Land Classification (ELC) first approximation (Lee et al., 1998). As described in the 2009 EIS, ELC communities provided by the TRCA data set (2000) were evaluated in the field during a single site visit. With the exception of the addition of a single wetland community (Bulrush Mineral Shallow Marsh Type, MASM1-2), all communities identified by the TRCA were supported by WME (2009). A further review of ELC communities for the Study Area was recommended in the 2012 EIS Update Letter based on the results of wetland assessments described in the 2011 ESPU.

Vegetation communities were verified by Dillon in 2019 using the ELC system for Southern Ontario, second approximation (Lee et al., 1998; Lee, 2008) to confirm classifications previously provided for the Study Area. Vegetation studies involved identifying the dominant species in each vegetation community type. Species nomenclature is based on the species lists for Ontario maintained by the NHIC which uses international standards for taxonomy and nomenclature.

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 confirmatory ELC survey completed by Dillon are discussed in Section 4.3.2.

### 3.2.2 Botanical Assessment

Vegetation was surveyed by WME during the June 2009 site visit, where plant species were documented concurrently during ELC community evaluations. As a follow up to this work, a single season (fall) botanical assessment was completed by Dillon within the Study Area on October 11, 2019. Surveys 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 4.3.3.

### 3.2.3 Endangered, Threatened, and Rare Species

In addition to species occurrences identified through the background review, a search of the NHIC database and other available wildlife atlases was conducted to identify possible occurrences of federal and/or provincial SAR and/or provincially rare species in proximity to the Study Area. SAR are defined as those listed as Endangered or Threatened under the ESA. Species of Conservation Concern (SCC) are defined as species listed as Threatened or Endangered under the federal Species at Risk Act, 2002 (SARA), but not under the provincial ESA; species that are provincially rare/tracked (i.e. have a Sub-national (provincial) Rank of S1 – Critically Imperilled, S2 – Imperilled or S3 – Vulnerable) and/or are listed as Special Concern under the ESA.

A complete screening for SAR and SCC within the Study Area is available in Appendix C (Table C-1). Through background review, several SAR and SCC have been identified with the potential to occur within or adjacent to the Study Area (Table 2).

**Table 2: Species at Risk and Species of Conservation Concern with the Potential to Occur within the Study Area**

Scientific Name	Common Name	SARA <sup>1</sup>	ESA <sup>2</sup>	SRANK <sup>3</sup>	Info Source <sup>4</sup>
<b>Species at Risk</b>					
<i>Juglans cinerea</i>	Butternut	END	END	S3?	NHIC; ESPU 2012
<i>Dolichonyx oryzivorus</i>	Bobolink	---	THR	S4B	NHIC, OBBA
<i>Hirundo rustica</i>	Barn Swallow	---	THR	S4B	NHIC, OBBA
<i>Icteria virens virens</i>	Yellow-breasted Chat	END	END	S2B	OBBA
<i>Sturnella magna</i>	Eastern Meadowlark	---	THR	S4B	NHIC, OBBA
<i>Riparia riparia</i>	Bank Swallow	THR	THR	S4B	NHIC, OBBA
<i>Myotis lucifugus</i>	Little Brown Myotis	END	END	S4	MWH
<i>Myotis septentrionalis</i>	Northern Myotis	END	END	S3	MWH
<i>Myotis leibii</i>	Eastern Small-footed Myotis	---	END	S2S3	MWH
<i>Pipistrellus subflavus</i>	Tri-colored Bat	END	END	S3?	MWH
<i>Clinostomus elongatus</i>	Redside Dace	---	END	S2	NHIC
<b>Species of Conservation Concern</b>					
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	SC	SC	S4B	OBBA
<i>Contopus virens</i>	Eastern Wood-pewee	---	SC	S4B	OBBA
<i>Hylocichla mustelina</i>	Wood Thrush	---	SC	S4B	OBBA
<i>Cardellina canadensis</i>	Canada Warbler	THR	SC	S4B	NHIC
<i>Euphagus carolinus</i>	Rusty Blackbird	SC	SC	S4B	NHIC
<i>Chelydra serpentina</i>	Snapping Turtle	SC	SC	S3	NHIC, OHA, ON
<i>Graptemys geographica</i>	Northern Map Turtle	SC	SC	S3	NHIC, OHA
<i>Danaus plexippus</i>	Monarch	SC	SC	S2N, S4B	OBA

<sup>1</sup>Federal Species at Risk Act; <sup>2</sup>Ontario Endangered Species Act, 2007; <sup>3</sup>SRank 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. S5 = Secure, S4 = Apparently Secure, S3 = Vulnerable, S2 = Imperiled, S1 = Critically Imperiled, ? = Ranking Uncertain, N= National Ranking, B = within species breeding range. <sup>4</sup>Information sources include: NHIC = Provincially Tracked Species; OBBA = Ontario Breeding Bird Atlas; OBA = Ontario Butterfly Atlas; OHA = Ontario Herpetofaunal Atlas; ON = Ontario Nature: Ontario Reptile and Amphibian Atlas; SARA = Species at Risk Act; THR = Threatened, SC= Special Concern; "----"denotes no information or not applicable;.

Of the SAR listed above, Butternut was documented previously within the Study Area in the ESPU 2012. Details regarding Butternut, as well as the potential for other SAR or SCC to occur within the Study Area is discussed further in Sections 4.4.6 and 4.4.7.

### 3.2.4 Identification of Significant Wildlife Habitat

Criteria for determining significance of wildlife habitat (SWH) follow the guidelines outlined in the Natural Heritage Reference Manual (NHRM; MNRF, 2010), the Significant Wildlife Habitat Technical Guide (SWHTG; MNRF, 2000) and the Ecoregion 6E Criteria Schedules (MNRF, 2015), where applicable.

A review of the MNRF background data and available habitat within the Study Area suggests that the following candidate SWH types may be present within and adjacent to the Study Area:

- Bat Maternity Colonies;
- Turtle Wintering Areas;
- Amphibian Breeding Habitat (Wetland and Woodland);
- Land Bird Migratory Stopover Habitat; and
- Habitat for Special Concern and Rare Wildlife Species
  - Eastern Wood-pewee (*Contopus virens*),
  - Wood Thrush (*Hylocichla mustelina*),
  - Rusty Blackbird (*Euphagus carolinus*).

Based on the list of potential candidate SWH identified, breeding bird surveys and amphibian call surveys were conducted to establish baseline conditions, and to determine whether SWH can be confirmed within the Study Area.

The presence of candidate or confirmed SWH within the Study Area is discussed in Section 4.4.7.

#### 3.2.4.1 Breeding Bird Survey

Breeding bird surveys for the Study Area were conducted by Beacon in the spring of 2019. Methods used by Beacon are described in the technical memo available in Appendix D. In brief, 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), and were completed in Late June and early-July.

Specifically, surveys consisted of wandering transects throughout the Study Area. Wandering transects were generally conducted between dawn and five hours after sunrise to establish quantitative estimates of bird abundance in suitable habitat types within the Study Area. The general route used by Beacon during wandering transects is provided in the technical memo attached to Appendix D. 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.

Results of breeding bird studies within the Study Area are included in Section 4.3.4.



#### 3.2.4.2 Amphibian Breeding Survey

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Amphibian monitoring surveys for the Study Area were conducted by WME in 2009. Three different surveys were conducted between April 1 and June 30. Each survey was completed during favourable weather conditions between 2100 and 2300 following methods described in the Marsh Monitoring Program protocol (Bird Studies Canada, 2009).

Results of amphibian breeding studies conducted within the Study Area are provided in Section 4.3.5.

#### 3.2.4.3 Incidental Wildlife

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A general wildlife assessment was completed within the Study Area through incidental observations while on site. Any incidental observations of wildlife were noted, as well as other wildlife evidence such as dens, tracks, and scat, where possible. 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 relating to incidental wildlife within the Study Area have been included in Section 4.3.6.

## 4.0 Results

The following sections outline the existing environmental conditions determined through the background review and field investigations within the Study Area.

### 4.1 General Site Description

The Property is 5.06 ha in size, comprising approximately 24.3% of the total Study Area (20.84 ha). In its current state, the Property contains vacant lands, as well as riparian woodlands of the West Duffins Creek. The surrounding land uses within the remaining Study Area are described as follows:

- North: residential subdivisions and community centres (Pickering Islamic Centre);
- West: Brock Road, residential subdivisions and Brock Ridge Community Park;
- East: Wetlands, riparian woodlands, and West Duffins Creek; and
- South: Riparian woodlands, West Duffins Creek and residential properties.

### 4.2 Aquatic Environment

#### 4.2.1 Watershed Summary

The Study Area is within the Duffins Creek Watershed and the West Duffins Creek Subwatershed (TRCA, 2018). The Duffins Creek is approximately 81 km long and meanders southeast from its headwaters in the Region of York through Uxbridge, Whitchurch-Stouffville, before entering the Region, City, Markham and Ajax to eventually outlet to the north shore of Lake Ontario (TRCA, 2018).

Three significant landscape features are found within the watershed: the Oak Ridges Moraine (ORM), the ORM South Slope, and the Lake Iroquois Plain (TRCA 2018). The watershed is split into three general zones based on the ORM: the upper watershed (the upland area of the ORM), the middle watershed (the ORM South Slope) and the lower watershed (the Lake Iroquois Plain) (TRCA, 2018). Substrates of the Duffins Creek are largely dictated by the three landforms. Substrate within the ORM consist of sand and gravel, whereas glacial debris and till comprise of watercourse substrate within the ORM South Slope. The shoreline of the former Lake Iroquois Plain provides the Duffins Creek watershed with sandy substrates which later transition to clay (TRCA, 2018).

Land use along the corridor of the Duffins Creek watershed predominantly consists of rural landscapes (71%); due to the limited urban development the Duffins Creek watershed is one of the healthiest in the TRCA (TRCA, 2018). The TRCA's Watershed Report Card 2018 rated the water quality in watersheds as "Fair" and forest conditions as "Fair". Streams within the watershed are dominated by cold water communities (TRCA, 2018).

#### 4.2.2 Groundwater

Groundwater was encountered at all of the borehole locations during 2019 site investigations completed by Soil Engineers Ltd. The groundwater levels were measured in the monitoring wells installed in five locations over three sampling days. The depth below ground surface at the five locations ranged between 2.93 m and 6.61 m with an elevation of 82 m and 85.6 m, respectively (Soil Engineers Ltd., 2019a). As a result of these measurements, Soil Engineers Ltd. interpret that shallow groundwater likely flow east/southeast towards West Duffins Creek (2019a).

#### 4.2.3 Fish Habitat

According to Open Source Fish Monitoring Data from the TRCA (2018), 38 fish species were found over 13 years of monitoring in the West Duffins Creek subwatershed. Of the 38 species, 32 were found to be native to the watershed. Two monitoring stations, one each located upstream (DF003WM) and downstream (ACRES-SS) from the Study Area contained fish collection data for the section of the watercourse adjacent to the Study Area. In total, 16 fish species, including Brown Trout (*Salmo trutta*) and Atlantic Salmon (*Salmo salar* pop. 2) were observed in data collected from these two stations over five years of monitoring (i.e. 2003, 2006, 2009, 2012, 2015). Species observed within the West Duffins Creek subwatershed and specifically within the reaches adjacent to the Study Area are listed in Table 3.

**Table 3: Fish Species Observed in West Duffins Creek through TRCA Environmental Monitoring**

Scientific Name	Common Name	SARA <sup>1</sup>	ESA <sup>2</sup>	SRANK <sup>3</sup>	Observed in West Duffins Subwatershed <sup>4</sup>	Observed in Study Area <sup>5</sup>
<i>Alosa pseudoharengus</i>	Alewife	---	---	SNA	●	---
<i>Ambloplites rupestris</i>	Rock Bass	---	---	S5	●	---
<i>Ameiurus nebulosus</i>	Brown Bullhead	---	---	S5	●	---
<i>Amia calva</i>	Bowfin	---	---	S4	●	---
<i>Catostomus commersoni</i>	White Sucker	---	---	S5	●	●
<i>Cottus bairdi</i>	Mottled Sculpin	---	---	S5	●	---
<i>Culaea inconstans</i>	Brook Stickleback	---	---	S5	●	●
<i>Cyprinella spiloptera</i>	Spotfin Shiner	---	---	S4	●	---
<i>Cyprinus carpio</i>	Common Carp	---	---	SNA	●	---
<i>Dorosoma cepedianum</i>	Gizzard Shad	---	---	S4	●	---
<i>Esox lucius</i>	Northern Pike	---	---	S5	●	---
<i>Etheostoma caeruleum</i>	Rainbow Darter	---	---	S4	●	---
<i>Etheostoma nigrum</i>	Johnny Darter	---	---	S5	●	●
<i>Lampetra appendix</i>	American Brook Lamprey	---	---	S3	●	---
<i>Lepomis gibbosus</i>	Pumpkinseed	---	---	S5	●	●
<i>Lepomis macrochirus</i>	Bluegill	---	---	S5	●	---
<i>Luxilus cornutus</i>	Common Shiner	---	---	S5	●	●
<i>Micropterus dolomieu</i>	Smallmouth Bass	---	---	S5	●	●
<i>Micropterus salmoides</i>	Largemouth Bass	---	---	S5	●	---
<i>Neogobius melanostomus</i>	Round Goby	---	---	SNA	●	---
<i>Nocomis biguttatus</i>	Hornyhead Chub	---	---	S4	●	---
<i>Notemigonus crysoleucas</i>	Golden Shiner	---	---	S5	●	---
<i>Notropis atherinoides</i>	Emerald Shiner	---	---	S5	●	---
<i>Notropis hudsonius</i>	Spottail Shiner	---	---	S5	●	---
<i>Notropis stramineus</i>	Sand Shiner	---	---	S4	●	---
<i>Noturus flavus</i>	Stonecat	---	---	S4	●	●
<i>Oncorhynchus kisutch</i>	Coho Salmon	---	---	SNA	●	---
<i>Oncorhynchus mykiss</i>	Rainbow Trout	---	---	SNA	●	●

Scientific Name	Common Name	SARA <sup>1</sup>	ESA <sup>2</sup>	SRANK <sup>3</sup>	Observed in West Duffins Subwatershed <sup>4</sup>	Observed in Study Area <sup>5</sup>
<i>Perca flavescens</i>	Yellow Perch	---	---	S5	●	---
<i>Percina caprodes</i>	Logperch	---	---	S5	●	---
<i>Pimephales notatus</i>	Bluntnose Minnow	---	---	S5	●	---
<i>Pimephales promelas</i>	Fathead Minnow	---	---	S5	●	●
<i>Rhinichthys atratulus</i>	Blacknose Dace	---	---	S5	●	●
<i>Rhinichthys cataractae</i>	Longnose Dace	---	---	S5	●	●
<i>Salmo salar</i> pop. 2	Atlantic Salmon (Lake Ontario Population)	---	---	SX	●	●
<i>Salmo trutta</i>	Brown Trout	---	---	SNA	●	●
<i>Salvelinus fontinalis fontinalis</i>	Brook Trout	---	---	S5	●	---
<i>Semotilus atromaculatus</i>	Creek Chub	---	---	S5	●	●

<sup>1</sup>Federal Species at Risk Act; <sup>2</sup>Ontario Endangered Species Act; <sup>3</sup>SRank 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. S5 = Secure, S4 = Apparently Secure, S3 = Vulnerable, S2 = Imperiled, S1 = Critically Imperiled, SX = extirpated, SNA = unsuitable target for conservation activities; <sup>4</sup>TRCA Open Source Environmental Monitoring Data for Fish Sampling conducted for the West Duffins Creek; <sup>5</sup>TRCA Open Source Environmental Monitoring Data for Fish Sampling conducted for the West Duffins Creek for stations ACRES-SS and DF003WM.

The Duffins Creek Watershed is known to provide habitat for Redside Dace (*Clinostomus elongatus*). Redside Dace are listed as endangered and therefore are protected under the ESA (2007). Despite the presence of other cool/cold water fish species through environmental monitoring of the TRCA (2018), DFO SAR mapping did not indicate that the section of the West Duffins Creek within the Study Area or downstream to the Study Area are not considered habitat for Redside Dace (DFO, 2018).

Based on the results of the background review, fish habitat exists in the Study Area within West Duffins Creek (MNRF 2018).

## 4.3 Terrestrial Environment

### 4.3.1 Landforms, Soils and Surficial Geology

The Study Area is located within the Iroquois Plain physiographic region, situated between Lake Ontario and the ORM, which is characterized by Sand Plans comprising the former shoreline of Lake Iroquois (Chapman and Putnam, 1984). Physiographic mapping of the area indicates that the Study Area is bounded by the ORM South Slope and Peel Plain to the north (Chapman and Putnam, 1984).

Bedrock geology of the area consists of Upper Ordovician shale, limestone, dolostone and siltstone of the Georgian Bay Formation (Ministry of Northern Development and Mines, 1991; Chapman and Putnam, 1984). Bedrock is overlain with glaciomarine deposits of the Pleistocene period, including sand, gravelly sand, and gravel (Ministry of Northern Development and Mines; MNDM, 1991). Surficial geology of the Study Area is represented by Stone-poor, sandy silt to silty-sand-textured till located on the Study Area's tablelands; modern alluvial deposits of clay sand, silt sand and gravel containing organic remains are characterized within the riparian corridor of the West Duffins Creek (MNDM, 2010).

Soils observed within the Study Area are consistent with geology records reported: deposits and substrate within the Study Area reflect the presence of the former shoreline of Lake Iroquois. Soils of the Study Area tablelands are predominantly comprised of soils of the Brighton series which consist of well-drained, grey-brown podzolic soils of calcareous sand, and gravelly sand-loam (Canada Department of Agriculture, 1949). Lands to the west along Brock Road are consistent with the Wobern Series which are comprised of calcareous brown loam till (Canada Department of Agriculture, 1949). Soils of the West Duffins Creek Corridor are comprised of bottomland alluvial soil types with variable drainage (Canada Department of Agriculture, 1949).

Background information compiled for the Study Area was confirmed by a geotechnical investigation conducted by Soil Engineers Ltd. (2019b). As a result of the investigation, soils of the Study Area were described as containing silty clay, glacial till, and sand. Borehole investigations by Soil Engineers Ltd (2019b) reported that layers of topsoil were inconsistently found throughout the Study Area. Furthermore, earth fill was detected within the majority of borehole core samples, indicating evidence of past stripping and grading activities (Soil Engineers Ltd., 2019b).

Topographic surveys completed by Ontario Land Surveyor Ltd. on October 20, 2011, confirm that the Study Area is sloped south, southeast and east towards the riparian corridor of the West Duffins Creek (Wallace, 2011). Tablelands within the Study Area and lands to the north are relatively flat (Wallace, 2011).

#### 4.3.2 Ecological Land Classification

Vegetation communities identified by the TRCA and WME in the 2009 report and confirmed by Dillon in 2019 are depicted in Figure 3 (Field Investigation Results). In total, Dillon confirmed 12 communities within the Study Area.

In general, the natural communities identified were limited to the south, southeast and east of the Study Area. Tablelands of the Study Area consist of disturbed Dry-Fresh Mixed Meadow (MEMM3); mixed meadow communities gradually sloped eastward to transition to a small pocket of Bulrush Mineral Shallow Marsh (MASM1-2). The marsh community is located directly adjacent to an area of Green Ash Mineral Deciduous Swamp Forest (SWDM2); the boundary of the swamp continues east and

extends beyond the Study Area. Northern limits of the Green Ash Mineral Deciduous Swamp Forest consist of Dry-Fresh Deciduous Shrub Thicket (THDM2). The approximate boundaries of wetland communities identified within the Study Area are consistent with findings reported in the 2011 ESPU and 2012 EIS Update Letter.

Forest communities to the south along the ridge of the West Duffins Creek valleylands are comprised of Fresh-Moist Sugar Maple Deciduous Forest (FODM6); this community transitions to southern-laying Fresh-Moist White Cedar Coniferous Forest (FOCM4-1) and Dry-Fresh White Cedar Coniferous Woodland (WOCM1-4) communities within the ravine bottomlands. As indicated by TRCA open data(2000) and field reconnaissance confirmation, White Cedar Woodlands (WOCM1-4) also exist south of the West Duffins Creek.

Cultural vegetation communities dominated the Study Area in the north and northwest. Single-family residential subdivisions (CVR\_3) are the dominant land use present within the Study Area. Additional community areas (Commercial and Institutional – Pickering Islamic Centre; CVC) and parkland (CGL\_2; Brock Ridge Community Park) exist to the north and west. Cultural areas within the Study Area are connected by Brock Road (Transportation; CVI\_1) which bisects the Study Area from north to south.

Table 4 outlines the communities documented during the 2019 ELC surveys and summarizes dominant vegetation cover. Photos of vegetation communities are provided in Appendix E. A complete plant list for Dillon's field investigation is provided in Appendix F.

**Table 4: Ecological Land Classification**

ELC Code	Classification	Total within Study Area (ha)	Vegetation	Comments	Photograph (Appendix E)
<b>Natural Communities</b>					
MEMM3	Dry-Fresh Mixed Meadow	2.42	This ecosite is dominated by goldenrod ( <i>Solidago</i> sp.), with additional species such as Daisy Fleabane ( <i>Erigeron annuus</i> ), Purple Vetch ( <i>Vicia americana</i> ), Red Raspberry ( <i>Rubus idaeus</i> ), New England Aster ( <i>Symphyotrichum novae-angliae</i> ), Riverbank Grape ( <i>Vitis riparia</i> ), and Common Burdock ( <i>Arctium minus</i> ). Clusters of scattered young trees throughout the ecosite include Manitoba Maple ( <i>Acer negundo</i> ) and Scotch Pine ( <i>Pinus sylvestris</i> )	One MEMM3 polygon was observed on disturbed areas of cleared vegetation lands, on tablelands of the Study Area, adjacent to West Duffins Creek valleylands.  An additional polygon of mixed meadow (mowed lawn) identified along right-of way of Brock Road.	1, 2, 3
FODM6	Fresh-Moist Sugar Maple Deciduous Forest	1.54	Canopy dominated by Sugar Maple ( <i>Acer saccharum</i> ) and American Beech ( <i>Fagus grandifolia</i> ), with Eastern Hemlock ( <i>Tsuga canadensis</i> ), American Basswood ( <i>Tilia Americana</i> ), and Eastern White Pine ( <i>Pinus strobus</i> ). Ground cover consists of young Sugar Maple, Sensitive Fern ( <i>Onoclea sensibilis</i> ), and False Solomon's Seal ( <i>Maianthemum racemosum</i> ).	One polygon located along the valleyland ridge of the riparian corridor of the West Duffins Creek. Evidence of human disturbance (garbage) and excavations into the valley ridge were identified within this community. Dust and noise impacts to vegetation was present in areas adjacent to Brock Road.	4, 5, 6
FOCM4-1	Fresh-Moist White Cedar Coniferous Forest	1.67	The canopy is dominated by Eastern White Cedar ( <i>Thuja occidentalis</i> ), with individual trees consisting of Manitoba Maple, Common Buckthorn ( <i>Rhamnus cathartica</i> ), and dead Green Ash ( <i>Fraxinus pennsylvanica</i> ). The ground cover was dominated of Dog Strangling Vine ( <i>Vincetoxicum rossicum</i> ), with few isolated occurrences of Ostrich Fern ( <i>Matteuccia struthiopteris</i> )	One polygon located within the valley bottomlands of the West Duffins Creek riparian corridor. Dust and noise impacts to vegetation was present in areas adjacent to Brock Road.	7, 8
WOCM1-2	Dry-Fresh White Cedar Coniferous Woodland	0.83	Ecosite dominated by Eastern White Cedar and dead Green Ash with Staghorn Sumac ( <i>Rhus typhina</i> ) observed along Brock Road. Ground cover was dominated of Dog Strangling Vine and Garlic Mustard ( <i>Alliaria petiolata</i> ).	One polygon located directly north of the West Duffins Creek.	9
WODM5	Fresh-Moist Deciduous Woodland	2.33	Dominated by Poplar species ( <i>Populus</i> sp.).	Located east within the Study Area, as well as south of the West Duffins Creek.	---
MASM1-2	Bulrush Mineral Shallow Marsh Type	0.07	Wetland community dominated by Narrow-leaved Cattail ( <i>Typha angustifolia</i> ), Reed Canary Grass ( <i>Phalaris arundinacea</i> ), and Sweet Joe Pye Weed ( <i>Eutrochium purpureum</i> ).	One polygon located east within the mixed meadow ecosite of the Study Area	10, 11
THDM2	Dry-Fresh Deciduous Shrub Thicket	0.24	Dominated by Hawthorn species ( <i>Crataegus</i> sp.) and Common Buckthorn. Additional tree species located along the ecosite periphery include American Elm ( <i>Ulmus americana</i> ), Eastern Cottonwood ( <i>Populus deltoides</i> ), and Black Walnut ( <i>Juglans nigra</i> )	One polygon located in the northeastern corner of the Study Area.	12
SWMD2-2	Green Ash Mineral Deciduous Swamp Forest	0.67	Dominated by dead Green Ash, as well as Black Walnut, and American Elm. Groundcover included Water Horsetail ( <i>Equisetum fluviatile</i> )	One polygon located along the eastern boundary of the Study Area.	13, 14, 15
OAO	Open Aquatic	0.51	This ecosite consists of the West Duffins Creek.	One polygon.	16
FOD	Deciduous Forest	0.67	Deciduous forest community containing Sugar Maple, American Beech, and American Basswood.	Polygons located along the West Duffins Creek, west of Brock Road.	---
<b>Cultural Communities</b>					
TAGM5	Fencerow	0.16	Tree species identified within the Study Area along the Brock Road frontage includes Freeman Maple ( <i>Acer freemanii</i> ), Manitoba Maple, Yellow Birch ( <i>Betula alleghaniensis</i> ), American Basswood, Largetooth Aspen ( <i>Populus grandidentata</i> ), and Common Buckthorn.	One polygon located along Brock Road that extends northward from deciduous woodlands of the West Duffins Creek riparian corridor.	17
CGL_2	Parkland	1.42	Baseball diamonds and greenspace consisting of mowed lawn and landscaping trees.	Parkland located southwest in the Study Area.	17
CVR_3	Residential	5.64	Subdivision of residential town homes, containing mowed lawns and landscaped trees.	Located north and northeast within the Study Area. Additional residential areas are located south of the West Duffins Creek.	18, 19
CVC	Commercial and Institutional	0.91	Building (Pickering Islamic Centre) with associated parking lots	Located north within the Study Area.	19
CVI_1	Transportation	1.76	Brock Road, Usman Road, and Sunflower Road.	Municipal roads located east and north within the Study Area	20

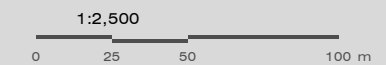




**BROCK ROAD DUFFINS FOREST INC.  
2055 BROCK ROAD  
ENVIRONMENTAL IMPACT STUDY**

**FIGURE 3  
FIELD INVESTIGATION RESULTS**

- Property Boundary
  - Study Area
  - Watercourse
  - Butternut
  - Staked ESA (April 2009)
  - Staked ESA (May 2006)
  - Staked Top of Bank (November 1990, rev April 2009)
  - Wetland Boundary (Beacon and TRCA; ESPU, 2011)
- Ecological Land Classification**
- CGL\_2: Parkland
  - CVC: Commercial and Institutional
  - CVL\_1: Transportation
  - CVR\_3: Single Family Residential
  - FOCM4-1: Fresh Moist White Cedar Coniferous Forest
  - FOD: Deciduous Forest
  - FODM6: Fresh Moist Sugar Maple Deciduous Forest
  - WOCM1-2: Dry Fresh Cedar Coniferous Woodland
  - WODM5: Fresh Moist Deciduous Woodland
  - MEMM3: Dry Fresh Mixed Meadow Ecosite
  - MASM1-2: Bulrush Mineral Shallow Marsh
  - SWDM2-2: Green Ash Mineral Deciduous Swamp
  - OAO: Open Aquatic
  - TAGM5: Treed Hedgerow
  - THDM2: Deciduous Shrub Thicket



MAP DRAWING INFORMATION:  
DATA PROVIDED BY MNRF, TRCA

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



PROJECT: 191589  
STATUS: FINAL  
DATE: 2020-03-31

### 4.3.3 Botanical Assessment

A total of 62 plant species were documented within the Study Area; of which, 40 were observed by Dillon during the 2019 field investigations. The remaining 22 species consisted of additional species identified within the Study Area in the 2009 EIS from during field investigations, as well as in data sets acquired from the TRCA. Of the 62 species, three (3) were identified to genus level only. Of the remaining 59 species, 45 are listed as native species and are considered to be Apparently Secure (S4) to Secure (S5) in the province of Ontario. In addition, twelve (12) 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), and one species was unranked (SRank of SU). One tree species observed within the Study Area (Butternut, *Juglans cinerea*) is listed as rare or uncommon in Ontario (SRank of S3), and is listed as Endangered by the ESA (2007). No other 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 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 fruticosa*) 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.

The mean CC value for the site was 4.29 out of a possible 10, indicating a moderately disturbed landscape. A full list of the vegetation species observed within the Study Area has been included in Appendix F.

Potential impacts related to vegetation within the Study Area are included in Section 7.1.2.

### 4.3.4 Breeding Bird Survey

A total of 13 bird species were observed within the Study Area by Beacon in 2019 (Table 5). Twelve of the reported bird species observed are considered Apparently Secure (SRank of S4) or Secure (SRank of S5) by the province. The remaining species, European Starling (*Sturnus vulgaris*), is not considered a suitable target for conservation activities (SRank of SE or SNA). None of the bird species identified within the Study Area are designated as SAR or SCC.

**Table 5: Breeding Bird Survey Results**

Scientific Name	Common Name	SARA <sup>1</sup>	ESA <sup>2</sup>	SRank <sup>3</sup>	Breeding Evidence <sup>4</sup>
<i>Agelaius phoeniceus</i>	Red-winged Blackbird	---	---	S4	S
<i>Bombycilla cedrorum</i>	Cedar Waxwing	---	---	S5B	S
<i>Cardinalis cardinalis</i>	Northern Cardinal	---	---	S5	F
<i>Carduelis tristis</i>	American Goldfinch	---	---	S5B	S
<i>Cyanocitta cristata</i>	Blue Jay	---	---	S5	S
<i>Geothlypis trichas</i>	Common Yellowthroat	---	---	S5B	S
<i>Melospiza melodia</i>	Song Sparrow	---	---	S5B	S
<i>Poecile atricapillus</i>	Black-capped Chickadee	---	---	S5	S
<i>Quiscalus quiscula</i>	Common Grackle	---	---	S5B	S
<i>Spizella passerina</i>	Chipping Sparrow	---	---	S5B	S
<i>Sturnus vulgaris</i>	European Starling	---	---	SNA	F
<i>Turdus migratorius</i>	American Robin	---	---	S5B	F
<i>Zenaida macroura</i>	Mourning Dove	---	---	S5	S

<sup>1</sup>Federal Species at Risk Act (Source: SARA Public Registry, 2007); <sup>2</sup>Provincial Endangered Species Act (Source: MNRF website, 2007); <sup>3</sup>SRank 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. S5 = Secure, S4 = Apparently Secure, S3 = Vulnerable, S2 = Imperiled, S1 = Critically Imperiled, SX = extirpated, SNA = unsuitable target for conservation activities, B = within the Species breeding range in Ontario.

<sup>4</sup>Breeding Bird Codes from Breeding Bird Atlas of Ontario (Cadman et al. 2007)

Observed	Confirmed
X Species observed in its breeding season (no breeding evidence)	NB Nest-building or excavation of nest hole by a species other than a wren or a woodpecker
Possible	DD Distraction display or injury feigning
H Species observed in its breeding season in suitable nesting habitat	NU Used nest or egg shells found (occupied or laid within the period of the survey)
S Singing male(s) present, or breeding calls heard, in suitable nesting habitat in breeding season	FY Recently fledged young (nidicolous species) or downy young (nidifugous species), including incapable of sustained flight
Probable	AE Adult leaving or entering nest sites in circumstances indicating occupied nest
P Pair observed in suitable nesting habitat in nesting season	FS Adult carrying fecal sac
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.	CF Adult carrying food for young
D Courtship or display, including interaction between a male and a female or two males, including courtship feeding or copulation	NE Nest containing eggs
V Visiting probable nest site	NY Nest with young seen or heard
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/O Flyover	

Potential impacts to breeding birds as well as general wildlife are discussed further in Section 7.0.

#### 4.3.5 Amphibian Survey

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As reported in the 2009 EIS, no amphibian species were heard or observed during amphibian call surveys within the Study Area. Furthermore, no amphibians were heard or observed incidentally during the October 2019 site visit by Dillon.

#### 4.3.6 Incidental Wildlife

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Incidental wildlife species observed within the Study Area by Dillon in 2019 are listed below in Table 6. An additional seven (7) species provided in digital data of the TRCA were reported to occur within the Study Area in the 2009 EIS. All of the incidental species observed are listed as either Secure (SRank of S5) or Apparently Secure (SRank of S4) in Ontario. No SAR or SCC were incidentally observed within the Study Area.

**Table 6: Incidental Wildlife Observations**

Scientific Name	Common Name	SARA <sup>1</sup>	ESA <sup>2</sup>	SRank <sup>3</sup>	Observed By Dillon <sup>4</sup>	TRCA Digital Data <sup>5</sup>
<b>Birds</b>						
<i>Buteo jamaicensis</i>	Red-tailed Hawk	---	---	S5	●	---
<i>Carduelis tristis</i>	American Goldfinch	---	---	S5B	●	---
<i>Cyanocitta cristata</i>	Blue Jay	---	---	S5	●	---
<i>Dumetella carolinensis</i>	Gray Catbird	---	---	S4B	---	●
<i>Falco sparverius</i>	American Kestrel	---	---	S4	●	---
<i>Melospiza melodia</i>	Song Sparrow	---	---	S5B	●	---
<i>Myiarchus crinitus</i>	Great Crested Flycatcher	---	---	S4B	---	●
<i>Passerina cyanea</i>	Indigo Bunting	---	---	S4B	---	●
<i>Picoides villosus</i>	Hairy Woodpecker	---	---	S5	---	●
<i>Poecile atricapillus</i>	Black-capped Chickadee	---	---	S5	●	---
<i>Sitta canadensis</i>	Red-breasted Nuthatch	---	---	S5	---	●
<i>Vireo olivaceus</i>	Red-eyed Vireo	---	---	S5B	---	●
<i>Zonotrichia albicollis</i>	White-throated Sparrow	---	---	S5B	●	---
<b>Mammals</b>						
<i>Sylvilagus floridanus</i>	Eastern Cottontail	---	---	S5	●	---
<i>Sciurus carolinensis</i>	Eastern Gray Squirrel	---	---	S5	●	---
<i>Tamiasciurus hudsonicus</i>	Red Squirrel	---	---	S5	●	---
<i>Odocoileus virginianus</i>	White-tailed deer	---	---	S5	●	---
<b>Herpiles</b>						
<i>Hyla versicolor</i>	Gray Treefrog	---	---	S5	---	●

<sup>1</sup>Federal Species at Risk Act (Source: SARA Public Registry, 2007); <sup>2</sup>Provincial Endangered Species Act (Source: MNRF website, 2007); <sup>3</sup>SRank 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. S5 = Secure, S4 = Apparently Secure, S3 = Vulnerable, S2 = Imperiled, S1 = Critically Imperiled, SX = extirpated, SNA = unsuitable target for conservation activities, B = within the Species breeding range in Ontario. <sup>4</sup> Incidental wildlife observed by Dillon during 2019 field reconnaissance activities. <sup>5</sup> Species reported in the 2009 EIS provided in TRCA digital data sets.

Potential Impacts to wildlife are provided in Section 7.1.4.

## 4.4 Natural Heritage Features

### 4.4.1 Environmentally Significant Areas

The Major-Spink Environmentally Significant Area No. 97 is defined by the TRCA within the riparian corridor of the West Duffins Creek system. A TRCA study for Major Spink Environmentally Significant Area is provided in Appendix B (TRCA, 2006). According to the study, the Major-Spink area meets the criteria for an Environmentally Significant Area because the riparian corridor as a whole is considered highly diverse and contains 15 plant communities (TRCA, 2006). Furthermore, breeding bird studies in the Major-Spink Environmentally Significant Area resulted in high species diversity (30 species) and an overall high species richness (TRCA, 2006).

According to the 2009 EIS, the limit of the Major-Spink Environmentally Significant Area was staked by the TRCA for an application under a previous owner. A site walk with the TRCA and WME took place in June 2009 to confirm and revise the Environmentally Significant Area boundary.

The staked boundary for the Environmentally Significant Area is provided in Figure 4. Potential impacts to the Major-Spink Environmentally Significant Area are described Section 7.0.

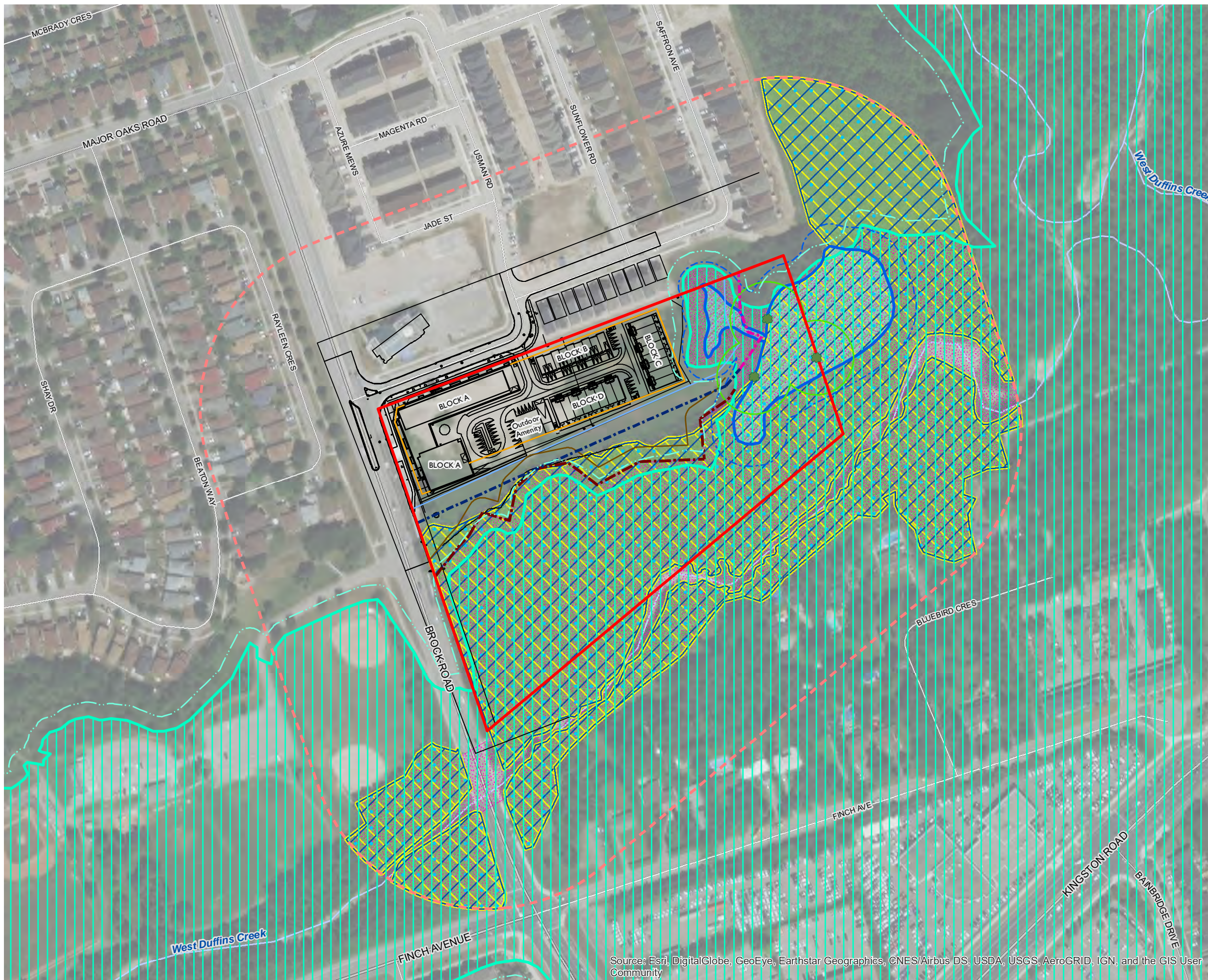
### 4.4.2 Wetlands

Three unevaluated wetland communities were identified within the Study Area through the background review. Two of these wetland communities were confirmed by Dillon during the 2019 site visit.

Using open-source data from the TRCA (2000), one wetland vegetation community (Jewelweed Forb Mineral Meadow Marsh, MAMM2-1) was identified within the Study Area in the 2009 EIS. An additional wetland community was identified adjacent to the MAMM2- area during staking activities with the TRCA (June 2009); this community (Bulrush Mineral Shallow Marsh Type, MASM1-2) was assessed and delineated during follow-up assessments occurring in June of 2009. Both unevaluated wetland communities were mapped in the 2009 EIS report.

Wetland boundaries within the Study Area were later delineated in 2011 by Beacon and the TRCA as part of the 2012 ESPU; the limits for unevaluated wetlands differed from those described in the 2009 EIS. In their evaluation, Beacon and the TRCA identified two communities comprising a single wetland unit (i.e. MASM1-2 and SWDM2). The area of MASM1-2 identified by Beacon and the TRCA was similar to that described in the 2009 EIS. However, contrary to the findings of the 2009 EIS, the unevaluated MASM1-2 wetland community was observed to connect to an area of Green Ash Swamp (SWDM2) located farther east within woodlands of the Study Area (2012 ESPU). Wetland communities previously delineated by Beacon and the TRCA (2012 ESPU) were confirmed by Dillon in 2019; both communities were found to be dry during the site visit.

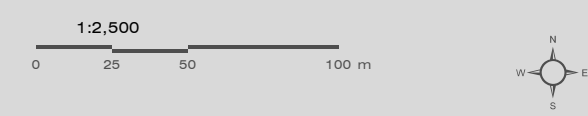
The boundary of unevaluated wetlands as defined in the 2012 ESPU are mapped within Figure 4. Potential impacts to wetland communities within the Study Area as a result of the proposed development is discussed further in Section 7.0.



**BROCK ROAD DUFFINS FOREST INC.  
2055 BROCK ROAD  
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**FIGURE 4  
PROPOSED DEVELOPMENT IMPACTS**

- Property Boundary
- Study Area
- Proposed Development
- Extent of Underground Parking
- Natural Heritage Features**
- Watercourse
- Wetland Boundary (Beacon and TRCA; ESPU, 2011)
- Unevaluated Wetlands
- Significant Woodlands
- Significant Valleylands
- Floodplain (2019, approx.)
- Staked Features and Buffers**
- Staked ESA (April 2009)
- Staked ESA (May 2006)
- Staked ESA 10 m Buffer
- Staked Top of Bank (November 1990, rev April 2009)
- Staked Top of Bank 10 m Buffer
- Butternut 25 m Setback
- Wetland 15 m Buffer (ESPU, 2011)
- Floodplain 10 m Buffer
- Significant Wildlife Habitat**
- Candidate Bat Maternity Roost
- Candidate Landbird Migratory Stopover Area
- Species at Risk Habitat**
- Butternut
- Potential SAR Bat Habitat



MAP DRAWING INFORMATION:  
DATA PROVIDED BY MNRF, TRCA

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



PROJECT: 191589  
STATUS: FINAL  
DATE: 2020-03-31

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



## 4.4.3

**Woodlands**

As described previously in Section 2.8, woodlands of the Study Area (i.e. FODM6, SWDM2-2-, FOCM4-1, FOD, WOCM1-2 and WODM5) associated with riparian cover of the West Duffins Creek are considered Significant by Schedule IIIB of the City's OP (2018; Appendix A). While criteria for significance is not provided in the City's OP (2018) or the ROP (2017), the woodland likely is considered significant as it meets several criteria of the NHRM (MNRF, 2010): the woodland is designated as within the Regional Greenlands System, provides linkages to other natural features (i.e. wetlands), is located within 30 m to fish habitat and maintains greater than 30 m of riparian habitat to the West Duffins Creek (Table 7-2; MNRF, 2010).

Based on the information provided in the 2009 EIS and the 2012 EIS Update Letter, the dripline for the Significant Woodland has not yet been staked. However, it is noted that the limits of forest communities are contained within the staked boundary of the Major Spink Environmentally Significant Area (Figure 4).

Significant Woodlands identified within the Study Area are mapped within Figure 4 (Proposed Development Impacts). Potential impacts related to woodlands within the Study Area are included in Section 7.1.2.

## 4.4.4

**Valleylands**

As described in Section 2.8, topography comprising of the riparian corridor for the West Duffins Creek is designated as Significant Valleylands under Schedule IIIC of the City's OP (2018; Appendix A). While criteria is not provided in the City's OP (2018) or the ROP (2017), the Valleyland is considered significant as it meets several criteria of the NHRM (MNRF, 2014). As per Section 8.3.1 of the NHRM (2014), the riparian corridor of the West Duffins Creek meets criteria for significance as it has; greater than 30 m of riparian habitat extending from the east and west banks of the watercourse. Significant Woodlands on the north and south banks of the West Duffins Creek are contiguous and provide linkage opportunities to other natural areas identified in the Regional Greenland System (2018).

Valleylands of the Study Area are less-well defined as the riparian corridor consists of rolling topography as well as more prominent ridgelines; as such, valleylands boundaries within the Study Area likely consist of a combination of the regional floodline, elevation contours and the staked top of bank. According to the 2009 EIS, the initial limit for the Significant Valleyland top of bank (TOB) was taken from open source data from the TRCA (2000). The TOB for the Significant Valleylands was later confirmed during staking activities conducted by the TRCA and WME in June 2009. During this time, revisions to the TOB in the southeastern corner of tablelands within the Study Area were established. Dillon staff noted that the valley ridge was impacted by human disturbance during field investigations in 2019; isolated excavation activities along the valley ridge were documented within the Study Area (Appendix F, Photo 6).

In accordance to Section 8.3 of the NHRM (2014), for a “less well-defined stream corridor,” Significant Valleylands of the Study Area were delineated by linking the staked TOB, the flooding hazard limit, and existing riparian vegetation (Figure 4).

Significant Valleylands, as well as the revised TOB identified in the 2009 EIS are mapped within Figure 4. Potential impacts to Significant Valleylands are discussed in Section 7.0.

#### 4.4.5 Areas of Natural and Scientific Interest

No Life Science or Earth Science Areas of Natural or Scientific Interest exist within or adjacent to the Study Area (NHIC, 2018).

#### 4.4.6 Species at Risk and Species at Risk Habitat

As noted in Section 3.2.4, three Butternut currently exist within the Study Area within the Green Ash Mineral Deciduous Swamp Forest (SWDM2; Appendix E, Photo 16). Additional surveys and genetic testing of these trees may be required to determine genetic purity. A Butternut Health Assessment is also required for these trees to determine if these trees are infected by Butternut Canker.

While potential habitat exists, Barn Swallow, Bank Swallow, Eastern Meadowlark, Bobolink, and Yellow-breasted Chat were not observed by Beacon within the Study Area during 2019 breeding bird surveys.

While targeted surveys for snag and cavity trees were not performed for the Study Area, potential habitat for SAR bat species exists within the deciduous forests (FODM6, FOCM4-1, WODM5, WOCM1-2, and FOD) and swamp communities (SWDM2). No snag or cavity trees were identified within the hedgerow communities (TAGM5) by Dillon during the 2019 field investigations, and therefore it is assumed hedgerows do not provide habitat for SAR bats.

While reaches of the West Duffins Creek are known to provide habitat for Redside Dace, sections of the watercourse adjacent or downstream of the Study Area have not been mapped as habitat for this species by the DFO (2018). In addition, this species was not identified in open source data by the TRCA (2018). Based on this information, Regulated Habitat for this species does not exist within the Study Area.

No other SAR or SAR habitat was identified within the Study Area during the 2019 field surveys. Potential impacts related to SAR are addressed further in Section 7.1.5.

#### 4.4.7 Significant Wildlife Habitat

Criteria for determining the significance of wildlife habitat follow the guidelines outlined in the NHRM (MNRF, 2010) and the Significant Wildlife Habitat Technical Guide Ecoregion 6E Criterion Schedules (MNRF 2015), where applicable.

While surveys for snag and cavity trees were not formally conducted for the Study Area, Candidate SWH for Bat Maternity Colonies have the potential to occur within communities comprising the Significant Woodlands (FODM6, SWDM2-2, WODM5, FOCM4-1, WOCM1-2 and FOD) of the West Duffins Creek riparian corridor.

Similarly, Significant Woodlands of the Study Area likely provide candidate SWH for Landbird Migratory Stopover Areas. While breeding bird surveys were completed for the Study Area in 2009 and 2019, the number and seasonal timing of surveys conducted do not qualify to confirm SWH. While candidate SWH is present, we note that preliminary avian species richness and diversity data reported as a result of the 2009 and 2019 breeding bird surveys do not meet criteria for SWH.

As reported in the 2009 EIS, no frog species were observed during the amphibian call surveys. Based on the results of the 2009 EIS, SWH for wetland or woodland Amphibian Breeding Habitat likely does not exist within the Study Area.

While Eastern Wood-pewee, Wood Thrush and Rusty Blackbird had the potential to occur within vegetation communities of the Study Area, these species were not observed incidentally by Dillon staff or by Beacon during 2019 breeding bird surveys. As these species were not observed, SWH for Special Concern or Rare Wildlife does not exist within the Study Area.

Aquatic features within the Study Area (the West Duffins Creek and unevaluated wetlands) do not contain suitable habitat to provide Candidate SWH for Turtle Overwintering Habitat. While a permanent source of water is present within the West Duffins Creek (OAO), geological and soil records indicate that the substrate is unsuitable (i.e. clay, silt, sand) to support hibernating turtles (Soil Engineers Inc., 2019; MNRF, 2015). Similarly, the unevaluated wetland communities identified east within the Study Area were reported as dry during the October site visit.

Candidate SWH identified as a result of the background review and field investigations are mapped within Figure 4. Potential impacts to wildlife habitat are discussed in Section 7.1.4.

## 5.0

## Ecological Function

Natural features within and adjacent to the Study Area were assessed to determine their ecological function. As described above, the Study Area and surrounding lands consists predominantly of residential (CVR), institutional (CVC), and park lands (CGL), reflecting the Living Areas designation of the ROP (2017; Schedule A) and the Urban Residential Areas designation of the City's OP (2018; Schedule I). At the larger landscape scale, forests (FOD, FODM6, FOCM4-1, WOCM1-2, SWDM2-2 and WODM5) within the riparian corridor of the West Duffins Creek are designated as part of the Regions Greenland System (Schedule A; 2017) and are considered Key Natural Features and Key Hydrological Features of the City's OP (Schedule I; 2018). As confirmed through the 2019 field investigations, it was determined that riparian habitat of the West Duffins Creek contains Significant Woodlands and Significant Valleylands that provide candidate SWH for migratory birds and bats, respectively. Additional habitat in these natural features was also identified for SAR bats. Significant Woodlands, Significant Valleylands identified in the Study Area are encompassed by the boundary of the Major Spink Environmentally Significant Area (TRCA, 2006). A small area of unevaluated wetland extends from the riparian corridor into the area of disturbed mixed meadow.

While natural communities within the Regional Greenland System may act as an ecological corridor for wildlife movement/migration and may provide forage, refuge and nesting habitat for a variety of wildlife, these areas displayed evidence of significant anthropogenic disturbance. Excavations and dumping of trash within the valleyland ridge were noted during the 2019 field investigations. In addition, ground cover of several forest communities was dominated by invasive species such as dog-strangling vine and garlic mustard. Noise and dust from the Brock Road were also noted as additional impacts to the forest communities during the 2019 field investigations. Municipal roads also likely limit the movement of wildlife within the Study Area from east to west.

The associated potential impacts of the development and proposed mitigation measures are discussed in Sections 7.0 and 8.0.

## 6.0

## Description of Proposed Development

The site plan for the Study Area located at 2055 Brock Road is for residential development (Figure 4). Buildings proposed in the site plan include one high rise condominium (Block A), as well as stacked townhouses (Blocks B, C and D). The high rise condominium will consist of a podium (4 storeys) and tower (20 storeys) and is anticipated to provide 307 units. Stacked Townhouses in the remaining Blocks are anticipated to provide 9 (Block B) and 32 (Blocks C and D) units each, respectively. Above ground visitor parking, as well as two underground parking lots are also proposed to accommodate residents. An outdoor amenity area (0.1 ha) is planned to be located centrally within the site plan in the middle of the four proposed buildings.

Construction of the proposed development would include vegetation clearing and grading activities, as well as the placement of driveways, sidewalks, and underground servicing for stormwater, sanitary and water. Clearing activities will include the removal of disturbed meadow vegetation identified within tablelands of the Study Area. While clearing activities may require the removal of select trees within the disturbed meadow and hedgerows, trees of the Significant Woodland will be retained and protected within staked limits for Major Spink Environmentally Significant Area. Other natural features (unevaluated wetlands, Significant Valleylands, candidate SWH and SAR habitat) will also be retained and protected by this staked boundary for the proposed development and applicable setbacks.

The proposed development, associated impacts and mitigation measures are discussed further in Sections 7.0 and 8.0.

## 7.0 Impact Identification and Analysis

### 7.1 Direct Impacts

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

- Tree and vegetation removal;
- Diversion of stormwater flows;
- Sedimentation of natural features; and
- Disturbance to wildlife and wildlife habitat.

#### 7.1.1 Tree and Vegetation Removal

While clearing activities will be required to remove select trees and ground vegetation, vegetation removals within the Study Area are minimal, as the proposed site plan is limited to tablelands containing disturbed mixed meadow (MEMM3) and treed hedgerows (TAGM5) (Figure 4). Approximately 1.25 ha of the disturbed mixed meadow community and 0.02 ha of the treed hedgerow is proposed for removal to accommodate the site plan. In addition, vegetation clearings may also require the removal of select small trees within the meadow area. A tree inventory and subsequent arborist report will be required during detailed design to determine impacts to trees as a result of the proposed development.

No tree removals and vegetation clearing are anticipated at this time within the Significant Woodlands or Major Spink Environmental Sensitive Area.

Mitigation for the removal of ground vegetation and select trees within the Study Area are provided in Section 8.2

#### 7.1.2 Diversion of Stormwater Flows

Surface flows within the Property and Study Area were evaluated in the Pre- and Post-Development Water Balance Assessment by Soil Engineers Ltd (2020). Under existing conditions, it was estimated that the Property receives a total of 873 mm of precipitation per year. Of the annual precipitation, 81% (710 mm/year) is estimated to occur as evapotranspiration, whereas 9% (73 mm/year) is estimated to occur as annual runoff and 10% (90mm/year) is anticipated to infiltrate grounds of the Study Area. Under pre-development conditions, the estimated annual runoff estimated for the Property was 3,702.6 m<sup>3</sup>/year; these calculations are a reflection of the existing land use within the Property (Soil Engineers Ltd., 2020). The Property is currently vacant and contains large areas of flat, pervious area (disturbed meadow).

As depicted in Figure 4, areas of impervious coverage are anticipated to increase under the post-development conditions. The foundations of four buildings, parking lots and roads are proposed for the Study Area. As a result of the proposed development, Soil Engineers Ltd. estimate that a total of 10,690.8 m<sup>3</sup>/year will occur as annual runoff; representing an increase of approximately 65.4% (6,988.2 m<sup>3</sup>/year) from pre-development conditions (Soil Engineers Ltd., 2020).

In the report by Soil Engineers Ltd., it is anticipated that 7,723.5 m<sup>3</sup>/year will be contributed as annual runoff from proposed building rooftops (3,754.1 m<sup>3</sup>/year) and paved areas (3,969.4 m<sup>3</sup>/year) for the proposed development (2020). As a result of the proposed mitigation, the estimated annual runoff for the Property is estimated to increase by 7% in the post-development conditions (Soil Engineers Ltd., 2020).

The increase in annual runoff estimated under the post-development conditions is not anticipated to impact wetland communities (i.e. MASM1-2 and SWDM2-2) within the Study Area as this change is in-line natural fluctuations in annual weather patterns (TRCA, 2017).

Mitigation regarding the proposed stormwater management plan is provided in Section 8.3.

### 7.1.3

#### Sedimentation of Natural Features

Construction activity, especially operations involving the handling of earthen material, dramatically 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 extremely important component of projects that plays a large role in the protection of downstream watercourses and aquatic habitat.

In addition, the potential impacts of changes to land use and land cover can include changes to surface water infiltration, runoff, streamflow regime, water quality, downstream channel erosion, and wildlife habitat. As a result, there is the potential for impacts to occur if construction best management practices are not implemented.

Potential impacts may include, but are not limited to:

- Disturbance to or loss of vegetation due to the deposition of dust and/or overland mobilization of soil; and
- Disturbance and sedimentation to the West Duffins Creek, Major Spink Environmentally Significant Area, Significant Woodlands and Significant Valleylands due to the mobilization of soil during excavations and construction activities.

Refer to Section 8.4 for mitigation measures related to erosion and sedimentation within the Study Area.

### 7.1.4 Disturbance to Wildlife and Wildlife Habitat

Wildlife within the Study Area has the potential to be temporarily impacted by construction activities within the proposed development area. Habitat for wildlife may be impacted by construction in the following ways:

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

Candidate SWH for Bat Migratory Roosts and Landbird Migratory Stopover Areas was identified within designated natural features (i.e. Significant Woodlands, Significant Valleylands, unevaluated wetlands, and Major Spink Environmentally Significant Area) of the Study Area. These areas were also identified as habitat for SAR: confirmed habitat for Butternut as well as a potential habitat for SAR bats were identified within Significant Woodlands of the Study Area.

Impacts to habitat for Butternut, bats (candidate SWH and SAR), and migratory birds (candidate SWH) are discussed in the following sections.

#### 7.1.4.1 Disturbance to Butternut

As discussed previously in Section 4.4.6, three Butternut currently exist within the Study Area within the Green Ash Mineral Deciduous Swamp Forest (SWDM2). Following the Species Recovery Strategy for this Butternut, a 25 m buffer has been applied to protect each of the three trees (Figure 4). No impacts are anticipated to occur to the three Butternut trees as a result of the proposed development, as they are to be protected within the limits of Significant Woodlands.

#### 7.1.4.2 Disturbance to Bats and Bat Habitat

While specific habitat surveys for bats were not completed for the Study Area, Significant Woodlands of the West Duffins Creek riparian corridor were identified as candidate SWH for Bat Maternity Roosts and potential habitat for SAR bat species (Figure 4). No direct impacts are anticipated to occur to either habitat within Significant Woodlands as no vegetation clearing activities are proposed for this area. Although portions of hedgerows may be removed as a result of the proposed development, individual trees of this community likely do not provide habitat for bats as no snag/cavity trees were observed in individual trees during the 2019 site visit.

#### 7.1.4.3 Disturbance to Migratory Birds

As discussed in Section 4.4.7, the Significant Woodlands and Major Spink Environmentally Significant Area has the potential to provide candidate SWH for Landbird Migratory Stopover Areas. While direct



impacts to habitat are not anticipated as a result of the proposed development, the addition of condominium and townhouse residential buildings in the Study Area may cause increased fatalities to migratory birds during spring and fall migration.

Common building designs of urban landscapes impose many hazards to migratory birds. It is common for multistorey buildings (apartments and offices) to have large surface areas consisting of glass windows. Glare, reflections from nearby vegetation, and light pollution from glass surfaces are the primary cause of bird fatalities. Birds can become confused by optical illusions imposed by glass surfaces, which can lead to fatal collisions.

Refer to Section 8.6 and Section 8.6.1 for mitigation measures for construction for the development area and bird strike analysis following the Toronto Green Standard (2014) Bird-Friendly Development Guidelines, respectively.

## 7.2 Indirect Impacts

Indirect impacts are those that do not always manifest in the core area of development but in the 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.

### 7.2.1 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. The proposed development is adjacent to existing highly urbanized areas, thus the impact of disturbance is expected to be minor.

Mitigation measures related to wildlife are addressed in Section 8.6.

## 7.2.2 Colonization of Non-native and/or Invasive Species

Results of the botanical survey and data reviewed from background resources provide evidence that the Study Area, including areas of natural features (Significant Woodlands, Significant Valleylands, and Major Spink Environmentally Significant Area) contain a high proportion of invasive and exotic plant species. Despite the existing conditions, additional physical site disturbance may introduce additional exotic and/or invasive flora species to the surrounding vegetation communities, primarily to the riparian habitat of West Duffins Creek in the south and south-east of the Study Area

Invasive flora can establish in disturbed sites and can encroach onto adjacent undisturbed lands more efficiently than native flora. This type of colonization has occurred within the Significant Valleylands and Significant Woodlands within and adjacent to the Study Area, such as Dog Strangling Vine (*Cynanchum rossicum*), Manitoba Maple (*Acer negundo*) and Common Buckthorn (*Rhamnus cathartica*).

Impacts due to the colonization of invasive and exotic species can be largely mitigated through the use of native species in landscaping plans.

Mitigation measures related to the control of invasive species are addressed in Section 8.2.

## 8.0 Proposed Mitigation Measures

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 of the proposed development plan highlighted four potential direct impacts, which include tree and vegetation removal, diversion of surface water flows, sedimentation of natural features, and disturbance to wildlife.

A variety of mitigation techniques can be used to minimize or eliminate the above-mentioned impacts. These measures include enhancement of the buffer areas through a Bird-Friendly Design, Landscaping and Planting Plan, a Stormwater Management (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 City as part of the preliminary and Detailed Design of the proposed development.

### 8.1 Natural Heritage Buffers

The proposed development will be limited to the boundaries shown in Figure 4; the limit for the proposed development was previously agreed to in the submitted 2009 EIS.

The site plan positions development outside of the required 10 m buffer applied from the staked boundary for Major Spink Environmentally Significant Area (April 2009) and 15 m buffer from unevaluated wetlands. The buffer for Major Spink Environmentally Significant Area encompasses natural features and associated vegetation protection zones for Significant Woodlands, Significant Valleylands (10 m) within the Study Area. A buffer for Significant Woodlands was not agreed to as part of the 2009 EIS as this feature would be protected by the boundary of Major Spink Environmentally Significant Area. In accordance to Section 7.3.1.4 of the TRCA LCP (2014), a 10 m buffer was applied to the area of Significant Valleylands defined by the regional floodline; the site plan was previously agreed to and established with consideration of the floodplain buffer.

In its current state, the buffer area for Major Spink Environmentally Significant Area consists of low quality habitat (disturbed meadow) and contains invasive species as a result of existing disturbances within the Study Area. As described in Section 8.2, to prevent the colonization of invasive species and maximize ecological function within the buffer area, planting of native species is recommended. Plantings will also increase the quality of habitat within the buffer and provide better protection to plants and wildlife utilizing the natural features.

Details of the buffer plantings are to be included in the Landscaping and Planting Plan, outlined in Section 8.2 below.

## 8.2 Landscaping and Planting Plan

The proposed development will require the removal of ground vegetation and select trees within the Study Area. As a result, a Landscaping and Planting Plan will be prepared during Detailed Design to offset proposed vegetation removal and propose enhancements to buffers of natural areas where possible. Compensation plantings of trees are generally based on the number of removals required to facilitate construction of the development.

The preliminary proposed plantings for buffer enhancement areas include:

- A mix of native deciduous and coniferous trees and shrubs throughout the development and buffer area;
- Sodding within the residential portions of the development; and
- A native seed mix recommended by suppliers for enhancement within buffer areas.

The following monitoring and maintenance measures may also be recommended for compensation planting areas:

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

The following additional measures are recommended to protect trees within the Study Area during site preparation and construction activities:

- Prior to construction, trees to be preserved will be protected with City-approved tree protection hoarding. This hoarding shall be maintained for the duration of construction and shall not be removed until authorized by the Consulting Arborist. Hoarding shall be constructed at the location as noted on the Tree Preservation and Removal Plan.
- The limits of protection hoarding shall be confirmed in the field by the Consulting Arborist and the City's Urban Forestry Department.
- Areas within the protection hoarding shall remain undisturbed for the duration of site construction and shall not be used for the storage of excavated fill, building materials, structures or equipment.
- Minor grading works will be permitted at the edge of the preservation zone as required to correct localized depressions adjacent to the new development, under the supervision of the Consulting Arborist.

- Where root systems of trees to be preserved are exposed or damaged by construction work, they shall be trimmed neatly by a qualified Arborist in accordance with acceptable arboriculture practice. The exposed area should be backfilled with appropriate material to prevent desiccation.
- No cables of any type shall be wrapped around or installed in trees to be preserved. No contaminants will be dumped or flushed where feeder roots of trees exist.
- Following construction, the limits of the Tree Protection Zone shall be inspected by the Consulting Arborist and the City. Remaining hazardous trees or limbs will be removed by a qualified Arborist as directed by the Consulting Arborist.

### 8.3 Integrated Stormwater Management Plan

A Functional Servicing and Stormwater Management Report (FSSR) for the Property was produced by SKA Consulting Engineers (2020). Stormwater management (SWM) strategies proposed for the Property in the FSSR were developed with regard to SWM infrastructure approved for the northern property (i.e. the Kindwin Lands); the FSSR for the Kindwin Lands was previously produced by GHD (2012). Both FSSRs for the Property and Kindwin Lands were developed using the information provided in the 2011 ESPU.

As reported in the 2011 ESPU, pre-and post-development infiltration volumes were estimated for an area encompassing the Property and Kindwin Lands. The estimated infiltration deficit (11,600m<sup>3</sup>/a) was then pro-rated for each area depending on the respective size and the anticipated number of development blocks (SKA Consulting Engineers, 2020). As a result of the assessment in the 2011 ESPU, the Property was estimated to have an infiltration deficit of 1,240 m<sup>3</sup>/a.

To meet water balance requirements under post-development conditions, all roof drainage (0.48 ha) collected for the proposed development will be directed towards the unevaluated wetlands (MASM1-2 and SWDM2-2) (SKA Consulting Engineers, 2020). Roof drainage will be directed by a clean water collector system at the southeastern limit of the development (SKA Consulting Engineers, 2020). A flow spreader is proposed for the outfall of the clean water collector to avoid point source contributions to the unevaluated wetland communities (SKA Consulting Engineers, 2020).

Minor stormwater drainage for the Property would also be conveyed to the existing SWM pond in the Kindwin Lands to the north (SKA Consulting Engineers, 2020). Flows from this SWM pond are eventually discharged directly to West Duffins Creek via an infiltration trench (SKA Consulting Engineers, 2020; GHD, 2012). As reported in the FSSR for the Kindwin Lands, the SWM pond has been designed to provide sufficient permanent pool and extended detention volumes to meet an "Enhanced" level quality and erosion control requirements for the drainage area for the West Duffins Creek (GHD, 2012; SKA Consulting Engineers, 2020). Quality control measures provided in Table 3.2 of the Ministry of Environment (MOE) Stormwater Management Planning and Design Manual (2003) were used to determine quality control requirements (GHD, 2012).

As indicated by SKA Consulting Engineers and the approved FSR for the Kindwin Lands (2012), major storm system flows will be conveyed directly to the West Duffins Creek (2020).

## 8.4 Erosion and Sediment Control Plan

Construction activity, especially operations involving the handling of earthen material, dramatically 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 extremely 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 should 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 are required.

In addition, an Erosion and Sediment Control Plan will be developed as part of Detailed Design for the proposed development. The plan may include, but is not limited to installation of geotextile silt fences, rock check dams, ditch checks, mud mats, temporary sediment ponds, designated topsoil stockpile areas, and cut-off swales and ditches to divert surface flows to the appropriate sediment control area; with provisions for re-vegetating the area as soon as construction is completed. 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 demarcate the construction 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 litres (L) of water to be pumped per day, appropriate permits must be obtained from the MECP before the dewatering.

## 8.5 Environmental Monitoring Plan

The Environmental Monitoring Plan (EMP) will be carried out, if required, 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.

Erosion and sediment control measures should be regularly monitored and are likely to require periodic cleaning (e.g., removal of accumulated silt), maintenance and/or re-construction. Inspections 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 observed 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 may be implemented during active construction periods for the development with the following frequency:

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

Protected vegetation areas may require periodic monitoring to ensure that they are not being impacted by the proposed development. Should impacts be observed, necessary steps will be taken to ensure that the impacted vegetation is either restored or replaced.

## 8.6 Wildlife Impact Mitigation Plan

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

- Clearing vegetation outside the breeding bird season (April 1 to August 31) and active Bat Season (May 1 – October 31);
- Should any clearing be required during the breeding bird season (April 1 to August 31), nest searches conducted by a qualified person must be completed 48 hours prior to clearing activities. If nests are found, work within approximately 10 m (depending on the associated bird species) of the tree should cease until the young of year have fledged or until the nest is determined to be inactive. 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 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 Significant Woodlands, Major Spink Environmentally Significant Area, or unevaluated wetlands (MASM1-2) (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., Significant Woodlands, Significant Valleylands, Major Spink Environmentally Significant Area, or unevaluated wetlands);
- 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.

### 8.6.1

#### Bird Strike Analysis

In cooperation with the Fatal Light Awareness Program (FLAP) and Lights Out Toronto, the City of Toronto released the City of Toronto Green Development Standard for Bird-Friendly Development Guidelines (2007). The guidelines recommend mitigation for building design to reduce fatal collisions by migrating birds.

The presence of reflective glare and light pollution are the main factors contributing to increased bird fatalities within urban areas. The goal of design criteria within the guidelines is to recommend methods for reducing the presence of these two factors within new buildings. For the proposed development within the Study Area of 2055 Brock Road, the following mitigation strategies from the guideline should be considered in building design:

The glass of exterior walls should reduce reflective glare by:

- Installing exterior walls that create visual markers;
- Install glass with fritted patterns or embedded abstract shapes;
- Adhering translucent film or decals to the exterior of windows;
- Using glass with paned framing; and
- Installing decorative Grilles and Louvres to windows



Reflective glare from windows should be reduced by:

- Designing exterior glass walls at an angle;
- Installing internal screens behind exterior glass walls; and
- Including awnings, overhangs, and sun screens above windowed-walls.

To reduce light pollution by:

- Installing external decorative lighting that projects light downward; and
- Modify building operations to reduce the use of lighting after hours of primary use.

In addition, stewardship packages for residents and owner/operators of new buildings regarding bird-friendly operations should be distributed; packages should identify the significant and sensitivity of the natural environment the Study Area (specifically for Major Spink Environmentally Significant Area). Specific design requirements meeting criteria of the guidelines will be chosen during the Detailed Design phase.

## Summary

The EIS was prepared for the proposed development located at 2055 Brock Road, legally described as Lot 19 of Concession 2, within the City of Pickering, of the Region of Durham. The findings of the 2019 field investigations, which consisted of secondary source reviews and past consultant reports, ELC, and botanical surveys, are presented in the EIS. The EIS was required due to the presence of natural heritage features within and adjacent to the Study Area.

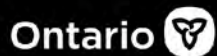
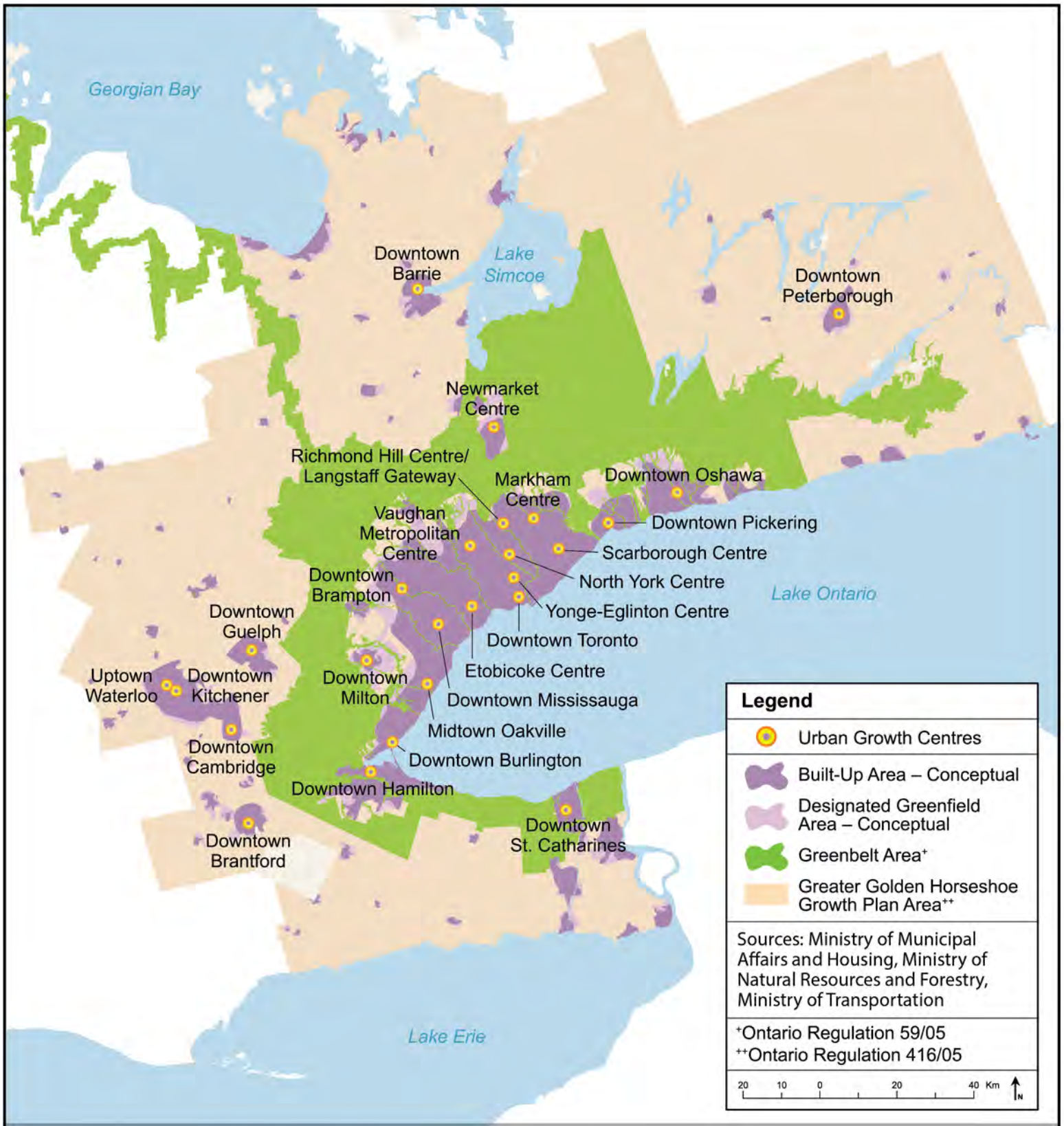
The majority of the Study Area consists of residential lands (Single family residential; CVC\_3), with areas of Significant Woodlands, Significant Valleylands, and unevaluated wetlands associated with the riparian corridor of West Duffins Creek. These three natural features are contained within staked boundaries of Major Spink Environmentally Significant Area. A total of 10 natural vegetation communities and 62 plant species were identified by Dillon in 2019. As a result of 2019 field investigations, candidate SWH for Landbird Migratory Stopover Areas was identified within Significant Woodlands and the Major Spink Environmentally Significant Area. Deciduous forest communities identified within Significant Woodlands were also considered candidate SWH for Bat Maternity Roosts, potential habitat for SAR bats, as well as confirmed habitat for three Butternut trees.

The proposed development will require the removal of ground vegetation and select trees within disturbed meadow and hedgerow areas of the Study Area. Based on the proposed development, potential impacts may include disturbance to candidate wildlife habitat (migratory birds), erosion and sedimentation, as well as diversion of surface water flows to the West Duffins Creek.

These impacts will be avoided or minimized by implementing the mitigation, restoration, and management measures described in this report. Impacts to migratory birds and migratory stopover SWH can be mitigated if bird friendly design are incorporated into the building architecture. To ensure the maintenance of existing surface water run-off patterns, a SWM plan and/or a functional servicing report has also been prepared to maintain existing surface water runoff patterns. In addition, an Erosion and Sediment Control Plan and a dewatering plan will be developed at Detailed Design to ensure the natural features located in proximity to the proposed development are not adversely affected as a result of construction activities. In addition, a tree inventory and arborist report, and subsequent Landscaping Plan and Planting Plan will be developed for the Study Area during Detailed Design. These reports will quantify the required tree removals, as well as determine compensation and mitigation to assist in preventing anthropogenic disturbance and the spread of non-native, invasive species. Lastly, an Environmental Monitoring Plan is recommended during construction to monitor impacts on the natural environment and to ensure mitigation measures are implemented.

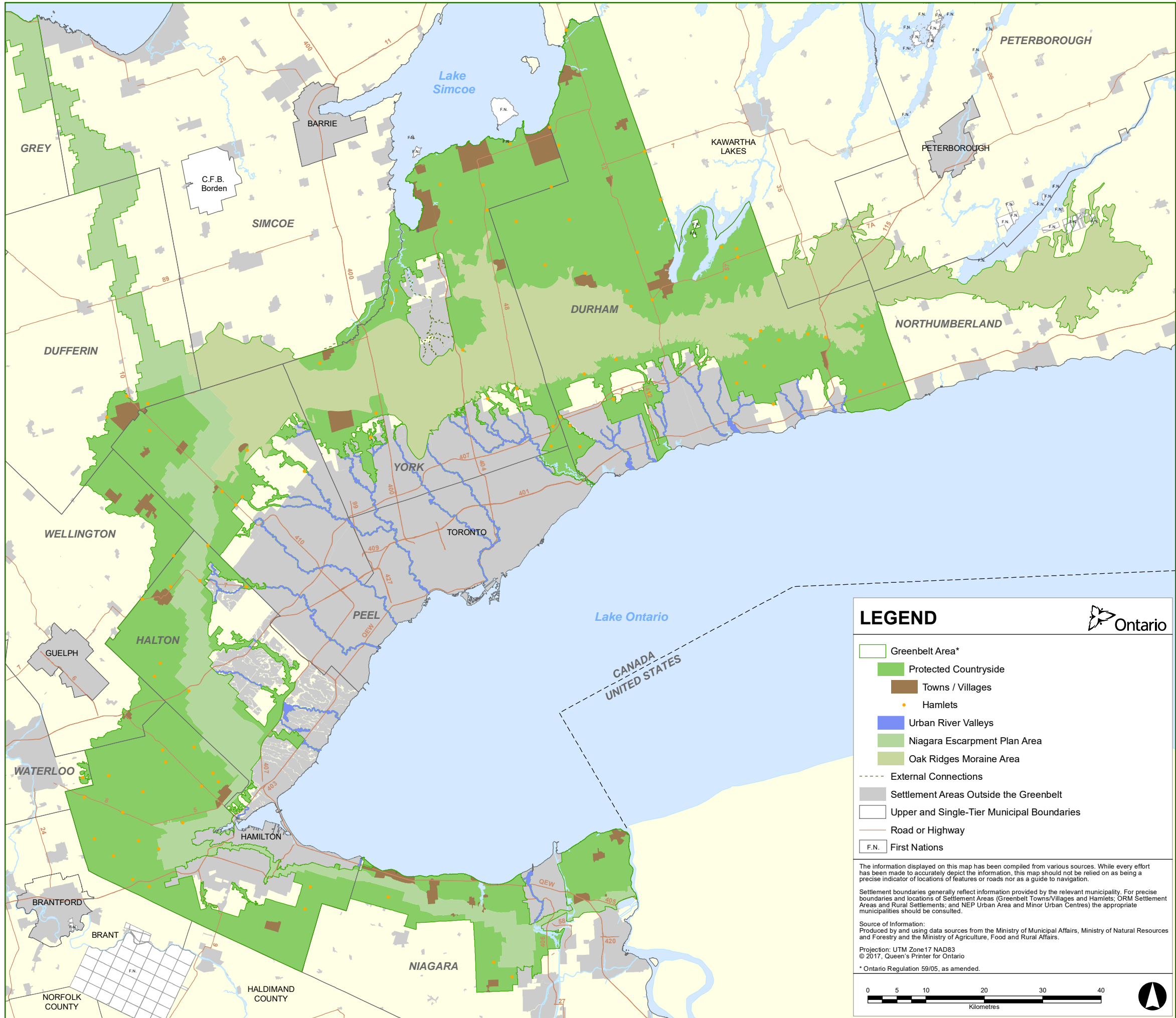
# Appendix A


## *Planning Policy Schedules*















## SCHEDULE 4 Urban Growth Centres

Note: The information displayed on this map is not to scale, does not accurately reflect approved land-use and planning boundaries, and may be out of date. For more information on precise boundaries, the appropriate municipality should be consulted. For more information on Greenbelt Area boundaries, the Greenbelt Plan should be consulted. The Province of Ontario assumes no responsibility or liability for any consequences of any use made of this map.



**LEGEND** 

-  Greenbelt Area\*
-  Protected Countryside
-  Towns / Villages
-  Hamlets
-  Urban River Valleys
-  Niagara Escarpment Plan Area
-  Oak Ridges Moraine Area
-  External Connections
-  Settlement Areas Outside the Greenbelt
-  Upper and Single-Tier Municipal Boundaries
-  Road or Highway
-  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, ORM Settlement Areas and Rural Settlements, and NEP Urban Area and Minor Urban Centres) 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 Zone 17 NAD83  
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\* Ontario Regulation 59/05, as amended.

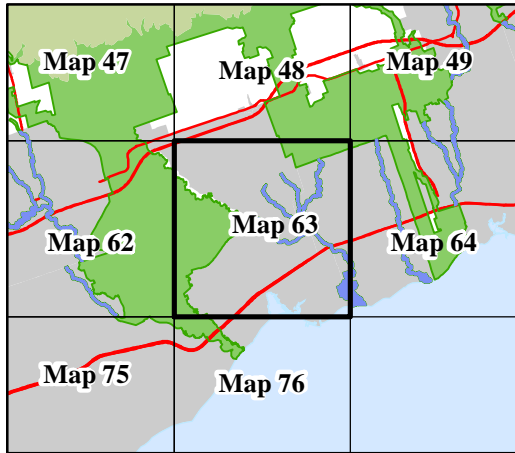
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# greenbelt

## PLAN 2017

# Schedule 1: Greenbelt Area

# greenbelt



## LEGEND



- 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

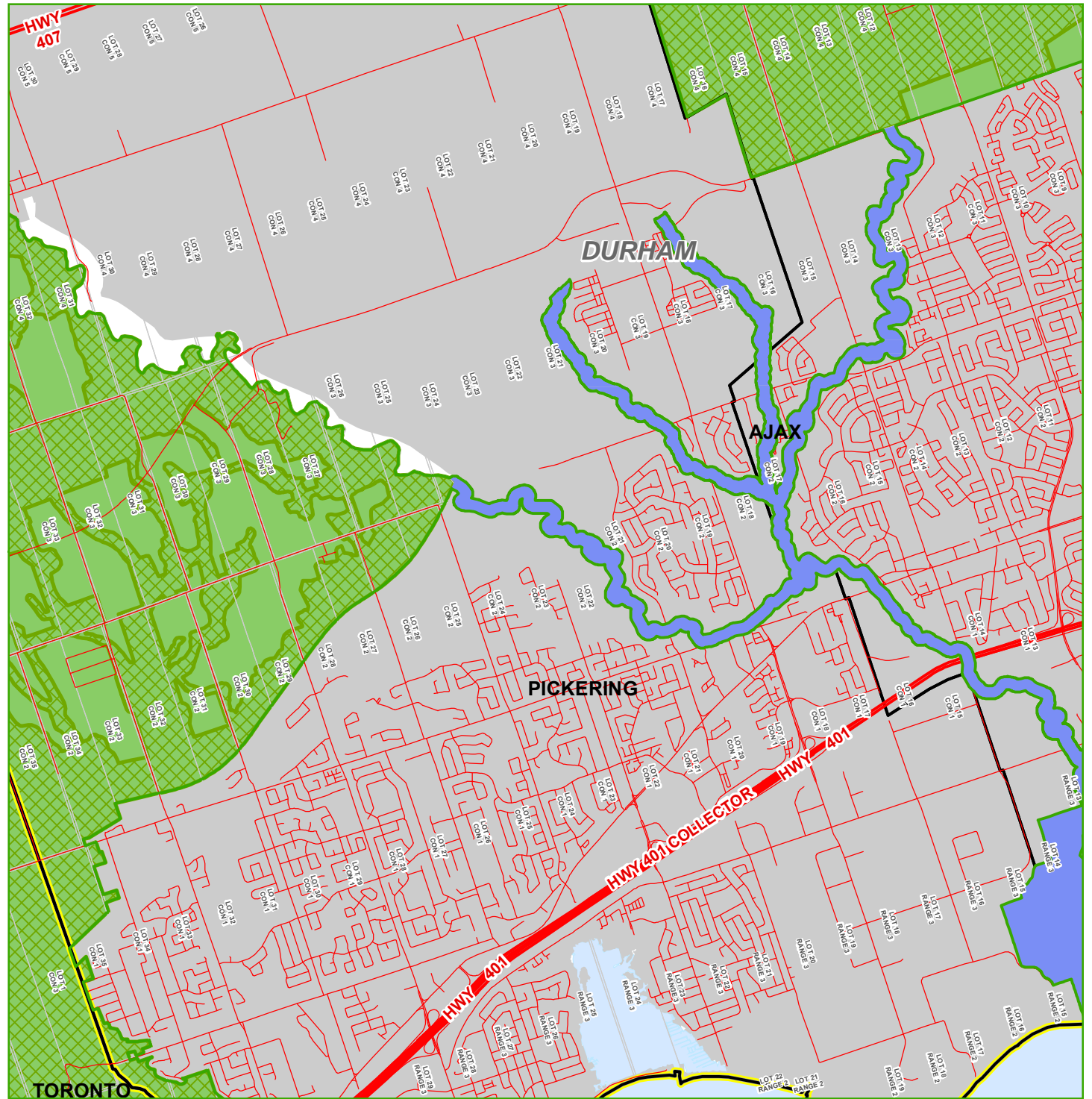
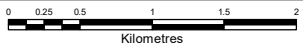
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\* Ontario Regulation 59/05, as amended.





**SCHEDULE 'A'  
REGIONAL STRUCTURE**

**LEGEND**

**URBAN SYSTEM**

- URBAN AREA BOUNDARY
- URBAN AREA BOUNDARY DEFERRED
- REGIONAL CENTRE
- URBAN GROWTH CENTRE
- REGIONAL CORRIDOR
- LIVING AREAS
- EMPLOYMENT AREAS
- MUNICIPAL SERVICE
- AREAS DEVELOPABLE ON FULL/PARTIAL MUNICIPAL SERVICES
- AREAS DEVELOPABLE ON MUNICIPAL WATER SYSTEMS & PRIVATE WASTE DISPOSAL SYSTEMS
- AREAS DEVELOPABLE ON PRIVATE WELLS & MUNICIPAL SEWER SYSTEMS
- AREAS DEVELOPABLE ON PRIVATE WELLS & PRIVATE WASTE DISPOSAL SYSTEMS
- BUILT BOUNDARY

**RURAL SYSTEM**

- PRIME AGRICULTURAL AREAS
- RURAL SETTLEMENTS :**
- HAMLET
  - RURAL EMPLOYMENT AREA (SEE TABLE E3 FOR DESCRIPTION)
  - COUNTRY RESIDENTIAL SUBDIVISION (SEE TABLE E2 FOR DESCRIPTION)
  - SHORELINE RESIDENTIAL
  - REGIONAL NODE (SEE SECTION 9C FOR DESCRIPTION)
  - AGGREGATE RESOURCE EXTRACTION AREA (SEE TABLE E1 FOR DESCRIPTION)

**GREENLANDS SYSTEM**

- MAJOR OPEN SPACE AREAS
- WATERFRONT AREAS
- OAK RIDGES MORaine BOUNDARY
- OPEN SPACE LINKAGE
- OAK RIDGES MORaine AREAS
- GREENBELT BOUNDARY
- TOURIST ACTIVITY / RECREATIONAL NODE
- WATERFRONT LINKS
- WATERFRONT PLACE

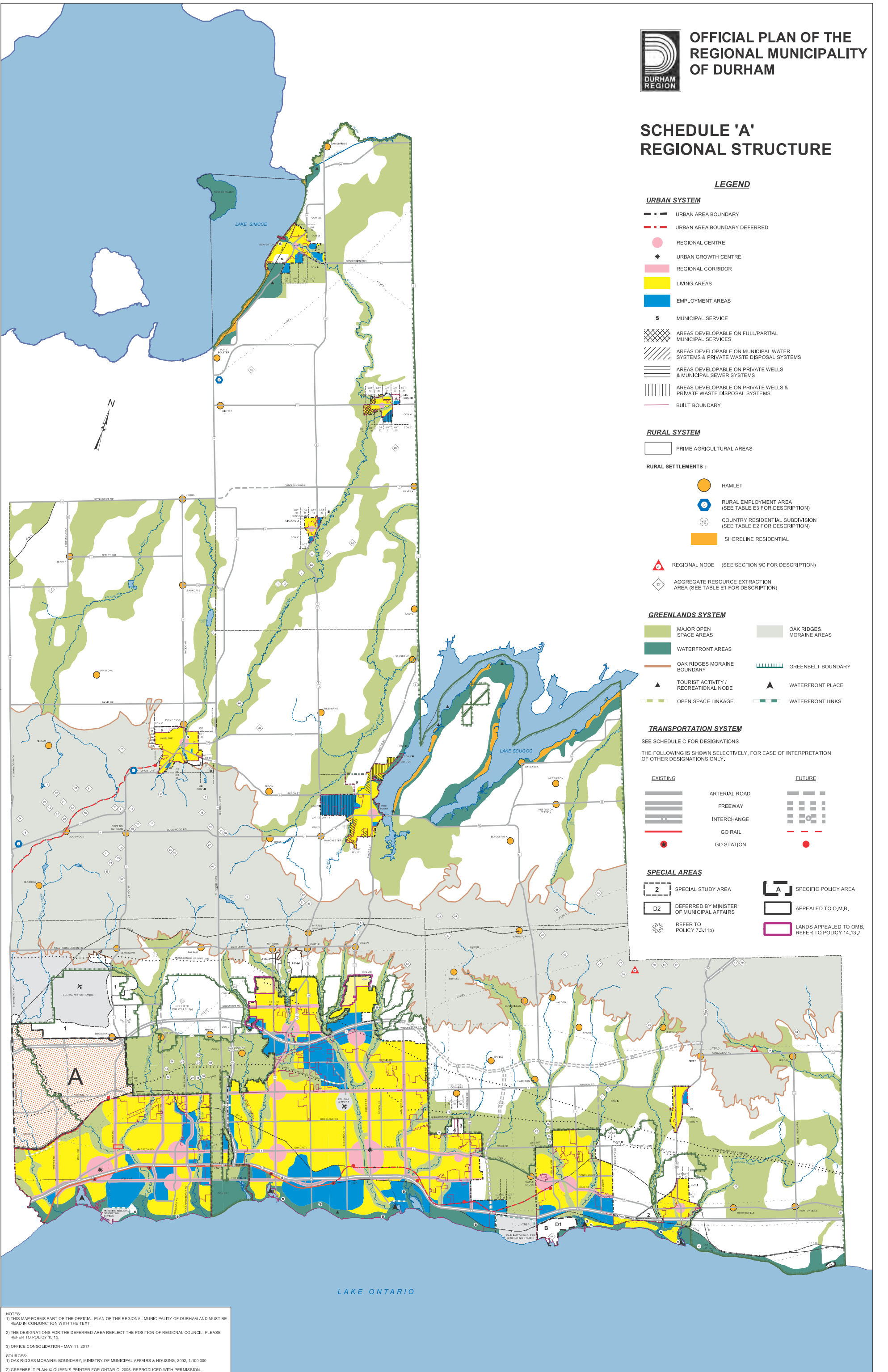
**TRANSPORTATION SYSTEM**

SEE SCHEDULE C FOR DESIGNATIONS  
THE FOLLOWING IS SHOWN SELECTIVELY, FOR EASE OF INTERPRETATION OF OTHER DESIGNATIONS ONLY.

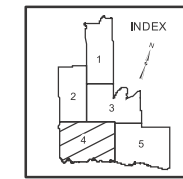
- | EXISTING |               | FUTURE |
|----------|---------------|--------|
|          | ARTERIAL ROAD |        |
|          | FREEWAY       |        |
|          | INTERCHANGE   |        |
|          | GO RAIL       |        |
|          | GO STATION    |        |

**SPECIAL AREAS**

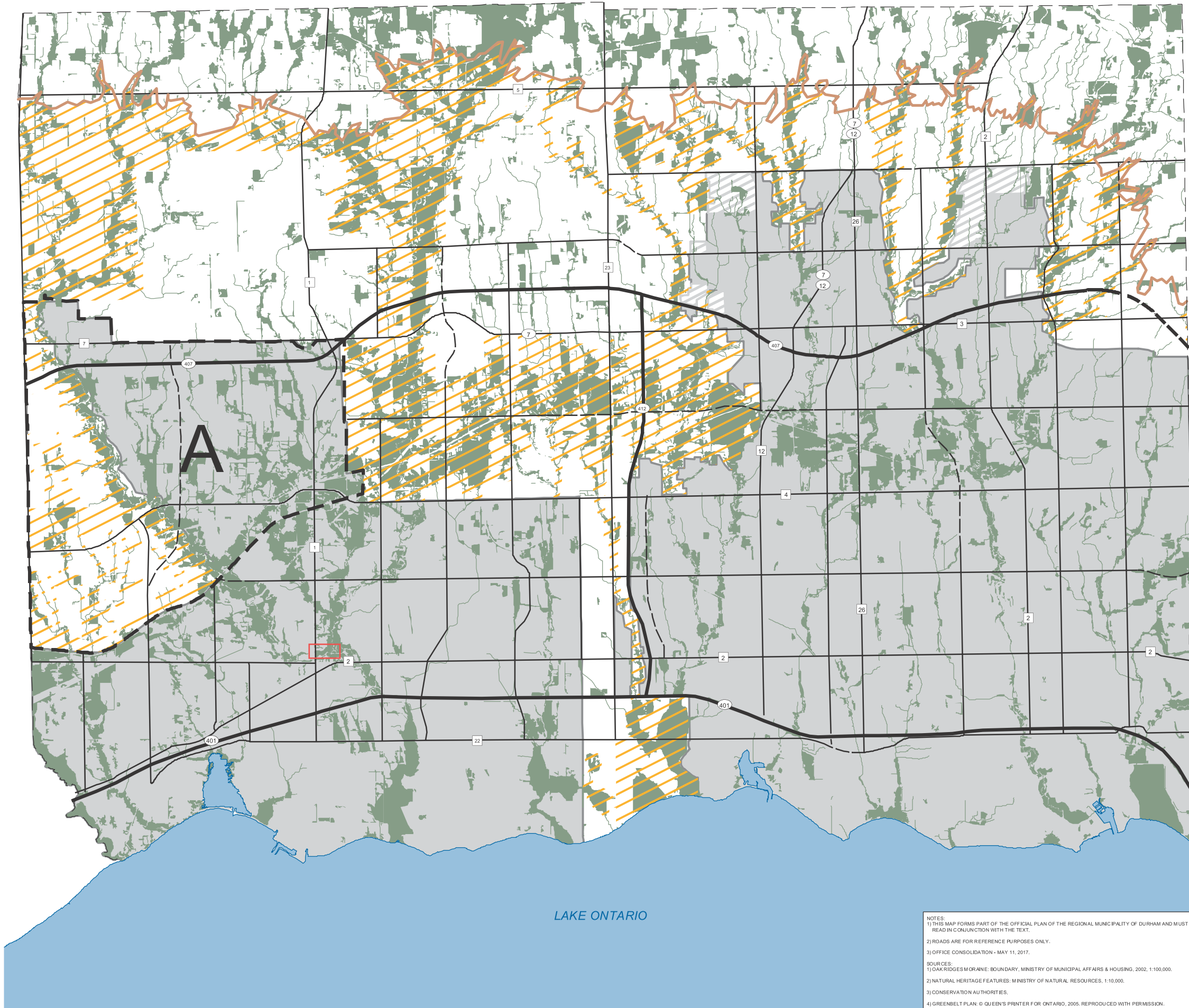
- SPECIAL STUDY AREA
- DEFERRED BY MINISTER OF MUNICIPAL AFFAIRS
- REFER TO POLICY 7.3.11(p)
- SPECIFIC POLICY AREA
- APPEALED TO O.M.B.
- LANDS APPEALED TO O.M.B. REFER TO POLICY 14.13.7









**NOTES:**  
 1) THIS MAP FORMS PART OF THE OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM AND MUST BE READ IN CONJUNCTION WITH THE TEXT.  
 2) THE DESIGNATIONS FOR THE DEFERRED AREA REFLECT THE POSITION OF REGIONAL COUNCIL, PLEASE REFER TO POLICY 15.13.  
 3) OFFICE CONSOLIDATION - MAY 11, 2017.  
**SOURCES:**  
 1) OAK RIDGES MORaine: BOUNDARY, MINISTRY OF MUNICIPAL AFFAIRS & HOUSING, 2002, 1:100,000.  
 2) GREENBELT PLAN: © QUEEN'S PRINTER FOR ONTARIO, 2005, REPRODUCED WITH PERMISSION.



**SCHEDULE 'B' - MAP 'B1d'**  
**GREENBELT NATURAL  
HERITAGE SYSTEM &  
KEY NATURAL HERITAGE  
AND HYDROLOGIC  
FEATURES**



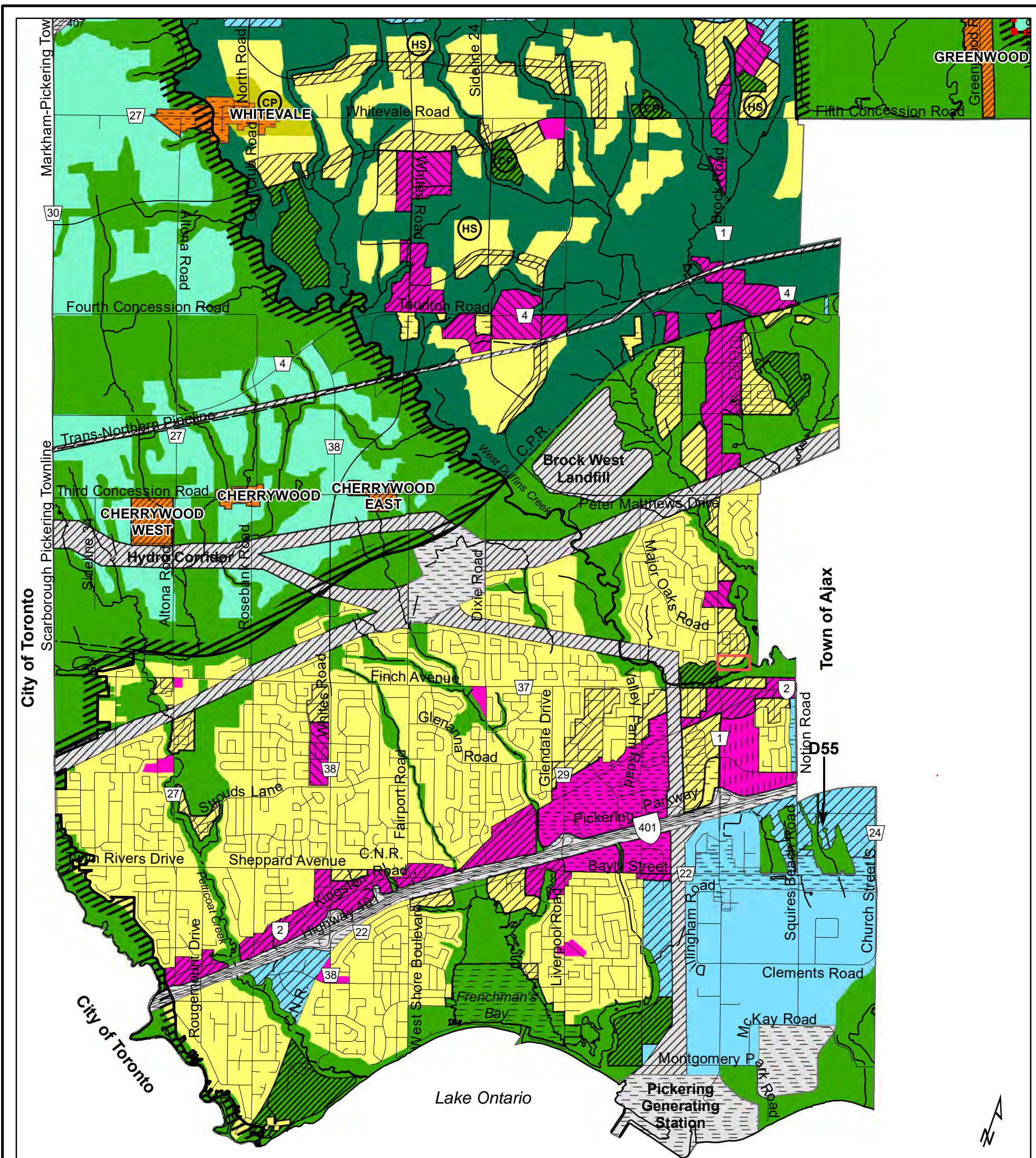
**LEGEND**

-  KEY NATURAL HERITAGE AND HYDROLOGIC FEATURES
-  GREENBELT NATURAL HERITAGE SYSTEM
-  OAK RIDGES MORAINÉ CONSERVATION PLAN AREA BOUNDARY
-  URBAN AREA
-  LANDS APPEALED TO OMB,  
REFER TO POLICY 14.13.7.
-  SPECIFIC POLICY AREA

NOTES:  
 1) THIS MAP FORMS PART OF THE OFFICIAL PLAN OF THE REGIONAL MUNICIPALITY OF DURHAM AND MUST BE READ IN CONJUNCTION WITH THE TEXT.  
 2) ROADS ARE FOR REFERENCE PURPOSES ONLY.  
 3) OFFICE CONSOLIDATION - MAY 11, 2017.

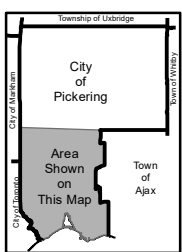
SOURCES:  
 1) OAK RIDGES MORAINÉ: BOUNDARY, MINISTRY OF MUNICIPAL AFFAIRS & HOUSING, 2002, 1:100,000.  
 2) NATURAL HERITAGE FEATURES: MINISTRY OF NATURAL RESOURCES, 1:10,000.  
 3) CONSERVATION AUTHORITIES.  
 4) GREENBELT PLAN © QUEEN'S PRINTER FOR ONTARIO, 2005. REPRODUCED WITH PERMISSION.





Schedule I to the  
**Pickering  
 Official Plan**

Edition 8



Sheet 1 of 3

City of Pickering  
 City Development Department  
 © July, 2018  
 This Map Forms Part of Edition 8 of the Pickering Official Plan and  
 Must Be Read in Conjunction with the Other Schedules and the Text.

**Open Space System**

- Seaton Natural Heritage System
- Natural Areas
- Active Recreational Areas
- Marina Areas
- Hamlet Heritage Open Space

**Rural Settlements**

- Rural Clusters
- Rural Hamlets

**Land Use Structure**

- Urban Residential Areas**
  - Low Density Areas
  - Medium Density Areas
  - High Density Areas
- Mixed Use Areas**
  - Local Nodes
  - Community Nodes
  - Mixed Corridors
  - Specialty Retailing Node
  - City Centre
- Employment Areas**
  - General Employment
  - Prestige Employment
  - Mixed Employment

**Freeways and Major Utilities**

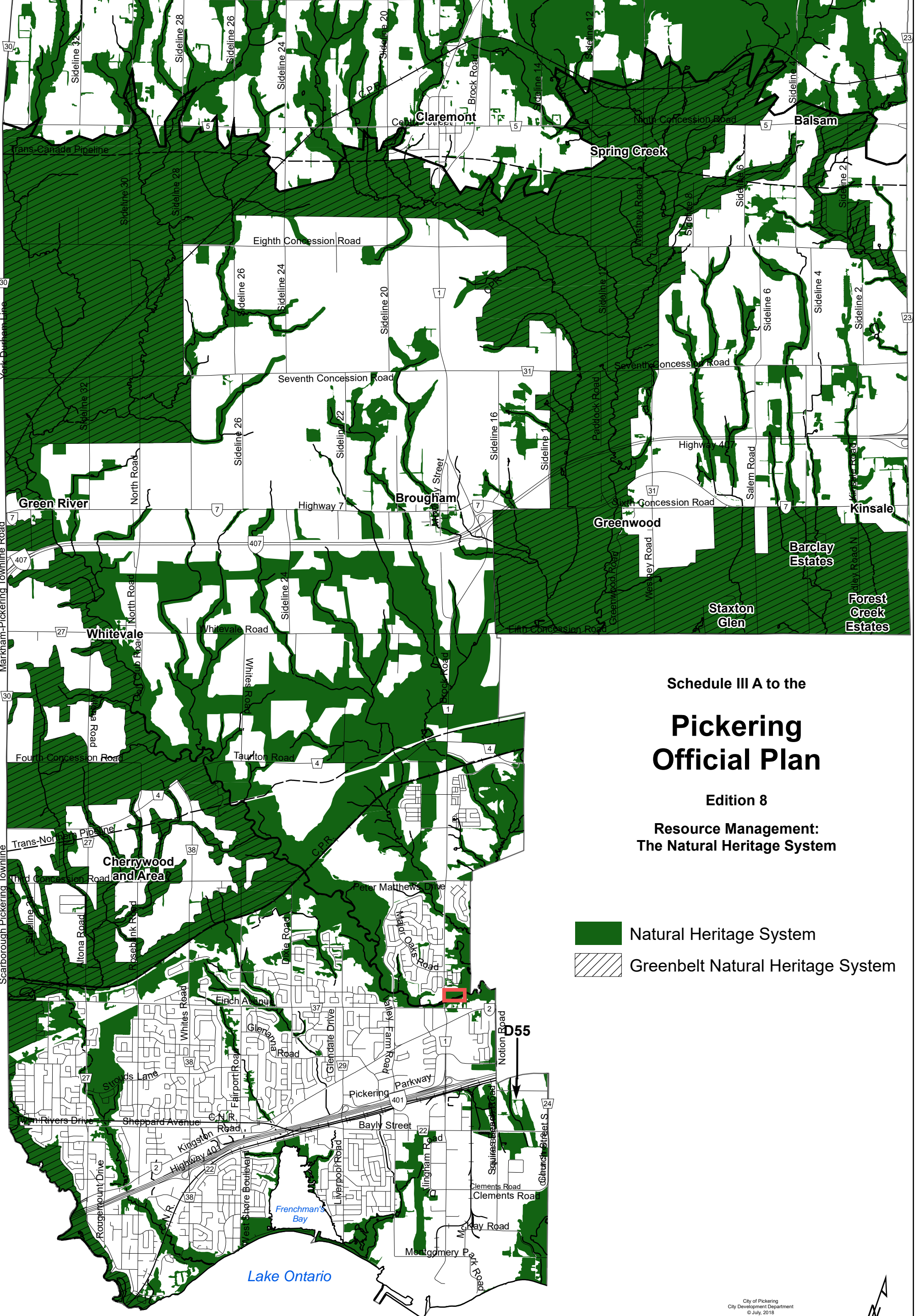
- Controlled Access Areas
- Potential Multi Use Areas

**Seaton Symbols**

- District Park
- Community Park
- High School

**Other Designations**

- Prime Agricultural Areas
- Deferrals
- Greenbelt Boundary



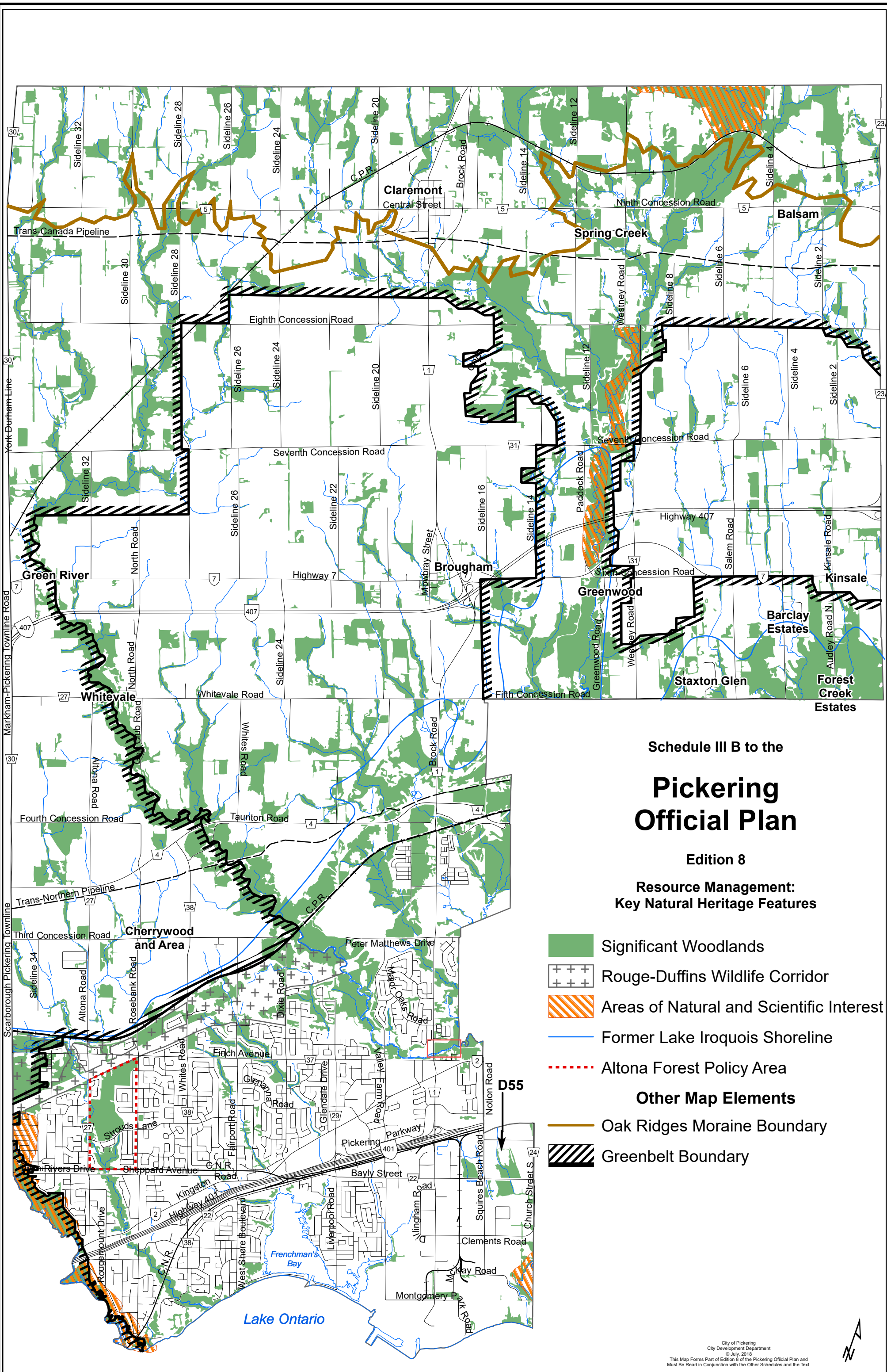
Schedule III A to the  
**Pickering  
 Official Plan**

Edition 8

**Resource Management:  
 The Natural Heritage System**

- Natural Heritage System
- Greenbelt Natural Heritage System





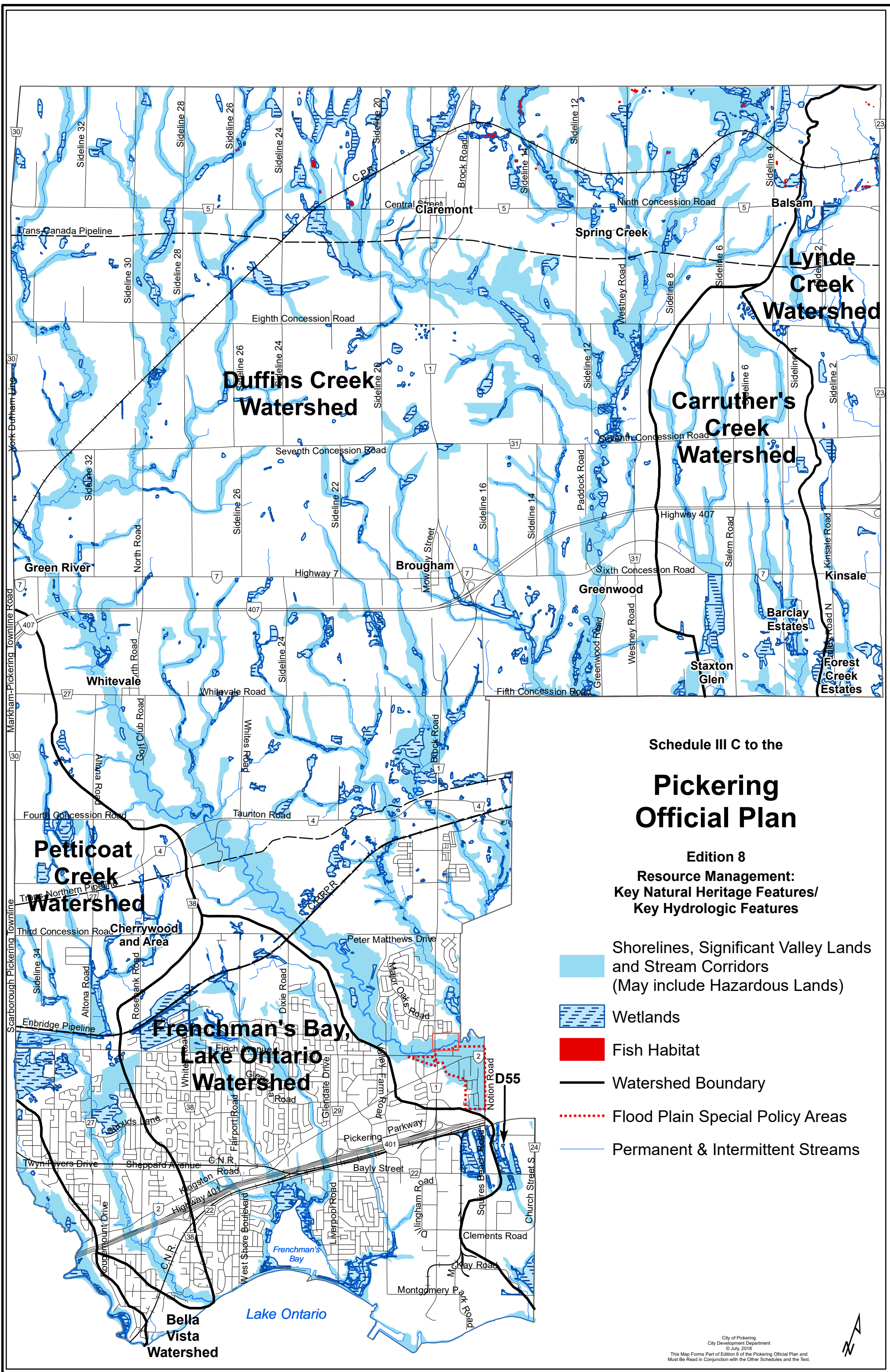
Schedule III B to the  
**Pickering  
 Official Plan**

Edition 8

**Resource Management:  
 Key Natural Heritage Features**

- Significant Woodlands
  - Rouge-Duffins Wildlife Corridor
  - Areas of Natural and Scientific Interest
  - Former Lake Iroquois Shoreline
  - Altona Forest Policy Area
- Other Map Elements**
- Oak Ridges Moraine Boundary
  - Greenbelt Boundary





Schedule III C to the  
**Pickering  
 Official Plan**

Edition 8  
 Resource Management:  
 Key Natural Heritage Features/  
 Key Hydrologic Features

- Shorelines, Significant Valley Lands and Stream Corridors (May include Hazardous Lands)
- Wetlands
- Fish Habitat
- Watershed Boundary
- Flood Plain Special Policy Areas
- Permanent & Intermittent Streams



## Appendix B

### *Major Spink Environmentally Significant Area Report*



Major-Spink Area

#### GENERAL DESCRIPTION

Major-Spink Area lies to the east of Brock Road, north of Kingston Road, in the Towns of Pickering and Ajax. The area is located on the sand plain which was deposited in the shallow water environment of the glacial Lake Iroquois. Most of the soil is fine-grained sand (Sibul et al. 1977).

Much of the flood plain is dominated by willows (Salix spp.) and Manitoba Maple (Acer negundo). South of the river, patches of Eastern Hemlock (Tsuga canadensis) occur, while north of the river and east of Brock Road is an extensive mature forest of mixed species. The variety of tree species is a result of the change in moisture conditions, from the wet flood plain to the drier slopes.

#### CRITERIA FULFILLED

##### Criterion 5

Fifteen different plant communities were identified in the relatively small area. This is considered unusually high diversity within the MTRCA region. Twenty-one tree species and 30 bird species were recorded in the area. A large number of individuals of each bird species were present.

COMMENTS

Two specimens of the nationally and provincially rare Black Walnut (Juglans nigra) occur in the area; however one is in poor health and both are probable escapes.

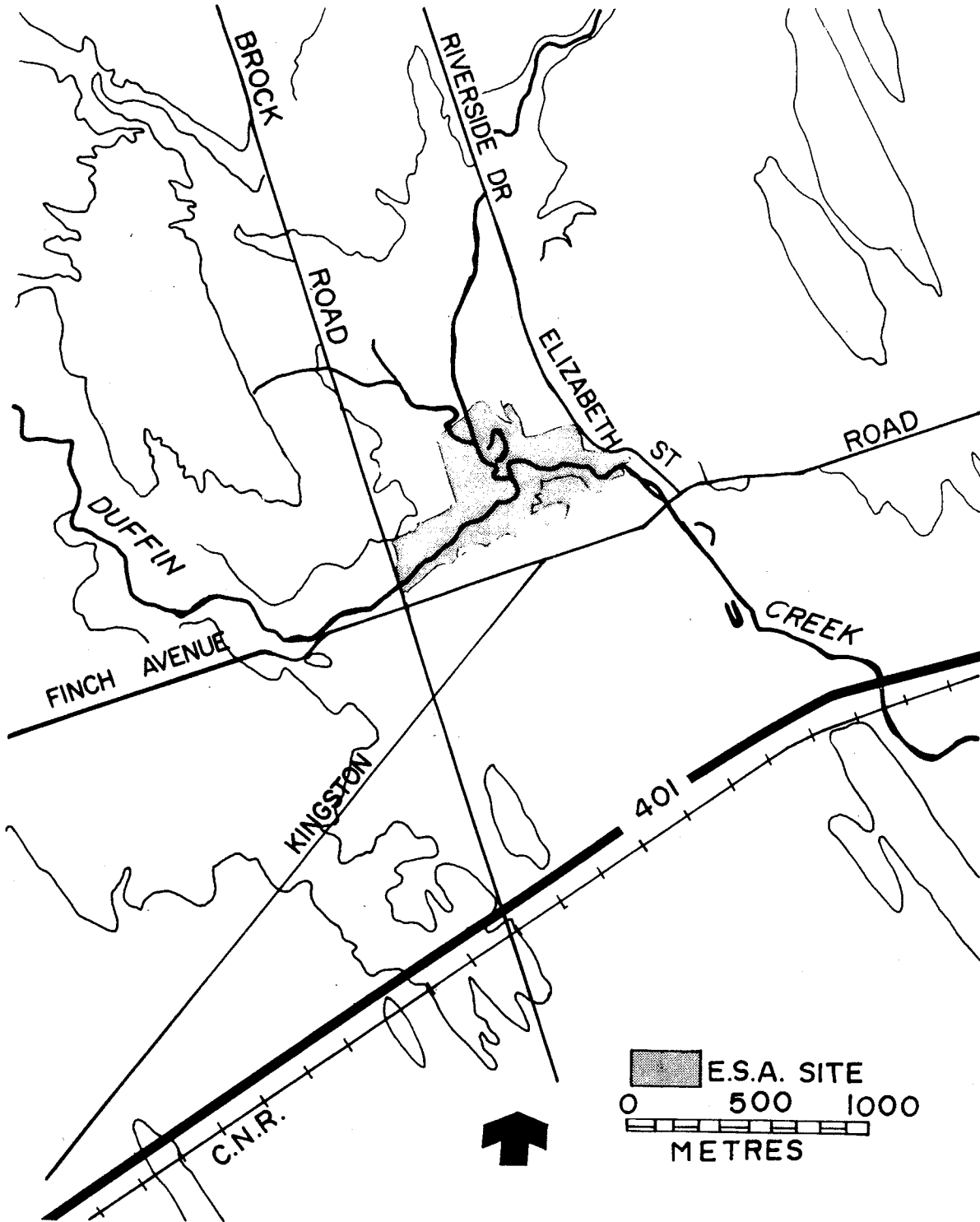
The area had fairly high bird activity, with 30 species being observed. Among these was the Ruffed Grouse (Bonasa umbellus).

# ENVIRONMENTALLY SIGNIFICANT AREAS STUDY



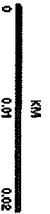
the metropolitan toronto and region conservation authority





ESA No. 97





### Brock Road and Finch Road - Pickering



-  Municipal Names (MUNICIPAL)
-  Watercourse
-  ESAs
-  TRCA Watersheds

## **Appendix 2**

# Appendix C

## *SAR and SCC Screening*

Table C-1: Species at Risk with the Potential to Occur Within the Study Area for 2055 Brock Road, Pickering Ontario.

Scientific Name	Common Name	SARA Status <sup>1</sup>	ESA Status <sup>2</sup>	SRank <sup>3</sup>	Information Source <sup>4</sup>	Regulated Habitat	Habitat Requirements <sup>2,5</sup>	Potential Habitat in the Study Area	Rationale for Potential to Occur
<b>Birds</b>									
<i>Chaetura pelagica</i>	Chimney Swift	THR	THR	S4B,S4N	OBBA	No	Commonly found in urban areas near buildings; nests in hollow trees, crevices of rock cliffs, chimneys; highly gregarious; feeds over open water.	Yes	Potential habitat for this species is available in riparian woodlands and open aquatic areas associated with the West Duffins Creek corridor.
<i>Ixobrychus exilis</i>	Least Bittern	THR	THR	S4B	OBBA	No	Deep marshes, swamps, bogs; marshy borders of lakes, ponds, streams, ditches; dense emergent vegetation of cattail, bulrush, sedge; nests in cattails; intolerant of loss of habitat and human disturbance.	No	Suitable habitat for this species is unavailable within the Study Area
<i>Chordeiles minor</i>	Common Nighthawk	THR	SC	S4B	OBBA	No	Open ground; clearings in dense forests; gravel beaches or barren areas with rocky soils; open woodlands; flat gravel roofs.	No	Suitable habitat for this species is unavailable within the Study Area
<i>Ammodramus savannarum</i>	Grasshopper Sparrow	SC	SC	S4B	OBBA	No	Well-drained grassland or prairie with low cover of grasses, taller weeds on sandy soil; hayfields or weedy fallow fields; uplands with ground vegetation of various densities; perches for singing; requires tracts of grassland > 10 ha.	No	Suitable habitat for this species is unavailable within the Study Area
<i>Falco peregrinus</i>	Peregrine Falcon	SC	SC	S3B	NHIC	No	Rock cliffs, crags, especially situated near water; tall buildings in urban centres; threatened by chemical contamination; reintroduction efforts have been attempted in numerous locations throughout Ontario.	No	Suitable habitat for this species is unavailable within the Study Area
<i>Hirundo rustica</i>	Barn Swallow	THR	THR	S4B	OBBA	No	Farmlands or rural areas; cliffs, caves, rock niches; buildings or other man-made structures for nesting; open country near body of water.	Yes	Buildings within residential areas (CVR) provide suitable breeding habitat for this species. Open mixed meadow (MEMM3) and open aquatic areas (OAO) communities within the Study Area may provide potentially suitable foraging habitat for this species.
<i>Riparia riparia</i>	Bank Swallow	THR	THR	S4B	NHIC, OBBA	No	Sand, clay or gravel river banks or steep riverbank cliffs; lakeshore bluffs of easily crumbled sand or gravel; gravel pits, road-cuts, grassland or cultivated fields that are close to water; nesting sites are limiting factor for species presence..	Yes	Open aquatic areas (OAO) of West Duffins Creek within the Study Area may provide suitable habitat for this species
<i>Dolichonyx oryzivorus</i>	Bobolink	THR	THR	S4B	OBBA	No	Large, open expansive grasslands with dense ground cover; hayfields, meadows or fallow fields; marshes; requires tracts of grassland >50 ha.	Yes	Mixed meadow (MEMM3) within the Study Area may provide suitable breeding and foraging habitat for this species.
<i>Euphagus carolinus</i>	Rusty Blackbird	SC	SC	S4B	NHIC	No	Openings in coniferous woodlands bordering bodies of water; tree-bordered marshes, beaver ponds, muskegs, bogs, fens or wooded swamps; stream borders with alder, willow; wooded island on lakes.	Yes	Coniferous woodlands adjacent to West Duffins Creek may provide suitable habitat for this species.
<i>Sturnella magna</i>	Eastern Meadowlark	THR	THR	S4B	OBBA	No	Open, grassy meadows, farmland, pastures, hayfields or grasslands with elevated singing perches; cultivated land and weedy areas with trees; old orchards with adjacent, open grassy areas >10 ha in size.	Yes	Mixed meadow (MEMM3) within the Study Area may provide suitable breeding and foraging habitat for this species.
<i>Cardellina canadensis</i>	Canada Warbler	THR	SC	S4B	OBBA	No	An interior forest species; dense, mixed coniferous, deciduous forests with closed canopy, wet bottomlands of cedar or alder; shrubby undergrowth in cool moist mature woodlands; riparian habitat usually requires at least 30 ha.	Yes	Valley bottomlands of the West Duffins Creek riparian corridor within the Study Area may provide suitable habitat for this species.
<i>Icteria virens virens</i>	Yellow-breasted Chat	END	END	S2B	OBBA	No	Thickets, tall tangles of shrubbery beside streams, ponds; overgrown bushy clearings with deciduous thickets; nests above ground in bush, vines etc..	Yes	Thicket communities (THDM2) associated with the West Duffins Creek riparian corridor may provide suitable habitat for this species.
<i>Vermivora</i>	Golden-winged	THR	SC	S4B	OBBA	No	Early successional habitat; shrubby, grassy abandoned fields	No	Suitable habitat for this species is unavailable

Scientific Name	Common Name	SARA Status <sup>1</sup>	ESA Status <sup>2</sup>	SRank <sup>3</sup>	Information Source <sup>4</sup>	Regulated Habitat	Habitat Requirements <sup>2,5</sup>	Potential Habitat in the Study Area	Rationale for Potential to Occur
<b>Mammals</b>									
<i>Urocyon cinereoargenteus</i>	Gray Fox	THR	THR	S1	MWH	No	Hardwood forests with a mix of fields and woods; swamps; wooded, brushy or rocky habitats; woodland farmland edge; old fields with thickets; dens in hollow log or tree; individual has numerous winter dens throughout its range which is > 40 ha.	No	Suitable habitat for this species is unavailable within the Study Area
<i>Myotis lucifugus</i>	Little Brown Myotis	END	END	S4	MWH	No	Uses caves, quarries, tunnels, hollow trees or buildings for roosting; winters in humid caves; maternity sites in dark warm areas such as attics and barns; feeds primarily in wetlands, forest edges.	Yes	Woodlands associated with the riparian corridor of the West Duffins Creek within the Study Area may provide suitable habitat for this species.
<i>Myotis septentrionalis</i>	Northern Myotis	END	END	S3	MWH	No	Hibernates during winter in mines or caves; during summer males roost alone and females form maternity colonies of up to 60 adults; roosts in houses, manmade structures but prefers hollow trees or under loose bark; hunts within forests, below canopy.	Yes	Woodlands associated with the riparian corridor of the West Duffins Creek within the Study Area may provide suitable habitat for this species.
<i>Pipistrellus subflavus</i>	Tri-colored Bat	END	END	S3?	MWH	No	Can be found in a variety of forested habitats. They form day roosts and maternity colonies in older forest and occasionally in barns or other structures, and overwinter in caves. They forage over water and along streams in the forest.	Yes	Woodlands associated with the riparian corridor of the West Duffins Creek within the Study Area may provide suitable habitat for this species.
<i>Myotis leibii</i>	Eastern Small-footed Myotis	---	END	S2S3	MWH	No	Prefers to roost in a variety of habitats, including in or under rocks, in rock outcrops, in buildings, under bridges, or in caves, mines, or hollow trees.	Yes	Woodlands associated with the riparian corridor of the West Duffins Creek within the Study Area may provide suitable habitat for this species.
<b>Plants</b>									
<i>Trichophorum planifolium</i>	Few-flowered Club-rush/Bashful Bullrush	END	END	S1	MNRF SAR in Area	Yes	The habitat of Few-flowered Club-rush is most commonly dry white or white-black oak deciduous forest. This species will occur less frequently in dry- fresh red oak forest. Within both forest types the plant is restricted to sunny openings where the sub-canopy and shrub layer are reduced to between 10 and 30 percent closure and the total forest canopy closure is between 40 and 70 percent.	No	Suitable habitat for this species is unavailable within the Study Area
<i>Juglans cinerea</i>	Butternut	END	END	S3?	NHIC	No	Usually grows alone or in small groups in deciduous forests. It prefers moist, well-drained soil and is often found along streams. It is also found on well-drained gravel sites and rarely on dry rocky soil. This species does not do well in the shade, and often grows in sunny openings and near forest edges.	Yes	Woodlands associated with the riparian corridor of the West Duffins Creek within the Study Area provide confirmed habitat for the species: three Butternut exist within deciduous swamp (SWDM2-2; 2009 EIS).

1 – Status identified by the Committee on the Status of Endangered Wildlife in Canada under the federal SARA, 2002;

2 – SAR in Ontario List under the provincial ESA, 2007;

3 – Ontario SRank; S5 = secure; S4= apparently secure; S3 = vulnerable; S2 = imperilled; SX = Extirpated; SH = Possibly Extirpated; SNA = non-native or exotic species to Ontario;

4 – NHIC = MNRF Natural Heritage Information Centre, MNRF SAR in Area = MNRF Species at Risk in Ontario List by area of the province; MNRF Reg. Habitat = MNRF Regulated Habitat (O. Reg. 242/08); MNRF Consult. = MNR Consultation, OBBA = Ontario Breeding Bird Atlas, MWH Digital Distribution Maps of the Mammals of the Western Hemisphere, version 3.0, OHA = Ontario Herpetofaunal Atlas, OOA = Ontario Odonata Atlas; OBA = Ontario Butterfly Atlas; CBC = Christmas Bird Count;

5 – MNRF Significant Wildlife Technical Guide - Appendix G (2000).

## Appendix D

### *Breeding Bird Survey Technical Memo (Beacon Environmental)*

October 2, 2019

BEL 219302

Brock Road Duffins Forest Inc.  
22 Ross Shinen Lane  
Stouffville, ON L4A 0V4

c/o Elyse Snyder, M.Arch, OAA  
Kohn Partnership Architects Inc.  
116 Spadina Avenue, Suite 501  
Toronto, ON M5V 2K6

via email: [esnyder@kohnarchitects.com](mailto:esnyder@kohnarchitects.com)

Attention: Alison Lin

via email : [alisonlin77@yahoo.com](mailto:alisonlin77@yahoo.com)

**Re: Breeding Bird Survey  
2055 Brock Road, Pickering, Ontario**

---

Dear Ms. Lin:

Beacon Environmental Limited (Beacon) is pleased to provide the following results of the breeding survey completed for the property located at municipal address 2055 Brock Road, in the City of Pickering, Regional Municipality of Durham (the “subject property”).

The subject property is an irregular shaped parcel of land encompassing an area of approximately 1.3 ha (3.24 ac) located on the east side of Brock Road, north of Finch Avenue (**Attachment A – Figure 1**). The subject property is currently undeveloped. Forested valleylands associated with West Duffins Creek are present directly south and east of the subject property. Institutional and residential lands are present to the north, and further residential subdivisions are present west of Brock Road.

Beacon has completed breeding bird surveys to support the natural heritage studies required to move forward with the development application.

### **Breeding Bird Methodology**

Two breeding bird surveys were completed for the subject property on the mornings of June 25, and July 3, 2019 (start times of 7:10 am, and 5:35 am respectively), under ideal weather conditions. The breeding bird community was surveyed using a roving type survey, in which all parts of the subject property were walked and all birds heard or observed and showing some inclination toward breeding were recorded as breeding species. All birds heard and seen were recorded in the location observed on an aerial photograph of the site.

## **Breeding Bird Results**

A total of ten species of birds were recorded breeding and another three species were recorded foraging on the subject property during the 2019 season (**Attachment B**). Most of the breeding birds recorded were commonly encountered generalist species regularly found in urban and urbanizing areas including Song Sparrow (*Melodia melodpiza*), Cedar Waxwing (*Bombycilla cedrorum*), Common Grackle (*Quiscalus quiscula*), American Goldfinch (*Spinus tristus*), Mourning Dove (*Zenaida macroura*), Black-capped Chickadee (*Poecile atricapillus*), Common Yellowthroat (*Geothlyphis trichas*), Blue Jay (*Cyanocitta cristata*) and Red-winged Blackbird (*Agelaius phoeniceus*). During the field investigations, foraging species observed included American Robin (*Turdus migratorius*), European Starling (*Sturnus vulgaris*), and Northern Cardinal (*Cardinalis cardinalis*).

No species ranked as S1 through S3 (Critically Imperiled through Vulnerable) by the province, or species protected under the ESA were encountered. Area-sensitive birds require larger tracts of suitable habitat in which to breed, or have higher breeding success in larger areas of suitable habitat. No birds considered to be area-sensitive were recorded during the 2019 breeding season.

Species of conservation concern within the TRCA jurisdiction receive a ranking of L1 to L3. No bird species of conservation concern were recorded for the subject property during surveys. The bird species observed are ranked by TRCA as L4, L5 or L+ reflective of species that occur and are generally secure throughout the region or are somewhat tolerant of urban stressors. L4 species are defined as those that occur throughout the region but could show declines if urban impacts are not mitigated effectively.

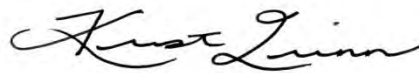
We trust that this technical letter report meets your project needs at this time. Should you have any question or points of discussion regarding the above, please don't hesitate to contact us anytime.

Prepared by:  
**Beacon Environmental**



Lauren Cymbaly, M.E.S.  
Ecologist

Reviewed by:  
**Beacon Environmental**

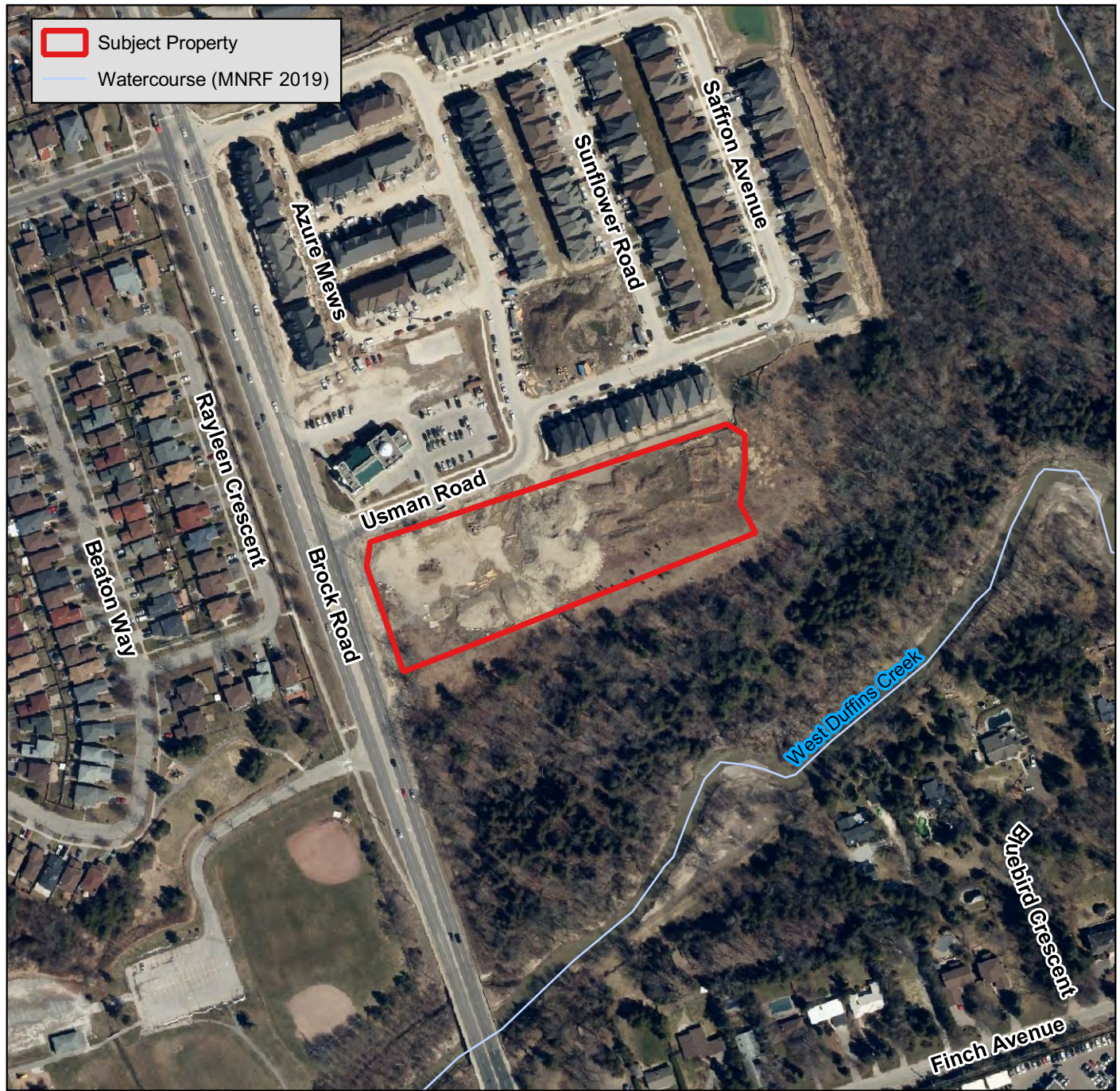




Kristi L. Quinn, B.E.S  
Principal, Senior Environmental Planner

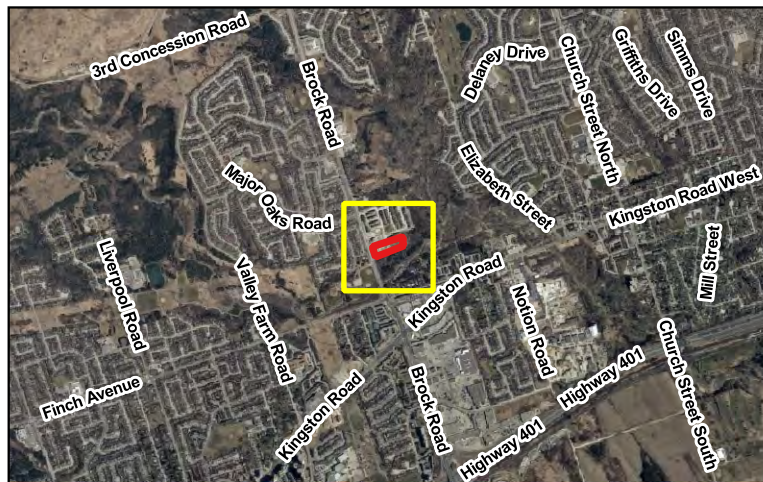




# Attachment A

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 Subject Property  
 Watercourse (MNR 2019)



<b>Site Location</b>		<b>Figure 1</b>
2055 Brock Road, Pickering, Breeding Bird Survey		
		Project: 219302 Last Revised: September 2019
Client: Brock Road Duffins Forest Inc.		Prepared by: BD Checked by: LC
	1:3200	Inset Map: 1:50000
Contains information licensed under the Open Government License—Ontario Orthoimagery Baselayser: 2018 (FBS)		

# Attachment B

---

# Attachment B

## Breeding Birds of 2055 Brock Road, Pickering

Species		Status						Totals
Common Name	Scientific Name	National Species at Risk COSEWICa	Species at Risk in Ontario Listing a	Provincial breeding season SRANK <sup>b</sup>	TRCA Status d	Regional Status	Area-sensitive (OMNR)c	# Breeding Pairs or Territories
Mourning Dove	<i>Zenaida macroura</i>			S5	L5			1
Blue Jay	<i>Cyanocitta cristata</i>			S5	L5			1
Black-capped Chickadee	<i>Poecile atricapillus</i>			S5	L5			1
American Robin	<i>Turdus migratorius</i>			S5	L5			F
Cedar Waxwing	<i>Bombycilla cedrorum</i>			S5	L5			3
European Starling	<i>Sturnus vulgaris</i>			SE	L+			F
Common Yellowthroat	<i>Geothlypis trichas</i>			S5	L4			1
Northern Cardinal	<i>Cardinalis cardinalis</i>			S5	L5			F
Chipping Sparrow	<i>Spizella passerina</i>			S5	L5			1
Song Sparrow	<i>Melospiza melodia</i>			S5	L5			4
Red-winged Blackbird	<i>Agelaius phoeniceus</i>			S4	L5			1
Common Grackle	<i>Quiscalus quiscula</i>			S5	L5			1
American Goldfinch	<i>Spinus tristis</i>			S5	L5			3

Field Work Conducted On: June 25 and July 3, 2019  
 F indicates foraging birds or those flying over the site  
 Number of Species: 10 (+3 foraging)  
 Number of (provincial and national) Species at Risk: 0  
 Number of S1 to S3 Species: 0  
 Number of TRCA L1, L2 and L3 Species (Species of Concern): 0  
 Number of Area-sensitive Species: 0

KEY

a COSEWIC = Committee on the Status of Endangered Wildlife  
in Canada

a Species at Risk in Ontario List (as applies to ESA) as designated by COSSARO (Committee on the Status of Species at Risk in  
Ontario)

END = Endangered, THR = Threatened, SC = Special Concern

<sup>b</sup> SRANK (from Natural Heritage Information Centre) for breeding status if:

S1 (Critically Imperiled), S2 (Imperiled), S3 (Vulnerable), S4 (Apparently Secure),

S5 (Secure)

SNA (Not applicable... 'because the species is not a suitable target for conservation activities'; includes non-  
native species)

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

d Toronto and Region Conservation Authority L rank

(2018):

L1 to L3 Regional species of concern from highest to lowest; L4 Urban concern; L5 Secure through region; L+  
Non-native

# Appendix E

## *Site Photographs*

Photo :1

October 11, 2019

Northeast view of disturbed and cleared areas of Dry-Fresh Mixed Meadow (MEMM3) within the Study Area.



Photo 2:

October 11, 2019

East view of disturbed areas of Dry-Fresh Mixed Meadow (MEMM3) within the Study Area.



Photo 3:

October 11, 2019

North view of disturbed areas of Dry-Fresh Mixed Meadow (MEMM3) adjacent to residential lands (CVR\_3) within the Study Area.



Photo 4:

October 11, 2019

Southwest view of Dry-Fresh Sugar Maple Deciduous Forest (FODM6) within riparian corridor of the West Duffins Creek.





Photo 5:

October 11, 2019

East view of Dry-Fresh Sugar Maple Deciduous Forest (FODM6) within riparian corridor of the West Duffins Creek



Photo 6:

October 11, 2019

Evidence of anthropogenic disturbance (excavations of the valley ridge) within the Dry-Fresh Sugar Maple Deciduous Forest (FODM6) community.



Photo 7:

October 11, 2019

East view of Fresh-Moist White Cedar Coniferous Forest (FOCM4-1) located in the bottom lands of the West Duffins Creek riparian corridor.



Photo 8:

October 11, 2019

Patch of Dog-strangling vine (*Vincetoxicum rossicum*) identified within Fresh-Moist White Cedar Coniferous Forest (FOCM4-1) of the bottom lands of the West Duffins Creek riparian corridor.



**Photo 9:**

October 11, 2019

South view of Dry-Fresh Cedar Coniferous Woodland (WOCM1-2) located north of the West Duffins Creek.



**Photo 10:**

October 11, 2019

Northeast view of Bulrush Mineral Shallow Marsh (MASM1-2) located in the eastern section of the Study Area.



**Photo 11:**

October 11, 2019

East view of Bulrush Mineral Shallow Marsh (MASM1-2) located in the eastern section of the Study Area.



**Photo 12:**

October 11, 2019

East view of Dry-Fresh Deciduous Shrub Thicket (THDM2) located in the northeast corner of the Study Area.



**Photo 13:**

October 11, 2019

East view of Ash Mineral Deciduous Swamp forest (SWMD2) located east within the Study Area.



**Photo 14:**

October 11, 2019

North view of Ash Mineral Deciduous Swamp forest (SWMD2) located east within the Study Area.



**Photo 15:**

October 11, 2019

Butternut (standing deadwood) located within Ash Mineral Deciduous Swamp forest (SWMD2) located east within the Study Area.



**Photo 16:**

October 11, 2019

East view of Open Aquatic (OAO) areas of the West Duffins Creek located south of the Study Area



**Photo 17:**

October 11, 2019

Southwest view of the treed fencerow (TAGM5) and baseball diamonds within parkland (CGL\_4) along Brock Road (CVI\_1).



**Photo 18:**

October 11, 2019

North view of residential subdivisions (CVR\_3) located north of the Study Area.



**Photo 19:**

October 11, 2019

North view of residential subdivisions (CVR\_3) and community centre (Pickering Islamic Centre; CVC) located north within the Study Area.



**Photo 20:**

October 11, 2019

Northwest view of Brock Road (CVI\_1 Transportation) located west within the Study Area.





# Appendix F

## *Botanical Species List*

**Table F-1: Botanical Inventory Results**

Scientific Name	Common Name	SARA <sup>1</sup>	ESA <sup>2</sup>	SRank <sup>3</sup>	Coefficient Conservation <sup>4</sup>	Observed by Dillon <sup>5</sup>	Observed by WME <sup>6</sup>	TRCA Data <sup>7</sup>
<i>Acer negundo</i>	Manitoba Maple	---	---	S5	0	●	---	---
<i>Acer saccharinum</i>	Silver Maple	---	---	S5	5	●	---	---
<i>Acer saccharum</i>	Sugar Maple	---	---	S5	4	●	---	---
<i>Acer x freemanii</i>	Freeman's Maple	---	---	SNA	---	●	---	---
<i>Actaea pachypoda</i>	White Baneberry	---	---	S5	6	---	---	●
<i>Anemone quinquefolia</i>	Wood Anemone	---	---	S5	7	---	---	●
<i>Apocynum androsaemifolium</i>	Spreading Dogbane	---	---	S5	3	---	---	●
<i>Arctium minus</i>	Common Burdock	---	---	SNA	---	●	---	---
<i>Arisaema triphyllum</i>	Jack-in-the-pulpit	---	---	S5	5	---	---	●
<i>Asarum canadense</i>	Canada Wild-ginger	---	---	S5	6	---	---	●
<i>Asclepias syriaca</i>	Common Milkweed	---	---	S5	0	●	---	---
<i>Betula alleghaniensis</i>	Yellow Birch	---	---	S5	6	●	---	---
<i>Bidens frondosa</i>	Devil's Beggarticks	---	---	S5	3	●	●	---
<i>Caulophyllum thalictroides</i>	Blue Cohosh	---	---	S5	6	---	---	●
<i>Cornus racemosa</i>	Gray Dogwood	---	---	S5	2	●	---	---
<i>Crataegus sp.</i>	Hawthorn Species	---	---	---	---	●	---	---
<i>Cynanchum rossicum</i>	European Swallow-wort	---	---	SNA	---	●	---	---
<i>Dicentra canadensis</i>	Squirrel-corn	---	---	S5	7	---	---	●
<i>Equisetum variegatum</i>	Variegated Horsetail	---	---	S5	5	●	---	---
<i>Erigeron hyssopifolius</i>	Daisy Fleabane	---	---	S5	10	●	---	---
<i>Eutrochium maculatum var. maculatum</i>	Spotted Joe Pye Weed	---	---	S5	3	●	●	---
<i>Fagus grandifolia</i>	American Beech	---	---	S4	6	●	---	---

Scientific Name	Common Name	SARA <sup>1</sup>	ESA <sup>2</sup>	SRank <sup>3</sup>	Coefficient Conservation <sup>4</sup>	Observed by Dillon <sup>5</sup>	Observed by WME <sup>6</sup>	TRCA Data <sup>7</sup>
<i>Fraxinus pennsylvanica</i>	Green Ash	---	---	S4	3	●	---	---
<i>Galium palustre</i>	Marsh Bedstraw	---	---	S5	5	---	●	---
<i>Impatiens capensis</i>	Spotted Jewelweed	---	---	S5	4	---	●	---
<i>Juglans cinerea</i>	Butternut	END	END	S3?	6	●	---	●
<i>Juglans nigra</i>	Black Walnut	---	---	S4	5	●	---	---
<i>Lotus corniculatus</i>	Garden Bird's-foot Trefoil	---	---	SNA	---	---	●	---
<i>Lythrum salicaria</i>	Purple Loosestrife	---	---	SNA	---	---	●	---
<i>Maianthemum racemosum</i>	False Solomon's-seal	---	---	S5	4	●	---	---
<i>Matteuccia struthiopteris</i>	Ostrich Fern	---	---	S5	5	●	---	---
<i>Onoclea sensibilis</i>	Sensitive Fern	---	---	S5	4	●	---	---
<i>Osmorhiza longistylis</i>	Smooth Sweet Cicely	---	---	S5	6	---	---	●
<i>Phalaris arundinacea</i>	Reed Canary Grass	---	---	S5	0	●	●	---
<i>Picea glauca</i>	White Spruce	---	---	S5	6	---	---	●
<i>Pinus strobus</i>	Eastern White Pine	---	---	S5	4	●	---	●
<i>Pinus sylvestris</i>	Scotch Pine	---	---	SNA	---	●	---	---
<i>Podophyllum peltatum</i>	May-apple	---	---	S5	5	---	---	●
<i>Populus balsamifera</i>	Balsam Poplar	---	---	S5	4	●	---	---
<i>Populus deltoides</i> ssp. <i>deltoides</i>	Eastern Cottonwood	---	---	S5	4	●	---	---
<i>Populus grandidentata</i>	Large-tooth Aspen	---	---	S5	5	●	---	---
<i>Prunus serotina</i>	Wild Black Cherry	---	---	S5	3	●	---	---
<i>Ranunculus acris</i>	Tall Buttercup	---	---	SNA	---	---	●	---
<i>Rhamnus cathartica</i>	Common Buckthorn	---	---	SNA	---	●	---	---
<i>Rhus hirta</i>	Staghorn Sumac	---	---	S5	1	●	---	---
<i>Rubus idaeus</i> ssp. <i>idaeus</i>	Common Red Raspberry	---	---	SNA	---	●	---	---
<i>Rudbeckia hirta</i> var. <i>hirta</i>	Black-eyed Susan	---	---	SU	0	---	---	●

Scientific Name	Common Name	SARA <sup>1</sup>	ESA <sup>2</sup>	SRank <sup>3</sup>	Coefficient Conservation <sup>4</sup>	Observed by Dillon <sup>5</sup>	Observed by WME <sup>6</sup>	TRCA Data <sup>7</sup>
<i>Rumex crispus</i>	Curly Dock	---	---	SNA	---	---	●	---
<i>Salix</i> sp.	Willow Species	---	---	---	---	●	---	---
<i>Scirpus microcarpus</i>	Red-tinge Bulrush	---	---	S5	4	---	---	●
<i>Solidago canadensis</i> var. <i>canadensis</i>	Canada Goldenrod	---	---	S5	1	---	●	---
<i>Solidago</i> Sp.	Goldenrod Species	---	---	---	---	●	---	---
<i>Symphotrichum novae-angliae</i>	New England Aster	---	---	S5	2	●	---	---
<i>Thuja occidentalis</i>	Eastern White Cedar	---	---	S5	4	---	---	●
<i>Tilia americana</i>	American Basswood	---	---	S5	4	●	---	---
<i>Trifolium pratense</i>	Red Clover	---	---	SNA	---	●	---	---
<i>Trillium erectum</i>	Red Trillium	---	---	S5	6	---	---	●
<i>Trillium grandiflorum</i>	White Trillium	---	---	S5	5	---	---	●
<i>Tsuga canadensis</i>	Eastern Hemlock	---	---	S5	7	●	---	●
<i>Typha angustifolia</i>	Narrow-leaved Cattail	---	---	SNA	3	●	---	---
<i>Ulmus americana</i>	American Elm	---	---	S5	3	●	---	---
<i>Vicia americana</i>	American Purple Vetch	---	---	S5	9	●	---	---

<sup>1</sup>Federal Species at Risk Act, 2002. <sup>2</sup>Provincial Endangered Species Act, 2007. <sup>3</sup>SRank 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. S5 = Secure, S4 = Apparently Secure, S3 = Vulnerable, S2 = Imperiled, S1 = Critically Imperiled, SX = extirpated, SNA = unsuitable target for conservation activities, B = within the Species breeding range in Ontario. "----" denotes no information for species. <sup>4</sup>Coefficient of Conservationism. <sup>5</sup> Observed by Dillon during 2019 field reconnaissance activities. <sup>6</sup>Observed by WME during 2009 Field Investigations. <sup>7</sup>Provided in digital data sets of the TRCA and reported in the 2009 EIS.

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