

# **Tree Protection and Tree Management: A Best Practices and Legislative Review**

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**Prepared for: The City of St. Catharines**

**November 2019**



## Acknowledgements

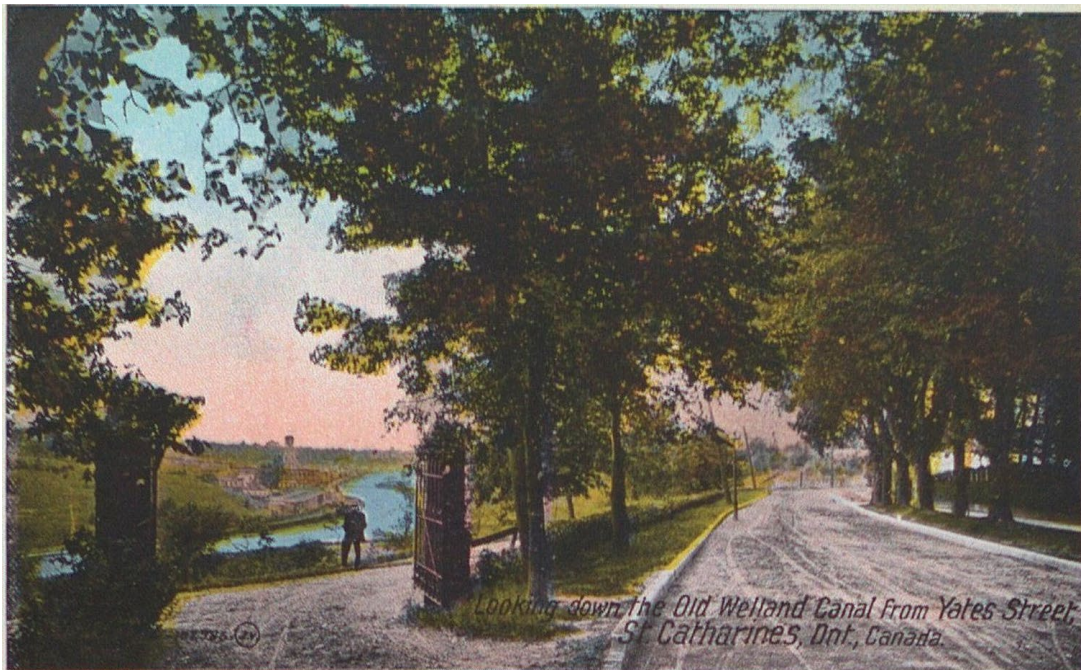
The project team would like to express gratitude to the following individuals and organizations who contributed to the success of the project:

Jessica Button and her team from the City of St. Catharines for their guidance, feedback, and great restaurant recommendations.

The PLAN 721 course instructors, Bob Lehman, Dana Anderson, and Nancy Adler for their support, advice, and planning-related humour.

Municipal staff members from the surveyed municipalities for their considerations, and helpful contributions through the interview process, including:

- The Town of Ajax
- The City of Barrie
- The City of Cambridge
- The City of Guelph
- The City of Mississauga
- The City of Niagara Falls
- The Town of Oakville
- The City of Oshawa
- The City of Thunder Bay
- The City of Toronto
- The City of Waterloo
- The City of Windsor



*Image: St. Catharines Public Library*

## Executive Summary

Urban trees are increasingly recognized for the benefits they provide - from ecosystem services to their role in establishing ecological integrity. The City of St. Catharines is known as the “Garden City”, recognizing the prevalence of parks, gardens and trails. Despite this, the canopy coverage of City’s urban forest is about 16 percent, while the recommended target is 30 percent. Further, approximately 65 percent of their urban forest is on private lands. This project aims to guide the City of St. Catharines’ future decision making about private tree protection and management.

This project was divided into two phases: 1) *Background Research*; and 2) *Review of Best Practices*. Through the *Background Research* phase, three tasks were conducted: 1) *Environmental Scan*; 2) *Provincial & Regional Policy Assessment*; and 3) *Comparative Municipal Survey*. The *Environmental Scan* found a limited but growing field of urban forestry research in Ontario, and that current literature focuses on the themes of tree management policy; urban forestry methods; and resident perspectives. The *Provincial & Regional Policy Assessment* established the policy and legislative framework under which tree protection and management measures are undertaken, and found that few specific policy mechanisms exist to regulate urban trees on private property. Lastly, the *Comparative Municipal Survey* found key themes of tree protection and management throughout planning policies. All policies were found to differ in terms of policy language and applicability. Any tree planting or education programs facilitated by the municipalities were also included in this review.

The second phase of this study, *Review of Best Practices*, used key informant interviews with staff from 13 Ontario municipalities to compare the effectiveness of private tree management strategies. It found that private tree by-laws, heritage designation, compensation programs, and tree planting initiatives are all effective ways at increasing the tree canopy; and concluded that municipalities need to employ a mix of policies and programs aimed at protecting, managing, and enhancing the urban forest.

Through the completion of Phases 1 and 2, a list of recommendations were established for the City of St. Catharines to consider through the next steps related to their tree protection and management program. These recommendations range from policy-related additions and adaptations to education materials for residents.

## Definitions

**Assisted Migration:** A conservation tool and adaptation strategy that consists of moving and establishing species or populations outside of their historical range to a new location where the climate will be more suitable under expected conditions of climatic change (also referred to as Assisted Colonization) (Fontaine & Larson, 2016).

**Drip Line:** The area directly underneath the outer circumference of the tree branches. When the tree canopy gets wet, excess water is shed and falls along the drip line. This is also known as a tree's Critical Root Zone (CRZ).

**Ecological Integrity:** A contested definition, but generally refers to the natural composition of species and/or habitat, or the wholeness and proper functioning of an ecosystem (Conway, 2019).

**Ecosystem Services:** Goods or services produced by urban forests that contribute to human well-being (MEA, 2005).

**Good Forestry Practices:** As defined by the Forestry Act (1990), Good Forestry Practices refers to the proper implementation of harvest, renewal, and maintenance activities in a given forest and environmental context. This includes minimizing adverse effects on significant ecosystems, important fish and wildlife habitat, soil and water quality and quantity, forest productivity and health, and the aesthetics and recreational opportunities of the landscape (1(1)).

**Invasive Species:** Any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem; and whose introduction does or is likely to cause economic or environmental harm or harm to human health.

**Native Species:** Trees and plants that have adapted to the local climate and soil conditions. This means that they do not need as many resources such as watering or fertilizers to grow properly. These species have evolved with native animal and insects and provide habitat and a food source.

**Significant Woodlands:** Treed lands which are of special interest due to ecological, functional or economic considerations. Some municipalities differentiate between smaller “locally significant woodlands” and larger “provincially significant woodlands”.



**Tree Canopy:** A measurement of the areal extent of tree foliage coverage, typically measured in percentage of total land area. Also known as forest canopy cover, or canopy coverage.

**Tree protection:** To prevent or minimize harm to any tree.

**Tree preservation:** To ensure trees are maintained in their existing states.

**Urban Forest:** The sum of all woody and associated vegetation in and around dense human settlements.

**Urban Forest Management Plan:** A tailored plan that guides tree care professionals to proactively and effectively manage and provide for maximum, long-term benefits to the community (United States Global Change Research Program, 2019).



*Image: Toronto Public Library (1910)*

## TABLE OF CONTENTS

<b>1. Introduction</b>	7
1.1 Purpose of Study and Project Scope	9
1.2 Report Overview	9
<b>2. Background Research</b>	10
2.1 Context	17
2.2 Environmental Scan: State of Urban Forestry Literature	17
2.2.1 Tree Management Policies	10
2.2.2 Assessment of Urban Forestry Methods	11
2.2.3 Resident Perspectives	12
2.2.4 Overview of Findings	13
2.3 Provincial & Regional Policy & Legislation Assessment: Relevant Policy Framework	17
2.3.1 Land-use Framework	14
2.3.2 Forest and Tree Governance	16
2.3.3 Private Urban Trees	16
2.3.4 Overview of Findings	17
2.4 Comparative Municipal Survey: Key Themes and Unique Policies	17
2.4.1 St. Catharines Policy Overview	19
2.4.2 Key Themes	19
2.4.2 Tree By-laws	22
2.4.3 Public Programs	23
2.4.4 Overview of Findings	25
<b>3. Review of Best Practices</b>	25
3.1 Context and Methodology	27
3.2 Key Informants	26
3.3 Summary of Findings	27
3.3.1 Policy Effectiveness	27
3.3.2 Policy Adoption Process	29
3.3.3 Measurement Methods	31
3.3.4 Compensation Programs	32
3.3.5 Community Programs	33
3.4 Conclusion	34



<b>4. Conclusion: Key Findings &amp; Recommendations</b>	<b>34</b>
4.1 Recommendations	34
1. Increase By-law Coverage	34
2. Designating Trees as Heritage Features	35
3. Increase Tree-Related Programs	35
4. Create Resident-Focused Education Programs	36
5. Leverage Perimeter Trees	36
6. Include Planting Target Ratios	36
7. Formalize Climate Resilience Considerations	37
8. Strengthen Development Application Process	37
9. Update Canopy Cover Strategy	37
4.2 Concluding Remarks	38
<b>References</b>	<b>39</b>

## Appendices

### A. Phase 1: Background Research

1. Environmental Scan: Literature Review
2. Provincial and Regional Policy Assessment: Summary Table
3. Comparative Municipal Survey: Report
4. Comparative Municipal Survey: Chart

### B. Phase 2: Review of Best Practices

1. Information Letter
2. Key Informant Interview Questions
3. List of Participating Municipalities
4. Interview Response Data and Transcripts

## 1. Introduction

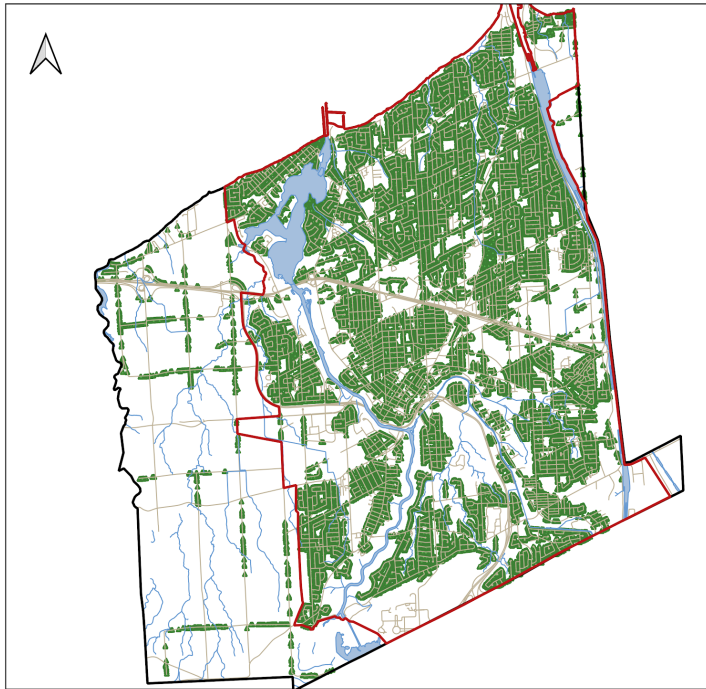
Trees are well understood to have significant value, from the ecosystem services they provide, to their role in establishing healthy ecosystems. In an urban context, individual trees and forested areas improve ground water quality, reduce soil erosion, contribute to stormwater management by reducing and storing run-off, help to mitigate urban heat islands, and provide flora and fauna habitat. Additionally, trees in urban areas can reduce risk factors to health such as high blood pressure and chronic stress (Ulrich et al, 1990), and can provide space for local communities. These health benefits have the capacity to extend across the country, as more than 80 percent of Canadians live in urban areas (Statistics Canada, 2011).

The City of St. Catharines is known as the “Garden City”, recognizing the prevalence of lush parks, gardens and trails. Currently, the canopy coverage of the City’s urban forest is between 15 and 17 percent, which is below the global recommended target of 30 percent (International Society of Arboriculture, 2011). In addition to improving tree canopy cover, the City is presently faced with the challenge of maintaining an aging urban forest. According to a background study conducted in preparation for the Urban Forestry Management Plan (UFMP) (2011), the City will not be able to reach the recommended tree canopy target under their current forestry strategy and budget.

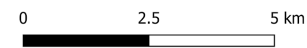
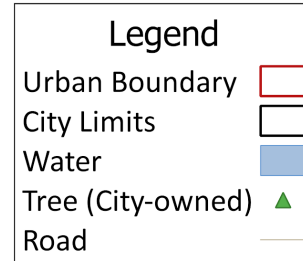
### 1.1 Purpose of Study and Project Scope

In St. Catharines, approximately 65 percent of the City’s urban tree canopy is located on private property (*Figure 1* and *Figure 2*). Under the *Municipal Act* (2001), municipalities are granted significant autonomy to govern their urban forests. In efforts to capitalize on this autonomy, City staff proposed a private tree by-law, but in response to community consultation results, Council determined that alternative approaches to tree protection and management should be explored.



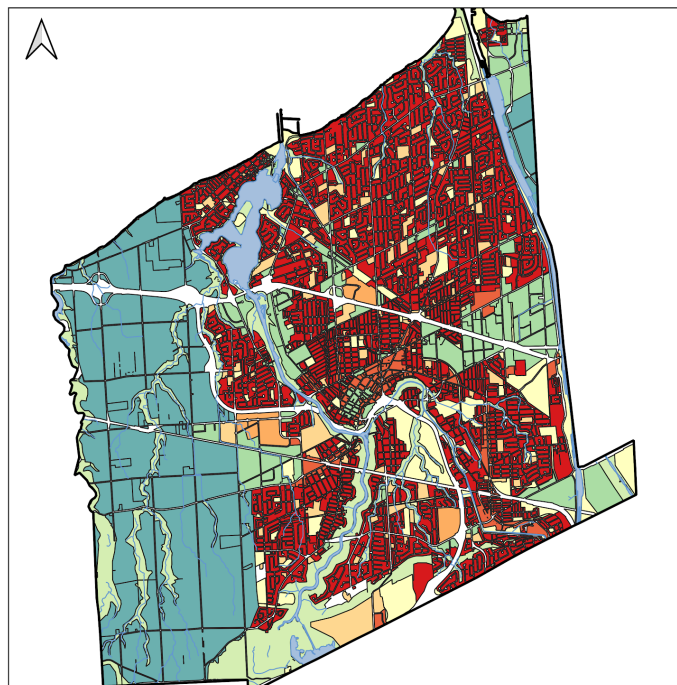


## St. Catharines Urban Forest

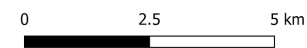
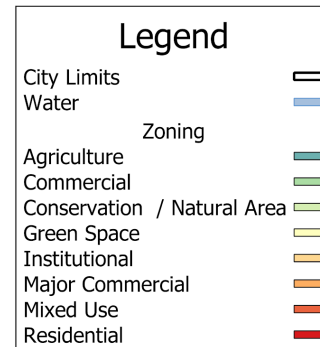


Map data provided by the City of St. Catharines  
 Map prepared by Tree Haus Consulting (U. of Waterloo) on behalf of the City of St. Catharines.  
 Date: 15 November 2019

Figure 1: Municipally-owned trees (public trees) in the City of St. Catharines



## Zoning, St. Catharines, ON



Map data provided by the City of St. Catharines  
 Map prepared by Tree Haus Consulting (U. of Waterloo) on behalf of the City of St. Catharines.  
 Date: 15 November 2019

Figure 2: Land-use zoning in the City of St. Catharines.

This project provides a comprehensive review of practices and policies across Ontario that will help guide the City of St. Catharines' future decision-making about tree

protection and management. The review involved scanning existing literature and reviewing provincial, regional, and municipal policies and practices. Additionally, key informants from Ontario municipalities were interviewed to further learn about unique and/or successful approaches to tree protection and management. Key findings from these project components have been summarized and used to develop recommendations to help St. Catharines reach their tree canopy goals.

## **1.2 Report Overview**

This Report is divided into three main sections. First, the *Background Research* section outlining key findings from three tasks: an *Environmental Scan* of urban forestry literature; a *Provincial and Regional Policy & Legislative Assessment*; and a *Municipal Policy Scan*. The second section discusses the effectiveness of tree protection policies and programs using information gathered from key informant interviews with municipal staff. The third and final section of this report uses the findings to provide recommendations for effective tree protection and management approaches in the City of St. Catharines.



## 2. Background Research

### 2.1 Context

This section presents an overview of Phase 1, *Background Research*. The purpose of this phase was to gain an understanding of tree protection and management practices and policies in Ontario. It explored both academic research and policy documents at the provincial, regional, and municipal level. Detailed findings from each task can be found in *Appendix A*.

This Phase was subdivided into three separate tasks:

1. *Environmental Scan: State of Urban Forestry Literature*  
This literature review explored academic research on tree protection and management in Ontario to determine current trends in urban forestry research.
2. *Provincial and Regional Legislative and Policy Assessment*  
This task assessed legislation and policy at the provincial and regional level, highlighting components that apply to the context of St. Catharines.
3. *Comparative Municipal Survey*  
A survey of municipal policies in select Ontario municipalities was conducted to determine how tree protection and management is approached through policies in the development process.

### 2.2 Environmental Scan: State of Urban Forestry Literature

The purpose of this environmental scan was to identify and summarize existing research on tree protection and management in Ontario. Through this scan, three themes were identified: Tree Management Policies, Assessment of Urban Forestry Methods, and Resident Perspectives.

#### 2.2.1 Tree Management Policies

There is a growing body of literature that compares urban forestry policies across Ontario. From these studies, general findings emerged, including:

- The most common urban forestry policies in Ontario are pest and disease control policies, landscape guidelines, and standards for development. Tree planting and greening strategies are less common.

- Upper-tier municipalities are more likely to have tree by-laws than lower-tier municipalities. This has been attributed to resource constraints and the population threshold required for enacting conservation by-laws.
- A universal standard for urban forestry best practices has not been adopted across Ontario. Some municipalities refer to the International Society of Arboriculture, while others refer to American National Standards Institute.

### Urban Forestry Management Plans

Urban Forestry Management Plans (UFMPs) are a common tool created by municipalities that aim to provide strategic direction for dealing with matters related to the urban forest. This may include articulating specific programs to be implemented, or for certain actions to occur (e.g. hiring a municipal staff member to oversee conservation efforts). In a study conducted comparing effectiveness of UFMPs, they found that key factors contributing to effective UFMPs include adopting “active adaptive management” (adapting plan to changing conditions) and taking a collaborative approach both internally and externally to ensure a consistent approach to implementation (Douglas, 2016).

Within UFMPs, it has been found that municipalities approach native and non-native species differently:

- While all municipalities include themes of ecosystem services and ecological integrity in their UFMPs, the importance of native species is only raised when discussing an area’s ecological integrity.
- Many municipalities discuss the importance of native species and express a desire to increase the proportion of native species in the urban forest. However, they do not include native-to-non-native target ratios or scenarios when native or non-native species should be used.

### **2.2.2 Assessment of Urban Forestry Methods**

The literature on tree canopy measurement methods and techniques for is limited, as are techniques for evaluating the success of approaches to increase the tree canopy. This gap in the research is likely a result of the relatively recent adoption of monitoring policies, as well as the limitations associated with measurement technologies.

One study conducted in Mississauga used leaf-off (i.e. during the fall season) aerial photographs from the 1940s to 2017 to track changes in the City’s tree canopy. Notable findings include:

- Tree density is able to recover, be maintained, or increase post-development.

- Aerial photographs, while not originally intended for tree-related purposes, can be effectively used to track changes to the tree canopy.



*Figure 3: Example of Tree Canopy Change, Mississauga, 1944, 2017 (Bonney & He, 2019)*

Another study explored urban foresters' perspectives on assisted migration - a process where non-native species are used in anticipation of future climate change. Researchers found:

- Many urban foresters are aware of the concept of assisted migration, but it remains more of a theoretical concept than a management tool.
- Many municipalities are unknowingly employing assisted migration strategies such as planting southern tree species at the northernmost end of their range, and planting non-native trees in areas where native species cannot adapt and/or where their growth is compromised.

### 2.2.3 Resident Perspectives

A growing body of literature - that is particularly useful when exploring private tree management strategies, examines resident perspectives related to a variety of tree-related topics. Key findings are as follows:

- Residents' participation in tree planting and removal activities are primarily motivated by aesthetic reasons.
- Residents in newer neighbourhoods, who recently moved to the area, who have a university degree, and/or whose household does not include seniors were more supportive of private tree management policies.
- Resident knowledge of native tree species is generally low, whether or not their municipality has a UFMP.



- While most residents believe native species are more beneficial than non-native species, native status is not a primary consideration when choosing a tree to plant on their property.
- Residents in municipalities that have UFMPs are more actively engaged in planting native trees, planting and removing trees on their properties, and had more trees on their properties in general.

#### 2.2.4 Overview of Findings

In conclusion, research pertaining to urban forestry is a small but growing field in Ontario. Based on these findings, several conclusions about the state of urban forestry in Ontario can be made:

- The lack of best practice guidance from the Province has resulted in a wide range of municipal urban forestry plans and policies.
- The effectiveness of these plans and policies is difficult to assess, as these plans often lack concrete measurements and targets, and due to the absence of historical tree canopy data.
- Residents are willing to be active participants in tree preservation and management programs, but must be engaged meaningfully.

As municipal tree protection efforts are only just beginning, it is expected that this field of research will continue to grow and inform best practices for tending to urban forests. For more information about the *Environmental Scan*, refer to *Appendix A1*.

### 2.3 Provincial & Regional Policy & Legislation Assessment: Relevant Policy Framework

The purpose of this assessment was to establish the provincial and regional policy and legislative framework under which tree protection and management measures can be undertaken at the municipal level. A total of 16 policy and legislation documents were assessed (see *Appendix A2*) and categorized into 3 categories: Land-use Framework; Forest and Tree Governance; and Private Urban Trees.

Document Title	Level of Government
Conservation Land Act (1990)	Provincial
Environmental Protection Act (1990)	Provincial
Forestry Act (1990)	Provincial
Greenbelt Act (2005)	Provincial

Municipal Act (2001)	Provincial
Niagara Escarpment Planning and Development Act (1990)	Provincial
Ontario Heritage Act (1990)	Provincial
Places to Grow Act (2005)	Provincial
Planning Act (1990)	Provincial
Professional Foresters Act (2000)	Provincial
Provincial Policy Statement (2014)	Provincial
Regional Municipality of Niagara Tree and Forest Conservation By-law (2008)	Regional
A Place to Grow - Growth Plan for the Greater Golden Horseshoe (2014)	Provincial
Greenbelt Plan (2017)	Provincial
Niagara Escarpment Plan (2017)	Provincial
Region of Niagara Official Plan (2014)	Regional

*Table 1: Documents assessed in Provincial & Regional Policy & Legislation Assessment*

### 2.3.1 Land-use Framework

A number of documents outline the land-use planning framework which enables municipalities to enact policies and plans to protect and preserve trees. For the City of St. Catharines, these include:

- *Planning Act* (1990, revised 2019)
- *Provincial Policy Statement* (1996, revised 2014)
- *Growth Plan for the Greater Golden Horseshoe* (2006, revised 2019)
- *Greenbelt Plan* (2017)
- *Niagara Escarpment Plan* (2017)
- *Region of Niagara's Official Plan* (2014)

Ontario's *Planning Act* (1990) gives municipalities the power to set goals and priorities through Official Plans, as well as the ability to pass by-laws to protect and regulate significant natural features. The *Provincial Policy Statement* (2014) outlines the long-term general protection of environmental features, and details the protection of natural feature areas, including significant natural areas (2.1). It also contains policy direction for defining forests, woodlands, and woodlots, referencing the *Forestry Act* (1990) for technical details. St. Catharines is also subject to both the *Greenbelt Plan*

(2017) and the *Niagara Escarpment Plan* (2017) (see Figure 3). *A Place to Grow: Growth Plan for the Greater Golden Horseshoe* (2005) includes goals to protect sensitive natural areas and farmland.

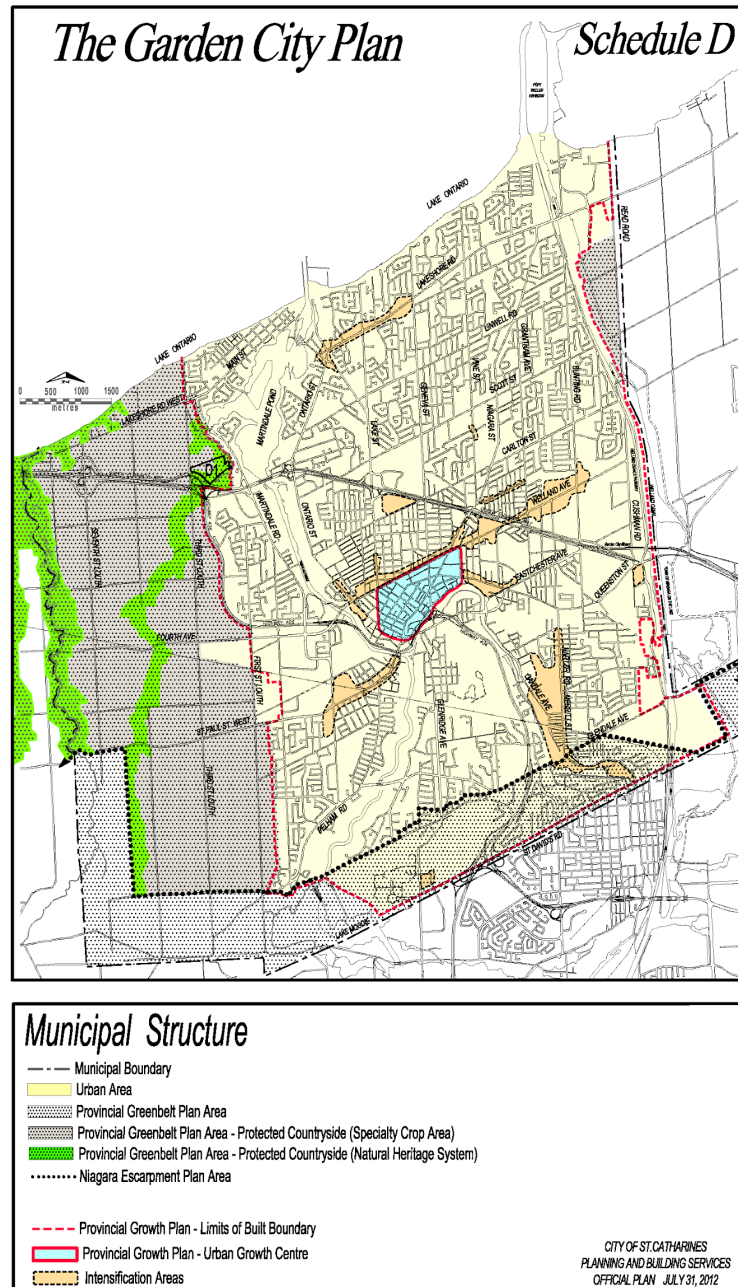


Figure 4: City of St. Catharines municipal structure

\*St. Catharines Official Plan (The Garden City Plan) (2012). Schedule D, Municipal Structure. Retrieved from <https://www.stcatharines.ca/en/buildin/resources/Official-Plan-Garden-City-Plan.pdf>



### 2.3.2 Forest and Tree Governance

The *Forestry Act* (1990) and Ontario's ecological land classification system define forests, woodlands, and woodlots for policy use. They reference values which include significant eco-systems, important fish and wildlife habitat, soil and water quality and quantity, forest productivity and health and the aesthetics and recreational opportunities of the landscape (F26). The *Forestry Act* (1990) also defines *Good Forestry Practices*, which include activities conducted in ways that lead to ecological sustainability of managed stands, more specially, by minimizing damage to the site and wildlife habitats, and by protecting natural features for the integrity and long-term health of the stand (Section 2).

Using these definitions, the *Municipal Act* (2001) contains legislation which gives both upper and lower tier municipalities the responsibility to ensure laws and plans are in place to protect natural features, including the power to create tree by-laws (135(1)). Municipalities are allowed to prohibit or regulate the destruction or injuring of trees (135(1)), including on private land, and dictate that they *shall* have regard for Good Forestry Practices (135(5)). Both upper and lower tier municipalities can enact tree by-laws, though some restrictions exist (e.g. only lower-tier municipalities with a population greater than 10,000 can monitor and regulate tree cutting).

The *Niagara Region Official Plan* (2014) supports landowners to maintain and improve ecosystem health by promoting Good Forestry Practices, including implementing a Regional Forest Conservation By-Law. The Region has a tree cutting by-law (30-2008), which was introduced to conserve and improve woodlands in the Region. It regulates the harvesting or injuring of trees in woodlands in the municipality, which are defined in *Appendix A2*.

The Niagara Peninsula Conservation Authority is charged with the administration and enforcement of the Regional Municipality of Niagara Tree and Forest Conservation By-law, as well as ensuring that tree cutting follows Good Forestry Practices.

### 2.3.3 Private Urban Trees

The *Professional Foresters Act* (2000) defines the urban forest, which gives policy direction for managing and protecting tree specifically within urban boundaries. It includes a wide range of types of vegetation, including woodlots, plantations, shade trees, fields, wetland and riparian areas (18,3(3)).

There are few provincial and regional policy and legislative mechanisms that are specific to protecting and managing urban trees, and in particular, trees on smaller

lots. However, there are a few options that can be considered as possible tools, which are outlined below.

#### Site Plan Control

Under the *Planning Act* (1990) municipalities are allowed to designate site plan control areas and withhold approval of site plans if considerations are not made regarding woodland buffers and renovation, and trees for landscaping and protecting adjoining lands, including highways.

#### Heritage Trees or ‘Significant Community Trees’

Under the *Ontario Heritage Act* (1990), trees can be given heritage status by designation under Part IV, or through *recognition* under the Heritage Tree Program of Forests Ontario. If the tree(s) are on private land the landowner is not required to agree to the designation; however it can be challenged. Once established a heritage designation remains even if the property is sold.

#### Endangered Species Act

The *Endangered Species Act* identifies tree species on the Species at Risk in Ontario List. Municipalities cannot currently withhold a building permit under this Act.

#### Environmental Protection Act & Building Code Act

Under these provincial acts, trees in designated Shoreline Areas and Environmental Protection Zones can be protected.

### 2.3.4 Overview of Findings

In Ontario, planning legislation is hierarchical, resulting in clearly defined tiers of policy. There are few policies, laws, and other instruments dedicated to the specific protection of trees and urban forests at the provincial level in Ontario. Of those that do exist, very few pertain to private trees in urban contexts. Additionally, there are few defined mechanisms for enforcement, making it difficult for municipalities to defer to provincial and regional policies and legislation for guidance on tree protection.

### 2.4 Comparative Municipal Survey: Key Themes and Unique Policies

The objective of this survey was to determine the range of municipal policies that address urban trees on private property. Relevant policy documents from selected municipalities were obtained and reviewed for policies relating to tree protection,

management, and enhancement. This section will provide an overview of the survey’s findings, more detailed information can be found in *Appendix A3 and A4*.

Comparable Municipalities		Additional Municipalities	
1. Barrie	6. Niagara Falls	11. Ajax	16. Toronto
2. Cambridge	7. Oshawa	12. Mississauga	17. Vaughan
3. Guelph	8. Thunder Bay	13. Oakville	
4. Kingston	9. Waterloo	14. Peterborough	
5. Kitchener	10. Windsor	15. St. Catharines	

*Table 2: List of Municipalities Surveyed for Policies Addressing Private Trees*

As outlined in *Table 2* above, a total of 17 municipalities were scanned for this policy analysis - the City of St. Catharines, the 10 municipalities identified in the Municipal Comparators Report [CAO-061-2015], and six municipalities identified through the *Environmental Scan* portion of this project. At a minimum, each municipality’s Official Plan, private Tree By-law, Urban Design Guidelines, and Urban Forest Management Plan (UFMP) were scanned for tree-related policies (*Table 3*). This section outlines the key themes that emerged from the policy document scan; includes an analysis of private tree by-laws; and provides a brief description of some municipal programs that promote tree planting and stewardship.

Municipality	Official Plan	Private Tree By-law (Municipal)	Urban Design Guidelines	Urban Forest Management Plan
Ajax	✓	✓	✓	✓
Barrie	✓	✓	✓	
Cambridge	✓		✓	✓
Guelph	✓	✓	✓	✓
Kingston	✓	✓	✓	✓ (public trees)
Kitchener	✓	✓	✓	✓
Mississauga	✓	✓	✓	✓
Niagara Falls	✓		✓	✓



Oakville	✓	✓		✓
Oshawa	✓	✓		
Peterborough	✓	✓		
St. Catharines	✓		✓	✓
Thunder Bay	✓		✓	✓
Toronto	✓	✓	✓	✓
Vaughan	✓	✓	✓	✓
Waterloo	✓		✓	
Windsor	✓			

Table 3: Municipal Policy Documents Surveyed

**2.4.1 St. Catharines Policy Overview**

The City of St. Catharines has a variety of policy documents that guide development. Currently, documents that impact tree protection during the development process are:

- the Official Plan;
- Downtown Urban Design Guidelines;
- Guidelines for Single Dwellings on Small Infill Lots in Traditional Neighbourhoods;
- Guidelines for Single Dwellings on Small Infill Lots in Suburban Neighbourhoods;
- Guidelines for Townhouse Dwellings on Private Roads in Suburban Neighbourhoods;
- Design Guidelines for General Commercial Uses in Commercial Corridors; and
- GO Transit Station Secondary Plan.

A UFMP has been adopted by the municipality and outlines a variety of initiatives to implement. The initiatives are intended to have a tangible impact on increasing the tree canopy of St. Catharines.

**2.4.2 Key Themes**

This section outlines the key themes that emerged from the policy document scan of select Ontario municipalities, which are: 1) protection & preservation, 2) design element & amenity, 3) urban resilience; and 4) enforcement.

## Protection & Preservation

This theme encompasses a variety of policies that pertain specifically to the protection of existing trees on private lands, and is divided into four sub-categories:

### *a. Language of Policy:*

Some policies included general and non-binding language, while others clearly establish the protection of trees as a key consideration (e.g. “*where possible*” versus “*shall*”).

### *b. Replacement & Relocation of Trees:*

Replacement and relocation policies direct proponents to replace trees removed through the construction process in efforts to preserve the pre-existing landscape. While there are several replacement and relocation-focused policies, the majority are only applicable to municipal government-led projects and public infrastructure projects. Few policies direct proponents to replace private trees damaged during development.

### *c. Preservation of Perimeter Trees:*

The preservation of perimeter trees is a potential tool for municipalities to encourage more intense development while preserving existing trees. Such policies allow development to occur with the understanding that some trees will be damaged (e.g. trees in the centre of a site), while ensuring that some trees will be protected. Overall, perimeter tree protection policies were limited with only one example found in the Town of Ajax (Town of Ajax, Employment Areas Urban Design Guidelines, 4.3 Landscaping).

### *d. Heritage Protection:*

Numerous policies frame tree protection as a matter of preserving heritage landscapes or the natural heritage features of neighbourhoods. Some policies provide direction on designating a tree(s) in select neighbourhoods as a natural heritage feature protected under the *Ontario Heritage Act (1990)*.

## Design Element & Amenity

Many policies address tree protection and management by promoting the aesthetic and material benefits of trees. Most of these policies linked tree planting to a more visually appealing streetscape. In terms of the benefits of trees for residents, these policies highlight the personal benefits that an individual would gain from the existence of a tree (e.g. shade). An example of this type of policy is found in the *Urban Design Guidelines* for Thunder Bay (2C Uses and Amenities: b)).

Most of St. Catharines' tree-related policies fall within this theme. St. Catharines has numerous Urban Design Guidelines documents, which mainly speak to the aesthetic of a site or neighbourhood, or to the visual benefits that trees can provide a neighbourhood.

### Urban Resilience

The policies within this theme deal with the resilience of the urban system, especially its ecological components. These policies aim to protect trees by identifying their importance as one component of a sustainable urban system. Where Official Plans discuss the resilience benefits of trees, these benefits often include: urban cooling, air purification, slope stabilisation, and erosion mitigation. Generally, mature trees are considered to deliver superior benefits relative to young trees, and as a result mature trees may be favoured by tree protection policies. Many of the policies within this theme deal with one or more of the following:

- Protecting significant environmental features;
- Planning green and sustainable development;
- Creating and protecting ecological linkages;
- Greening the urban landscape; and
- Climate-appropriate planting

#### *a. Ecological Network:*

Many municipalities employ a Natural Heritage System (NHS) or similar measures to protect and enhance the ecological network. Some Official Plans have mechanisms to extend the consideration of trees outside the formally delineated NHS. For example, Mississauga extends protection to mature trees on private property via policy by directing proponents to conduct a tree preservation plan as a condition for the proposed development (Official Plan 16.5.3.1).

Some Official Plan policies discuss the importance of creating and maintaining a robust ecological network connected through ecological linkages. For example, the City of Vaughan references ecological linkages in the Official Plan (3.3.3 Woodlands). This policy - and similar ones, articulate the importance of preserving individual trees in order to achieve the larger goal of maintaining an ecological network.

#### *b. Assisted Migration:*

Many municipalities encourage the planting of native trees and vegetation through the Official Plan and Urban Design Guidelines. Some municipalities, however, have adopted policies in line with the principles of assisted migration.



Assisted migration is the practice of planting trees according to the projected *future* climate, ensuring the longevity of a municipality's tree canopy and ecological system. The Official Plan for the Town of Ajax, for example, encourages proponents to plant native and non-native tree species that are resilient to climate change and which provide high levels of carbon sequestration (2.1.4 Tree Canopy).

### Enforcement

Policies that explicitly connect tree protection mechanisms into the development application process and enforcement measures were classified into this theme. Overall, such policies allow for a municipality to take a stronger stance on ensuring that development proponents are taking appropriate steps to address tree protection before the proposed development receives approval. For example, the Official Plan for Niagara Falls states that if any existing trees will be impacted by the proposed development, a tree inventory and tree preservation plan will be required of the proponent (4.2.10).

A serious concern for municipalities is the potential for proponents to clear-cut properties before submitting a formal planning application. Clear-cutting beforehand would result in the proponent not having to adhere with tree-related policies as it is only through the formal planning process that Official Plans, Urban Design Guidelines, and other relevant policy documents can be applied to a development proposal. In addition, the overall tree canopy would be negatively impacted as, technically, no trees could be protected through the development planning process. This scan found that municipalities are beginning to confront this concern by including policies to ensure proponents are held accountable for any site alterations made *before* a planning application is submitted to the municipality. One such example can be found in the City of Barrie's Official Plan which articulates that proponents will be responsible for trees clear-cut before a formal application is submitted.

### **2.4.2 Tree By-laws**

From the municipalities selected for this review, 11 have enacted tree by-laws applicable to trees on private lands. In reviewing the by-laws, there are several key differences that exist between municipalities, which will be identified below.

#### Application of the By-law

Each by-law considered contains a detailed section delineating the specific trees and circumstances upon which the by-law is enforceable. When comparing by-laws, it was found that they range in the restrictiveness of their application. Criteria outlining which trees are subject to the tree by-law included items such as the diameter of the tree

(e.g. Vaughan), land use designation (e.g. Ajax), or the size of the land that the subject tree is located on.

### Permit Requirements

Each municipality with a private tree by-law had different levels of requirements for obtaining a tree removal permit. For example, some required a more extensive application, including reports from arborists and written consent from the adjacent property owner (Mississauga Tree by-law). Other municipalities asked for a notification including the contact information of the property owner, species of the tree, the diameter of the tree, the reasons (if any) for removing the tree and plans (if any) for replacing the tree (Peterborough Tree Notice By-law). The varying levels required to obtain a permit to remove a private tree impact how rigorously a municipality can monitor the tree canopy.

### **2.4.3 Public Programs**

While a comprehensive study of urban forestry programs was not conducted, programs mentioned were noted and some additional research was conducted. Many municipalities have public programs aimed at promoting tree planting and maintenance. The programs and events are used to inform residents about the importance of trees and provide education on tree stewardship. These programs exist outside of municipal policy frameworks, although many UFMPs and some Official Plans indicate the need to create such programs. General commentary on the models of public programs are highlighted below.

#### Donation Programs

‘Greening Guelph’ is a monetary donation program aimed at helping to increase the tree canopy in Guelph. Donations are solicited from interested individuals and corporate sponsors, then are used to fund existing tree planting, protection, and education programs in the municipality.

#### Events & Planting Partnerships

Events and public-private partnerships exist in many forms. These partnerships allow the municipality some control over tree protection and management while working strategically with a private entity to facilitate the desired outcome. Examples include:

- The City of Windsor’s public-private partnerships to expand the urban forest, relying heavily on city expertise and planting support from local environmental groups.

- The City of Cambridge’s subsidized tree program, delivered in partnership with Local Enhancement & Appreciation of Forests (LEAF) and Reep Green Solutions. For between \$150 and \$220 per tree, residents receive a personalized consultation, delivery, planting, and a long-term care guide.
- The City of Thunder Bay hosts numerous public events throughout the year promoting tree planting and education, which are advertised on the City’s website.



*Image: Essex Region Conservation Authority (ERCA) Spring Large Stock Program (Windsor)*

### Planting Programs

Some municipalities have larger-reaching public programs aimed at increasing the tree canopy. For example, Mississauga is well known for their One Million Trees program. Through this program, groups or individuals who plant a tree can input the information through an online portal, which is displayed on the program website along with the planter’s name or company name and how many trees they have planted. This ‘gamification’ has allowed the municipality to better track the goal of planting one million trees and encourage resident participation.

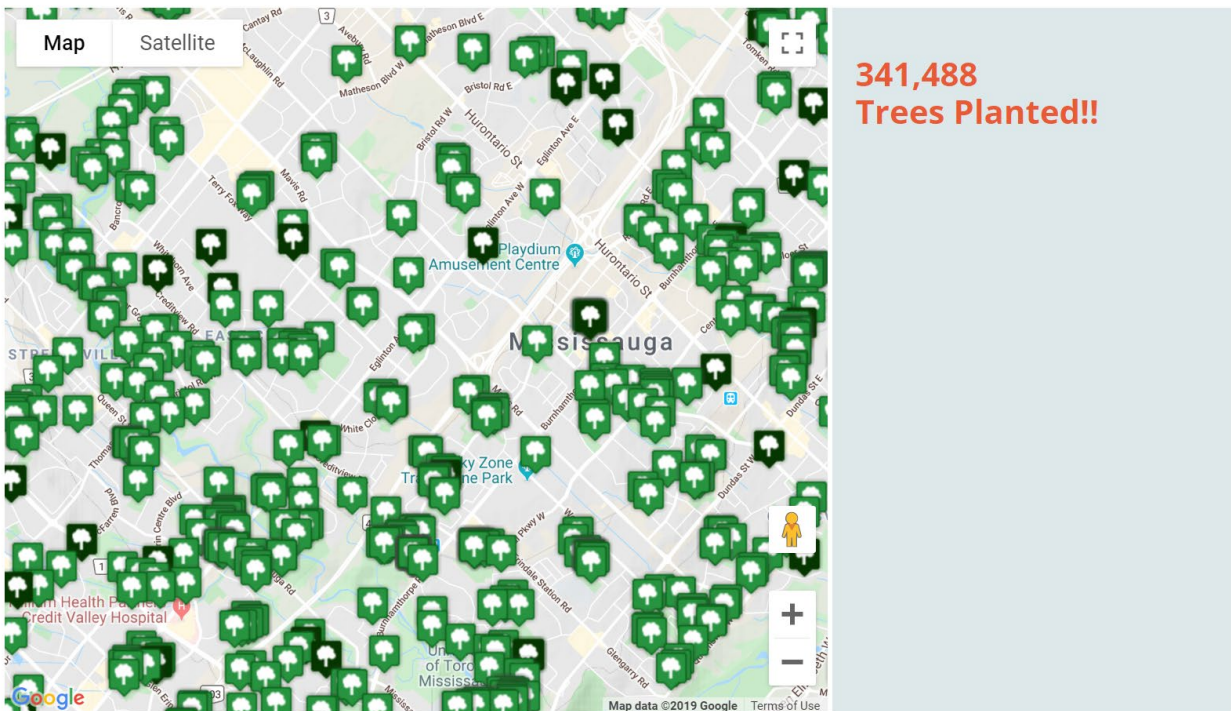


Image: Mississauga's One Million Trees Application

#### 2.4.4 Overview of Findings

Through the municipal policy survey, it has been demonstrated that there is a wide range of policies pertaining to private tree protection and management. Municipalities across Ontario have enacted policies addressing the tree canopy through various angles, unique to the local context. In terms of private tree by-laws, it was discovered that major differences exist across the documents of each municipality. This was determined to have an impact on the overall effectiveness of tree protection.

### 3. Review of Best Practices

#### 3.1 Context and Methodology

As demonstrated through the Background Research portion of this study, municipalities in Ontario employ a variety of strategies to protect and manage their urban forests. As many of these strategies are newly implemented, it is difficult to determine what methods are effective. Furthermore, municipalities seldom share assessment strategies or reflections until the policy or program is updated. Therefore, to gain insight into the effectiveness of policies and programs implemented to protect and manage urban

forests, key informant interviews with municipal staff were conducted. These interviews provided in-depth qualitative information from experts in the fields of urban planning and forestry.

Several steps were taken to complete this task:

1. A list of interview questions was generated using the findings from Phase 1 of this study and additional topics of interest. These questions (see *Appendix B2* for full list) asked informants to reflect on the effectiveness of private tree protection policies and programs, and asked about compensation programs and methods of measuring the tree canopy.
2. An information letter about the project was created to share with potential informants (*Appendix B1*). It specified the goals of the project and what their participation would entail. Informants were given the option to answer the interview questions via telephone call or electronically by typing their responses in the provided document.
3. A recruitment strategy was created and employed to contact representatives from each municipality (described in detail below).
4. Responses were gathered and analyzed, and a list of key findings was generated.

### **3.2 Key Informants**

Key informants were recruited from all 17 municipalities used for the *Comparative Municipal Survey* portion of this project and St. Catharines. Contact information was gathered through connections from University of Waterloo instructors and municipal websites. Initial contact often resulted in being redirected to a municipal staff member who was both qualified in the research topic and willing to participate (list of participating municipalities in *Appendix B3*). Once redirected to the appropriate contact, the date and method of response were coordinated.

Of the 17 municipalities contacted, 13 responded expressing interest in the study and submitted responses to the interview questions (see *Table 4*). In terms of responses, 10 municipalities responded electronically, two responded via email, and one telephone interview was conducted. Since tree protection overlaps with a number of municipal departments, and municipalities vary in their internal organization, informants came from a range of departments, further highlighting the complexity of this topic.



Key Informant Interviews: Respondents			
Ajax	Mississauga	Oshawa	Toronto
Barrie	Niagara Falls	St. Catharines	Waterloo
Cambridge	Oakville	Thunder Bay	Windsor
Guelph			

Table 4: Key Informant Interview Municipal Respondents

### 3.3 Summary of Findings

Through conducting key informant interviews with municipal staff, several common themes emerged. This section will present these themes using data collected from interviews to describe and expand on each.

#### 3.3.1 Policy Effectiveness

Of the 13 municipalities interviewed, all have Official Plans that reference the importance of trees; 10 have Urban Forestry Management Plans (UFMPs); 10 have Urban Design Guidelines; and six have private tree by-laws. However, as discussed in the 2.4 *Comparative Municipal Survey*, these policies vary greatly between municipalities, highlighting the reality that tree protection and management is not one-size-fits-all.

##### Private Tree By-laws

All municipalities with private tree by-laws stated that they were the most effective tool for protecting and managing trees on private property, largely because they are “an actual enforcement tool” (Guelph). As discussed in 2.4 *Comparative Municipal Survey*, the restrictiveness and coverage of private tree by-laws ranges significantly across municipalities. Some of these municipalities (e.g. Ajax) have expressed an interest in expanding their by-law to cover a greater area. Further, most municipalities without private tree by-laws cited a desire to adopt one, but have faced challenges along the way, which will be discussed below.

##### Heritage Designation

Using heritage designations to protect trees on private land was another effective tool employed by municipalities. As previously mentioned, heritage designation through the *Ontario Heritage Act* (1990) can be applied at the scale of an individual tree to entire neighbourhoods. Some examples include:

- Barrie: “Natural Heritage Resources ‘protected areas’ mapping is the greatest improvement in high level planning to identify areas of significant forested/natural lands for protection from development”.
- Mississauga: “while staff, through development applications, encourage the retention of trees, there really isn’t enough authority for staff to refuse or withhold an approval to save trees, unless a tree is designated under the Ontario Heritage Act”.
- In Niagara Falls, two individual trees have been designated as culturally significant under the Ontario Heritage Act.



*Image: Heritage-designated “Stamford Green White Oak Tree”, Niagara Falls*

### Development Process

Many municipalities discussed challenges encountered during the land development process, and their efforts to balance tree preservation with other aspects of development (Toronto). Some of these cited challenges include:

- Developers and landowners cutting down trees prior to submitting a Site Plan application or Building Permit.
  - The informant from Mississauga explained that “where the City is able to prove that this has occurred, fines and penalties are pursued”, but it is likely that many instances go unreported.
- Unequal “power” of tree protection policies versus development applications, where development trumps tree protection.

- In many municipalities, “applications for permission to cut down trees made under the Private Tree By-law cannot be refused in the instance where it negates the approval of a development application” (Mississauga).

The City of Thunder Bay spoke about the recent adoption of interesting tree planting initiatives related to land development. For example, in 2018 the City began a program that involves collecting the money that would be allocated to tree planting requirements under Site Plan Control and planting the trees using the City’s own contractor. They explained that in removing the onus of tree planting from the developer, there is “no more warranty period for the contractor and no more battles with them”. Similarly, they began working with their Engineering Department for large capital rebuilds, where they “follow directly behind completion and replant boulevards regardless if there was a tree there or not”, which has been effective in increasing the number of trees in the City.

### 3.3.2 Policy Adoption Process

#### Opposition

While some policies and plans are more effective than others, many informants discussed challenges associated with both the initial adoption and long-term governance, including opposition from developers, residents, and City Council. Examples from informants include:

- Barrie: “the development community, often through planning consultants challenged any new policy that would affect total development area on private lands”.
- In Mississauga, when reviewing their private tree by-law in 2012, Councillors and residents largely disapproved of a more restrictive by-law. The informant explained, “while there are groups that advocate for more retention, there are also groups that want to be able to take down trees when they can”.
- In St. Catharines, City staff were directed to consult the public after proposing a private tree by-law to Council. The negative responses from residents led Council to reject the by-law and instead seek alternatives (see Figure 5 below).
- In Ajax, when exploring expanding their current by-law to include properties within the Urban Area, the informant explained that “politically this has not been prioritized, and the cost of enforcement needs to be examined more closely”.
- A private tree by-law was proposed in Windsor several times, and while there was reported interest from residents, the informant explained that the political climate of Council caused the by-law to be rejected.

As these examples demonstrate, municipal staff are faced with opposition from a variety of stakeholders when a new or updated tree-related policy is proposed. Overall, municipalities are challenged with balancing the rights and interests of property owners, Council, developers, and other stakeholders while encouraging tree retention (Mississauga).

**Should the City of St. Catharines introduce a by-law to regulate trees on private property within the City’s urban boundary?**

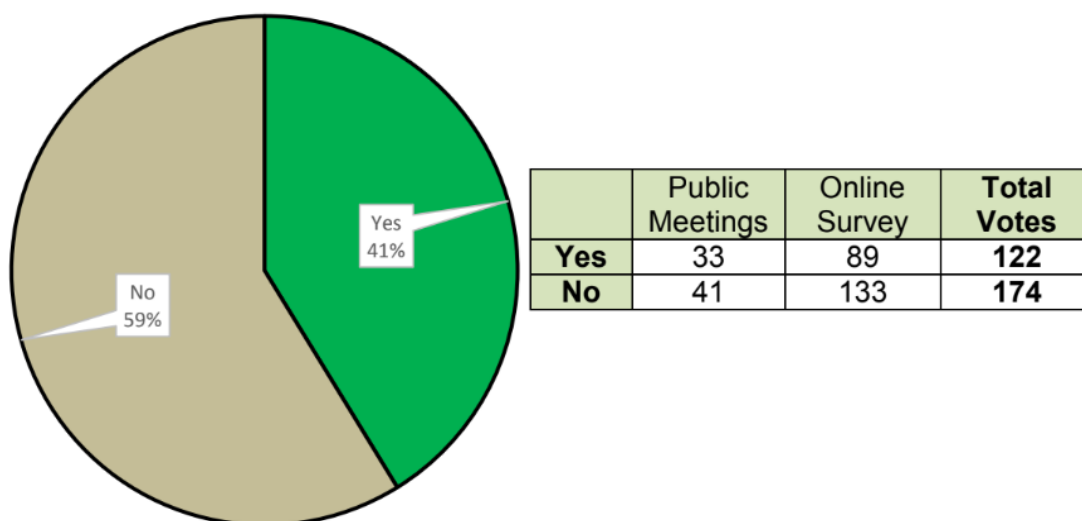


Figure 5: Results of Public Consultation Survey, St. Catharines (2019)

Implementation

If municipalities are able to pass the first hurdle of creating a tree protection or management strategy, the next challenge is faced during the policy’s implementation phase. For example, informants discussed the frequency in which developers and landowners ignore by-laws. Further, they referenced private sector planners, engineers, and the Local Planning Appeal Tribunal (LPAT), who “do not give much attention to policy statements” (Barrie). The informant from Thunder Bay eloquently articulated this concern when referencing the effectiveness of their UFMP, explaining that “it remained, as so many plans do, on a dusty shelf with little appeal for higher ups to initiate”.

Enforcement

Some municipalities referenced a lack of financial and human resources as one of the challenges associated with tree protection and management policies and programs. For example, as the informant from St. Catharines explained, “a tree protection by-law is

only effective as it's enforced", as they are concerned about the staffing required to review, implement, and enforce by-laws. Windsor also discussed their lack of City resources for monitoring a private tree by-law. In Thunder Bay, when exploring a City-supplied and -sponsored tree planting program, they said one of the main reasons it has not been initiated is because of the lack of time and capacity of municipal staff. Overall, there are many factors that municipalities must consider before, during, and after a tree management policy or program is implemented.

### 3.3.3 Measurement Methods

The municipalities interviewed employ a variety of methods to measure contributions to the urban forest and overall canopy growth. In most cases, a canopy measurement is completed as part of the UFMP, and will be conducted each time the plan is updated. Some examples of tracking strategies include:

- Barrie: through their Urban Forest Strategy, have begun mapping the tree canopy and conducting "urban forest health card assessments".
- Cambridge: private consultants were hired to conduct in-depth canopy measurements in 2013 and 2018, which show tree cover at the city-wide, neighbourhood, and individual parcel scales.
- Guelph: is currently conducting an Urban Forest Study, which will set the baseline for monitoring the tree canopy, and be conducted every ten years.
- Toronto: conducts a canopy study every decade using LiDAR and satellite imagery.

While municipalities use a range of methods to measure the tree canopy and track changes, most municipalities indicated that it is too early to determine how tree protection and management actions have impacted the overall tree canopy.



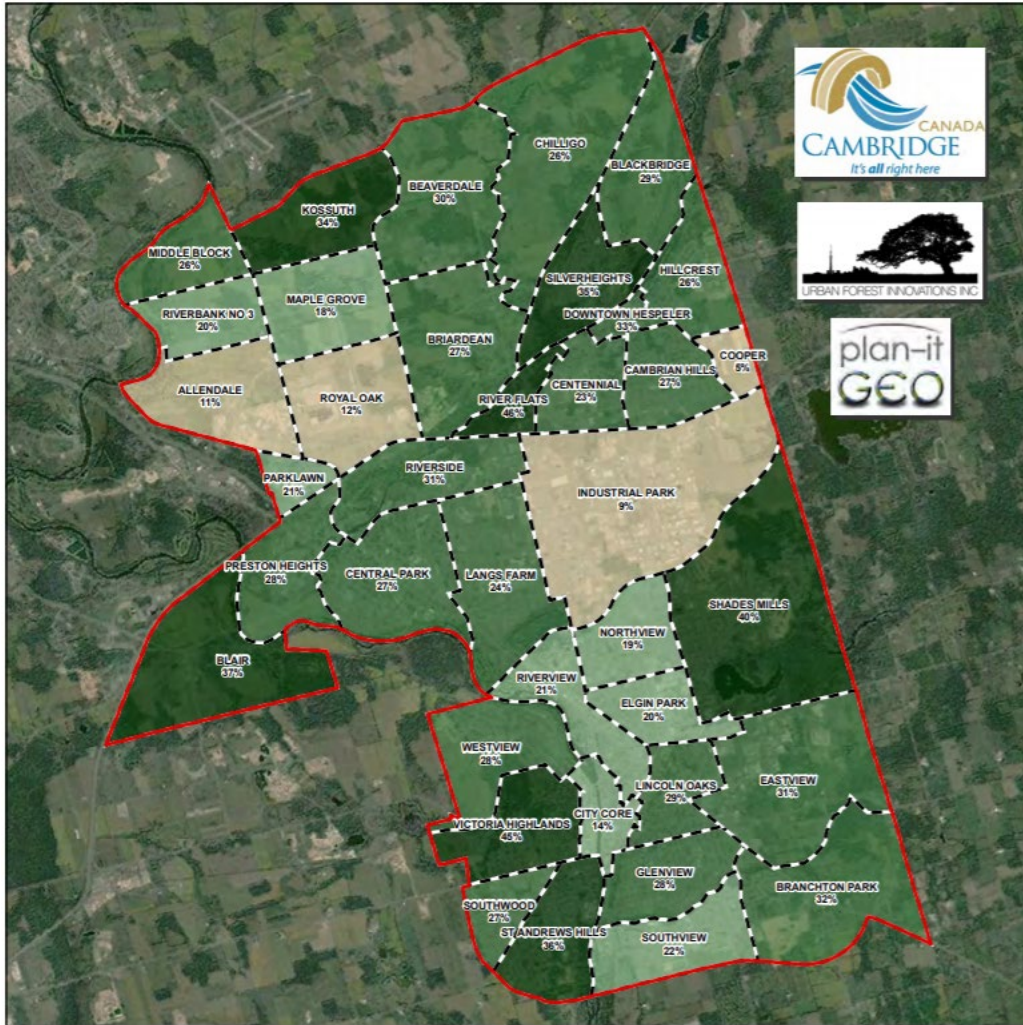


Image: Urban Forest Canopy Assessment, Cambridge (multispectral satellite imagery) (2013)

### 3.3.4 Compensation Programs

Compensation programs may allow for the removal of healthy trees if more trees are planted to make up for the corresponding loss of ecosystem services. Cities have different formulas for calculating appropriate compensation ratios and often include a cash-in-lieu option.

- Ajax: a compensation program is employed through development applications, where a tree replacement formula is used and “trees are either replaced on-site, or cash-in-lieu is provided and the Town plants trees elsewhere”.
- Cambridge and Guelph: private tree by-laws work in a similar way, where, if homeowners are unable to plant enough compensation trees, they pay into a private tree planting reserve fund.

- Niagara Falls: the Official Plan “contain[s] a policy supporting a compensation program for the removal of private trees however a formal program has not yet been created”.

While compensation can be effective when trees cannot be protected, “the replacement trees are never at the same caliper as the tree removed typically” - meaning there is an initial decrease to the canopy (Mississauga).

### 3.3.5 Community Programs

Lastly, municipalities were questioned about the existence of tree-related programs facilitated by the municipality, and their effectiveness compared with tree protection and management policies. Programs mentioned include:

- Local Enhancement & Appreciation of Forests (LEAF) Backyard Planting Program (Ajax & Oakville)
- Reep Green Solutions Backyard Tree Planting Program (Cambridge)
- One Million Trees (Mississauga)
- Free Tree Giveaway Day (St. Catharines)

As indicated in the list of tree-related programs, programs are often implemented through partnerships with larger organizations. The informant from Barrie explained that “these programs as a result are far more successful as they start with the same goal in mind and are easy for municipal staff to support/assist with implementation”.

When comparing the effectiveness of policies versus programs, informants overwhelmingly cited the need for both. For example, the informant from Cambridge stated, “policies form the foundation of programs, so they are each important in their own way”. Additionally, the informant from Oakville discussed the success of both policies and programs in contributing to the tree canopy, stating that from 2017 to 2018, 2,072 trees were planted on private properties through the revised private tree by-law and an additional 101 trees and 89 shrubs were planted on private properties through their backyard planting program.

The informant from Waterloo compared the effectiveness of private tree by-laws versus programs in reaching the goal of saving and protecting trees. For example, they explained that the punitive nature of by-laws is “burdensome to enforce and a great annoyance to the average resident”, whereas with less punitive measures and education programs, “trees become an asset to the property, not a liability”. Their perspective highlights the need for municipal staff, developers, and local residents to come

together to “share an understanding and appreciation of the many benefits of trees”, which will, in turn, provide a better outcome overall tree canopy.

### **3.4 Conclusion**

By conducting key informant interviews with staff from municipalities throughout Ontario, it is evident that municipalities share common successes and challenges with regard to urban forestry protection and management strategies. These findings were integrated into the recommendations provided for the City of St. Catharines.

## **4. Conclusion: Key Findings & Recommendations**

The need for protecting and enhancing the urban tree canopy has become a critical objective for municipalities. With tree canopies in many municipalities significantly below the recommended targets, alternatives to tree protection by-laws and new approaches through planning legislative frameworks are needed to ensure the expansion of urban tree canopies in Ontario. In many municipalities, over half of the urban forest is located on private property. This has resulted in the need for urban forest strategies that extend beyond tree planting efforts and towards stronger development policies that ensure the protection and enhancement of existing trees on private lands.

This study conducted a thorough review of urban forestry practices in Ontario through the lens of private tree protection and management. While the findings suggest that private tree by-laws are the most effective tool in protecting and managing trees, it is understood that St. Catharines’ residents and Council members are looking for alternative options, in part because the City does not necessarily have the financial or human resources to support enforcement. Therefore, through this research, the project team has compiled several key findings and associated recommendations for the City of St. Catharines.

### **4.1 Recommendations**

#### **1. Increase By-law Coverage**

From the prior public engagement, it is understood that a private tree by-law is not currently of interest to residents or Council, and the City lacks the internal capacity for by-law governance. Therefore, it is recommended that the City consider expanding the coverage within existing by-laws to include more language about trees, for example:

- Expand the current Property Standards by-law to include the removal hazardous trees, add a standardized replacement formula or cash-in-lieu calculation (e.g.

a caliper-for-caliper replacement or \$500 cash-in-lieu per tree). Also consider providing a list of approved tree replacements.

- As the City of St. Catharines is currently undergoing a Zoning By-law Review, explore means to include increased landscaped open space requirements, thus allowing municipal planning Staff to request more trees planted on a site.

## 2. Designating Trees as Heritage Features

The *Ontario Heritage Act* (1990) allows trees to be given a heritage designation, and many municipalities cited the effectiveness of framing tree protection as a matter of preserving heritage landscapes or the natural heritage features of neighbourhoods. It is recommended that St. Catharines explore neighbourhoods and trees that are potential candidates for tree protection through heritage designation:

- Using public and expert engagement, compile a list of potential candidate trees in St. Catharines to designate under the *Ontario Heritage Act* (1990).
- If appropriate, apply to designate identified trees as natural heritage features or neighbourhoods as heritage landscapes through appropriate channels outlined by the *Ontario Heritage Act* (1990).

## 3. Increase Tree-Related Programs

Staff from the municipalities interviewed overwhelmingly cited the need for both policy and programs to achieve tree canopy targets. Many specifically mentioned the high rate of success with programs that are implemented through public-private partnerships with larger corporate organizations. This approach may prove additionally beneficial as it decreases the onus on municipal staff to provide full-programming support. Therefore, it is recommended that St. Catharines consider ways of expanding tree programs, such as:

- Seek out private corporations to form public-private partnerships in order to develop and run programming for residents focused on increasing tree stewardship and planting of trees.
- Partner with private organizations to introduce and support year-round tree-related programs.
- Create a donation program that accepts monetary donations from residents and businesses in order to help fund community tree-planting initiatives and events.
- Explore the implementation of innovative programs, (e.g. Mississauga's One Million Trees) which includes the 'gamification' of tree plantings and an opportunity for robust data collection

#### 4. Create Resident-Focused Education Programs

Public engagement and interviews showed that residents believe that trees are beneficial; however their knowledge of trees - including tree health and maintenance, native tree species, and ecosystem services they provide - is generally low. Some municipalities have identified citizen education as an important contributor to the success of tree programs and on-going tree protection and preservation efforts. It is therefore recommended that the City:

- Create educational programs and materials for residents about the benefits of trees, tree planting and tree species identification.
- Identify and foster strategic partnerships with local organizations such as schools and other NGOs.
- Develop a culture of tree-conservation among city staff and the public. This can be facilitated by a strong Urban Forest Management Plan.

#### 5. Leverage Perimeter Trees

The preservation of perimeter trees has been found to encourage more intense development while preserving existing trees on properties. Details can be included in municipal policies and guidelines to strengthen preservation and protection efforts. It is recommended that St. Catharines can consider including the preservation of perimeter trees in policy and plans:

- Include preservation of perimeter trees in urban design guidelines and/or development regulations.
- Focus specifically on ensuring minimal disturbance to the root system of trees, so as to not encroach on tree drip lines.

#### 6. Include Planting Target Ratios

While many non-native tree species are popular options in Canadian cities, native tree species are well adapted and contribute positively to the local ecosystem. No municipal plans indicate target ratios for native to non-native planting, what the number or percent of native species should be, or situations when native or mostly native species should be used. In order to encourage healthy and resilient ecosystems it is recommended that St. Catharines:

- As part of UFMP, indicate target ratios for native to non native planting in an UFMP and create a clear implementation strategy and timeline.
- Ensure that native trees are included on, and promoted via the municipal recommended planting list. These lists should also consider urban versus non-urban factors that influence the success of certain species.



## 7. Formalize Climate Resilience Considerations

Climate change is altering the environment, including temperature extremes and frost dates. Urban trees can help in mitigating and adapting to climate change; however, they themselves are vulnerable to environmental change. Successful tree planting and tree survival rates must consider these factors. Research and interviews revealed that some municipalities are considering alternative tree species, planting schedules and locations, often informally. In order to proactively plan for climate resilience and to ensure high rates of survival from tree planting efforts, St. Catharines should consider formalizing climate resilience considerations:

- Adopt “active adaptive management” such as planting techniques to encourage assisted migration.
- Develop information for linking ecosystem services to specific land use in order to guide tree species selection.

## 8. Strengthen Development Application Process

Several municipalities are employing creative tactics to bring tree protection and preservation into the development process. Some approaches have proven highly effective in both protecting existing trees and encouraging new planting. In order to add a level of accountability to development applications, it is recommended that St. Catharines use lessons learned from other municipalities to bring tree protection and preservation in the development process:

- Consider the addition of Official Plan or Urban Design Guidelines policies that clearly outline requirements for a complete development application (e.g. requirements for tree protection/preservation plans when trees will be damaged by construction; or standards for site plans and the level of landscaping detail required).
- Adopt an official policy to reference fines for removing vegetation prior to submitting a development application.
- Consider implementing a planting program modelled after the City of Thunder Bay (see 3.3.1 Policy Effectiveness - Development Process).
- Consider adopting a tree compensation policy, under which a certain number of trees must be replanted for each tree an applicant removes (e.g. Town of Ajax).

## 9. Update Canopy Cover Strategy

No national or provincial standards exist for canopy cover targets or measuring and monitoring canopy cover. Some municipalities use recommended targets from the International Society of Arboriculture, while others reference the American National

Standards Institute. This can result in varying targets and approaches to both developing and pursuing tree canopy targets. It is recommended that St. Catharines:

- Support efforts to develop a scientifically informed standard of practice for setting and achieving canopy cover targets.
- Consider adopting a remote-sensing and land cover classification approach to long-range canopy monitoring . For example, The City of Toronto has identified a strategy through Table 6 of their SFMP to use “high resolution leaf-on aerial and satellite imagery” to perform a land cover classification once every ten years. Remote sensing is an effective and practical method of monitoring canopy change over time; however, remote sensing data can be costly.
- Continue to identify and follow the current best practices for canopy monitoring.

#### *4.2 Concluding Remarks*

It is hoped that the City of St. Catharines will be able to utilize the information in this Report and further consider the recommendations to advance tree protection and management. As the City works towards the recommended tree canopy cover of 30%, lessons learned from other municipalities in Ontario can help inform a multi-pronged approach to supporting the urban forest on public and private property.

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## Appendix A1: Environmental Scan: Literature Review

### Introduction

In general, the benefits of trees to humans and the environment are well documented. First, the ecosystem services provided by urban forests and greenery to residents are well-known and associated with many psychological and economic benefits. Urban forests are also key contributors to an area's ecological integrity. They contribute to improving ground water quality, reducing soil erosion and improving wildlife habitat. Urban forests can help in mitigating the effects of climate change by providing a cooling effect for nearby properties and reducing the heat island effect.

The purpose of this environmental scan is to identify and summarize research about tree protection and management in Ontario municipalities. This research will assist in understanding the current state of urban forest governance and management practices in Ontario, including popular research subjects and gaps in the literature. The next section of this report will outline the methods used for this review, followed by a discussion on key themes identified through this exercise.

### Methods

Academic and grey literature were reviewed for this scan. It quickly became evident that research is primarily being conducted at the academic level. As mentioned, this environmental scan is focused on the governance and management of urban forests in Ontario, therefore, research about the benefits of urban forestry were not included. Keywords related to tree protection in Ontario were used to identify and gather relevant documents. Selected documents were further analyzed for key pieces of information and study findings. Based on the analysis, various themes were identified, which are outlined in subsequent sections of this report.

### Findings

Based on our analysis, three key research themes arose: 1) tree management policies; 2) assessment of urban forestry methods; and 3) resident perspectives. This section will share findings related to each research theme.

#### 1. Tree Management Policies



In recent years, many municipalities have shifted their approaches to urban forest management from a focus on the aesthetics and hazard reduction of public trees, towards ecosystem service provisioning and managing the entire urban forest - on both public and private lands - to support ecological integrity (Ordóñez & Duinker, 2013; Silvera Seamans, 2013 in Conway, Almas, & Coore, 2019). The first subsection deals with the literature on prevalence of urban forest policies in municipalities across Ontario. This is followed by literature discussing how municipalities in Ontario have dealt with native species in their urban forest policies.

### **1.1 Distribution and nature of municipal urban forest policies in Ontario.**

A research paper from the University of Toronto (Yung, 2018) exploring common urban forestry policies in Ontario municipalities found that the most common policies are pest and disease control policies, landscape guidelines, and standards for development, whereas less common common policies included tree planting and greening strategies.

Yung's research paper (2018) and another study Conway and Urbani (2007) found links between specific characteristics of municipalities and the type of tree management practices adopted by them. More specifically, they found that municipalities with a population higher than 3,000 have a higher probability of having tree by-laws. Along similar lines, more extensive and private tree by-laws were noted in more urbanized municipalities. The study highlighted the Town of Oakville as being a rapidly growing municipality with an active tree planting, replacement, and monitoring program.

In general, upper-tier municipalities are more involved in urban woodland and woodlot management, while lower-tier municipalities focus on policies and programs related to street trees and trees on private residential property (Conway & Urbani, 2007). However, these studies indicate that a higher percentage of upper-tier municipalities have tree by-laws in comparison with lower-tier municipalities. This has been ascribed to resource constraints and the population threshold for enacting conservation by-laws (i.e. only lower-tier municipalities with a population greater than 10,000 can monitor and regulate tree cutting according to the Municipal Act) (Barker & Kenny, 2012).

A comparative analysis of current tree by-laws carried out by Yung (2018) shows that urban forestry practices among municipalities vary when it comes to the establishment and management of trees. For example, while some by-laws refer to International Society of Arboriculture, others refer to American National Standards Institute when discussing best practices within the context of tree by-laws. Some of the cities recognized in these studies for carrying out notable work in tree protection include Toronto, Oakville, Peterborough, London and Vaughan.

A report from Queens University (Douglas, 2016) comparing the UFMPs of London and Mississauga used 12 indicators to measure how well the plans fare. These 12 indicators fall within four major categories: context and goal setting process, incorporation of ecological principles, stakeholder involvement cum cooperation, and implementation strategies. The study identified the implementation strategy as a strength in Mississauga's UFMP, but it did not fare well during public consultation. London's plan on the other hand fared well when it comes to public consultation undertaken for this plan.

Based on the analysis of these UFMPs, the report offers some valuable recommendations, including adopting "active adaptive management" (adapting plan to changing conditions) and taking a collaborative approach both internally and externally to ensure a consistent approach to implementation. This report also asks planners to complement UFMP with planning tools like site plan controls, urban design guidelines and development permits.

## **1.2 Management of native and non-native species.**

According to recent research conducted by Dr. Tenley Conway and other researchers from the University of Toronto (2019), there are observed challenges in managing urban forests for ecosystem services (i.e. goods/services produced by urban forests that contribute to human well-being) and ecological integrity (the natural composition of species and/or habitat). This is especially true with regard to native tree species. In general, the ecosystem services approach has conflicting views about native versus non-native species' ability to provide these services, while the ecological integrity approach consistently views native species as positively contributing to the area's integrity.

In their study, researchers compared 17 urban forest management plans in Ontario - ranging from smaller towns (e.g. Port Hope) to large urban centres (e.g. Toronto) - and found that all municipalities include both the ideas of ecosystem services and ecological integrity in their plans, yet the importance of native species is only raised when discussing the topic of ecological integrity. Overall, this report highlights the tension between the two concepts' relationship to native species. Based on these findings, the authors suggest developing ecosystem services that are linked to specific land uses to would help guide species selection, employing a more holistic framing to ameliorate the tension between managing urban forests for ecosystem services and ecological integrity, and considering the stressors unique to urban and non-urban areas that might suit native or non-native species (Conway, Almas & Coore, 2019).

Along similar lines, another study examined how municipalities in Ontario manage native trees species (Almas & Conway, 2016). When comparing municipalities with and without UFMPs, researchers found that municipalities with UFMPs emphasized the importance of native species and wanted to increase the proportion of native species in the urban forest. However, the UFMPs were unclear about how to achieve this - no plan indicated target ratios for native to non-native planting, what the number or percent of native species should be, or situations when native or mostly native species should be used.

As part of this study, interviews with municipal foresters were conducted, which highlighted the effectiveness of UFMPs in affecting planting trends in the municipality, the benefit of tree planting authority being held by a single department, and the effective use of contracts with nurseries to specify tree provenance. In general, interviewees believed that native tree planting increases ecological integrity, however, all municipalities left at least 35 species native to Carolinian Canada (Southern Ontario) off their planting lists for unknown reasons. This research suggests that as municipalities continue to adopt UFMPs, the role of native tree species in achieving tree canopy goals needs to be identified and operationalized (Almas & Conway, 2016).

The research shows that due consideration should go into urban forestry planning for balancing the ecosystem services and ecological integrity. It further shows that identifying target ratios and percentage of native and non native species should be a priority as it hasn't been prioritized in UFMPs so far.

## **2. Assessment of Urban Forestry Methods**

In general, research that assesses methods used to increase tree canopies in Ontario is limited, especially since long-term canopy cover data is scarce (Bonney & He, 2019). This section will highlight two studies with similar conclusions about the state of tree canopy measurement programs.

In 2016, researchers from the University of Waterloo explored urban foresters' perspectives of assisted migration - a process where non-native species are used in anticipation of future climate change - as an urban forest management strategy in Southern Ontario (Fontaine & Larson). They found that although urban foresters are aware of the concept of assisted migration, it has remained "more of a theoretical concept than a management tool" (Fontaine & Larson, 2016). Despite this, many municipalities are unknowingly employing assisted migration strategies - for example, southern tree species are being planted at the northernmost end of their range, and

non-native trees are being planted in areas where native trees cannot adapt and/or where their growth is compromised.

In 2019, a study team from the University of Toronto used leaf-off aerial photographs to track tree density changes in Mississauga from 1944 to 2017 (Bonney & Hey). They found that in the case of Mississauga, tree density was able to recover, be maintained, or even increase post-development. The results of this study demonstrate that the enforcement of tree replacement by-laws and other initiatives have been successful, and shows municipalities currently experiencing high agricultural to suburban development what they can expect following their development.

In the concluding remarks of both studies, the authors allude to why this area of research is limited. For example, in the assisted migration study, Fontaine and Larson (2016) explain that limited current and historical information about municipal urban forests restricts the effective use of assisted migration - but highlights its importance, as “comprehensive and ongoing data collection allows urban foresters to detect problems early and manage proactively” - thus highlighting a significant barrier to assessing urban forestry management tools (Fontaine & Larson, 2016). Further, Bonney and Hey (2019) indicated that no comparable studies have been conducted, which is perhaps due to the difficulty of accessing and working with aerial photographs not originally intended for tree management purposes. Overall, these studies point to the necessity for municipalities to collect tree canopy data so they can more adequately evaluate the effectiveness of policies and programs put in place to preserve and maintain their urban forests.

### **3. Resident Perspectives**

As highlighted by Almas and Conway, “residents may be the least understood but perhaps the most important” with regard to urban tree management efforts, since “the majority of trees in the urban forest are located on private property (Nowak, 2012 in Almas & Conway, 2016). Over the last decade, several Ontario-based studies have been conducted to determine residents’ role in tree protection and management at the household level - most notably from Dr. Tenley Conway and associates at the University of Toronto.

#### **3.1 Neighbourhood-scale.**

Conway and associates conducted two neighbourhood-level studies in Mississauga - one to assess resident support of urban forestry policies (Conway & Bang, 2014), and another that explored resident motivations for tree planting and removal (Conway, 2016). With

regard to the first study, researchers determined that most residents in Mississauga support common municipal policies that encourage the planting and/or restrict the removal of trees, but found that residents in newer neighbourhoods, who recently moved to the area, who have a university degree, and whose household does not include seniors were more supportive of these policies. These results demonstrate the potential for residents to be willing partners in tree planting and protection efforts.

Conway's 2016 study of the same Mississauga neighbourhoods found that residents' engagement in tree planting and removal activities were primarily motivated by aesthetic reasons. However, variance in actual tree density from household to household suggests that residents have differing ideas about desired aesthetics. Findings from this study demonstrate a disconnect between residents and municipalities - as municipalities have demonstrated a shift away from beautification towards ecological service provision - and highlights the need for municipalities to "better consult with residents when establishing urban forestry goals and identify actions residents can take to help meet adopted city's goals" (Conway, 2016).

### **3.2 Municipal scale.**

Conway has also participated in studies comparing residents' attitudes across four municipalities - two with UFMPs (London and Oakville), and two without (Hamilton and Markham). In their 2017 study of residents' knowledge of native tree species, they found that their knowledge levels were generally low whether or not their municipality had a UFMP - despite UFMPs' emphasis on resident education and program adoption (Almas & Conway, 2017). Researchers attributed these findings - in the case of municipalities with UFMPs - to the short period of time that the plans have been in place, but also to their poor communication of the plan's goals to residents.

They furthered this study in 2018 when exploring residents' attitudes and actions toward native tree species, where they found that residents believe native species are more beneficial than non-native species in urban areas, but that native status was not a primary consideration when choosing a tree to plant on their property. However, in municipalities with an UFMP, respondents were more actively engaged in planting native trees, planting and removing trees on their properties, and had more trees on their properties. Overall, the results highlight the "need for municipalities to more actively engage residents regarding the goals and targets of their management plans, and to reinforce the property-level value of planting native trees to achieve resident buy-in for these initiatives" (Almas & Conway, 2018).

Resident perspectives are a growing sector of urban forestry research in Ontario, especially as municipalities continue to adopt UFMPs and other tree management tools and since these tools typically warrant some type of resident participation. Since more than half of every municipality's urban forest is located on private residential property, it is imperative that municipalities consider means of meaningful public engagement to ensure canopy growth and sustainment.

### **Conclusion**

As this report demonstrates, research pertaining to urban forestry is a small but growing field in the province of Ontario. As municipalities become increasingly aware of the ecosystem services provided by urban forests, they enact protection and management plans, policies, and programs. Based on these findings, several conclusions about the state of urban forestry in Ontario can be made. First, the lack of best practice guidance from the province has resulted in a wide range of municipal urban forestry plans and policies. Second, the effectiveness of these plans and policies is difficult to assess, as these plans often lack concrete measurements and targets, and due to the absence of historical tree canopy data. Finally, residents are willing to be active participants in tree preservation and management programs, but must be engaged meaningfully. Since the era of municipal tree protection efforts is still in its infancy, it is expected that this field of research will continue to grow and inform best practices for tending to their urban forest.



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## Appendix A2: Provincial and Regional Policy Assessment: Summary Table

Level of government	Name	Relevant Policy/Text	Relevance	Section
Provincial	Conservation Land Act, R.S.O. 1990, c. C.28	2 (c) watershed protection and management	Defines "areas of natural and scientific interest" and "wetland".	Forest and tree management and protection
Provincial	Environmental Protection Act, R.S.O. 1990, c. E.19	3 (1) The purpose of this Act is to provide for the protection and conservation of the natural environment. R.S.O. 1990, c. E.19, s. 3	Includes tree species that are protected.	Forest and tree management and protection
Provincial	Forestry Act, R.S.O.1990, c.F.26	<p>1 (1) In this Act, "good forestry practices" means the proper implementation of harvest, renewal and maintenance activities known to be appropriate for the forest and environmental conditions under which they are being applied and that minimize detriments to forest values including significant ecosystems, important fish and wildlife habitat, soil and water quality and quantity, forest productivity and health and the aesthetics and recreational opportunities of the landscape; ("bonnes pratiques forestières")</p> <p>5 The Minister may establish programs to protect, manage or establish woodlands and to encourage forestry that is consistent with good forestry practices.2002, c.17, Sched.C, s.12 (2).</p> <p>11(1) The council of a municipality may pass by-laws, (c) for planting and protecting trees on any land acquired for or declared to be required for forestry</p>	Defines "good forestry practices", "nursery stock" and "wood-lands".	Forest and tree management and protection

Provincial	Greenbelt Act, 2005, S.O. 2005, c. 1	6 (1) The Greenbelt Plan may set out policies with respect to the lands to which the Green-belt Plan applies, including, (a) land use designations	Provides regulation on designation of green-belt area.	Land-use enabling environmental considerations
Provincial	Municipal Act, 2001, S. O.2001, c.25	Municipalities are allowed to prohibit or regulate the destruction or injuring of trees (135(1)), including on private land, and dictates that they <i>shall</i> have regards for good forestry practices (135(5)) Tree by-laws 135 (1) Subject to subsection (4) and without limiting sections 9, 10 and 11, a local municipality may prohibit or regulate the destruction or injuring of trees. 2006, c. 32, Sched. A, s. 71 (1)	Provides regulations on tree by-laws, agreement re enforcement by upper- and lower-tier municipality.	Land-use enabling environmental considerations
Provincial	Niagara Escarpment Planning and Development Act, R.S.O. 1990, c. N.2	Objectives 8 (d) to maintain and enhance the open landscape character of the Niagara Escarpment in so far as possible, by such means as compatible farming or forestry and by pre-serving the natural scenery	Defines the “Niagara Escarpment Planning Area”.	Land-use enabling environmental considerations
Provincial	Ontario Heritage Act, R.S.O. 1990, c. O.18	Objects of Trust 7 (d) to preserve, maintain, reconstruct, restore and manage property of historical, architectural, archaeological, recreational, aesthetic, natural and scenic interest.	Outlines protection of heritage trees.	Forest and tree management and protection, Private urban tree specific
Provincial	Places to Grow Act, 2005, S.O. 2005, c. 13	Plans or policies (5) The plans and policies to which subsection (4) refers are, (a) a policy statement issued under section 3 of the Planning Act; (b) the Greenbelt Plan established under section 3 of the Greenbelt Act, 2005 and any amendment to the Plan;	Establishes area as in the Greenbelt and Niagara Escarpment.	

Provincial	Planning Act, R.S.O.1990, c.P.13	<p>34. (1) Zoning by-laws may be passed by the councils of local municipalities:  Natural features and areas  3.2 For prohibiting any use of land and the erecting, locating or using of any class or classes of buildings or structures within any defined area or areas, i. that is a significant wildlife habitat, wetland, woodland, ravine, valley or area of natural and scientific interest,  ii. that is a significant corridor or shoreline of a lake, river or stream, or iii. that is a significant natural corridor, feature or area</p> <p>Municipalities are allowed to designate site plan control areas and withhold approval of site plans, barring:</p> <ol style="list-style-type: none"> <li>1. Drawings showing sustainable design elements on any adjoining highway under a municipality’s jurisdiction, including trees. (41(4)2.(e))</li> <li>2. Require the owner of the land to provide trees for the landscaping of the lands or the protection of adjoining lands. (41(7)(a)6.)</li> <li>3. Consideration of woodland buffers and renovation</li> </ol>	Defines “area of settlement” and “provincial plan”, which covers the Greenbelt Plan, the Niagara Escarpment Plan, gives municipalities jurisdiction to enact plans and policies ie. environmental protection and consideration, outlines site plan control options.	Land-use enabling environmental considerations
Provincial	Professional Foresters Act, 2000	<p>Scope of practice  3 (1) The practice of professional forestry is the provision of services in relation to the development, management, conservation and sustainability of forests and urban forests where those services require knowledge, training and experience equivalent to that required to become a member under this Act  Defines ‘urban forest’ as ““tree-dominated vegetation and related features found within an urban area and includes woodlots, plantations, shade trees, fields in various stages of succession, wetland and riparian areas” (2000, c. 18, s. 3(3)).</p>	Specifically relevant to urban forests	Forest and tree management and protection

Provincial	Provincial Policy Statement, 1996	<p>Forests and ‘woodlands’ are defined and delineated as per the Forestry Act or Ontario’s Ecological Land Classification system definition. It references values which include significant eco-systems, important fish and wildlife habitat, soil and water quality and quantity, forest productivity and health and the aesthetics and recreational opportunities of the landscape (F26)</p> <p>Planning authorities <i>should promote</i> green infrastructure to complement infrastructure (1.6.2) <i>should support</i> improved air quality, reduced greenhouse gas emissions, and climate change adaptation through land use and development which, in part, considers the mitigating effects of vegetation and maximize vegetation within settlement areas, where feasible (1.8.1).</p> <p>Long term general protection of environmental features, and details the protection of natural feature areas, including significant natural areas (2.1)</p>		
Regional	Regional Municipality of Niagara Tree and Forest Conservation By-law	<p>The Tree and Forest Conservation By-law applies to:  Woodlands that are 1.0 hectare or more in size;  Woodlands having an area of less than 1.0 hectare upon delegation of such authority to the Region by a local municipality in Niagara; and  Heritage and Significant Community trees identified and designated by the Council of a local municipality, but only upon delegation of such authority to the Region.</p> <p>Prohibits or regulates the harvesting or injuring if trees in woodlands in the municipality. In this case, “woodlands” are defined as land on one or more properties with a density of at least:</p> <ul style="list-style-type: none"> <li>· 1.38.a 1,000 trees, of any size, per hectare;</li> <li>· 1.38.b 750 trees, measuring over five (5) centimetres in diameter at DBH, per hectare;</li> </ul>	Regulates the destruction of trees in woodlands to conserve and improve woodlands in Niagara	Forest and tree management and protection



		<ul style="list-style-type: none"> <li>· 1.38.c 500 trees, measuring over twelve (12) centimetres, in diameter at DBH, per hectare; or</li> <li>· 1.38.d 250 trees, measuring over twenty (20) centimetres, in diameter at DBH, per hectare</li> </ul> <p>Exemption are included, in particular for agriculture, and require a permit for the selective removal of individual trees.</p> <p>The Niagara Peninsula Conservation Authority is charged with the administration and enforcement of the Regional Municipality of Niagara Tree and Forest Conservation By-law, as well as ensuring that tree cutting that does occur follows Good Forestry Practices.</p>		
Provincial	A Place to Grow - Growth Plan for the Greater Golden Horseshoe, 2006	<p>1.2.1. Guiding Principles</p> <p>Integrate climate change considerations into planning and managing growth such as planning for more resilient communities and infrastructure - that are adaptive to the impacts of a changing climate - and moving towards environmentally sustainable communities by incorporating approaches to reduce greenhouse gas emissions.</p>	Establishes environmental and climate considerations as important.	Land-use enabling environmental considerations
Provincial	Greenbelt Plan, 2017	<p>2. Environmental protection</p> <p>Protection, maintenance and enhancement of natural heritage, hydrologic and landform features, areas and functions, including protection of habitat for flora and fauna and particularly species at risk;</p> <p>5. Infrastructure and natural resources</p> <p>Support for infrastructure which achieves the social and economic aims of the Greenbelt Plan and the Growth Plan and improves integration with land use planning while seeking to minimize environmental impacts;</p>		Land-use enabling environmental considerations

Provincial	Niagara Escarpment Plan, 2017	<p>Forest Management</p> <p>10. Any forest management activities shall include natural regeneration or rehabilitation through reforestation, using native tree species where necessary.</p> <p>12. Development where permitted in woodlands should protect and where possible enhance the woodland and associated wildlife habitat. All development involving the cutting of trees requires approval from the implementing authority, subject to the following criteria:</p> <ul style="list-style-type: none"> <li>a) cutting of trees and removal of vegetation shall be limited to the minimum necessary to accommodate the permitted use;</li> <li>b) using tree-cutting methods designed to minimize negative impacts on the natural environment, including surface drainage and groundwater;</li> <li>c) minimizing disruption to wildlife habitat in the area;</li> <li>d) retaining the diversity of native species;</li> <li>e) aiming over the long term to protect and where possible enhance the quality and biodiversity of the woodland;</li> <li>f) protecting trees and vegetation to be retained by acceptable means during construction; and</li> <li>g) maintaining existing tree cover or other stabilizing vegetation, on steep slopes in excess of 25 per cent (1:4 slope).</li> </ul> <p>2.12 Infrastructure</p> <p>2. Infrastructure shall be sited and designed to minimize the negative impact on the Escarpment environment. Examples of such siting and design considerations include, but are not limited to the following:</p> <ul style="list-style-type: none"> <li>a) blasting, grading and tree removal should be minimized where possible through realignment and utilization of devices, such as curbs and gutters, retaining walls and tree wells;</li> </ul>	Outlines forest and tree management considerations for area within the Niagara Escarpment area.	Land-use enabling environmental considerations
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Regional	Region of Niagara Official Plan	<p>1.8.5 Development Objectives</p> <p>6 (c) accessory uses and accessory facilities, except for infrastructure, that are underground, localized in nature, and do not result in visual impacts, permanent loss of ground vegetation or trees, or permanent contour changes;</p> <p>Policy 7.A.1.2 The Region shall support the efforts of landowners to maintain and improve ecosystem health by:</p> <ul style="list-style-type: none"> <li>a) Promoting good forestry practices and development of Woodland Management Plans;</li> <li>b) Encouraging and supporting natural heritage conservation and restoration, including the planting of native vegetation; and</li> <li>c) Maintaining and implementing a Regional Forest Conservation By-law regulating harvesting, destruction or injuring of trees in woodlands. If a local municipality has entered into an agreement pursuant to the Municipal Act to adopt a by-law establishing more rigorous standards respecting cutting and destruction of trees the Region may, upon request, delegate its authority to that municipality.</li> </ul> <p>Local municipalities shall be encouraged to:</p> <ul style="list-style-type: none"> <li>a) Adopt by-laws protecting trees and woodlands not covered by the Regional Forest Conservation By-law or delegate their authority to the Region;</li> <li>b) Require preparation and implementation of Tree Saving Plans for new development, if needed; and</li> <li>c) Integrate natural features and natural vegetation, including the planting of native species, into development.</li> </ul> <p>Policy 7.B.1.19 Where development or site alteration is approved within the Core Natural Heritage System or adjacent lands as set out in Table 7-1 the applicant shall submit a Tree Saving Plan</p>	Land-use enabling environmental considerations
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## Appendix A3: Comparative Municipal Survey: Report

### Methods

Relevant policy documents from select municipalities were used for this scan. These documents were reviewed for policies relating to tree protection, management, and enhancement. The objective of this scan was to determine if and how municipal policies address trees, tree canopies, and landscaping and how policies, guidelines, and regulatory tools are used to preserve and maintain trees.

While scanning each policy document, relevant policies pertaining to tree preservation and management were recorded and grouped according to emerging themes for further analysis. Tree-related programs aimed at enhancing the tree canopy, the number of trees in the municipality, and general tree education were also noted.

A total of 17 municipalities were scanned for this policy analysis, consisting of ten identified in the City of St. Catharines' Municipal Comparators Report [CAO-061-2015], six identified through the Environmental Scan, and the City of St. Catharines. At minimum, each municipality's Official Plan, tree-related by-laws, urban design guidelines, and Urban Forest Management Plan were obtained and scanned for tree-related policies.

Below is a table listing the municipalities included in this scan.

Comparable Municipalities		Additional Municipalities	
1. Barrie	6. Niagara Falls	11. Ajax	16. Toronto
2. Cambridge	7. Oshawa	12. Mississauga	17. Vaughan
3. Guelph	8. Thunder Bay	13. Oakville	
4. Kingston	9. Waterloo	14. Peterborough	
5. Kitchener	10. Windsor	15. St. Catharines	

The municipalities reviewed for this report had varying policy frameworks to address tree protection and management. Further, the Urban Forestry Management Plans varied in approach - some were comprised of recommendations for the municipality to implement while others were applicable only to public trees (e.g. Kingston). The table below identifies the policy documents that each municipality has to monitor and regulate trees.

Municipality	Official Plan	Private Tree By-law (Municipal)	Urban Design Guidelines	Urban Forest Management Plan
Ajax	✓	✓	✓	✓
Barrie	✓	✓	✓	
Cambridge	✓		✓	✓
Guelph	✓	✓	✓	✓
Kingston	✓	✓	✓	✓ (public trees)
Kitchener	✓	✓	✓	✓
Mississauga	✓	✓	✓	✓
Niagara Falls	✓		✓	✓
Oakville	✓	✓		✓
Oshawa	✓	✓		
Peterborough	✓	✓		
St. Catharines	✓		✓	✓
Thunder Bay	✓		✓	✓
Toronto	✓	✓	✓	✓
Vaughan	✓	✓	✓	✓
Waterloo	✓		✓	
Windsor	✓			

### Key Findings

After completing the document scan, four (4) distinct themes emerged. Policies pertaining to tree protection and management in municipalities explored demonstrated one or more of the following themes: 1) protection & preservation; 2) design element & amenity; 3) urban resilience; and 4) enforcement. Further, within each theme, nuances exist in the language used for each policy and the exact application of each policy. For example, some contained direct language (e.g. “shall”) whereas others were more open to interpretation (e.g. “encouraged”). The four (4) main themes will be explored in-depth below.

#### 1. Protection & Preservation

The first theme that emerged from the policy scan pertains to the protection and preservation of existing trees. This theme is broad and encompasses a range of policies related to the preservation of trees on a site during the development process, or if being altered through a planning application. Further, most policies within this theme were premised on protecting existing trees on properties when development or alterations to a site were proposed through a formal planning application. As the majority of the municipal policies fell within this theme, sub-categories have been established to further articulate findings.

### Language of Policy

Of the policies that focused on protection and preservation, some policies included general and non-binding language. For example, Guelph's Official Plan states, "*where possible*, existing trees should be retained on-site and *where appropriate* suitable new trees *should* be planted on-site, in the street right-of-way or in other City-approved locations" (8.17 Landscaping and Development). Many other municipalities use similar language that - although draws attention to the need to consider trees in the development process, can be interpreted as a suggestion to the applicant for consideration. These policies are not particularly binding in the phrasing or application. Without clear standards for the level of consideration that 'should' be dedicated to retaining existing trees or the planting of new trees, such policies may not lend strongly to tree protection objectives.

In other cases, Official Plans were more rigorous and used language prompting the protection of trees as a key factor in the development process. An example of this is demonstrated in Barrie's Official Plan, which states, "wherever possible the protection of treed areas, hedgerows and other natural areas *shall be* incorporated into the design, and the planting of new trees *shall be* encouraged" (6.5.2.2 General Design Guidelines d) Environmental Features iv)). Although similar to the previous example, this directs that tree protection be incorporated into the design of the proponent through the development process. This language clearly communicates that tree protection ought to be considered, which makes the protection of existing trees on a site a matter that is enforceable by a municipality.

### Replacement & Relocation of Trees

Some policies approached tree protection and preservation through directives focused on the replacement or relocation of trees. These policies direct proponents to replace any trees demolished due to construction in order to preserve the pre-existing landscape. These policies can be used to address the challenge of preserving trees if



the proposed site development or alteration does not allow for existing trees to be retained. By including policy language about replacing trees, proponents must consider the replacement of trees through the development process. This is a ‘next best’ approach to address the loss of trees if a proposed development fails to preserve existing trees on site. An example of this type of policies reads as follows: “Council may require proponents of development and infrastructure undertakings to submit an inventory of trees on site and prepare and implement a tree conservation and replacement plan” (Windsor Official Plan 5.3.6.7).

It is acknowledged that some proposed developments will not be able to preserve all trees located on the property due to the various site configurations - some are adjacent to woodlots, some may have existing mature trees, while others are undeveloped and have trees dispersed all over the property - which makes change impossible without destroying trees. By including policies that speak to this scenario, municipalities can address tree protection from a variety of angles. This further communicates to proponents that trees are an important feature within the municipal boundary.

#### Preservation of Perimeter Trees

In very few instances were perimeter trees mentioned in the policy documents scanned. The preservation of perimeter trees has been identified as a potential for municipalities to encourage more intense development and keep existing trees on sites. By outlining the protection of perimeter trees, more intense development becomes a more viable option for proponents as they cannot build larger floor plates if existing perimeter trees are on site. This can be viewed as accomplishing two major goals: preserving trees and influence more intense development. Ajax includes a policy within the Employment Areas Urban Design Guidelines document that delineates the preservation of perimeter trees: “preserve all existing perimeter trees with minimal changes to the area beneath the drip line. Locate underground services and utilities so as not to encroach within the drip line of trees to be preserved, to minimize disruption to the root system” (4.3 Landscaping).

#### Heritage Protection

Lastly, a small number of policies framed tree protection as a matter of preserving heritage landscapes or the natural heritage features of neighbourhoods. Framing tree protection in this manner allows municipalities to champion the importance of protecting trees via the development process. Heritage preservation has long been a significant consideration within the development process, with public interest also vested in the matter. Thus, by framing tree protection as a heritage preservation

matter, municipalities can use this approach to communicate the overall importance on preserving trees within the jurisdiction. It is an important consideration as designated heritage items are protected with additional rigorous policies through the Ontario Heritage Act (1990). An example of this type of policy can be found in the Official Plan for Guelph. The policy states: “The City shall identify, evaluate and conserve heritage trees which satisfy one of the criteria for determining cultural heritage value or interest as prescribed by regulation under the Ontario Heritage Act. 2. Where heritage trees have been identified by the City, they will be protected through appropriate measures under the Ontario Heritage Act while having regard to the health of the tree and public safety (4.8.8 Heritage Trees: 1.).

## **2. Design Element & Amenity**

The second theme that emerged from this scan was Design Element & Amenity. Many of the policies within the documents premised the use of trees as a means to maintain existing character or enhance the character of an area. Some policies were presented from the perspective of the personal amenities that trees can provide people.

Policies that address tree protection and management through a design-focused lens championed the aesthetic benefit of trees and the material benefits that trees can provide residents. Through Kingston’s Official Plan, those making certain changes to the built environment are directed to consider that “the review of requests to establish front yard parking spaces must address the following criteria: the residual portion of the front yard shall be landscaped and consist of grass or similar groundcover, trees, or shrubs to provide for suitable streetscape enhancement, buffering from adjacent properties and visual relief from the paved areas” (Front Yard Parking in Existing Residential Area - 4.6.60). Many design-related policies regarding trees were found within Urban Design Guidelines, with some also found in Official Plans. Such policies encourage proponents to include tree plantings on a site to achieve a desirable look for an area, which in itself can act as an incentive for proponents to contribute to the overall tree canopy.

In terms of purporting the benefits of trees, the Urban Design Guidelines for Thunder Bay include a policy for Parks and Open Space that states “playground equipment should be imaginative, easily maintained and should be located in areas shaded by trees” (2C Uses and Amenities: b)). This type of policy clearly links the personal benefits that an individual could benefit from a tree - in this case, shade is identified as the key benefit for community members. The policy - and similar ones, calls for trees to be either planted or maintained for specific reasons, making it clear to proponents the *importance of* and *reasons for* including these features.

By including policies for tree protection and management through a design-focused means, it may serve as a way to encourage tree planting or protection in a municipality through reframing as a desirable aspect for the community. These policies communicate to development proponents that trees should be added into a site plan in order to achieve a desirable aesthetic, or to provide a distinct benefits to users of a space. Although trees do play a role in improving the look of a space, trees provide a host of important benefits beyond an individual's personal gain from the existence of a tree.

### **3. Urban Resilience**

The policies within this theme deal with the resilience of the urban system, especially its ecological components, with an emphasis on trees and urban forests. Policies which reflect urban resilience do not necessarily refer to the concept outright. Many of the policies identified under this theme deal with protecting significant environmental features, planning green and sustainable development, greening the urban landscape, climate-appropriate planting, conservation and monitoring. Trees are not the specific focus of many of the identified policies, which deal more generally with environmental features.

Most official plans contain references to the value of the natural environment and the benefits that nature provides to residents. Where official plans discuss the resilience benefits of trees, these benefits often include shade generation, urban cooling, air purification, slope stabilisation , erosion mitigation, and aesthetic value. Generally, mature trees are considered to deliver superior benefits relative to immature trees, and as a result mature trees may be favoured by protection policies. Many official plans emphasize the importance that the municipality places on its natural features. There is a great deal of variability in the policies, regulations and actions which Municipalities adopt to pursue their natural resilience goals. Regulations which protect environmental features are often incorporated in the development approval process. This may help explain why very few official plans contain substantial policies which govern how minor environmental features such as trees should be managed on private property.

Many municipalities employ a Natural Heritage System (NHS) (Kingston, Niagara Falls, Oshawa) Natural Heritage Network (Vaughan) Green Space System (Toronto) or some similar scheme as a measure to protect and enhance the ecological network within their city. The City of Waterloo defines the NHS as follows: "The Natural System consists of Landscape Level Systems, Core Natural Features, Supporting Natural Features, fish habitat, Restoration Areas, and Linkages" (8.2.2 General Policies). More restrictive development policies generally apply on lands which are close to features identified for protection under one of these NHSs. The official plan of the City of Niagara Falls states

that “When considering development or site alteration within or adjacent to a natural heritage feature, the applicant shall design such development so that there are no significant negative impacts on the feature or its function within the broader ecosystem. Actions will be undertaken to mitigate any unavoidable negative impacts.” (11.1 Natural Heritage System). Natural heritage protection areas are normally delineated through a map attached as an appendix to the official plan.

Some plans discuss the importance of creating and maintaining a robust ecological network connected through ecological linkages. The City of Vaughan references ecological linkages in Official Plan section 3.3.3 Woodlands: “an application for development or site alteration on lands adjacent to woodlands will not be considered by Council unless... b) an evaluation is carried out to determine that the required minimum vegetation protection zone between the woodland and the proposed development is sufficient to maintain or enhance existing functions, attributes and linkages of the woodland.” This language is normally tied to the natural heritage system and emphasizes how this systematic approach to protecting natural features is key for producing positive resilience outcomes. One shortcoming of this approach is that the heritage system is normally defined spatially to include provincially and locally significant woodlands and wetlands. Much of the previously developed urban landscape is outside the boundaries of these protections. The city of Guelph addresses this through policy 4.1.6 Urban Forest “To ensure that opportunities for protection of trees outside the City’s Natural Heritage System are fully considered through the planning process”. The City of Mississauga extends protection to mature trees outside the NHS through policy 16.5.3.1 “Notwithstanding the Natural Heritage System policies of this Plan concerning residential woodlands, sites with mature trees will be subject to a review of a tree preservation plan prior to consideration of proposed development”. The city of Oshawa clearly extends protection beyond the NHS through policy 5.3.4 “5.3.4 For any proposal for development or site alteration in proximity to a natural heritage and/or hydrologic feature that is not part of the Natural Heritage System, an Environmental Impact Study shall be undertaken in accordance with Section 5.5 of this Plan to determine if the feature should be protected or if appropriate mitigation, or ecological compensation as a consideration secondary in preference to mitigation, can be provided to address any loss of the feature and/or function.”

Tree canopy protection and enhancement is a key urban resilience issue for many municipalities, and this is represented in many of their official policies. Many municipalities use development regulations, urban design guidelines, public outreach and tree-planting programs to improve their tree canopy. A further issue facing canopy cover is the challenge of monitoring. The City of Toronto has identified a strategy through Table 6 of their SFMP to use “high resolution leaf-on aerial and satellite imagery” to perform a land cover classification once every ten years.

The issue of which tree species to plant is also closely tied to resilience. It is widely considered good practice to encourage the planting of native species. Climate change is leading to a northward migration of ecozones, so that trees which are native to the region may not be compatible with the regional climate in the decades to come. To this end, some municipal plans include policies which support assisted migration of tree species. Another important consideration is the carbon sequestration potential of the species selected for planting. The Town of Ajax official plan, for example, states that the municipality will “Encourage the planting of native or non-native non-invasive tree species and vegetation that are resilient to climate change and provide high levels of carbon sequestration” (2.1.4 Tree Canopy).

#### **4. Enforcement**

The final theme observed in municipal policy documents directs proponents to factor in tree protection and management practices into the proposed development. These policies are unique in that they explicitly link tree protection mechanisms into the development process itself. The Official Plan for Niagara Falls contains legislation stating: “A tree inventory and tree preservation plan, where an individual significant tree or any group of trees, including a woodland as defined by the Region’s Tree and Forest Conservation By-law, may be impacted by a proposed development” (4.2.10). This provides planners with a level of control in preserving trees or ensuring that adequate tree planting is included in development agreements. The majority of policies within this theme involve the direction to include a Tree Protection/Preservation Plan as part of any site alteration proposal.

By conducting a Tree Protection/Preservation Plan for a proposed development, the proponent is held to a higher standard for considering the protection of existing trees while development occurs. Such plans involve the documentation of existing trees on site and which ones are intended to be destroyed - allowing for a municipality to more closely monitor the treescape or question the trees planned for destruction.

A concern that municipalities have is the potential for proponents to clear-cut a property before submitting a formal planning application. This is a concern as it is only through the planning process that the policies of Official Plans, Urban Design Guidelines, and other applicable policy documents can be applied. By clear-cutting a site beforehand, municipalities worry that a proponent will not have to adhere with any tree protection, replacement, or management policies.

This scan found that some municipalities are beginning to confront this valid concern through including policies to ensure proponents are held accountable for site alterations

made before a planning application is submitted to the municipality. Such policies were made stronger through reference to other municipal policies or by-laws. For example, the City of Barrie Official Plan includes a policy stating “where existing trees have been substantially removed and land stripping and/or the removal of topsoil has occurred prior to an application for development or during the process of obtaining approval for any development of a site, Council may impose conditions of such approval in accordance with the intent of the City’s tree cutting by-law” (6.5.2.2 General Design Guidelines D) Environmental Features vii)). By referencing other policies across all documents applied when assessing a proposed development, a municipality can more strongly ensure that tree protection and management practices will be upheld.

### **Tree By-Laws**

Municipalities that have adopted tree by-laws are able to regulate the removal of trees more strictly than municipalities without. However, a scan of tree by-laws in the selected municipalities demonstrates the range of restrictiveness across by-laws. First, it is important to note that while most municipalities reviewed have tree by-laws, not all municipalities have by-laws that includes private trees. Only by-laws pertaining to trees on developed or undeveloped lands were included in this review.

Of the municipalities that have adopted tree by-laws addressing private trees, the by-laws reviewed have varying degrees of protection allocated for private trees in the municipality. Criteria outlining which trees are subject to the tree by-law included items such as the diameter of the tree, land use designation, or the size of the land that the subject tree is located on.

An example of a land use designation-specific by-law is found in Ajax. The tree by-law in Ajax is only applicable to private trees within the outlined land use designations and zones. In this case, this includes: Environmental Protection, Open Space, Town-Wide Park, Community Park, or Neighbourhood Park land use designations; as well as areas zoned Private Open Space (Tree by-law s. 4.2). This is compared with Vaughn where all private trees of a certain diameter are subject to tree-cutting regulations (Tree by-law s. 2 & 3). The different restrictions on which trees are subject to the tree by-law impact the amount of trees that the city can regulate in order to monitor tree canopy coverage targets.

Furthermore, of the municipalities that had a tree by-law for private trees, each had different levels of requirements to be met in order to obtain a permit to remove a private tree. Some required reports from arborists and written consent from the adjacent property owner (Mississauga Tree by-law s 7). While, some simply required a



notification including the contact information of the property owner, species of the tree, the diameter of the tree, the reasons (if any) for removing the tree and plans (if any) for replacing the tree (Peterborough Tree Notice By-law). The varying levels required to obtain a permit to remove a private tree impact how rigorously a municipality can monitor the tree canopy.

## **Programs**

A number of municipalities have public programs aimed at promoting tree planting and maintenance for residents. The programs and events are used to help inform residents about the importance of trees and provide education on tree stewardship. These programs exist outside of municipal policy frameworks - although many Urban Forest Management Plans and some Official Plans indicate the need to create such programs. Of the municipalities that had programs, there was a range in the exact type of program each municipality facilitated.

The programs ranged from straightforward to intricate, with varying levels of programming run by a municipality. One example of a straightforward program is 'Greening Guelph' which is a monetary donation program aimed at helping to increase the canopy in Guelph. Donations are solicited from interested individuals and corporate sponsors, then is used to fund existing tree planting, protection, and education programs in the municipality. Other municipalities have programs that are premised on public-private partnerships in order to expand the urban forest. In Windsor, the Parks and Recreation department is focused on planting and partnerships as a strategy to increase the tree canopy. This program relies on the expertise of the department and help with planting from local environmental groups, Scouts, and the Essex Region Conservation Authority.

Lastly, some municipalities have larger-reaching public programs aimed at increasing the tree canopy. Mississauga is well known for the One Million Trees program. This program is intended to help conserve and enhance tree canopies in open spaces and forested areas in both the public and private areas of the City. Under the program, tree planting is done by City staff, resident volunteers, and through partnerships. To track the goal of planting one million trees, Mississauga has gamified the program - groups or individuals who plant a tree are able to input the information through the online portal, which is then displayed on the website along with the tree planter's name or company name and the number of trees the individual has planted. Such a program allows residents to feel valued for their contribution and for a municipality to more accurately track the progress of a goal.

Overall, these programs are a way for municipalities to get residents involved and excited about increasing the tree canopy. Since not all individuals will go through a planning application/the development process, public programming is another way for municipalities - and all residents, to work towards better tree stewardship and the recommended canopy cover targets.

## Appendix A4: Comparative Municipal Survey Chart

The following table is a compilation of all tree-related policies found during the Municipal Policy Scan phase of the project. The information is organized based on municipality, in alphabetical order (Ajax - Windsor). The policy document in question is listed in the next column, if applicable, the Official Plan, Private Tree By-law, Urban Design Guidelines, and Urban Forestry Management Plan for each municipality were reviewed. Any policies found pertaining to trees in the aforementioned policy documents were copied and organized accordingly. The columns following are used to categorize each policy into a particular theme: Protection & Preservation, Design & Amenity, Urban Resilience, and Enforcement.

The following table contains over 500 policies that can be viewed as examples for policy content or policy language. There are numerous variations on the same policy aim as well as an array of unique policies for private trees.

Municipality	Document	Year	Policy	Preservation & Protection	Design Element & Amenity	Urban Resilience	Enforcement	By-Law
Ajax	Official Plan	2016	2.1.1 Goals - To achieve the environmental principles in Section 1.2 of this Plan, the Town shall: l) Manage forest resources and trees in a manner that enhances their quality, quantity and sustainability over time;	X				
			2.1.3 Air Quality and Urban Heat Island - The Town recognizes that poor air quality and the urban heat island effect have adverse effects on both human health and the natural environment. Accordingly, the Town shall: d) Promote tree planting and innovative green spaces, such as green roofs in new and existing development, to reduce energy use through shading and sheltering;			X		
			2.1.4 Tree Canopy - The Town recognizes the value of tree cover in improving air quality and lowering air temperature during summer months. Expanding and providing a more robust tree cover creates bird and wildlife habitat, reduces the urban heat island effect, improves air quality, and connects open spaces and other natural areas. To maintain, protect, and enhance the existing tree canopy, the Town shall: a) Develop and implement an Urban Forest Management Plan; b) Encourage the planting of native or non-native non-invasive tree species and vegetation that are resilient to climate change and provide high levels of carbon sequestration, subject to the Town's approval, particularly through new development and on municipally-owned land; c) Consider enacting a Town-wide tree-cutting by-law to regulate the destruction or injury of trees; d) Encourage the use of water-conserving irrigation systems and the provision of adequate permeable surfaces around newly planted trees to establish a secure root system; e) Require reimbursement, in the form of new trees or financial compensation, for all healthy trees proposed to be removed in development applications, based on the findings of a Tree Inventory and Preservation Plan; f) Encourage tree planting by local residents and organizations, and educate residents about the benefits of planting trees versus the environmental impact of removing trees; and, g) Implement measures to protect, enhance, and expand the tree canopy, including but not limited to: i) requiring tree planting in areas of extensive surface parking; ii) promoting development that maximizes areas for tree planting; and, iii) preserving the existing tree canopy.			X		
			2.1.10.2 Policies - To achieve the goals for the Lake Ontario Waterfront, the Town shall: i) Protect the Lake Ontario Waterfront as natural, clean, green, attractive, diverse, open, accessible and connected. It is designated Environmental Protection and Open Space. Facilities and activities on the Lake Ontario Waterfront will reflect the Waterfront Management Plan, and in conformity with the principles and goals of this Official Plan: ii) Green - Waterfront landscapes shall form a green corridor, including protected natural areas, meadows, trees/shrubs, gardens and mown areas for recreation;	X				
			2.5 BUILT ENVIRONMENT - 2.5.2.1 Streetscapes and Landscaping - The Town intends to enhance the connectivity, sustainability and aesthetics of streetscapes and landscaping throughout the Built Environment, and strengthen connectivity to the Greenlands System by ensuring proper attention to detail is provided in the design and implementation of streetscapes and landscaping. Accordingly, the Town shall: a) Require all new public and private sector development to incorporate high-quality landscaping, including native or non-native, non-invasive trees and other vegetative plantings, subject to the Town's approval, to enhance the site, the streetscape and the surrounding area; consideration should be given to using drought-tolerant varieties of these species; b) Require new development to appropriately address arterial roads through the provision of sidewalks, and the use of tree cover, planting areas and/or other appropriate vegetation; c) Require all new development to provide amenity for the adjacent public realm to render these areas attractive, interesting, comfortable and functional for pedestrians by providing: iv) landscaped open space that is well-designed and includes permeable surfaces; and, native or non-native non-invasive species of trees and plants, subject to the Town's approval, consideration should also be given to using drought- tolerant varieties of these tree and plant species; g) Require parking lots to be attractive, well-designed and complement the character of the adjacent area. As such, surface parking lots shall be: v) designed to accommodate tree islands.		X		X	
			2.5.2.2 Built Form and Architectural Design - k) Promote development that maximizes areas for tree planting and permeable surfaces;		X			

	2.5.2.7 Bird Friendly Design - The Town is protecting and enhancing tree cover, wildlife habitat and natural areas to continue to provide habitat and resting areas for birds, including migratory species, throughout the municipality. Such habitat is not limited to the Greenlands System, including the Lake Ontario shoreline, wetlands, valleylands, and woodlands, but also shall continue to extend into the Built Environment on rooftops and naturalizing open spaces.	X		X		
	2.5.4.5 Utilities - e) Provide the Federal Government with comments regarding land use compatibility related to telecommunication towers and antenna systems, including: ii) encouraging towers and antenna systems to be designed to minimize visual impacts using fencing and tree and shrub plantings around the perimeter;		X			
	2.6.2.1 General Policies - g) Beyond the Environmental Protection designation, consider designating landmark tree(s), tree and hedge lines, and other vegetation of a cultural significance. The preservation of landmark tree(s) and/or other vegetation of cultural significance shall be evaluated through the development review process. The applicant may be required to revise the site layout such that significant features are retained. The Town may provide approval for the removal of landmark trees and other vegetation of cultural significance if, through a Tree Inventory and Preservation Plan, it is established that there is evidence of infestation or disease damage, or to protect public health and safety;	X				
	3.2.2.3 Village Centre - g) Natural features, including the canopy of mature trees, and connections to the Town's trail systems are appropriately protected and enhanced; and,	X				
	3.2.3.10 Village Centre - i) Heritage, Arts and Culture - The unique character of the Village Centre as a heritage area and arts and cultural hub for the Town will be preserved and enhanced. As part of this effort, the Town shall: - promote the maintenance and enhancement of the existing tree canopy.	X				
	3.2.3.10 Village Centre - [...] All new development shall be consistent with the following policies intended to facilitate a comfortable, safe, attractive and convenient pedestrian experience: vi) The removal of existing mature trees that are worthy of preservation is discouraged. The design of surface parking areas, driveway locations, and landscaped areas, and the siting of buildings, shall accommodate, where possible, the retention of existing mature trees. Open space areas, such as squares, patios or yards, are encouraged to be sited and designed to incorporate existing tree specimens as a means of preserving them in the context of development.	X	X			
	3.2.4.3 Parking - b) Surface Parking Lots - ii) Where surface parking must be provided, the visual impact of large surface lots shall be mitigated with a combination of setbacks, significant landscaping and pavement treatments including low walls, landscape materials, trees and lighting throughout parking lots and along the edges. Parking areas should be designed with clear pedestrian routes that are defined with landscape treatment. The design of surface parking lots shall also be consistent with policy 2.5.2.1 g).		X			
	4.2.7 Parking policies - i) Ensure that where surface parking cannot be avoided, or parking lot retrofits are proposed, designs provide tree plantings and/or pervious surfaces that seek to reduce the volume of surface runoff to the Town's stormwater management system;					
	5.0 Descriptions of Studies and Reports that may be Required for Complete Applications: o) Environmental Impact Study - d) An Environmental Impact Study shall: - xiii) Provide a Tree Inventory and Preservation Plan, prepared by a qualified landscape architect, in conjunction with a certified arborist; and,				X	
	5.0 Descriptions of Studies and Reports that may be Required for Complete Applications: u) Tree Inventory and Preservation Plan - The purpose of a Tree Inventory and Preservation Plan is to provide detailed information about individual trees and associated vegetation on public and private lands. A Tree Inventory and Preservation Plan is required for any development or site alteration where private or public trees/vegetation exist within the property and/or exist within a minimum of 3 metres from the property line. The Plan shall detail, in addition to other matters, tree health and size; existing trees proposed to be removed and the canopy replacement; existing trees proposed to be transplanted and their new locations (if tree spades are needed, indicate the spade size); existing trees proposed to be retained/protected and their monetary dollar value; and, the dimensions and details of recommended tree protection and preservation measures for all trees to be retained.				X	
	6.13 Lands Fronting onto both sides of Achilles Road between Salem Road and Carruthers Creek, lands located at the northwest corner of Salem Road and Achilles Road, lands located at the southwest corner of Salem Road and Mandrake Street, and lands located north of Highway 401 and south of Chambers Drive, between Salem Road and Carruthers Creek: c) Policies - The following policies are specific to this Area Specific Policy: vii) The removal of existing mature trees that are worthy of preservation is discouraged, particularly when they are located at the edges of development. Where mature trees are removed, compensation in the form of on-site landscaping and trees shall be secured. The design of surface parking areas, driveway locations, and landscaped areas, and the siting of buildings, shall accommodate, where possible, the retention of existing mature trees.	X				
	6.13.C.4.vi Appropriate landscape treatments, including trees and pedestrian lighting throughout parking lots and along their edges, shall be implemented to improve the appearance of parking areas and to contribute to the visual continuity of the street edge, while encouraging the safe use of these spaces.		X			

		7.1.15 Pre-Consultation and Complete Application Requirements - i) The following studies, reports and information may be required, as determined by the Town in consultation with the applicant and any other government body, public authority and/or external agency as deemed necessary by the Town, to be submitted as part of a complete application for an Official Plan Amendment, Zoning By-law Amendment, Draft Plan of Subdivision and Draft Plan of Condominium: Urban Design 21) Tree Inventory and Preservation Plan				X	
By-Law	2014	4.2 The provisions of this by-law shall apply to: (a) Any land in the area described in Schedule AA to this by-law; (b) Any land or part of land in an area designated as Environmental Protection, Open Space, Town-Wide Park, Community Park, or Neighbourhood Park pursuant to Schedule AA of the Town's Official Plan; and (c) Any land or part of land in an area zoned as Private Open Space pursuant to the Town's Zoning By-laws.					X
		5.1 In addition to the exemptions set out in section 135 (12) of the Act, this by-law shall not apply to: (e) A tree located on a lot of less than 1.2 ha which has a single dwelling thereon with the exception of land zoned Private Open Space pursuant to a Zoning By-law of the Town;					
Employment Areas Urban Design Guidelines	2006	3.3.2 Landscape Buffers: The treatment of landscape buffers shall be consistent with the following parameters: Materials within the landscaping buffer may include hard elements such as columns, low walls and decorative fencing, and soft elements such as trees, shrubs, grasses, groundcover and sod. The buffer may not be wholly sod.		X			
		3.4.2 Street Trees: Provide tree planting on each side of the street as per Town standards; - Select street trees from a diversity of high crowned deciduous species, with selection of variety based on hardiness, seasonal colour and salt tolerance. Where streets abut natural areas select native deciduous species.		X			
		4.3 Landscaping: Plant trees in all landscaped areas in a manner that is harmonious and consistent with the surrounding tree pattern. Planting in landscape strips abutting roads should compliment the existing character of the streetscape in terms of placement and species.		X			
		4.3 Landscaping: Preserve all existing perimeter trees with minimal changes to the area beneath the drip line. Locate underground services and utilities so as not to encroach within the drip line of trees to be preserved, to minimize disruption to the root system.	X				
		4.3 Landscaping: Preserve existing trees near or along residential property lines wherever possible to act both as a buffer as well as to prevent planting on residential properties to become suddenly exposed to edge conditions.		X			
		5.7 Alternative Approaches to Site Planning: Provide a spacious landscaped setting for the building, parking and other elements of a public nature. Landscaping may incorporate grass areas, landforms, trees, shrub beds and decorative materials.		X			
Urban Design Guidelines for Motor Vehicle Gas Bars/Service Centres	2006	2.0 Site and Building Organization - Guidelines - Provide an appropriate landscaped buffer between the gas bar/service station and the public realm, sufficiently sized to accommodate tree plantings in a mature state and a mix of hard of soft landscaping.		X			
		6.0 Landscaping and Tree Preservation - Gas bar/service station sites are to meet the same landscaping standards as required of all other commercial land uses and will continue and improve the existing landscaped public street edge.		X			
		6.0 Landscaping and Tree Preservation - Protect all existing perimeter trees worthy of preservation, with minimal grade changes to the area beneath the drip-line.	X				
		6.0 Landscaping and Tree Preservation - Locate all underground structures such as fuel tanks and utilities so as not to encroach within the drip-line of trees to be preserved (this minimizes disruption to the root system).	X				
		6.0 Landscaping and Tree Preservation - Provide tree planting in all landscaped areas, in a manner that is harmonious and consistent with the surrounding tree pattern; tree plantings along landscaped strips abutting roads are to complement the existing character of the streetscape (in terms of placement and species)		X			
		6.0 Landscaping and Tree Preservation - Diversification in planting schemes is desirable; accordingly, trees planted in clusters as well as in broken or unbroken lines will be considered, where appropriate.			X		

	Urban Design and Built Form Guidelines for Village of Pickering	2008	2.1 General Design Guidelines - Use landscaping to further define and contain public space by using street trees , for example, to delineate the pro- posed pedestrian plaza as shown in Figure 2.2.		X			
			2.2.4 Planting - Street Trees - Existing trees within the public right-of-way should be retained and protected;	X				
			2.2.4 Planting - Street Trees - Allow sufficient room for tree canopies to grow and develop without conflict with other building or sidewalk elements;		X	X		
			2.2.4 Planting - Street Trees - Street trees should be spaced 8 - 10 metres apart;		X			
			2.2.4 Planting - Street Trees - Street trees should be selected for durability in an urban environment, and height of the tree canopies should protect sightlines along the street for both motorists and pedestrians. Further, tree selection along boulevards containing hydro poles should ensure the height of the mature canopy will not interfere with the height of the hydro lines;			X		
			2.2.4 Planting - Street Trees - Street tree planting along Kingston Road would have to be located in the front yard of private properties due to the fact that it is a major arterial road with a narrow right- of-way. This should be done upon conversion or other improvements to these properties, with an agreement for access to perform tree maintenance.		X			
			3.3.2 Kingston Road/Church Street - Western Site - Street trees along Kingston Road and Church Street should be planted in the front yard setback zones of private property, as shown in Figure 3.9. These trees and locations should be secured through site plan agreement, with a separate easement and maintenance agreement between the municipality and the landowners to ensure that these trees are maintained to municipal standards. Trees should be planted with sufficient soil volume and topsoil to the satisfaction of the municipality.		X			
	UFMP	2010	32 Recommendations to enhance treescape in the Town of Ajax.					
Barrie	Official Plan	2018	The implementation of the master stormwater management plan and/or strategy will occur over time, via completion of development in accordance with a series of site plans. Georgian College and Royal Victoria Hospital will endeavour to maintain the lands in their natural state, for as long as feasible, with the exception of removing trees that are considered hazardous. (OPA No. 74)	X				
			The City may consider the reduction or re-allocation of development densities in order to preserve existing woodlots, mature trees and other natural areas and features which are not identified within the Environmental Protection Area designation.	X				
			Where an Environmental Protection Area consists of a woodland, the City will control development adjacent to this area to prevent destruction of trees.	X				
			...The Retail Village is intended to create an identity and continuity of the built form environment and be pedestrian friendly in terms of scale and streetscape amenities. Such amenities shall include trees and other high quality landscaping, street furniture and lighting fixtures, temporary and permanent kiosks and suitable sidewalks and patios...		X			
			A buffer strip of trees shall be maintained where possible around the perimeter of the site.		X			
			Site Plan Control - To ensure the appropriate use of lighting, walls, fences, hedges, trees, shrubs or other ground cover or facilities for the landscaping of areas to enhance land use compatibility and facilitate a safe and visually pleasing environment;		X			
			Site Plan Control - To ensure development of sustainable design elements on any adjoining highway under the City's jurisdiction, including without limitation trees, shrubs, hedges, plantings or other ground cover,			X		
			All contiguous woodlands greater than 0.2 hectares are protected by the City's Tree Preservation By-law, irrespective of ownership, maturity, composition and density. The City will control development adjacent to woodlands to prevent destruction of trees.	X				
			Wherever possible the protection of treed areas, hedgerows and other natural areas shall be incorporated into the design, and the planting of new trees shall be encouraged.	X	X			
			Where existing trees have been substantially removed and land stripping and/or the removal of topsoil has occurred prior to an application for development or during the process of obtaining approval for any development of a site, Council may impose conditions of such approval in accordance with the intent of the City's tree cutting by-law.				X	
			(8.5.4.5 Land Use) trees, berms and landscaping screen elements such as parking, service and loading areas; and,		X			



		In order to maintain and enhance vegetation cover, the City shall support tree planting, tree preservation, conservation initiatives and land stewardship strategies.			X		
		Prior to the creation of a lot for development on private septic systems, the necessary soil, hydrogeological, grading and tree preservation plans must meet the approval of the City and the appropriate public agencies.	X				
		The City will require the incorporation of larger lot sizes in wooded areas or the protection of woodlands (in whole or in part), and/or additional planting as determined by the City prior to approval of any development proposals in areas adjacent to or including woodlands.	X				
		General Policy - Open Space - The City may, in the process of reviewing development applications for residential intensification, require studies related to the improvement of older residential areas, as deemed appropriate. Such studies shall consider and evaluate measures to improve the condition of housing and neighbourhood amenities including: iii) The protection, enhancement and restoration of the natural heritage system;	X				
		General Policy - Open Space - The City shall protect and enhance open space within the municipal boundary and identify locally significant natural areas for restoration and enhancement through a Natural Heritage Strategy. The City shall also encourage protection and planting of native vegetation within City owned open space areas where appropriate.	X				
		Where an Environmental Protection Area consists of a woodland, the City will control development adjacent to this area to prevent destruction of trees.	X				
		General Policy - Waste Management Facility - A buffer strip of trees shall be maintained where possible around the perimeter of the site.		X			
		General Policy - Lot Creation - The Committee of Adjustment shall require, where necessary, as a condition of severance, an application for a Tree Removal Permit for the parcel to be severed and the parcel to be retained.				X	
		General Policy - Site Plan Control - As a prerequisite or as a condition of approval of site plans, the City may require developers to provide sufficient information pertaining to any or all the items relating to the development of a site including but not limited to traffic, noise, pedestrian accessibility, functional servicing and environmental, tree preservation and shadow studies, and exterior design elements including but not limited to character, scale, appearance, massing, design features, roof pitch design, building materials, and screening of mechanical and electrical equipment.	X			X	
		General Design Guidelines - Urban Design Guideline - Wherever possible the protection of treed areas, hedgerows and other natural areas shall be incorporated into the design, and the planting of new trees shall be encouraged.					
		Height and Density Bonusing - Without limiting the authority of the foregoing, the City will seek to secure any of the following community benefits above and beyond those that would otherwise be provided under the provisions of the Planning Act (including parkland dedication and cash-in-lieu of parking) or the Development Charges Act or any other statute. The community benefits that may be secured include, but are not limited to, the following: Enhanced on-site tree planting or landscaping;		X			
		In order for a development application to be considered complete in accordance with Sections 22, 34, 41, 51 or 53 of the Planning Act, the City of Barrie may require the following reports or studies be prepared to the City's satisfaction: Tree preservation plan/inventory	X			X	
		General Policy - Energy Conservation - The retention of forests and tree planting will be encouraged to enhance and improve the "urban forest" and tree cover as a means of improving air quality and reducing energy use through shading, sheltering, and screening.			X		
Tree By-law (private)	2014	Application of by-law: subject to section 5, this by-law applies to all trees in woodlots within the boundaries of the City of Barrie					
		Application for permit to injure or destroy trees: c) every application shall be accompanied by a report from either: i) a LA or Reg. Pro. Forester providing information about the woodlot certifying that the injury/destruction of tree(s) is required to permit the establishment or extension of a use permitted by the Zoning by-law and there is no reasonable alternative, OR ii) a Reg. Pro. Forester provides certification that injury/destruction of tree(s) is in accordance with good forestry practices					
		Conditions to Permit: c) tree preservation measures i) the owner shall cause the implementation of tree preservation measures consistent with the City of Barrie's Tree Protection Manual; ii) The owner shall cause the installation of all tree preservation measures to be completed under the supervision of the LA or Reg. Pro. Forester and approved by the City. Such measures shall be inspected and bi-monthly report made to Director by LA/Reg. Pro. Forester for duration of construction					

Urban Design Manual	2014	3.1. Pedestrian Circulation: D. Identify and emphasize major pedestrian routes through the use of signage, pavement markings, bollards, trees, appropriately scaled lighting and continuous hard surfaces.		X							
		3.2 Vehicle Circulation and Parking: M. Provide raised traffic islands to break up large parking areas and at a suitable scale and size to accommodate shrub and tree planting. Provide barrier free traffic islands where they are part of the pedestrian circulation system.		X							
		9.0 Landscape Design: Promote the preservation of existing natural features such as watercourses, specimen, trees, hedgerow and woodlot vegetation wherever reasonably possible in an effort to minimize the environmental impact on the site and surrounding areas.	X		X						
		9.0 Landscape Design: K. Tree preservation is promoted through the City of Barrie Tree Cutting By-law 2002-12 and the issuance of tree cutting permits. In situations where the by-law does not apply, it is the intent of these Guidelines that healthy trees be preserved whenever possible, and that no tree removal occur until the site plan is approved.	X			X					
Cambridge	Official Plan	2012	3.A.6 Restoration Areas and Vegetation Management 1. The protection, preservation and restoration of indigenous vegetative cover is a priority for the City. This priority ranges from the protection of significant natural features described in the Natural Heritage System to general vegetative cover across the municipality. Private development and public works projects are seen as opportunities to increase the vegetative cover quantity and quality in the municipality, as well as biodiversity. 2. The City shall require as necessary the preparation and submission of a tree management plan prior to draft approval of a plan of subdivision or site plan approval. Tree management plans submitted to the City shall be prepared in a manner consistent with the “Tree Management Policies and Guidelines for New Developments”. 3. The “Tree Management Policies and Guidelines for New Developments” shall also guide the City in the preservation, protection, management, replacement and possible acquisition of significant tree stands, hedgerows, woodlots and forested areas. They will be applied to tree management practices carried out by the City on City-owned lands. 4. In addition to the “Tree Management Policies and Guidelines for New Developments”, the City will consider other measures, such as the Region’s Woodland Conservation By-law, a local tree protection/preservation by-law under the Municipal Act, designation of heritage trees	X							
			3.B.4 Urban Forest and Biodiversity - 1. The urban forest in Cambridge is the treed environment, consisting of remnant wooded areas, trees in city parks and open space, street trees and trees on private property. The City recognizes the urban forest as providing significant environmental, social, cultural heritage and economic benefits and encourages its protection, restoration, wise management and expansion. 2. The City recognizes the environmental, aesthetic and heritage values associated with trees lining both urban and rural boulevards and streets. As such, the City shall promote and encourage the protection and management of such trees and encourage public authorities and agencies to give due consideration for their protection when undertaking utility projects and regular maintenance. 3. The City shall protect and preserve street trees located within road rights-of-way wherever feasible. Trees removed from an existing road right-of-way due to development or public utilities projects shall be required to be replaced in the same location or in the vicinity wherever possible by the individual or agency responsible for the removal. 4. The City will encourage private landowners to protect and preserve street trees located outside road rights-of-way through investigation of approaches such as tree preservation by-laws, private stewardship, advice from the City’s Forestry Division and Heritage Conservation District Plans. 5. The City encourages individuals and agencies to use indigenous species as appropriate to the locality when planting within or contiguous to the Natural Heritage System because some non-indigenous species are considered unsuitable and invasive. Guidance in maintaining the biodiversity of the Natural Heritage System will be provided through: the Regional list of trees and shrubs suitable for such use; the list of invasive alien herbaceous species; and any relevant City documents such as the “Tree Management Policies and Guidelines for New Developments” and the “Stormwater Management Policies and Guidelines”. 6. Wherever feasible and appropriate, species indigenous to the region will be used in plantings along local roads and on the grounds of City parks and facilities. 7. All development or site alteration requiring the removal of trees shall meet the requirements of the Region’s Woodland Conservation By-law.	X	X						
			4. The City will encourage private landowners to protect and preserve street trees located outside road rights-of-way through investigation of approaches such as tree preservation by-laws, private stewardship, advice from the City’s Forestry Division and Heritage Conservation District Plans.	X							
Design Guidelines							Language regarding street tree minimums (suggestions) but minimal content regarding preservation.		X		

Urban Forest Strategy	2015	49% of the City's current canopy is within protected Open Space designations within the Zoning By-law. The City's properties, especially parks and natural areas, already support a relatively high proportion of canopy cover (with many having 75-100% canopy cover) but still contain some opportunities for canopy cover expansion. The Urban Canopy Assessment (2013) shows that the City owns approximately 18% of the city's total canopy (430.5 ha in properties and 157 ha in right-of-way street trees = 587.5 ha) but that its lands also contain approximately 11% or 308.3 ha of potential plantable spaces. In Cambridge, as in most Canadian communities, approximately 80% of the urban forest canopy is on private lands and owned by many individuals, institutions or agencies.	X		X		
		10. Draft and explore implementing a private tree by-law to expand the City's tool kit for achieving urban forest targets. Implementation Notes: Developing a private tree by-law should not be considered until the City has adequately addressed its more urgent tree maintenance and management issues on its own lands (e.g., EAB). Once these are addressed, a by-law should be drafted and subject to public consultations. Key considerations for this by-law should include: a requirement for tree replacement or compensation (ideally directed towards a City tree fund or account), and for the City to commit additional resources to education, administration and enforcement related to the by-law before it is passed and implemented.	X			X	
		Tree By-laws for Private Property - The Region's Conservation of Trees in Woodlands By-law (2008) regulates all woodlands of at least 1 ha in the city such that a permit is required for any tree-related activities in such features. Notably, because woodlands above 4 ha are designated as "significant" at the Official Plan level, and no development is permitted within them, this by-law really applies to woodlands between 1 ha and 4 ha. Permit exemptions are provided for woodlands with approved management plans. Permits are generally provided for selective cutting in woodlands, as well as partial or entire feature removal "if in the opinion of the Tree By-law Committee, the injuring or destruction of the tree or trees is desirable for the appropriate development or use of the property and the general intent and purpose of this by-law is maintained". However, woodlands between 1 ha and 4 ha identified as Locally Significant Natural Areas in Cambridge would also need special consideration if development is proposed within them, as per the Official Plan policies discussed above. A draft Tree Preservation By-law, developed in consultation with various stakeholders and the community and focusing on trees on private property, was drafted and released for public comment in 2012. Ultimately, the draft by-law was not approved or enacted. The draft by-law was developed to address identified issues related to tree clearing prior to development application submissions and post development protection of trees identified for preservation through the planning process. It was also intended to regulate the removal of trees on private lands, with an emphasis on trees greater than 76 cm dbh. Up to three trees with a dbh between 20 cm and 76 cm dbh could be removed on a given property per calendar year without a permit.	X				
Guelph	2018	4.1 Natural Heritage System - Objectives - g) To protect and enhance tree canopy cover while providing for meadow habitat at appropriate locations to support biodiversity.	X		X		
		4.1.3.10 Restoration Areas - Objectives - c) To provide opportunities to increase the City's tree canopy cover, including areas where tree compensation can be directed.			X		
		4.1.4.3 Cultural Woodlands - Objectives - c) To protect healthy non-invasive trees within Cultural Woodlands.	X				
		4.1.4.3 Cultural Woodlands - Objectives - e) To compensate for loss of trees from Cultural Woodlands, where development and site alteration is permitted.				X	
		4.1.4.3 Cultural Woodlands - Policies - 3. Development and site alteration within or adjacent to a Cultural Woodland shall also require a Tree Inventory and Tree Preservation Plan in accordance with Section 4.2.4.	X				
		4.1.4.3 Cultural Woodlands - Policies - 4. Where development is permitted in all or part of a Cultural Woodland that does not meet the criteria in 4.1.4.3.1 healthy non-invasive trees should be protected to the fullest extent possible.	X				
		4.1.4.3 Cultural Woodlands - Policies - 8. A Vegetation Compensation Plan, in accordance with the policies of 4.1.6.4, shall be required for the replacement of all healthy, non-invasive trees measuring over 10 cm dbh that are proposed to be removed as part of development or site alteration.	X			X	
		4.1.6 Urban Forest - 4.1.6.1 Policies - 1. Healthy non-invasive trees within the urban forest shall be encouraged to be retained and integrated into proposed development. Where these trees cannot be retained, they will be subject to the Vegetation Compensation Plan addressed in Policy 4.1.6.4.	X				
		4.1.6 Urban Forest - 4.1.6.1 Policies - 2. Where the City is undertaking infrastructure work, healthy non-invasive trees within the urban forest will be retained to the fullest extent possible. Where trees are required to be removed, relocation or replacement plantings will be provided by the City.	X				
		4.1.6 Urban Forest - 4.1.6.1 Policies - 4. Tree destruction or removal of trees on private property will be regulated by the City's tree by-law.				X	
		4.1.6.2 Plantations - 2. Development and site alteration within a plantation shall also require a Tree Inventory and a Tree Protection Plan in accordance with Section 4.2.4.	X				
4.1.6.2 Plantations - 3. A Vegetation Compensation Plan shall be required for the replacement of all healthy non-invasive trees measuring over 10 cm dbh, proposed to be removed.	X			X			

			4.1.6.3 Hedgerows and Trees - 1. Development and site alteration may be permitted to impact hedgerows and individual trees provided it has been demonstrated, to the satisfaction of the City, that the hedgerows and trees cannot be protected or integrated into the urban landscape.	X			X	
			4.1.6.3 Hedgerows and Trees - 2. Tree Inventory and Vegetation Compensation Plans shall be required for all new development and site alterations.				X	
			4.1.6.3 Hedgerows and Trees - 3. Heritage Trees may be identified by the City in accordance with the Cultural Heritage Policies of this Plan.	X			X	
			4.1.6.4 Vegetation Compensation Plan - 1. The detailed requirements for a Vegetation Compensation Plan will be developed by the City through the Urban Forest Management Plan. The requirements, once developed, will be applied to determine appropriate vegetation compensation for the loss of trees through development and site alteration.				X	
			4.1.7 Natural Heritage Stewardship and Monitoring - Policies - 4.1.7.1 Invasive Species - 4. Plans prepared in conjunction with development and site alteration applications will require indigenous plants, trees and shrubs except where harsh environmental conditions would limit their survival.		X			
			4.2.4 Tree Inventory and Tree Preservation Plan - 1. Tree Inventory and Tree Preservation Plans shall as a minimum include: i) a Tree Inventory measuring all trees over 10 cm diameter at breast height (dbh), including the size, species composition and health, and indigenous shrubs in accordance with the City's tree inventory guidelines; ii) a Tree Preservation Plan identifying healthy indigenous and non-invasive trees to be protected, including those that may be transplanted (e.g. smaller specimens); iii) the protective measures required for tree protection during construction; and iv) measures for avoiding disturbance to any breeding birds during construction.				X	
			4.8.8 Heritage Trees - 1. The City shall identify, evaluate and conserve heritage trees which satisfy one of the criteria for determining cultural heritage value or interest as prescribed by regulation under the Ontario Heritage Act. 2. Where heritage trees have been identified by the City, they will be protected through appropriate measures under the Ontario Heritage Act while having regard to the health of the tree and public safety.	X			X	
			8.2 Public Realm - 8. The City will maintain a program of tree replacement within its right-of- ways in all areas of the city. 9. The planting of trees, shrubs and groundcover in street medians and shoulders shall be designed to allow for their long term health through the implementation of best practices for planting and maintenance. Planting in street medians and shoulders will generally be undertaken with low maintenance, drought resistant and salt tolerant plant species.	X				
			8.17 Landscaping and Development - 3. Where possible existing trees should be retained on-site and where appropriate suitable new trees should be planted on-site, in the street right-of-way or in other City-approved locations. 4. Where appropriate, trees should be used to help define the image of neighbourhoods, streets and parks.	X	X			
			11.1.6 Energy, Water and The Natural Environment - In addition to supporting the Principles, Objectives and Targets in Section 11.1.2, the intent of the policies below is to: Increase the amount of urban forest tree canopy cover Downtown.					
			11.2.2.4 Urban Forest - 1. The GID includes hedgerows, smaller wooded areas and individual trees that are part of the City's urban forest. Development and site alteration will identify opportunities for: a) Protection, enhancement, compensation and/or restoration of the urban forest; and b) Contributing to maintaining and increasing canopy cover in a manner that respects the cultural heritage landscape and associated public views and public vistas.	X		X	X	
			11.2.5.2 Streets - 4. Opportunities for landscaping within the public right-of-way will be explored and implemented as a means to increase the area's tree canopy and contribute to stormwater management.			X		
Urban Design	By-Law	2010	Part IV - Permit Exemptions (a-n)					X
			Part VI - Issuance of Permits: when deciding to issue permit, inspector shall consider: g) the protection and preservation of ecological systems and their functions, including the protection and preservation of native flora and fauna					X
Urban Design		2017	Neighbourhood Infill and Residential Development: Objectives: 4. Integrate existing natural features into the design of new developments and preserve existing trees as much as possible to help retain the character and value of the neighbourhood.	X	X			

			Natural Heritage and the Urban Forest: Objectives: 3. Maintain and increase tree canopy cover within the city, in accordance with the Urban Forest Master Plan.	X		X			
			Major Roadways: Objectives: Develop a Hanlon Beautification Program in conjunction with the Province and adjacent landowners, that coordinates landscaping projects with capital improvements, identifies annual City initiatives, and encourages landowners to plant native trees along the edge of the highway.			X			
	UFMP	2012	Recommendation # 2 - Create an interdepartmental "Tree Team" of City staff						
			Recommendation # 4 - Undertake targeted vegetation assessment and management of City parks and natural areas			X			
			Recommendation # 6 - Undertake an Urban Tree Cover (UTC) Potential Plantable Spaces Analysis			X			
			Recommendation # 8 - Develop tree risk management policy and train City Arborists in risk assessment	X					
			Recommendation # 9 - Complete State of the Urban Forest report every five years			X			
			Recommendation # 13 - Develop and implement a Public Tree By-law	X			X		
			Recommendation # 16 - Develop a Greening Strategy building on the Potential Plantable Spaces Analysis			X			
			Recommendation # 17 - Track municipal tree removals and plantings	X		X			
			Recommendation # 18 - Expand the City's capacity to undertake tree-related plan review and site supervision	X			X		
			Recommendation # 20 - Pursue targeted urban forest education and outreach						
			Recommendation # 21 - Increase capacity for coordination of volunteers for stewardship activities						
			Recommendation # 22 - Pursue targeted stewardship initiatives, partnerships and funding sources						
Kingston	Official Plan	2010	Urban Areas - Focus of Growth - 2.1.1: where possible, the preservation of mature trees for shade and their other beneficial ecological and community effects		X	X			
			Functional Needs 2.7.6: Only development proposals that meet the long-term needs of the intended users or occupants will be supported. Proponents, whether developing individual buildings on a single site, or multiple buildings being built at one time or phased over time, will be required to demonstrate to the satisfaction of the City that the functional needs of the occupants or users will be met by providing: appropriate landscaping that meets or improves the characteristic green space amenity of the site and surroundings and enhances the City's tree planting program;		X				
			Minimum Forest Cover 2.8.2: Forests and trees are recognized as a critical part of the City's health and character. Kingston will take steps to achieve the Environment Canada guideline of 30 percent minimum forest coverage in the urban area and maintain the existing forest coverage outside the Urban Boundary, as well as achieve a doubling of the urban forest cover by 2025.			X			
			Urban Agricultural and Community Food Centres: 3.8.3 Community-based initiatives such as community gardens, other forms of urban agriculture, and tree planting projects are permitted in all land use designations, subject to site by site evaluation. Not-for-profit community food centres are considered a community facility and are permitted in all land use designations except for an Environmental Protection Area.		X				
			Forest Resources - 3.11.20: Part of the natural heritage system includes significant woodlands, and contributory woodlands, which are shown on Schedule 8 as an overlay on the land use designations shown in Schedule 3. All land owners are encouraged to recognize these forest resources as an integral part of their total agricultural use, both as a source of income from various forest products, and as an important component of soil and water conservation. Landowners are encouraged to: b. retain existing tree cover as much as possible, and particularly in areas of low capability soils, slopes, major drainage swales and flood prone areas to reduce runoff rates and minimize soil erosion; (note: policy 3.12.20 contains the same wording)			X			
			Proposal for New Estate Residential Development - 3.12.17 - Approval of new areas of Estate Residential development is strongly discouraged by Council and, upon review of the following criteria, may be prohibited. Any proposal to expand or designate new Estate Residential areas requires an amendment to this Plan, rezoning, and a plan of subdivision. All applications are required to demonstrate conformity to the following policies through submission of supporting plans and studies as may be required in accordance with						

	Section 9.12 of this Plan, and prepared by qualified persons to the satisfaction of the City: b. the site has tree cover, varied topography or other interesting landscape characteristics suitable for residential development and these qualities are preserved in the proposed development;					
	Alcan District, Schedule 3-D, SSP Number 9 - 3.17.9 - c. Wildlife Habitat Policies New development within the Alcan District is subject to the following policy with respect to wildlife habitat: the preservation of tree and shrub species and corridors is considered in the context of project design to provide amenity for future development, and long- term maintenance of local habitat.	X				
	1150-1202 Division Street (86 Dalton Avenue), Schedule 3-D, SSP Number 18 - 3.17.18 - a. urban setting and site attributes - landscaping and tree planting for any new development, and the use of these to 'break up' any large parking areas. (note: policy 3.17.21 contains the same wording)		X			
	Pedestrian Friendly Streetscapes - 4.6.6 - The City supports the development of convenient, accessible and appealing streetscapes through such measures as providing wide sidewalks, street furniture, trees and amenities, including convenient transit stops.		X			
	Street Trees - 4.6.27 - Development proponents may also be required to provide trees in the street boulevard, or in other locations as approved by the City, as a condition of development approval.				X	
	Street Landscaping - 4.6.28 - The City will augment its program of landscaping and street tree planting and replacement in many parts of the City to enhance the streetscape, particularly within the Urban Boundary.		X			
	Buffering for Future Road Design - 4.6.36 - Adequate buffering in the form of berming, landscaping, fencing, and tree planting will be required as part of any future road design to minimize the potential impacts of any new road extension or road improvement. Native species of trees are also encouraged as a means to increase tree coverage.		X	X		
	Front Yard Parking in Existing Residential Area - 4.6.60 - The review of requests to establish front yard parking spaces must address the following criteria: the residual portion of the front yard shall be landscaped and consist of grass or similar groundcover, trees, or shrubs to provide for suitable streetscape enhancement, buffering from adjacent properties and visual relief from the paved areas;		X			
	Tree Conservation - 6.1.19 - Trees are recognized as a resource that improves community resilience since they contribute to air quality improvement, and have aesthetic benefits, quality of life benefits, financial benefits, and stormwater management benefits. The City will manage the urban forest as per Section 2.8.2 and with reference to the long term management plan established through Kingston's Urban Forest Management Plan.			X		
	6.1.20 - Trees will be protected in accordance with the City's Tree By-law. The City will monitor and review the Tree By-law to ensure its provisions are up-to date and provide adequate protection.				X	
	Policies (General) 6.2.2 - The City promotes landscaping and tree planting programs that help to moderate summer and winter micro-climatic conditions.			X		
	Old Sydenham Heritage Conservation District - 7.3.C.9 - a. The District is a stable, pedestrian-focused historic neighbourhood of human scale which is a significant cultural heritage resource to be conserved and protected from proposed changes that could undermine its heritage attributes. Its heritage attributes include the following: tree-lined streets and dominating rear yards;	X				
	King Street West Heritage Character Area - 7.3D.2 - "... Planning for the roadway and first tier of lots abutting the roadway requires: f) preserving and supplementing mature tree cover wherever possible through a program of tree replacement.	X				
	Gateways to the City - 8.11.2 - Along individual corridors, the City will develop an appropriate streetscape for the corridor through the implementation of public works, site plan control review, and through the effort of individual owners by providing such features as tree plantings, gardens, boulevards, public and private signage, and where feasible, underground utilities.		X			
	Tree By-law - 9.5.41 - The City will continue to enforce and monitor its by-law to prohibit or regulate the destruction or injury of trees within the municipality, in accordance with the provisions of the Municipal Act.				X	
	9.12.13 - Development Applications: Additional Information - Studies and Assessments - d) The additional information or material that may be required includes, but is not limited to, the following: Tree Inventory; Tree Preservation & Protection Plan;	X			X	
	Design Guidelines - 10B.2.11 - When considering new residential development, the following design guidelines apply: g) the preservation of existing trees, woodlots, and new tree plantings along streets.	X				

		10B.6 Open Space Policies - e) in reviewing proposed developments, the intent of this Plan is to ensure that: existing woodlots and trees are assessed and preserved where appropriate; and, additional tree planting, especially along streets, is provided;	X	X			
		Baxter Farm Subdivision, SSP Number RC-1-2 -10B.13.2.2 - In conjunction with Section 10B.6, Open Space Policies, for the lands shown as Open Space on Schedule RC-1 and located between the Environmental Protection Area designation and the Low Density Residential designation the following policies will also apply: a. the permitted uses will include open space, parklands, a stormwater management facility, and a tree preservation area; b. within the tree preservation area native trees will be promoted and left largely undisturbed; d. buildings, structures, pathways or other facilities will not be permitted within the defined tree preservation area.	X				
		10C. Cataraqi North Secondary Plan - 10C.1.7 To encourage the preservation of significant features of the natural environment, such as watercourses and stands of mature trees, and integrate such resources into proposed developments, wherever possible.	X				
		10C.1.13 - To implement a tree planting program that is consistent with municipal policy.		X	X		
		10C.8 Transportation Policies - 10C.8.1 Though Schedule CN-1 does not show local roads, it is intended that local roads will accommodate automobiles, public transit, all modes of active transportation, service vehicles and other supporting features such as parking, laneways, loading areas, street furniture and tree planting.		X			
		10C.9 Development Policies - 10C.9.2 The location of roads and land uses will reflect the natural environment, specifically: c) appropriate species of deciduous trees are planted along the boulevards of key streets throughout the neighbourhood to provide, ultimately, a continuous tree canopy that will enhance natural habitats and serve as connecting links to open space and other natural areas;					
		10D.1 Cataraqi West Goal and Objectives - 10D.1.2. Secondary Plan Objectives - j) encourage tree preservation practices so as to enhance the existing natural environment and the aesthetics of the built environment;	X				
		10D.10.1. Natural Environment - Every reasonable effort will be made to ensure that development proposals contribute to an environmentally-sensitive, healthy, urban setting. Specifically: b) appropriate species of deciduous trees will be planted in the street boulevards throughout the neighbourhood to provide, ultimately, a continuous tree canopy to enhance wildlife habitat and serve as connecting links with open space and other natural areas. All tree planting, removal and replacement works must be undertaken in accordance with the City's Tree By-Law;			X		
		Boulevards - 10E.1.14 The following policies apply to the Williamsville Main Street boulevard: c) Wherever possible, the boulevard should contain a linear planting of street trees in clustered tree trenches to encourage longevity and viability. Street tree locations should be coordinated with utilities to minimize root pruning during utility maintenance and to ensure optimum tree growth.		X			
		Green Streets - 10E.1.21 Green streets are defined as tree-lined corridors that create important visual links and enhance pedestrian and cyclist connections between areas within and surrounding the Williamsville Main Street. Green streets should incorporate healthy tree planting practices in order to ensure the longevity of trees and the creation of street canopies. Planting should include double rows of trees on both sides of the street wherever possible, with enhanced landscape treatments where appropriate.		X			
		Low Density Residential Policies - 10F.3.9 When considering new development within the Low Density Residential designation, the following design guidelines apply: a. Site Design and Building Orientation - Every effort should be made to retain existing mature trees in this area.	X				
		Medium Density Residential - 10F.3.13 Medium Density Residential areas shall be compatible with the character of the Heritage Landscape designation and enhanced through the preservation and/or planting of mature trees and shrubs along roadsides, pathways and on residential properties. (note: this policy is the same for Low Density Residential and High Density Residential)					
		10F.4 Mixed Use Policies - 10F.4.8 Mixed Use areas shall be compatible with the character of the Heritage Landscape designation and enhanced through the preservation and/or planting of mature trees and shrubs along roadsides, pathways and on residential properties.	X	X			
		10F.6 Heritage Landscape Policies - 10F.6.11 - 19th century plantings of specimen trees that are now in a mature state should be maintained to conserve these important cultural heritage resources	X				
Tree By-Law	2017	Whereas Council deems it to be desirable to enact a Tree By-Law for the purposes of: (a) Regulating and controlling the removal, maintenance, and protection of trees and woodlands. (b) Controlling the clear cutting of trees. (c) Supporting the City's Strategic Plan and the goal of intensifying the city's urban forest. (d) Achieving the objectives of the city's Official Plan by sustaining a healthy, natural environment. (e) Protecting and enhancing the biodiversity of woodlands, wildlife habitat, and related ecological					X

		functions. (f) Promoting Good Forestry Practices and Good Arboricultural Practices that sustain healthy woodlands and tree coverage. (g) Contributing to human health and quality of life. (h) Mitigating greenhouse gas emissions and reducing the effects of climate change.						
		Application of the By-Law 2. This By-Law pertains to all lands within the geographic limits of the City of Kingston which include the Urban Area and Rural Area as shown on Schedule B and shall apply to: (a) The Injury or Destruction of Trees that are 15 centimetres or greater in Diameter at Breast Height;					X	X
		Permit Application Process: 8. Every Person that intends to Injure or Destroy a Tree, either personally or through another Person, shall: (c) Where prescribed by this By-Law or required by the Director, submit an Environmental Impact Assessment (EIA). The EIA shall be prepared by a Qualified Person and shall include the following: (i) A description of the proposal and rationale for undertaking the Tree removal activity where proposed (ii) A survey illustrating the legal boundaries of the property, any easements, rights-of-way or other encumbrances; (iii) An inventory and description of the key features present and their significance, including a reference to all Natural Heritage Features and Areas and their associated Ecological Functions; (iv) A professional opinion by the Qualified Person as to whether the proposal is acceptable considering potential impacts to Natural Heritage Features and Areas and their Ecological Functions taking into account the relevant policies of the Provincial Policy Statement and the Official Plan; and (v) A description of any mitigation required to protect the Ecological Function of identified Natural Heritage Features and Areas. (d) Where required by the Director, submit a report prepared by a Certified Arborist setting out the reasons for the proposed Injury and/or Destruction of the Tree(s) and the Tree Preservation and Protection Plan for any Trees to be retained. The report shall be prepared in accordance with the City of Kingston’s Guidelines for the Completion of an Arborist Report and the Guidelines for Tree Preservation and Protection.					X	X
		Permit Conditions 12. (1) The Director may impose any conditions on a Tree Permit that are reasonable, which may include, but are not restricted to: (a) Measures that will ensure the Injury or Destruction of a Tree(s) is carried out in accordance with Good Arboricultural Practice and Good Forestry Practice, which may include limitations on the manner and timing of the Injury or Destruction; (b) Conditions recommended by a Qualified Person through the completion of an Environmental Impact Assessment (EIA) or other technical evaluation; (c) Mitigative measures to protect against the Injury or Destruction of a Tree(s) that is not subject to removal, which may include the identification of Tree Zones; (d) A requirement to prepare additional technical documentation that will be used to validate the appropriateness of issuing a Tree Permit and may include: an Environmental Impact Assessment; Landscaping, Replanting and Replacement Plan; a Sivicultural Prescription; a Forest Management Plan; and/or a Tree Preservation and Protection Plan; (e) A requirement to provide compensation in accordance with Section 17 of this By-Law; (f) A requirement to enter into an agreement with the City which sets out the Owner’s obligations to replace Trees and any conditions imposed in accordance with this By-Law; and, (g) A requirement to provide financial security for the performance of the Owner’s obligations under the agreement.						X
		Compensation: 3) When replacement Trees can be accommodated on the property, the quantity, species and size of replacement Trees shall be equivalent in value to the value of the Tree(s) Injured or Destroyed as a result of the issuance of the Tree Permit. The City will require financial securities when replacement Tree(s) are proposed in association with a Tree Permit.						X
Design Guidelines - Communities	2015	5.6 Boulevards and Sidewalks: h. Plant street trees within the Street Furniture and Landscape Zone (refer to Figure 5-13). Use double rows of trees in key areas where space allows, such as next to open spaces and wider boulevards. See the Street Trees section for further details.		X				
		5.6 Boulevards and Sidewalks: k. Expand sidewalk widths where pedestrian activity is concentrated. At neighbourhood hubs, design sidewalks as high quality spaces that include street furniture, street trees, special paving, signage, public art and seasonal banners.		X				
		5.7 Traffic Calming: d. Incorporate treed bump-outs in combination with on-street parking. Strategically placed along the side of the roadway, these elements force drivers to slow down by narrowing the traffic lane.		X				
		5.9 Street Trees - a) Plant street trees at regular intervals to create a street canopy that will integrate them as a major component of all streets. Mature street trees provide shade for pedestrians, slow traffic, reduce the urban heat island effect, enhance the visual and environmental qualities of the street, increase land value, and provide a buffer between the pavement, sidewalk and buildings. b) Locate street trees within the street furniture and landscape zone and offset them from the curb to accommodate snow storage, large vehicle movements, and to minimize salt damage, and to allow for enough room for when the trees reach physical maturity. c) Provide adequate soil volume for trees in hard boulevard surface environments and ensure that utility trenches are placed away from the growing space needed for proper street tree establishment. d) Preserve existing street trees wherever possible, as mature street trees create a greater sense of enclosure along streets.e) Use trees to create canopy and shade especially in parking areas and passive open space areas. Trees should be spaced to allow ‘filtered’ views for security purposes. f) Consider the type and location of trees to avoid interference between higher branching trees and truck traffic, sight lines, utilities, rooftop solar panels, etc. g) Incorporate a variety of native tree species. Using only one type of tree increases the risk of tree loss to disease or infestation (e.g. emerald ash borer, Dutch elm disease).	X	X	X			
		6.1 On-Street Parking - d. Landscape curb extensions with street trees or low level ground cover and design them to accommodate snow storage.		X				



			6.3 Surface Parking - e. Preserve sightlines to surface parking areas and primary building façade, but screen parking with softened views at sidewalk level by using landscaping such as trees and shrubs, or other interesting visual features. Incorporate CPTED principles including an easily observed location, natural view corridors, and coordinated landscaping and lighting.		X			
			6.3 Surface Parking - h. Provide landscaping that is proportionate to the overall parking lot size, using approximately 1 tree for every 8 parking spaces. Use plant materials with appropriate year- round appearance, hardiness, and maintenance requirements. Landscaping improves edge conditions and minimizes visual impact, surface water runoff and heat island effects. Define areas for accommodating snow storage.		X		X	
	Design Guidelines - Residential	2015	4.1 Building Orientation and Configuration: f. Preserve mature on-site trees, wherever possible, by locating structures in areas where existing mature vegetation is not affected.	X				
6.10 Heritage Considerations: j. Protect site elements and features, such as large mature trees, wrought-iron fencing, stone walls, and stone paving.			X					
7,3 Surface Parking lots - b. Preserve sightlines to surface parking areas, but screen parking with softened views at sidewalk level by using landscaping such as trees and shrubs, or other interesting visual features.				X				
7.3 Surface Parking lots - h. Provide tree landscaping that is proportionate to the overall parking lot size, with generally 1 tree for every 8 parking spaces.				X		X		
9.1 Landscaping: d. Assess and retain existing landscape features of environmental and ecological value. Protect and incorporate existing trees, tree stands, and vegetation. Where trees are to be removed, it should be shown that alternative measures such as pruning are impractical, and suitable replacement trees should be planted and maintained elsewhere on the site, wherever possible. e. Plant new trees to contribute to the City's existing tree canopy. Plant new trees where the rhythm of existing trees is interrupted to infill and maintain a continuous canopy. Incorporate a variety of tree types to protect against major deforestation in the event of a species-specific affliction. f. Use trees to create canopy and shade especially in parking areas and passive open space areas. Trees should be spaced to allow 'filtered' views for security purposes. g. Locate deciduous trees to shade windows of dwellings to reduce cooling costs in the summer. Locate coniferous trees to create barriers protecting structures from prevailing winter winds. k. Create an attractive sidewalk edge by planting trees, shrubs, hedges, ornamental plantings and groundcover adjacent to the street and sidewalk, but not within the municipal right-of-way. Select hardy, salt-tolerant, native plant material that can thrive in stringent urban conditions. Position and maintain landscaping such that pedestrian passageways, sight-triangles and entrances are clear of obstacles.			X		X			
Kitchener	Official Plan	2014	7.C.2.1. The Natural Heritage System includes all the natural heritage features which have been identified by the Kitchener Natural Heritage System Technical Background Report for protection, conservation, restoration and/or enhancement. The features of the Natural Heritage System include but are not limited to the following: g) Significant Woodlands; h) Locally Significant Woodlands	X				
			7.C.2.3. Illegal acts resulting, or having resulted, in a reduction in the form or function of a natural heritage feature, including but not limited to such acts as tree removal, wetland filling or draining, or the diverting of watercourses, will not be recognized as existing conditions within the development review process. Restoration of the damaged area may be required prior to, or as a condition of, approval of any development applications.	X			X	
			The removal, destruction or injuring of woodlands and/or trees will be regulated through the City's Tree Conservation By-law.	X				
			7.C.2.23. Development, redevelopment or site alteration will only be permitted on lands adjacent to the Natural Heritage Conservation features where an Environmental Impact Study or other appropriate study has determined to the satisfaction of the City, Region, Grand River Conservation Authority and/or Province, as appropriate, that approval of the proposed development, redevelopment or site alteration would not result in adverse environmental impacts on the natural heritage feature or the ecological functions of the feature.	X				
			8.C.2.1. The City will preserve, protect, manage, replace and where appropriate acquire significant tree stands, hedgerows, woodlands and forested areas within the city boundaries	X	X			
			8.C.2.2. The City, in accordance with the Parks Strategic Plan, will develop an Urban Forest Management Strategy including a tree inventory and an update of the Woodland Management Program.	X				
			8.C.2.4. The City, in accordance with the Parks Strategic Plan, will implement a tree planting and replacement program and support natural area and urban woodland retention and maintenance.	X				
			8.C.2.6. The City will incorporate existing and/or new trees into the streetscape or road rights-of-way and encourage new development or redevelopment to incorporate, protect and conserve existing healthy trees and woodlands in accordance with the Urban Design Policies in Section 11, the Urban Design Manual and the Development Manual.	X				

			8.C.2.12. The City will encourage the reforestation, wise management and improvement of privately owned trees and woodlands within the City.	X				
			8.C.2.13. Tree removal on private property will be subject to the City Tree Conservation By-law where applicable.	X				
			8.C.2.15. The City may require existing trees and vegetation to be retained through the Site Plan Approval process to act as buffers to minimize potential adverse effects to sensitive natural areas.	X				
			8.C.2.16. The City will require the preparation and submission of a tree management plan in accordance with the City's Tree Management Policy, where applicable, as a condition of a development application. Any tree management plan must identify the trees proposed to be removed, justify the need for removal, identify the methods of removal and specify an ecologically sound tree replacement scheme and any mitigative measures to be taken to prevent detrimental impacts on remaining trees.	X				
			8.C.2.17. The City will consider the importance of woodlands, not classified as significant, during the development review process by considering the following: [...]	X		X		
			8.C.2.18. The City will minimize the impact of development, redevelopment or site alteration on woodlands, not classified as significant through the implementation of appropriate mitigation measures, which may include compensation.	X		X		
			8.C.2.19. When considering development, redevelopment or site alteration proposals, the City may require the protection and enhancement of hedgerows, especially where: a) they link other elements of the Natural Heritage System; b) wildlife regularly use them as habitat or movement corridors; c) they are composed of mature, healthy trees; d) they contain trees that are rare, unique, culturally important or over 100 years in age; or, e) they contribute to the aesthetics of the landscape.	X		X		
By-Law	2011		692.2.1 Injury to trees - prohibited - without permit - No person shall injure or cause or permit the injury of a tree or trees within the City without a permit.	X				
			692.4.1 Land less than 1 acre - In addition to Article 3, the provisions of this Chapter do not apply to the removal of a tree or trees situated on land less than 0.405 hectares in size.	X				
			692.4.4 Tree - within 5 metres of occupied building - In addition to Article 3, the provisions of this Chapter do not apply to the removal of trees located within 5 metres of an occupied building.	X				
			692.4.6 Small trees - In addition to Article 3, the provisions of this Chapter do not apply to the removal of trees with a DBH less than 10 centimetres.	X				
			692.7.1 To Director - information - fee - required - Subject to Articles 2, 3 and 4 respectively, every person that intends to injure a tree personally or through another person is required by this Chapter to apply to the Director for a permit by submitting all of the information necessary to determine compliance with this Chapter and paying the fee prescribed.	X			X	
			692.9.1 Set out - A permit may be subject to conditions imposed by the Director, which may include requirements for: (a) the submission of landscaping or restoration plans and associated maintenance plans; (b) requiring that replacement trees be planted; (c) the undertaking of tree cutting work only under the supervision of an arborist; (d) as to the manner and timing in which injury is to occur; or (e) as to the species, size, number and location of trees to be injured.	X				
			692.14.1 Fine - for contravention - person - Any person other than a corporation who contravenes any provision of this Chapter, the terms or conditions of any permit, or an order issued under this Chapter, is guilty of an offence and is liable: (a) on a first conviction, to a fine not exceeding \$25,000; and (b) on any subsequent conviction, to a fine not exceeding \$50,000. 692.14.2 Fine - for contravention - corporation A corporation that contravenes any provision of this Chapter, the terms or conditions of any permit, or an order issued under this Chapter, is guilty of an offence and is liable: (a) on a first conviction, to a fine not exceeding \$50,000; and (b) on any subsequent conviction, to a fine not exceeding \$100,000. 692.14.3 Fines - exclusive of costs - The fines set out in Sections 692.14.1 and 692.14.2 are exclusive of costs and are collectible pursuant to the Provincial Offences Act.					X
Urban Design Manual	2019		Design Standard 13.0 LANDSCAPE AND NATURAL FEATURES. Language throughout pertaining to the retention and incorporation of trees into urban design, but pertaining primarily to the development of subdivisions.	X	X			
U F M S	2 0		Visions 14 - Work with the community to develop a non-profit tree planting and stewardship program to maintain and/or increase the tree canopy on private and public lands.	X				

			Action 11 - Conserve and protect the urban forest prudently on public and private lands to maximize current and future benefits while minimizing costs and risks. The first action required to conserve and protect the urban forest is to increase community awareness on this issue through education. A review and potential update of existing bylaws and policies that protect city trees, their soil habitat natural areas, and private trees is required.	X				
Mississauga	Official Plan	2019	4.5 Achieving the Guiding Principles - Value The Environment - Mississauga has natural areas of exceptional beauty and quality. Mississauga will serve as a steward of the environment by protecting, enhancing, restoring and expanding its Natural Heritage System, making use of sustainable green infrastructure, and preserving and protecting trees.	X				
			5.3.1 Downtown - [...] Opportunities to enjoy nature in a variety of urban open spaces that include trees and other natural elements will be provided. [...]		X			
			6.2 Living Green - Individual sites and portions of the public realm can contribute to the health of the environment by incorporating measures such as: planting trees;			X		
			6.2.12 Mississauga will encourage tree planting on public and private lands and will strive to increase the Urban Forest canopy.			X		
			6.3.7 Buffers which are vegetated protection areas that provide a physical separation of development from the limits of natural heritage features and Natural Hazard Lands, will be provided to perform the following: - protection of tree root zones to ensure survival of vegetation; - provision of a safety zone for tree fall next to woodlands;			X		
			6.3.19 Development proposals and site alteration for lands within a Residential Woodland will have regard for how existing tree canopy and understorey are protected, enhanced, restored and expanded. A site development plan may be required to demonstrate how the following, among other matters, have been addressed:	X			X	
			6.3.24 The Natural Heritage System will be protected, enhanced, restored and expanded through the following measures: a. ensuring that development in or adjacent to the Natural Heritage System protects and maintains natural heritage features and their ecological functions through such means as tree preservation, appropriate location of building envelopes, grading, landscaping, and parking and amenity area locations;	X				
			6.3.39 The Urban Forest is composed of wooded areas within the Natural Heritage System and individual trees on public and private property.				X	
			6.3.42 Mississauga will protect, enhance, restore and expand the Urban Forest. This will be achieved by the following: a. developing and implementing a strategic planting program, specific to distinct geographic areas within the city; b. developing and implementing a strategic pro- active maintenance program pertaining to trees on public land; c. providing sustainable growing environments for trees by allocating adequate soil volumes and landscaped areas during the design of new development and infrastructure projects; d. developing and implementing consistent standards for tree protection and planting across the city; f. increasing tree canopy coverage and diversity, by planting trees appropriate to the location and avoiding the use of non-native tree and shrub species that are invasive; g. regulating the injury and destruction of trees on public and private property; k. compliance with by-laws pertaining to tree preservation and protection.	X			X	
			6.3.43 The preservation of trees and woodlots on public and private property that serve to connect and enhance the overall vegetative system and improve wildlife habitat will be encouraged.	X				
			6.3.44 Development and site alteration will demonstrate that there will be no negative impacts to the Urban Forest. An arborist report and tree inventory that demonstrates tree preservation and protection both pre and post construction, and where preservation of some trees is not feasible, identifies opportunities for replacement, will be prepared to the satisfaction of the City in compliance with the City's tree permit by-law.					X
			6.3.45 Where tree replacement cannot be accommodated on-site, the City may require cash-in- lieu for replacement trees elsewhere or replacement plantings at a location approved by the City.					X
			6.3.81 Wherever possible, significant treed areas throughout Mississauga will be incorporated into the Public Open Space network. Where appropriate, these areas will be retained in a natural condition or be permitted to regenerate to assume a natural state. Active recreation will be restricted to lands that have been specifically acquired and developed for such purposes.	X				
			7.6.1.2 Built form within Intensification Areas should provide for the creation of a sense of place through, among other matters, distinctive architecture, high quality public art, streetscaping (including street trees), and cultural heritage recognition.		X			
7.4.1. Cultural Heritage Resources - Mississauga's cultural heritage resources reflect the social, cultural and ethnic heritage of the city and, as such, are imperative to conserve and protect. Cultural heritage resources are structures, sites, environments, artifacts and traditions that are of cultural, historical, architectural, or archaeological value, significance or interest. These include, but are not limited to: environments such as landscapes, streetscapes, flora and fauna within a defined area, parks, heritage trails and historic corridors;	X							

	8.3.1.1 The City will design its roads in a manner that: c. minimizes the disruption to the Natural Heritage System and preserves, where appropriate, existing tree canopies;	X				
	9.2.1.36 Streetscape improvements including trees, pedestrian scale lighting, special paving and street furniture in sidewalks, boulevards, open spaces and walkways, will be coordinated and well designed.		X			
	9.2.2.3 While new development need not mirror existing development, new development in Neighbourhoods will: f. preserve mature high quality trees and ensure replacement of the tree canopy; and	X				
	9.3.3.11 Lands fronting, flanking and/or abutting Mississauga Road, between the Canadian Pacific Railway, located south of Reid Drive, and Lakeshore Road West, are part of a designated scenic route. These lands will be subject to the following: i. tree preservation and enhancement will be required on public and private lands in order to maintain existing trees;	X				
	9.5.2.2 Developments will be sited and massed to contribute to a safe and comfortable environment for pedestrians by: d. providing opportunities for weather protection, including awnings and trees.		X			
	9.5.2.5 Development proponents may be required to upgrade the public boulevard and contribute to the quality and character of streets and open spaces by providing: a. street trees and landscaping, and relocating utilities, if required;		X			
	9.5.2.11 Site development will be required to: f. preserve significant trees on public and private lands;	X			X	
	9.5.5.3 Where surface parking is permitted, the following will apply. Parking should: b. incorporate stormwater best management practices, such as, permeable paving, bio-retention areas and tree clusters; f. have appropriate landscape treatment including trees and lighting, throughout parking lots;		X	X		
	10.6 Infrastructure and Utilities - 10.6.7 The preservation of existing trees and the planting of new trees will be given priority and coordinated with utility placement within the public boulevard.	X				
	10.7 Energy and Power Generation - 10.7.6 Mississauga encourages the creation of innovative strategies such as green site design and green buildings, which utilize technology such as green roofs, white roofs and the use of the urban tree canopy to achieve energy efficiencies.			X		
	12.4.1.9 Public Realm: The Design of the Public Boulevard - The following features should be encouraged to reduce the perceived visual width of the street and improve the level of pedestrian comfort, safety and convenience within the public boulevard: f. provision of street trees, feature lighting and related pedestrian amenities.		X			
	13.3.5.1 Living Green - 13.3.5.1.1 To achieve a sustainable community, development will be designed to include sustainable measures such as: planting trees;		X			
	13.3.7.1.5 Streets will be designed to incorporate active transportation and provide views to the waterfront. Lakefront Promenade, Street 'I', Hydro Road/Street 'J' and Street 'K' will be designed with enhanced streetscapes that may include among other things, wide sidewalks, street trees, planting, furniture.		X			
	13.3.8.2.1 Development master plans will provide direction and contain built form guidelines to be prepared to the City's satisfaction, addressing issues including, but not limited to: d. use of public and private open spaces to accommodate innovative stormwater best management practices, including low impact development techniques, reinforce view corridors, enhance the aesthetic quality of the area, increase the tree canopy, and enhanced connections (i.e. connections to the adjoining street network);			X		
	13.3.8.2.1 - g. streetscape and upgraded boulevard treatments that provide appropriate setbacks to reflect planned function, minimize vehicular access points, create an attractive public and private realm and provide opportunities for tree planting;		X			
	14.7.2.2.2 Notwithstanding the provisions of the Residential High Density and Convenience Commercial designations, the following additional policies will apply: a. a concept plan for all or part of this site may be required and will address, among other matters, the following: preservation of all mature trees and other significant natural features; and	X				
	14.10.1.8 The established residential character of the areas generally located along Queen Street South, south of Barry Avenue, will be maintained through appropriate building masses, setbacks, intensive landscaping, streetscapes with many mature trees, and a regular street grid pattern.	X				
	14.10.6.1.5 Sufficient on-site parking, which will consist of only surface parking, as required by the Zoning By-law, should be provided in the rear yard only at grade without removal of existing trees, except at the discretion of the City arborist.	X				

	15.5.2.2 To achieve and enhance the campus like setting, the following design guidelines will be used to evaluate development proposals: d. landscape design should incorporate the following: a consistent pattern of trees lining the streets to unite the elements of the open space system and refresh the green identity within Sheridan Park Corporate Centre;		X			
	15.5.2.2 To achieve and enhance the campus like setting, the following design guidelines will be used to evaluate development proposals: e. large expanses of surface parking will be softened by landscaped islands with canopy trees;		X			
	15.2.2.1.1 The lands identified as Special Site 1 are located north of Eglinton Avenue West, south of Matheson Boulevard East, east of the Etobicoke Creek, to Explorer Drive and all lands east of Explorer Drive: c. Pedestrian Connections: Development will promote pedestrian movements to and from transit stations through the local streets and publicly accessible private pedestrian connections or private open space areas (plazas). The location, size and character of the publicly accessible connections will be determined during the site plan review process having regard for the following: streetscape improvements will be coordinated and well designed, including trees, pedestrian scale lighting, special paving and street furniture on sidewalks, boulevards and important pedestrian and publicly accessible open space areas and walkways;		X			
	15.2.2.1.1 [...] - c. Pedestrian Connections: [...] the site plan review process having regard for the following: parking areas will have appropriate landscape treatments, including trees and lighting, throughout parking lots and along their edges, in order to improve the appearance of the parking areas, to contribute to the visual continuity of the street edge. Parking areas should also incorporate defined pedestrian routes for safe and convenient pedestrian movement to building entrances and other destinations to encourage the safe use of these spaces;		X			
	15.3.1.2 The purpose of the following urban design policies is to define principles for the physical form and character of Hurontario Street: b. encourage a high standard of public and private realm streetscape design that is coordinated and comprehensive, particularly at Major Transit Station Areas, which includes street furniture, public art, building forecourts, open space, transit shelters, bicycle parking, tree planting, and the sensitive placement of utilities with consideration for the public and private realm;		X			
	15.5.2.1 A business park within a natural setting creates the identity of Sheridan Park Corporate Centre that distinguishes it from other office parks. The campus like setting is achieved by a combination of public and private open spaces of various sizes, forms and functions. To achieve the City's urban design objectives for Sheridan Park Corporate Centre, development proposals should address the following: g. a Streetscape Master Plan will be prepared to coordinate street tree planting and right-of-way design.				X	
	15.5.2.2 To achieve and enhance the campus like setting, the following design guidelines will be used to evaluate development proposals: d. landscape design should incorporate the following: a consistent pattern of trees lining the streets to unite the elements of the open space system and refresh the green identity within Sheridan Park Corporate Centre;		X			
	16.22.3.1.2 Notwithstanding the provisions of the Residential Low Density I designation of this Plan, the following additional policies will apply: a. a concept plan for all or part of this site may be required and will address, among other matters, the following: preservation of mature trees and other significant natural features; and	X				
	16.22.3.2.2 Notwithstanding the provisions of the Residential Medium Density designation, the following additional policies will apply: a. a concept plan for all or part of this site may be required and will address, among other matters, the following: preservation of all mature trees and other significant natural features; and	X				
	16.24.1.3 The established residential character of the areas generally located along Main Street east of Church Street and along Queen Street South, south of Barry Avenue, will be maintained through appropriate building masses, setbacks, intensive landscaping, streetscapes with many mature trees, and a regular street grid pattern.		X			
	16.24.5.1.5 Sufficient on-site parking, which will consist of only surface parking, as required by the Zoning By-law, should be provided in the rear yard only at grade, without removal of existing trees, except at the discretion of the City arborist.				X	
	16.2.4.3.2 Notwithstanding the provisions of the Office designation, apartment dwellings in accordance with the Residential High Density designation, will also be permitted and the following additional policies will apply: b. approval for development will be subject to approval of a tree survey submission which demonstrates appropriate tree preservation measures.				X	
	16.2.4.4.3 Approval for development will be subject to approval of a tree survey submission which demonstrates appropriate tree preservation measures.				X	
	16.4.2.2.1 The lands surrounding the intersection of Thomas Street and Tenth Line West will form a community focus for the city through the development of a retail commercial facility and Residential High Density development. The form of development is to allow for transition of conventional dwellings to mixed uses with store fronts addressing main streets to achieve an urban character with a pedestrian friendly environment: [...] incorporation of measures such as landscape space, planters or tree grates; or other elements which reinforce the urban street wall; (NOTE: The same wording is also found in policies 16.4.2.5.1 and 16.4.7.4.2)		X			

	16.5.1.4 For development of all detached dwellings on lands identified in the Site Plan Control By-law, the following will apply: h. preserve existing mature high quality trees to maintain the existing mature nature of these areas;	X				
	16.5.3.1 Notwithstanding the Natural Heritage System policies of this Plan concerning residential woodlands, sites with mature trees will be subject to a review of a tree preservation plan prior to consideration of proposed development.				X	
	16.6.5.4.2 Notwithstanding the policies of this Plan, the following additional policies will apply: i. existing high quality trees will be preserved to maintain the existing mature nature of these areas;	X				
	16.6.5.7.2 Notwithstanding the policies of this Plan, the following additional policies will apply: j. existing high quality trees will be preserved to maintain the existing mature nature of the area.	X				
	16.7.3.1.2 Notwithstanding the provisions of the Residential Low Density II designation, the following additional policies will apply: b. new development will be subject to site plan approval to ensure compatibility with the heritage structure and the preservation of mature trees and other significant natural features.				X	
	16.9.2.2.2 Notwithstanding the provisions of the Residential Low Density I designation, the following additional policies apply: h. preserve existing mature high quality trees to maintain the existing mature nature of these areas; and	X				
	16.15.1.1 The following principles should be encouraged during the evaluation of any development proposal: [...] There is a strong character of modest one to one and a half storey residential structures, mature trees and consistent setbacks.		X			
	16.17.2.4 A concept plan may be required as part of the processing of any development application to illustrate the location of existing trees, the road and lotting pattern and connections to adjacent developments. Appropriate land assembly may be encouraged to achieve the objectives of this Plan.				X	
	16.17.2.12 The rural village character of the Heritage Conservation District must be maintained; for example, the small houses with complex massing, the generous front, rear and side setbacks, the many mature trees and the irregular topography. These provisions should also guide new development in close proximity to the Heritage Conservation District.		X			
	16.17.2.13 The horizontal and vertical road alignments of existing roads within the Heritage Conservation District should be preserved with no widenings or significant changes to existing grades to ensure the preservation of existing hedgerow trees and Village character.		X			
	16.17.2.14 The ditched cross-sections of existing roads within the Heritage Conservation District should be maintained to retain character and to avoid disrupting the existing drainage pattern and thus affecting the health of existing trees; reconstruction of these roads to a curb and gutter cross-section will require an amendment to this Plan.		X			
	16.17.2.19 A concept plan will be required as part of the processing of any development application to illustrate the location of existing trees, the road and lotting pattern, connections to adjacent developments, existing and proposed grading, building envelopes, and garage locations.				X	
	16.17.2.20 The Precinct includes a progression of spaces and landscape features to define the edge of the Village; development near these gateways should enhance them and be in harmony with the character of the Village. The progression of spaces leading to the Village starts with a streetscape which is loosely enclosed by buildings or tree planting, followed by a streetscape which is enclosed by a canopy of trees which marks the entrance to the Village.		X			
	Infill House - 16.18.1.1 For development of all detached dwellings on lands identified in the Site Plan Control By-law, the following will apply: h. existing trees, large groupings or areas of vegetation and landscape features such as retaining walls, fences, hedgerows, etc. should be preserved and enhanced, along with the maintenance of topographic features and drainage systems;	X				
	16.18.1.2 On lands adjacent to Hurontario Street, the existing mature vegetation, well landscaped appearance and generous setbacks will be maintained to reflect area character. As Hurontario Street is a gateway to the Character Area, as well as Port Credit, consideration should be given to: additional tree planting, a sodded boulevard, a bicycle route and a right-of-way design that is sympathetic to the character of the area.		X			
	16.18.1.3 On Mineola Road East and West, consideration should be given to additional tree planting.		X			
	16.22.3.1.2 Notwithstanding the provisions of the Residential Low Density I designation of this Plan, the following additional policies will apply: preservation of mature trees and other significant natural features; and	X				

Urban Design Guidelines - New Dwellings, Replacement Housing and Additions	Private Tree Protection By-Law	16.22.3.2.2 Notwithstanding the provisions of the Residential Medium Density designation, the following additional policies will apply: a. a concept plan for all or part of this site may be required and will address, among other matters, the following: preservation of all mature trees and other significant natural features; and	X			X	
		16.24.1.3 The established residential character of the areas generally located along Main Street east of Church Street and along Queen Street South, south of Barry Avenue, will be maintained through appropriate building masses, setbacks, intensive landscaping, streetscapes with many mature trees, and a regular street grid pattern.	X				
		16.24.5.1.5 Sufficient on-site parking, which will consist of only surface parking, as required by the Zoning By-law, should be provided in the rear yard only at grade, without removal of existing trees, except at the discretion of the City arborist.				X	
		17.4.4.1.2 The lands identified as Area A are located north and south of Dundas Street East, from Southcreek Road to the municipal boundary, Etobicoke Creek. Notwithstanding the provisions of the Mixed Use designation of the lands, the following additional policies will apply: e. special formal street tree planting at regular intervals is encouraged along the frontage of the gateway properties.		X			
		19.4.5 Some or all of the following studies, reports and/or documents may be required as part of a complete application submission for an official plan amendment, rezoning, draft plan of subdivision or condominium or consent application, dependent on the type of application, the property location and adequacy of services. Includes: Arborist's Report (including Tree Survey/Tree Preservation Plan)				X	
		19.4.7 To provide consistent, efficient, and predictable application of environmental planning principles, all applications will have regard for: i. tree preservation;				X	
		19.14.5 Site plan applications will address the sustainable design elements on the development site and adjoining highways under Mississauga's jurisdiction including without limitation trees, shrubs, hedges, plantings or other ground cover, permeable paving materials, street furniture, curbs, ramps, waste and recycling containers, and bicycle parking facilities.				X	
		19.21.3 An approved development plan, archaeological assessment and tree permit may be required prior to the release of a demolition permit.				X	
	2012	Part II: Scope 2. This By-law shall apply to all private property within the City.				X	
	Part IV: Application for Designation Under the Ontario Heritage Act 5. An application to designate a Tree(s) to be of cultural heritage value or interest shall be made in accordance with the Ontario Heritage Act, 2005.				X		
	Part V: General Prohibition and Exemptions 6. (2) No Person shall Injure or Destroy 3 or more Trees each with a Diameter greater than 15 centimetres on a Lot within one Calendar Year without first obtaining a Permit pursuant to this By-law.				X		
	Part VI: Permit 7. Where an Owner applies for a Permit for the Injury or Destruction of a Tree(s) on the Owner's Lot, he or she shall submit the following to the Commissioner: (a) a completed application form; (b) a plan to the satisfaction of the Commissioner illustrating the Trees to be Injured or Destroyed, the Tree(s) to be retained, and any other measures to be taken in relation to the Injury or Destruction of the Tree(s) or Tree preservation, as required by the Commissioner; (c) the fees as described in the Fees and Charges Bylaw; (d) an Arborist Report, if required by the Commissioner; (e) the written consent of the adjacent property Owner if the base of the Tree(s) to be Injured or Destroyed is partially located on the adjacent property Owner's property; and (f) the written consent of the Owner of the Lot where the subject Trees are located, if the Person who is applying for the Permit is not the Owner of the Lot.				X		
	2014	2.6 Grades - 2.6.2 Guideline: Existing grades within the site and adjacent to tree preservation areas should be maintained.	X				
2.8 Driveway/Hard Surfaces - 2.8.2 Guideline: Circular driveways will only be considered on lots with a frontage of 22.5 m or greater where no existing trees are impacted and where there is ample room for landscaping.	X						
2.9 Natural Environment Preservation and Protection - Trees should be preserved and protected. It is recommended that home owners engage the services of a certified arborist to assess the health and condition of the existing trees and to make recommendations with regard to the preservation measures, including the siting of the house.	X						
3.2 Who Gets Circulated - Community Services Department - Forestry responsible for the assessment of trees within the City boulevard. Also responsible for the issuance of tree permits and tree removal permissions. For more information (contact (905) 615-4108); Parks Planning: responsible for the assessment of fencing, tree protection and grading in regards to properties adjacent to parkland and public open space. (Contact (905) 896-5382);				X			

		3.3 Site Plan Application Requirements - 3.3.1 Site Plan Drawings Required - Show the location of all trees on site, neighbouring trees around the perimeter of the site and trees within the municipal boulevard. Include details such as the species, diameter, canopy size, and calliper. Additional information and Frequently Asked Questions regarding tree information can be found on the City's web site at <a href="http://www.mississauga.ca/urbanforestry">www.mississauga.ca/urbanforestry</a>				X		
		3.4 Securities - As a condition of Site Plan approval, the Development and Design Division may request securities to ensure that tree protection and site works comply with the approved plans. As indicated below, the amount of securities will vary depending on the extent of the proposed development and site works: Minor Additions: (includes tree protection/hoarding with no changes to the driveway) \$5,000 - \$10,000; Major Additions: (includes tree protection, replanting and driveway reconfigurations) \$10,000 - \$15,000 New/Replacement Dwellings under 400 m2 (4,305 ft2.) (includes tree protection and replanting and driveway reconfigurations) \$15,000 - \$25,000 New/Replacement Dwellings 400 m2 (4,305 sq. ft.) or greater (includes tree protection and replanting and driveway reconfigurations) \$25,000 - and up It is anticipated that some Site Plan applications may vary from the above criteria. In these cases, it will be at staff's discretion to determine the appropriate amount of securities for the site. Once the exterior cladding is complete and all site works have been installed, the homeowner should contact the Development and Design Division to arrange for an inspection to initiate the release of the securities.				X		
		3.6 Tree Removal Permission - The City of Mississauga passed By-law 0254-2012 regulating the removal of trees on private property. The By-law states that property owners require a permit to remove three or more trees that are greater than 15 cm (6 in.) in diameter from their private property in a calendar year. Trees should not be removed prior to submitting an application.				X		
	Urban Design Guidelines - Green Development Standards	2012	4.1 New Trees - For groups of two or more trees planted primarily in hardscaped areas, provide a minimum volume of 15 m3 (530 ft3) of high quality soil per tree. A single tree planted in hardscape requires a minimum volume of 30 m3 (1060 ft3) of soil. - Provide trees planted in softscape with a minimum volume of 30 m3 (1,060 ft3) high quality soil. - Plant "shade trees" approximately 6-8 m (20- 27 ft) apart along all street frontages, open space frontages and public walkways.		X			
			5.2 Pedestrian Comfort - Provide shade trees along pedestrian pathways and in amenity spaces to take advantage of summer shade.			X		
	UFMP	2014	Objectives - Objectives for Private Lands - Enhance and restore the Natural Heritage System and Urban Forest on private lands by promoting stewardship, naturalization, restoration, tree planting and proactive tree care with creative outreach and incentives.	X				
			Recommended Actions - 30 recommended actions developed to provide more detailed technical, operational and/or tactical guidance regarding the implementation of a number of the Strategies identified within the broader Natural Heritage & Urban Forest Strategy (NH&UFS).					
	Niagara Falls	Official Plan	1993	11.1.41 All development is to be designed in a sensitive manner having regard to the environmental, social and aesthetic benefits of trees, hedgerows and woodlands through the following: (i) The retention and protection, to the greatest extent possible, of the existing tree cover, recognizing its environmental and aesthetic importance. (ii) Ensuring efficient harvesting and use of trees that must be removed to accommodate the placement of buildings, structures and roads (iii) The incorporation of land with existing tree cover into the urban area park system, if appropriate. (iv) The maintenance and possible enhancement of tree cover along watercourses and on steep slopes, in order to reduce soil erosion and improve water quality. (v) Permitting the continued management and selective harvesting of forest resources, where appropriate. (vi) The use of native trees in development design.	X	X	X	
				11.1.42 The City supports the protection of woodlands greater than 0.2 hectares in size and individual trees or small stands of trees on private lands that are deemed by Council to be of significance to the City because of species, quality, age or cultural association from injury and destruction through such means as the Region's Tree and Forest Conservation By-law or any similar municipal by-law.	X			
				11.1.43 Good stewardship of urban woodlots and forested areas shall be promoted. The location of treed and wooded areas, including those located outside of significant woodlands, are illustrated on Appendix III to this Plan. Where such lands are under private ownership and are contemplated for development, the preservation and maintenance of natural environment conditions will be encouraged to the fullest extent possible. Where deemed appropriate, the City will consider such measures as bonusing, land purchase, transfer of development rights or land exchanges to safeguard important natural areas. 11.1.44 The City shall encourage the retention of individual trees or stands of trees wherever possible through development applications including site plan control, plan of subdivision or vacant land condominiums. A Tree Savings Plan may be requested as a condition of development.	X			



		11.1.45 City Council may consider the preparation of Policy and Procedural Guidelines for a formal compensation program that would outline the level of compensation required for the removal of a tree either in terms of the replanting of trees on site or elsewhere in the community, or the monetary equivalent of the tree(s) lost to be applied towards the planting of trees on public lands elsewhere in the community or City.					
		11.1.5 When considering development or site alteration within or adjacent to a natural heritage feature, the applicant shall design such development so that there are no significant negative impacts on the feature or its function within the broader ecosystem. Actions will be undertaken to mitigate any unavoidable negative impacts. 11.1.6 The Natural Heritage Policies shall apply when development or site alteration is proposed on lands within the City that are adjacent to a natural heritage feature identified within the Official Plan of a neighbouring municipality, the Niagara Region Official Plan or by the Ministry of Natural Resources.	X		X		
		2.9.1.16 All development is to be designed in a sensitive manner having regard to the environmental, social and aesthetic benefits of trees, hedgerows and woodlands through the following: (i) The retention and protection, to the greatest extent possible, of the existing tree cover, recognizing its environmental and aesthetic importance. (ii) Ensuring efficient harvesting and use of trees that must be removed to accommodate the placement of buildings, structures and roads (iii) The incorporation of land with existing tree cover into the urban area park system, if appropriate. (iv) The maintenance and possible enhancement of tree cover along watercourses and on steep slopes, in order to reduce soil erosion and improve water quality. (v) Permitting the continued management and selective harvesting of forest resources, where appropriate. (vi) The use of native trees in development design.	X				
		2.9.1.17 The City supports the protection of woodlands greater than 0.2 hectares in size and individual trees or small stands of trees on private lands that are deemed by Council to be of significance to the City because of species, quality, age or cultural association from injury and destruction through such means as the Region's Tree and Forest Conservation By law or any similar municipal by law. 2.9.1.18 The City shall encourage the retention of individual trees or stands of trees wherever possible through development applications including site plan control, plan of subdivision or vacant land condominiums. A Tree Savings Plan may be requested as a condition of development.	X				
		2.9.1.4 When considering development or site alteration within or adjacent to a natural heritage feature, the applicant shall design such development so that there are no significant negative impacts on the feature or its function within the broader ecosystem. Actions will be undertaken to mitigate any unavoidable negative impacts.	X				
		2.9.1.6 The policies of the Natural Heritage System shall apply to protect any previously unmapped natural heritage feature identified by an Environmental Impact Study regardless of the land use designation applying to such feature in this Plan.			X		
		2.9.1.9 An Environmental Impact Study (EIS) shall be required as part of a complete application under the Planning Act for site alteration or development on lands: (a) within or adjacent to an Environment Protection Area or Environmental Conservation Area as shown on Schedule A 3; or (b) that contain or are adjacent to a natural heritage feature.					
		4.2.10 A tree inventory and tree preservation plan, where an individual significant tree or any group of trees, including a woodland as defined by the Region's Tree and Forest Conservation By-law, may be impacted by a proposed development.	X				
		5.3.5 The City shall encourage the preservation and the incorporation of existing trees, vegetation, green areas and topography into the design and landscaping plans of proposed developments. Tree Preservation Plans may be required prior to any site alteration in compliance with PART 2, Section 11.	X	X			
		The City shall participate in a tree planting program to enhance the environment and shall encourage private landowners to protect existing trees, hedgerows, windbreaks and other natural areas and plant additional trees on their own property using native species wherever possible.	X				
Design Guidelines		3e.2 c) The height, mass and architectural design of buildings and structures should be designed to be compatible with the protection of the natural environment and cultural landscape including slope, terrain, tree cover, and natural and cultural heritage features. Buildings and structures should not exceed the tree canopy or the sky line associated with the Escarpment nor should their mass be out of character with the surrounding cultural landscape.	X	X	X		
		a) Existing trees and significant vegetation should be preserved whenever possible and incorporated into site landscaping to preserve the context of surrounding land uses and the Natural Heritage System. Existing trees and vegetation will act as buffers between adjoining developments and act as site amenities. b) For purposes of this section, "significant" trees include the following: - Trees with 30cm minimum diameter or trees of 3.5m or more in height; and - Groups or stands of ten (10) or more trees with a minimum diameter of 15cm measured 1.4m from the diameter breast height. c) Any existing vegetation or significant trees that are in appropriate locations, in sufficient quantities, and of acceptable quality to be used to fulfil transition, landscaping, or buffering requirements should be preserved to the maximum extent practicable. d) All preserved trees and vegetation should be healthy and free of mechanical injury. e) Significant trees (as per above definition) should be protected during construction with the erection of hoarding, which is maintained throughout construction at the dripline of the trees. Grading should be avoided within the root area or drip line of any existing preserved trees. f)	X	X			

			Maintenance of tree cover, plantings, or other stabilizing vegetation should be used to minimize erosion of sloped areas. g) If any significant trees designated for preservation are removed or substantially damaged during clearing, grading, or construction, they should be replaced. Replacement trees should be the same diameter, and of similar species to the trees removed or damaged, or alternately a species native to the Region.					
	Urban Forest Strategy		The City of Niagara Falls Woodland Management Plan is a comprehensive management plan for all City owned or controlled woodlands. This management plan lays out a road map that will ensure the long-term sustainability of City woodlands. The Woodland Management Plan contains 34 City woodlands that were surveyed utilizing the provincial standard Ecological Land Classification (ELC) inventory system and field notes from volunteer data collectors from the Niagara Falls Nature Club.	X				
Oakville	Official Plan	2009	10.12.2 The Town shall ensure that appropriate space for tree protection and tree planting within road rights-of-way are included in the design of new roads or road improvements.	X	X			
			10.12.5 Tree removal on private property shall be subject to the Town's private tree protection by-law.	X				
			28.17.3 Unless an exemption is granted under section 28.17.5, the following information and materials shall be required to be submitted as part of any application for Official Plan amendment, Zoning By-law amendment, draft plan of subdivision or draft plan of condominium, and shall be requested as applicable for other applications: d) Environmental Considerations: i) environmental site screening and Environmental Protection Act assessments ii) environmental impact statement/study iii) tree vegetation study and tree protection plan	X				
			28.17.6 The following information and materials shall be required to be submitted as part of any application for consent: a) Environmental Considerations: i) environmental site screening checklist ii) tree inventory and preservation study	X			X	
			6.10.2 Development should preserve and enhance the urban forest by: a) maintaining existing healthy trees, where possible; b) providing suitable growing environments; c) increasing tree canopy coverage; d) incorporating trees with historic or cultural significance; and, e) integrating a diverse mix of native plant species.	X		X		
			6.4.1 Streetscapes shall: c) provide well designed and coordinated tree planting, landscaping, lighting and furnishings;	X	X			
	By-Law	2017	4. (1) No person shall cause or permit the injury, destruction or removal of any tree classified as an endangered, threatened, or at risk tree species, as defined in the provincial Endangered Species Act, 2007, S.O. 2007, c. 6, or any tree classified as an endangered or threatened tree species, or a tree species of special concern, as defined in the federal Species at Risk Act, 2002, S.C. 2002, c. 29. (2) No person shall cause or permit the injury, destruction or removal of any tree with a diameter equal to or greater than fifteen (15) centimetres on a lot, or any tree required to be retained or planted as a condition of an approved site plan, without first obtaining a permit pursuant to this By-law. 5. The provisions of this By-law do not apply to the removal of trees...	X			X	
		7. (1) A person shall file a tree removal permit application for the removal of a tree or trees on a lot by submitting the following to the Designated Official: (a) a completed application form, as specified by the Designated Official; (b) payment of a non-refundable fee as set out in the rates and fees schedule approved by Council as part of the annual budget approval process, with the exception of: (i) not-for-profit organizations or individual(s) facing financial hardship who are eligible for a waiver of the fee; (ii) trees identified as dead, infested with Emerald Ash borer (EAB), or infested with Asian Long-Horned Beetle (ALHB), and approved by the Designated Official, or (iii) any species of Buckthorn approved by the Designated Official, or By-law Number: 2017-038 Page 7 (iv) trees identified as high risk and approved by the Designated Official; (c) an arborist report is required for any high risk tree and may be requested for other trees; (d) a written consent from the adjacent property owner if the tree to be removed is considered a boundary tree; and (e) a written consent from the owner of the lot where the subject tree(s) are located if the applicant is not the owner of that lot...	X			X		

	Urban Forest Strategy	2008	Urban Forest Strategic Management Plan Town of Oakville: 2008 - 2027 - An extensive document prepared by a third party consultant which makes a number of recommendations for the management and protection of the urban forest. Contains analysis of tree preservation policies in various municipalities. Includes public education and land stewardship program.	X				
			Current Urban Forestry Policies - The following is a summary of Oakville's existing urban forestry policies: Title of Policy Corporate Policy #; Guidelines for Tree Preservation in New Subdivisions 10-03-05; Street Tree Planting 10-03-07; Street Tree Removal if No Public Interest Involved 08-03-06; Woodchips 10-03-04; Firewood 10-03-03; Flag Service 10-03-02; Banners 10-03-01; Tree Protection Specifications for Construction near Trees 01-03-08	X				
Oshawa	Official Plan	1987	5.12 Woodlands and Tree Preservation 5.12.1 The City, in consultation with the Conservation Authority and other agencies having jurisdiction, shall require an Environmental Impact Study to be undertaken in accordance with Policy 5.3.5 and Section 5.5 of this Plan to assess and, where appropriate, identify measures to mitigate the impact of development or site alteration on significant woodlands. 5.12.2 For any proposal for development or site alteration in proximity to a wooded area, an appropriate buffer for the wooded area shall be determined pursuant to an Environmental Impact Study in accordance with Section 5.5, provided that: (a) Within the Major Urban Area or within areas designated either as Estate Residential or Hamlet ORM - Rural Settlement Area: (i) The minimum buffer width shall be 10 metres (32 ft.) past the dripline of the wooded area, if the wooded area relates to part of the Natural Heritage System as shown on Schedules "D-1" and "F-1A" other than a riparian corridor, a wetland, or a provincially significant feature; (ii) The minimum buffer width shall be 10 metres (32 ft.) past the dripline of the wooded area, if the wooded area comprises a known natural heritage feature outside of the Natural Heritage System; (iii) The minimum buffer width shall be 30 metres (98 ft.) from the base of the outermost tree trunks if the wooded area relates to a provincially significant feature; (iv) The minimum buffer width shall be 15 metres (49 ft.) from the dripline of any part of a wooded area associated with a wetland that is not a provincially significant wetland; or (v) The minimum buffer width shall match the minimum buffer requirements for a riparian corridor in accordance with Policies 5.4.8 and 5.4.9, if the wooded area is within a riparian corridor; (b) Outside of the Major Urban Area or areas designated either as Estate Residential or Hamlet ORM - Rural Settlement Area: (i) The minimum buffer width shall be 10 metres (32 ft.) past the dripline of the wooded area, if the wooded area relates to a component of the Natural Heritage System as shown on Schedules "D-1" and "F-1A" other than a key natural heritage feature, a key hydrologic feature or a riparian corridor; (ii) The minimum buffer width shall be 10 metres (32 ft.) past the dripline of the wooded area, if the wooded area comprises a known natural heritage feature outside of the Natural Heritage System; (iii) The minimum buffer width shall be 30 metres (98 ft.) from the base of the outermost tree trunks if the wooded area relates to a key natural heritage or key hydrologic feature identified in Table 6 of this Plan; or (iv) The minimum buffer width shall match the minimum buffer requirements for a riparian corridor in accordance with Policies 5.4.8 and 5.4.9, if the wooded area is within a riparian corridor. Where the contextual conditions associated with the wooded area match more than one of the contextual conditions described above, the greater buffer requirement shall apply.	X				
			5.12.3 The City may pass by-laws restricting and regulating the cutting of trees. Notwithstanding the foregoing, a tree cutting by-law in accordance with Policy 5.13.9.4.1 shall be adopted for the Oak Ridges Moraine. (OPA 179) 5.12.4 For any development or site alteration where private or public trees are located within the property and/or a minimum of 5 metres (16 ft.) beyond the limit of the development site, the City may require the proponent to submit a Tree Inventory and Preservation Plan for trees 100 millimetres or greater in caliper indicating the following: (a) Location including the grade/elevation at the base of the trunk; (b) General location of smaller trees and shrub groupings; (c) Species identification both botanical and common names; (d) Size of tree: caliper, canopy spread and height; (e) State of health/condition of tree; (f) Existing trees proposed to be removed and the reason for removal; (g) Existing trees proposed to be transplanted and their new locations; (h) Existing trees proposed to be protected/retained; (i) Dimensions and details of recommended tree protection and preservation measures for all trees to be retained; and (j) Any other matters to tree protection and preservation identified by the City. For existing trees proposed to be removed and/or damaged as a result of development, compensation planting may be required at a ratio of 1 tree for every 100 millimetres of the impacted tree caliper up to a maximum of 5 trees and/or at the discretion of the City.	X				
			5.13.9.4.1 The City shall adopt site alteration and tree cutting by-laws for the Oak Ridges Moraine in accordance with Sections 135 and 142 of the Municipal Act and the Oak Ridges Moraine Conservation Act, 2001.	X				
			5.3.10 In the event that portions of key natural heritage or key hydrologic features are damaged or destroyed by unauthorized development or site alteration, these areas and the ecological features, functions and/or landform will continue to be subject to all relevant key natural heritage or key hydrologic features policies of this Plan, and the lands will be restored as part of any development approval process.	X			X	
			5.3.2 Development and site alteration shall be prohibited within key natural heritage and key hydrologic features and their related minimum Vegetation Protection Zone as identified in accordance with Policy 5.3.5. Notwithstanding the foregoing, development and site alteration may be permitted in these features and zones for certain uses in accordance with Policy 5.4.4.	X				

	5.3.3 The extent and the exact location of natural heritage and/or hydrologic features, including key natural heritage and/or key hydrologic features, shall be determined at the time of development application(s) in accordance with Section 5.5 of this Plan.					
	5.3.4 For any proposal for development or site alteration in proximity to a natural heritage and/or hydrologic feature that is not part of the Natural Heritage System, an Environmental Impact Study shall be undertaken in accordance with Section 5.5 of this Plan to determine if the feature should be protected or if appropriate mitigation, or ecological compensation as a consideration secondary in preference to mitigation, can be provided to address any loss of the feature and/or function	X				
	5.4.1 The City's Natural Heritage System is shown on Schedules "D-1", "D-2", "F-1A" and "F-1B". The Natural Heritage System includes lands with the highest concentration of the most sensitive and/or significant natural heritage and hydrologic features and functions. Achieving a healthy, self-sustaining, connected Natural Heritage System is integral to ensuring a healthy and resilient watershed. Protection of this system is necessary to support ecological integrity including healthy terrestrial, wildlife, wetland and aquatic ecosystems.	X		X		
	5.4.10 Development or site alteration in proximity to components of the Natural Heritage System may be permitted subject to submission of an Environmental Impact Study, prepared in accordance with the policies of Section 5.5 of this Plan, that demonstrates: [...]	X				
	5.4.11 Development and site alteration shall be prohibited within buffers, including minimum Vegetation Protection Zones, established to protect the components of the Natural Heritage System identified in Policy 5.4.4 of this Plan. Notwithstanding the foregoing, development and site alteration may be permitted in these buffers for the projects/uses identified in Policy 5.4.4 in accordance with the provisions therein.					
	5.4.14 Excepting buildings and structures permitted under the umbrella of agricultural, agricultural-related and secondary agricultural uses (e.g., bed and breakfast establishments), where non-agricultural uses are contemplated in areas within the Greenbelt Natural Heritage System, the Natural Heritage System, or both, as permitted by the policies of this Plan, applicants shall demonstrate that: (a) At least 30 percent (30%) of the total developable area of the site will remain or be returned to natural self-sustaining vegetation. This does not apply to new or expanding areas for Mineral Aggregate Extraction; [...]	X	X			
	5.4.4 Development and site alteration shall be prohibited within the following components of the Natural Heritage System: [...] (c2) Forestry; [...]					
	6.4.4 To ensure compatibility with the character of the surrounding neighbourhood and achieve an appropriate transition to adjacent uses, the design of new residential development in existing residential neighbourhoods shall: [...] (d) Preserve mature high quality trees and ensure replacement of the tree canopy wherever possible; and	X				
	8.4.12.10 No significant removal of trees or topsoil or significant grading shall be undertaken within the Pinecrest Planning Area without prior approval from the City. In this regard, the City may require the submission of an environmental analysis report including a Tree Inventory and Preservation Plan in accordance with Policy 5.12.4 by a qualified arborist prior to granting such approval.					
	8.5.13.7 The City shall encourage the retention of other existing vegetative features not shown on Schedule "B" - Taunton Environmental Management Plan such as specimen trees, tree stands and hedgerows. In this regard, the City may require the submission of a Tree Inventory and Preservation Plan in accordance with Policy 5.12.4 by a qualified arborist prior to granting development approval. These features may be retained and incorporated, where appropriate, into the design of roads, parks, site plans, and plans of subdivision.					
	8.6.12.7 The City shall encourage, where appropriate, the retention of other existing vegetation not shown on Schedule "B" - Windfields Environmental Management Plan such as specimen trees, tree stands and hedgerows. In this regard, the City may require the submission of a Tree Inventory and Preservation Plan in accordance with Policy 5.12.4 by a qualified arborist prior to granting development approval. These features shall be considered during the development review process and may be retained and incorporated, where appropriate.					
	8.7.9.9 Retention of other existing natural heritage and hydrologic features not shown on Schedule "C" - Kedron Environmental Management Plan such as specimen trees, tree stands and hedgerows is encouraged. These features shall be identified and considered during the development review process and may be retained and incorporated where appropriate into the design of roads, parks, site plans and plans of subdivision in consultation with the City and Central Lake Ontario Conservation Authority. In this regard, the City may require that a Tree Preservation Plan be submitted in conjunction with a development application. Features found to be suitable and feasible for retention shall be detailed and implemented in the development agreement. Mitigation measures such as tree protection fencing, silt fence/sedimentation control, dust control and protection of soil moisture regime shall be utilized before, during and after construction.					
	Any proposal for development or site alteration in proximity to a key natural heritage and/or key hydrologic feature shall determine, through an Environmental Impact Study in accordance with Section 5.5 of this Plan, an appropriate related Vegetation Protection Zone, of sufficient width to protect the feature and its functions from the impacts of the proposed change and associated activities. The minimum width of a Vegetation Protection Zone shall be as follows: [...] (iv) For features other than those identified under	X				

			subsections (i), (ii) or (iii) directly above that include wooded areas that are not provincially significant woodlands, the minimum width requirement is determined in accordance with Policy 5.12.2 of this Plan;					
			Significant woodlands - Min area of influence: All land within 120 metres of any part of feature - Min Vegetation Protection Zone: All land within 30 metres of the base of the outermost tree trunks within the woodland, subject to any increase in Vegetation Protection Zone as determined through a natural heritage evaluation	X				
Peterborough	Official Plan	2019	3.3.5 Methods of Protection: The City of Peterborough may assist in the protection of identified Natural Areas through the following actions: 2) entering into agreements with land owners as a condition of development approvals involving rezoning, subdivision, variances or site plan approval. Such agreements may require the placement of siltation barriers, and fencing around the drip line of treed areas or other natural features during construction, and specific planting required to buffer or enhance natural features within a development plan. Adequate performance security to guarantee compliance with measures specified in the agreement will be required. 5) regulating the destruction or removal of trees from properties through the requirement of a permit.	X				
			4.5.1.2 Sense of Community: To contribute to the beauty of the urban setting by providing parkland and preserving treed areas in high profile locations in order to maintain the natural image of Peterborough as a “city in the country”.	X				
			4.5.1.3 Preservation/Conservation: To maintain and improve a healthy natural environment within an urban setting by protecting and preserving those features considered to be a part of the natural heritage of the community. To reduce the risk of loss of life or damage to property by restricting development of lands or areas sensitive to development or that may be hazardous to development.	X				
			Development Policies: 10.5.3.8: Prior to any grading, construction or tree removal, the City may require the submission of detailed natural features/vegetation studies, tree assessment and preservation plans, which will include an inventory of existing mature trees on site and identify measures for respecting these trees, hydrogeological studies and archaeological assessment studies when reviewing development proposals. Development approvals will be conditional upon the completion of required studies and implementation of necessary works.					X
			Natural Area, Open Space and Parkland: 10.9.3.2.5 Prior to any development, site alteration, construction or tree removal, the City will require the submission of detailed natural features/vegetation studies, tree assessment and preservation plans (including an inventory of existing mature trees on site and measures for respecting or replacing these trees), hydrogeological and geotechnical studies, and archaeological assessment studies when reviewing development proposals.					X
			10.9.3.2.7 The Jackson Creek Valley is a significant valleyland and woodland area that serves to connect Jackson Park to significant natural areas beyond the City. Generally, the treeline along the top of and within the valley shall be protected. Limited tree removal may be permitted to facilitate the provision of infrastructure and trail facilities subject to the completion of studies and plans in accordance with Sections 10.9.3.2.1, 10.9.3.2.5, and 10.9.3.2.6.	X				
			10.9.3.2.9 To promote public accessibility to and to protect public views to and from the Jackson Creek Valley, the City will encourage the provision of open space and tree planting along the top of the valley and may consider alternative design standards for streets that abut such open space.		X			
			10.9.3.2.10 Connecting Links are conceptually depicted on Schedule “C” - Natural Areas and Flood Plains. The final number, width and location of the connecting links shall be determined through the plan of sub- division process, and shall be subject to the recommendations of studies and plans prepared pursuant to Sections 10.9.3.2.1, 10.9.3.2.5, and 10.9.3.2.6 in order to protect the existing treelines around which they are planned and/or to accommodate significant re- vegetation and an off-road trail, in accordance with Section 3.3 of the Plan.	X				
			Cultural Heritage: 10.9.3.7.1 In addition to the requirements of Section 2.4.9, prior to any development, site alteration, demolition, construction or tree removal, the City shall require the submission of a Heritage Impact Assessment to assess the cultural heritage significance of existing built structures on the lands as well as the significance of the Jackson Creek Valley/Trans-Canada Trail as a Cultural Heritage Landscape and to identify measures for conserving features of cultural heritage significance.					X
	Tree Notice By-Law	2019	No person may Destroy a Tree or permit the Destruction of a Tree except with the prior written consent of all of the Owners and: a) unless exempt pursuant to section 3 of this By-law; or b) except with notice given pursuant to section 4 of this By-law.					
This By-law does not apply to a: a) Woodland or to a Plantation Woodland as defined by the City’s Woodland Conservation By-law; b) Tree with a DBH of less than 7.5 centimetres; c) Tree located within a rooftop garden or a solarium; d) Tree located within a Nursery or an Orchard; e) Tree to which the City’s By-law 82-82 or Chapter 765 of the City’s Municipal Code applies; f) Tree the subject of a property standards order issued on behalf of the City; or to an g) activity to which subsection 135(12) of the Act applies.								

			A person who intends to Destroy a Tree or to permit the Destruction of a Tree must give to the Commissioner no less than seventy-two (72) hours' written notice of the Destruction. The notice is effective when given by e-mail to treebylaw@peterborough.ca or when received in City Hall, 500 George St. N., Peterborough, Ontario, marked to the attention of the City's Urban Forest Manager as "Tree By-law Notice". The notice shall include for each Tree the following particulars: a) each Owner's name, mailing address, telephone number and, if applicable, e-mail address; b) species; c) DBH; d) the reasons, if any, for the proposed Destruction including, as applicable, the Tree's condition; and e) each Owner's plan, if any, to replace the Tree.					
St. Catharines	Official Plan	2012	4.3. Built Form - 3. Development/Redevelopment may be required to provide amenities for adjacent streets and open spaces such as street furniture, bicycle parking facilities, trees, signage, and lighting to ensure they are fully integrated into the surrounding neighbourhood.		X			
			4.5. The Natural Environment - 5. Where they remain, the pleasant tree-lined streets of the older areas will be protected and where trees have to be removed, they will be replaced as soon as possible.	X				
			4.5. The Natural Environment - 6. A program of tree planting, preservation, and landscaping will be undertaken so that all areas are provided with trees and other vegetation to maintain a high standard of amenity and appearance, with specific emphasis given to the Urban Growth Centre and Intensification Areas, as set out on Schedule D 'Municipal Structure', at the time of infrastructure renewal and reinvestment.	X	X			
			4.5. The Natural Environment - 7. In all public works, trees should be retained and when trees must be lost to accommodate the works, they will be replaced as soon as possible by other trees of sufficient maturity and in sufficient numbers to enhance the appearance of the public works.	X				
			4.5. The Natural Environment - 8. Where development or redevelopment may necessitate the loss of existing trees or vegetative planting on a public right-of-way, they will be replaced and relocated on the public right-of-way in the immediate vicinity of the affected lands, to the satisfaction of the City or the Region of Niagara, and at the cost of the proponent.	X				
			4.6. The Public Realm - 1. Urban design opportunities to enhance the quality of the public realm shall be encouraged as part of the design of all municipal undertakings, including public parks and buildings, public streets, natural areas, and all municipal engineering projects related to public spaces. The design of such projects will consider: c) naturalization opportunities including the use of native species of trees in development of open spaces;		X			
			4.6. The Public Realm - 4. Wherever feasible, utilities will be placed underground and/or designed to minimize negative impacts, maintain existing area character, and enable further aesthetic improvements such as boulevard trees planting.		X			
			6.4. Air Quality - 5. The City shall promote green space, tree planting, and natural heritage conservation.			X		
			6.6. The Urban Forest - 2. The City shall endeavor to reduce heat island effect by establishing a minimum landscaping and/or tree canopy coverage for parking lots and other major hard surface areas.			X		
			6.6. The Urban Forest - 3. The City shall establish a 2 for 1 public tree replacement program.	X				
			6.6. The Urban Forest - 5. The City shall ensure that appropriate space for tree protection and tree planting within road rights-of-way are included in the design of new roads and road improvements.	X				
			6.6. The Urban Forest - 6. The City may develop programs and incentives to encourage property owners to plant more trees, and should consider developing a by-law to protect trees on private property.					X
			11.3. General Policies - h) The pedestrian realm is a key to providing shoppers, employers, employees, residents and visitors an active, visible and safe sense of place. The City shall create an attractive, high quality pedestrian environment by considering 'pedestrian first' and public realm principles, opportunities and connections in evaluating traffic operations, development applications and public works projects. iii) the City shall plan, fund, and maintain pedestrian level lighting, street trees, landscaping and street furniture as a standard component in completing roadway improvements.		X			
			13.2.2. General Policies - 7. Where development, redevelopment or site alteration is approved within Natural Hazard Lands, Natural Heritage or the associated adjacent land buffer zone, the applicant will submit a Tree Saving Plan maintaining or enhancing the ecological functions to be retained. The Plan shall be prepared in accordance with the Tree and Forest Conservation By-law and its implementation monitored by a member of the Ontario Professional Forestry Association.					X
			13.2.2. General Policies - 8. Where lands are not subject to Section 13.2.2.7 above, the City should enact and maintain a by-law regulating the destruction or injuring of trees in identified woodlots less than 0.5 hectares of land in size. Where a woodland greater than 0.5 hectares of land in size is located on or adjacent to lands subject to an application					X

		for plan of subdivision, consent, site plan approval or other development approval, the applicant shall be required to prepare a Tree Saving Plan as a condition of approval. A grading or building permit shall not be issued until the Tree Saving Plan, with appropriate implementation and monitoring measures, has been approved by the City in consultation with the NPCA.					
		15.3. WEST DISTRICT - 3. Schedule E6/7 - GO Transit Station Secondary Plan ( GTSSP) - 4. IMPLEMENTATION FRAMEWORK 2. Public Realm i) Gateways i) Major gateway improvements should include prominent signage, enhanced lighting, intensive landscaping (such as seasonal floral displays, tree planting), public art, cycling infrastructure and other types of public realm enhancements. Adjacent redevelopment should be designed to support the function of the gateway.		X			
		15.3. WEST DISTRICT - 3. Schedule E6/7 - GO Transit Station Secondary Plan ( GTSSP) - 4. IMPLEMENTATION FRAMEWORK 2. Public Realm iii) Potential New Public Spaces and Public Space Improvements ii) Public spaces should be inclusive and barrier-free to all users while including a mix of design elements such as enhanced landscaping, shade trees, ample seating, and public art.		X			
		16.7. Site Plan Control - 4. No development shall be undertaken within a site plan control area designated in accordance with Section 16.7.3, until the City has approved drawings and/or agreements sufficient to ensure the matters set out Subsections 41(4) and 41(5) of the Planning Act as amended, including but not limited to: b) Sustainable design elements within and adjoining a City right-of-way, including, without limitation, trees, landscaping, permeable paving materials, street furniture, curb ramps, waste and recycling containers, and bicycle facilities.		X			
		16.16. Pre-Consultation and Complete Application Submission Requirements - 8. The additional information or material that may be required includes, but is not limited to the following: b) Environmental Assessment - tree inventory and preservation study					X
		17. INTERPRETATION - 17.10 Density - 2. Within a low density designation, consideration to relax the established minimum density standard may be given for: b) private road development, where: i) enhanced design details and features are provided to support optimum compatible and context sensitive development with adjacent properties, including but not limited to gateway and building design features, greening, landscaping, fencing and additional provision of trees.		X			
Downtown Urban Design Guidelines	2012	Part 3 Streetscape Design - 3.11 Landscape Design - Landscape design for any individual property or portion of street should not be considered in isolation from its surroundings. Landscape design should be undertaken in a comprehensive manner to ensure the coordination of character-defining elements such as street trees, sidewalks, street furniture and boulevard treatments.		X			
		Part 3 Streetscape Design - 3.13 Street Trees - a) CANOPY & SHADE: Provide street trees with close regular spacing to create a continuous tree canopy. Large gaps in the street tree canopy should be avoided where possible.		X			
		Part 3 Streetscape Design - 3.13 Street Trees - b) PLANTING TECHNIQUES: Use planting techniques that mitigate the effects of soil compaction and road salt. Provide adequate soil space for root growth to maximize long-term tree health.			X		
		Part 3 Streetscape Design - 3.13 Street Trees - c) TREE PLACEMENT: Street trees should be placed between the sidewalk and the travelled road to serve as both a visual and physical buffer for pedestrians and to provide a greater sense of street enclosure. The use of “bump-outs” for tree plantings and landscaping is also encouraged. Tree locations and planting techniques should be selected which will not obstruct barrier-free pedestrian travel on the sidewalk.		X			
		Part 3 Streetscape Design - 3.13 Street Trees - d) TREE RETENTION: Where possible, healthy existing trees should be retained and be integrated as part of any reconstructed streetscape.		X			
		Part 3 Streetscape Design - 3.13 Street Trees - e) TREE SPECIES: Utilize native, high-branching deciduous tree species where feasible. Utilize a variety of species that create visual harmony, while avoiding monocultures.			X		
		Part 3 Streetscape Design - 3.17 Overhead Wires & Utility Boxes - a) CABLES & WIRES: Cable and wire utilities should be buried wherever feasible. Overhead wires crowd the streetscape and can limit opportunities for street tree canopy.	X				
		Part 3 Streetscape Design - URBAN PARKS & OPEN SPACE DESIGN - 3.20 Coverings and Shelter: Open spaces should strategically integrate coverings such as shade trees, awnings, umbrellas, trellis, or other elements, which provide shelter from inclement weather and maximize pedestrian comfort		X			
		Part 3 Streetscape Design - URBAN PARKS & OPEN SPACE DESIGN - 3.21 Landscaping: Open spaces of all scales will be primarily hard- surfaced though the use of concrete or pavers, but should also integrate “soft” landscaping elements including shade trees, planters, ornamental gardens, hanging plants or other methods of greening. The selection and maintenance of lush and colourful seasonal landscaping programs is encouraged. This will help to support the Garden City image. The use of movable planters or similar		X			

		flexible streetscape elements is specifically encouraged. These elements can provide substantial greening, support place character, buffer traffic, and can be used to temporarily block street or demarcate special areas.				
		Part 3 Streetscape Design - URBAN PARKS & OPEN SPACE DESIGN - 3.23 Walkway Connections: [...] These off-street walkways should be hard-surfaced and have a minimum width of 2.0 metres. The walkways should be lined with shade trees and/or other landscaping elements, as well as pedestrian- scaled lighting. The inclusion of pedestrian amenities such as benches, water fountains, and works of public art is also encouraged.	X			
		Part 3 Streetscape Design - ENCROACHMENTS & STREET USES - 3.26 Awnings/Canopies The installation of awnings or canopies is encouraged to provide shelter and create more vibrant streetscapes. These elements may project over the sidewalk subject to approval from the City. c) ENCROACHMENT: Agreements may be required where an awning extends over a right-of-way. Awnings should provide adequate clearance light posts and street tree.	X			
		Part 4 Area-Specific Guidelines - SECTION 4.3 THE CIVIC CLUSTER - Design guidelines for development in the Civic Cluster: 4.3.6 Landscaping: Landscaped boulevards with consistent shade tree plantings should be provided along both James and Church Streets. Strategic gaps in street tree plantings may be appropriate to frame views of significant landmarks. Front yards should feature ornamental landscaping, as well as pedestrian amenities such as benches or fountains.	X			
		Part 4 Area-Specific Guidelines - SECTION 4.4 THE LOWER LEVEL VALLEY - Design guidelines for development in the Lower Level: 4.4.5 Views Buildings and trees should be arranged to strategically frame views of landmarks including the performing arts centre and the former Canada Haircloth building, as well as views from St Paul Street out across the valley.	X			
Guidelines for Single Dwellings on Small Infill Lots in Traditional Neighbourhoods	2009	Site and Landscaping: 6. Landscaped open space should consist of considerable amount of planting and permeable materials, such as turf, shrubs, trees, crushed stones, no-joint pavers, etc.	X			
		Site and Landscaping: 6. Landscaped open space should consist of considerable amount of planting and permeable materials, such as turf, shrubs, trees, crushed stones, no-joint or pervious pavers, etc.	X			
Guidelines for Townhouse Dwellings on Private Roads in Suburban Neighbourhoods	2009	Site and Landscaping: 2. Zoning Provision - Driveways and front yards of abutting units shall be twinned in order to provide larger front yard areas suitable for planting. One shade tree shall be planted for at least every two abutting units.	X			
		Site and Landscaping: 5. Front yard landscape design should be coordinated within a cluster of units and make every attempt to include deciduous trees for shade.	X			
		Site and Landscaping: 9. The visitor parking area should be made permeable and should be screened by landscaping strips with a minimum width of 1.5m, planted with trees, shrubs, hedges or decorative garden walls.	X			
		Site and Landscaping: 10. Where the lot line abuts commercial / industrial uses, denser tree/shrub planting, low berming and privacy fencing should be provided. Where the lot line abuts an arterial road, a railroad or industrial uses, noise mitigation measures should be considered.	X			
		Building: 11. The placement of buildings should facilitate the preservation of noteworthy existing trees on the site.	X			
		Landscaping, Site and Lighting: 1. Zoning Provision: For buildings near the street edge, a landscape strip (3-6m wide) with tree planting and other landscape treatments (e.g. foundation planting) shall be provided along the building front yard and flanking yard areas, to create a comfortable environment for the abutting public sidewalk and to enhance the architecture and its relation to the street frontage.	X			



		Landscaping, Site and Lighting: 2. Zoning Provision: Where the commercial development abuts residential uses, a minimum 3m wide landscape strip along the lot line and with tree and shrub planting and privacy fencing shall be required. For larger development sites wider landscape strips (min. 6m) shall be provided.		X			
		Landscaping, Site and Lighting: 3. Zoning Provision: Parking lots should be located away from the public street edge. In an area where a parking lot abuts the street, a minimum 3m wide landscape strip along the lot line with tree and shrub planting shall be required. Additionally, low berming, decorative fencing or garden walls within the landscape strip should be considered. For larger development sites wider landscape strips (min. 6m) shall be provided.		X			
		Landscaping, Site and Lighting: 8. A parking lot should have significant and substantial tree canopy coverage at maturity. Integrate tree planting and other landscape treatments within landscape islands and landscape strips between parking rows.		X			
		Landscaping, Site and Lighting: 18. Healthy existing mature trees in the site should be preserved.	X				
GO Transit Station Secondary Plan	2018	Chapter 2 Urban Design Improvements - 2.2 Potential New Public Spaces and Public Space Improvements: Where new major mixed use development or redevelopment is planned, new public spaces should be provided to enhance the pedestrian environment and provide amenities for residents, employees and visitors. Where public spaces exist, improvements should be made to better serve the existing and planned community. Public spaces shall be inclusive and barrier-free to all users while including a mix of design elements such as enhanced landscaping, shade trees, ample seating, and public art. New public spaces should be located close to the street and be connected to the pedestrian network, including existing or planned transit stops.		X			
		Chapter 2 Urban Design Improvements - 2.3 Gateways - 2.3.1 Major Gateway Improvement Areas: Major gateway improvements should include prominent signage, enhanced lighting, intensive landscaping (such as seasonal floral displays, tree planting), public art, cycling infrastructure and other types of public realm enhancements. Adjacent redevelopment should be designed to support the function of the gateway. Two major gateway improvement areas have been identified:		X			
		2.3.2 Minor Gateway Improvement Areas: Minor gateway improvements should include a smaller scale of public realm enhancements, such as landscaping, public art, lighting and appropriately scaled wayfinding cues. The expectation is that Minor Gateway Improvements are for locations that require enhancements to address the public realm at prominent intersections, but would not necessarily imply prominent redevelopment opportunities on adjacent lands. Two minor gateway improvement areas have been identified: Louth Street at Crestcombe Road: [...] In addition, enhanced landscaping and tree plantings, pedestrian-scaled lighting, street furniture and new public spaces should be considered in these minor gateway improvement areas.		X			
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.1 Boulevard Design: [...] The design of the boulevard must accommodate pedestrian circulation and an attractive public realm. It should support its multi-purpose function; accommodating pedestrian circulation, adequate space for healthy tree growth, plants and other landscaping, bicycle parking, public art, transit shelters, street lighting, signage, street furniture, utilities and adequate space for commercial and social activity. [...]		X			
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.1 Boulevard Design: [...] Development of these zones should adhere to the following guidelines: - The planting and furnishing zone will contain street furniture, street trees, street lighting and other fixed objects. - In hardscaped areas, trees should be planted in continuous tree trenches utilizing soil cells to encourage longevity and viability. Soil cells can be extended under on street parking, multi-use paths and bike facilities where soil volume is critical. Tree planting and landscaping should be optimized to provide sun protection and reduce heat island effect.		X	X		
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.2 Cross Sections - 3.2.1 Ridley Road and Ridley Road West: [...] The following includes supportive design recommendations: Protect existing mature trees during construction.	X				
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.2 Cross Sections - 3.2.2 Louth Street: [...] The following provide specific design recommendations for Louth Street: Provide planting, furnishing, and edge zones of 2.75 metres that include street trees and other vegetation		X			
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.6 Landscaping: Providing improved landscaping along Ridley Road and within public spaces and semi-public open spaces will help create visual continuity throughout the Plan Area. Trees shall be incorporated into public street design and will frame all streets and pathways, within consideration given to specific contexts. Trees provide shade and comfort and enhance the visual and environmental qualities of the street. To sustain trees, planting should occur in sufficiently deep and wide planting areas backfilled with appropriate soil. Native and disease-resistant species for street trees should be used, wherever possible, to promote long-term growth. Enhanced landscaping will be a priority within areas identified for major and minor streetscape improvements, including St. Paul Street West, Ridley Road, Louth Street, and Ambrose Street, as per Schedule E6/7.		X			
Chapter 3 Urban Design Guidelines for the Public Realm - 3.6 Landscaping: [...] The following are general landscaping guidelines that should be adhered to as the Plan Area develops: To allow for full growth and to ensure their long-term viability street trees should be planted with appropriate soil volume in continuous tree trenches.			X				

		Chapter 3 Urban Design Guidelines for the Public Realm - 3.6 Landscaping: [...] The following are general landscaping guidelines that should be adhered to as the Plan Area develops: Only species that are tolerant of urban conditions should be used. Mono-culture planting may, in the case of disease, be entirely lost and is therefore strongly discouraged. Refer to Niagara Peninsula Conservation Authority’s Native Plant Guide for information on appropriate native plants, as well as the City’s Street Tree Planting List.			X			
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.6 Landscaping: [...] The following are general landscaping guidelines that should be adhered to as the Plan Area develops: Shrub and ground cover planting should be utilized in open tree pits, provided the minimum pedestrian clearway dimension is available.		X				
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.6 Landscaping: [...] The following are general landscaping guidelines that should be adhered to as the Plan Area develops: Careful consideration should be given to the type and location of trees. Higher branching trees should be positioned to ensure there is no interference with truck traffic. Sight lines should also be considered in the location of trees planted at intersections.		X				
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.6 Landscaping: [...] The following are general landscaping guidelines that should be adhered to as the Plan Area develops: The planting of trees as infill along existing streets where the rhythm of existing trees is interrupted should be implemented.		X				
		Chapter 3 Urban Design Guidelines for the Public Realm - 3.7 Low-Impact Development (LID): Low-Impact Development is an approach to managing stormwater run-off at the source by replicating natural watershed functions. It uses simple, cost-effective methods to capture, detain and treat stormwater. General guidelines include: Incorporate LID practices where possible and as appropriate. LID options include: Pre-cast tree planters or soil cells.			X			
		Chapter 4 Urban Design Guidelines for the Private Realm - 4.1 Site Design - 4.1.1 Gateway Features: The design should: Create a sense of entrance and arrival, contributing to community image and identity, at a scale appropriate for the given context. Elements contributing to gateway features and design include: signage and wayfinding, trees and other landscaping, feature lighting, paving, seat walls and public art.		X				
		Chapter 4 Urban Design Guidelines for the Private Realm - 4.1 Site Design - 4.1.3 Parking - Landscaping for Parking - Landscaped parking islands, of at least 3 metres wide, at the end of parking rows and pedestrian connections that contain salt tolerant shade trees are encouraged. Selection of plant materials should consider the following: Year-round maintenance; Seasonal variety; Hardiness and resistance to disease; Maintenance requirements; and Tolerance of plant materials to salt and urban conditions.			X			
		Chapter 4 Urban Design Guidelines for the Private Realm - 4.3 Sustainability - 4.3.1 Passive Solar Design: The locations of buildings to each other and to open spaces influences the amount of energy they consume as well as comfort and quality of interior and exterior spaces. New development within the Plan Area should be massed to maximize opportunities for access to natural light and heating, cooling, security and views. Building design should analyze site characteristics and address existing conditions. For example: Trees and vegetation, operable windows, treated glass, roof coverings and other building elements should be selected to take advantage of natural means of regulating interior temperature, lighting and other environmental variables.			X			
	UFMP	2011	Report with 15 “Action Items”					
	Thunder Bay	Official Plan	2018	Forests - Urban Forest - The City shall enhance its urban forest by: - encouraging tree planting within the City’s urban areas on both private and public lands; and - implementing measures to protect, enhance and expand tree cover including but not limited to: - preserving existing tree cover where appropriate; - encouraging tree planting in areas of surface parking; - promoting development that maximizes areas for tree planting; and enhancing the streetscape.	X			
Forests - Urban Forest - The City has developed the Urban Forest Management Plan and, as a result, development proponents may be required to assess, and whenever possible, protect, woodlands and/or existing trees, including those on adjacent lands.				X				
Street Lighting and Trees - Street lighting and trees shall be provided within the Urban Settlement Area and within Rural Settlement Areas, where appropriate. Where feasible and appropriate, pedestrian-scale lighting shall be provided on sidewalks and multi-use trails.					X			
Roads - Design of Roads - Where feasible, roads within the Urban Settlement Area shall be designed to include provisions for: • adjacent residences by appropriate tree planting, landscaping, berms, or other forms of aesthetic and noise reducing applications; and,					X			
Pre-Consultation and Complete Applications - The following studies, reports and information may be required, as determined by the City in consultation with the development proponent, and any other government body, public authority and/or external agency as deemed necessary by the City, to be submitted as part of a complete application for an Official Plan Amendment, Zoning By-law Amendment, Consent, Draft Plan of Subdivision, and Draft Plan of Condominium. Includes: Tree Inventory and Tree Preservation Plan							X	

		Lot Creation - Evaluation Criteria - Consent applications will be evaluated in accordance with the following: • proposed building envelopes shall be located to protect the existing natural vegetation and trees on the lot as much as possible;				X		
		Development Tools - Site Plan Control - The following, among other matters, shall be considered in the review of site plans: • the protection of existing natural features, including individual trees.				X		
		Site Alteration - The City shall update the Site Alteration By-law to regulate alterations to lands within certain designations or locations, and to require the obtainment of a site alteration permit from the City, which shall address the following, among other matters: • the protection of natural heritage features or areas, including any requirements of the Lakehead Region Conservation Authority; • tree removal;				X		
Urban Design Guidelines	2012	Urban Forestry: The Official Plan acknowledges the significance of street trees and forested areas. In order to improve the aesthetic quality of the urban environment, the Official Plan advocates increasing the stock of trees through planting programmes, adhering to high standards regarding maintenance and replacement, and encouraging developers to retain existing trees wherever practical. In addition, the City places a high priority on the protection and wise management of natural heritage features.	X	X				
		1.3.9 Urban Forestry Management Plan: Thunder Bay's urban forest provides significant benefits to the community, at a benefit-cost ratio of 2:1, including stormwater runoff reductions, energy consumption savings, air quality improvement, carbon dioxide reduction, and aesthetic value increases for properties. The Urban Forestry Management Plan is a comprehensive, efficient, and effective urban forestry program prepared by City forestry staff and community members to protect and enhance the City's tree canopy.	X					
		2.1. Downtown and Image Route Vision: To protect the surrounding wilderness from further outward expansion, the majority of intensification in Thunder Bay will occur along the City's Image Routes, and within the North and South Cores. Higher density built form that continues to support the integrity of stable neighbourhoods is encouraged. New development will be of the highest quality, and will promote a mix of uses to support active, pedestrian-supportive streets characterized by wide boulevards, public art, and active at-grade uses. Abundant landscaping and large, mature street trees will be provided in all new developments to enhance the urban forest, and bring nature back into the City.		X	X			
		3.1. Celebrating the Natural Foundation: All of the above features reinforce Thunder Bay's great Canadian wilderness context, and accommodate passive/ active recreation. Their preservation and enhancement should be of the highest priority. The protection of the tree canopy and reforestation of the City should influence the layout of all new development, and be linked by a well-connected network of parks, open spaces and trails to encourage alternative modes of transportation (i.e. walking and cycling).	X	X	X			
		Parks and Open Space: 2C Uses and Amenities: b) Playground equipment should be imaginative, easily maintained and should be located in areas shaded by trees		X				
		Transit Supportive Design: i) Areas adjacent to transit shelters should be well-lit, and should incorporate seating and tree planting for shade.		X				
		Boulevard Design: a) Boulevard widths should be optimized to support their multi-purpose function and provide adequate space to promote healthy tree growth. g) Boulevards should be planted with street trees. Linear tree trenches, soil cell technology, or structural soils are recommended to ensure mature growth. h) Pedestrian-scaled boulevard lighting should be provided in areas of high use, particularly where the future tree canopy may impact light levels.		X	X			
		Dedicated Cycling Lanes: f) New off-road dedicated cycling lanes should be placed in a wide boulevard and, where possible, separated from vehicular traffic by a 2.0 metre landscaped strip with street trees. Similarly, where possible, there should be a 1.8 metre planting strip between the cycling lanes and the adjacent sidewalk.		X				
		Green Streets: a) A City-wide campaign of expanding the street tree canopy should be a priority in all road works projects. c) Wherever possible, existing healthy street trees should be preserved. d) 15 cubic meters of good quality soil should be provided per tree (can be shared). e) To support sustainable tree growth, street trees should be planted in the boulevard - between the sidewalk and inside vehicular lane, and where possible use a continuous linear trench. f) Utilize continuous tree pits to maximize soil volume. A soil cell system is the preferred option when trees are planted in hard surface paving. A suspended slab system or structural soil infill are alternate options. h) Street trees should be planted at a minimum width of 2.5 metres. i) Where sufficient boulevard width is available, a double row of trees should be planted on either side of the Sidewalk Zone. j) For optimal tree health, street trees in the boulevard should be set back 1.5-2 metres (minimum) from the curb. k) Large deciduous trees should be planted at 8-10 metre intervals (on centre) or clustered in groups of 2-4 trees on bump-outs. l) Medium and small trees should be planted at 8-10 metre intervals (on centre). r) Utilities design and location should be coordinated so that it does not interfere with sustainable tree growth.	X	X	X			
		Green Medians: a) Medians planted with street trees should have a minimum width of 3.0 metres. c) Preferred species for trees and shrubs in medians are non-invasive species suitable for Zone 3 climatic conditions.		X	X			
Utilities: c) Utilities should be placed within the street Right-of-Way (or in a front yard easement) in a joint utility trench that can be accessed for repairs without disturbing street trees.	X							

		Arterial Roads: a) Arterial road boulevards should aim to be a minimum 4.8 metres in width and should accommodate street trees offset 1.5-2.0 metres from the curb.		X				
		Collector Roads: a) Collector road boulevards should aim to be a minimum 4.8 metres in width and accommodate street trees offset 1.5 metres from the curb.		X				
		Sustainability: Site-Design: d) Tree planting should be optimized for any site and within parking areas.			X			
		Surface Parking: g) 1 tree for every 8 parking spaces is recommended. These can be clustered to facilitate snow clearing.		X				
		Private Trees: b) Utility right of ways should be adhered to for all tree planting on private sites. c) Wherever possible, plant trees on private property in a continuous row, parallel with public street trees. e) City of Thunder Bay should distribute maintenance pamphlets for all new private trees.	X	X	X			
		Large Format Retail: h) Continuous boulevards of 4.8 metres should be provided on the principle sides of the building, incorporating street trees (spaced 8-10 meters on centre), landscaping, benches and pedestrian-scaled lighting.		X				
		Office Buildings: a) Buildings should address the principle public street but may incorporate setbacks that provide attractive landscaping and tree- planting.		X				
	UFMP	2011	7.2.2 Nuisance Trees: Recommendations: 119. Create policies that will guide land use decisions for publicly owned woodland buffers and incorporate as appropriate by-law provisions that would regulate the loss of woodlands on private property.				X	
			7.2.2 Nuisance Trees: Recommendations: 120. Make tree preservation a more significant part of the plan/site review process and ensure that the Urban Forester has an official role in all phases of site development—from application review to final approval. Currently, the Coordinator of Park Planning has this responsibility but is limited by the lack of a municipal Private tree By-Law.				X	
			7.2.2 Nuisance Trees: Recommendations: 121. Require a comprehensive tree preservation and/or landscape plan be developed for all public projects where trees are present. This plan would show how trees are being protected and restored, and would preferably be completed by a Certified Arborist.				X	
			Objective 1. Establish a canopy cover goal citywide of 50 percent: Strategy 1.3. Increase private tree planting efforts through educational and public awareness campaigns utilizing advocacy groups such as Trees Thunder Bay and municipal groups such as Earthwise® Thunder Bay.			X		
Toronto	Official Plan	2015	2.3.2 TORONTO'S GREEN SPACE SYSTEM AND WATERFRONT Policies 1. Actions will be taken to improve, preserve and enhance the Green Space System by: a) improving public access and enjoyment of lands under public ownership; b) maintaining and increasing public access to privately owned lands, where appropriate; c) restoring, creating and protecting a variety of landscapes; and d) establishing co-operative partnerships in the stewardship of lands and water. 2. Public agencies and Torontonians will be encouraged to support the protection, enhancement and restoration of links within and between elements of the Green Space System. 3. The Green Space System will be expanded by: a) acquiring linkages between existing parks and open spaces, where feasible; and b) acquiring lands, or easements over lands, associated with private development which can be connected to the System for the extension of recreational trails or which have important natural heritage value. 4. The sale or disposal of publicly owned lands in the Green Space System will be discouraged. No City owned land in the Green Space System will be sold or disposed of. However, City owned land in the Green Space System may be exchanged for other nearby land of equivalent or larger area and comparable or superior green space utility. 5. Within the Green Space System, development will not result in the loss of public space. 6. Increased public enjoyment and use of lands along the water's edge will be promoted by ensuring that future development and actions on the part of both the public and private sectors, including the Toronto Port Authority, the Toronto Waterfront Revitalization Corporation and the Toronto and Region Conservation Authority, will help to achieve the following objectives: a) minimize physical and visual barriers between the City and Lake Ontario; b) increase and improve public access to lands along the water's edge and between parts of the waterfront; c) improve water quality and the quality of beaches; d) improve the public realm with more parks, public squares and natural settings that please the eye and lift the spirit and support a sense of belonging to the community; e) increase the availability, choice and awareness of recreational opportunities and public activities throughout the year; f) protect, improve and where possible extend the Martin Goodman/Waterfront Trail as a continuous waterfront route for cyclists, pedestrians and people with disabilities; and g) maintain and enhance the natural heritage value of lands near or along the water's edge by protecting existing habitat and, where appropriate, restoring and enhancing habitat. 7. Private development and public works on lands along the water's edge or in its vicinity will: a) improve public spaces in the waterfront; and b) maintain and increase opportunities for public views of the water, and support a sense of belonging to the community. 8. The physical and visual continuity of the waterfront corridor will be maintained and enhanced. 9. The sale or disposal of publicly owned lands on the water's edge will be discouraged. 10. The year-round recreational use of unique regional resources such as Toronto Island Park and Rouge National Urban Park will be encouraged. 11. The important ecological and hydrological functions and park and trail connections that Greenbelt River Valley Connections provide will be recognized through public information, awareness and stewardship programs and partnerships with public and private landowners, First Nations, institutions and organizations.	X	X	X		

		3.1.2 BUILT FORM - Policies 1. New development will be located and organized to fit with its existing and/or planned context. It will frame and support adjacent streets, parks and 3.1.2 BUILT FORM open spaces to improve the safety, pedestrian interest and casual views to these spaces from the development by: d) preserving existing mature trees wherever possible and incorporating them into landscaping designs.	X	X			
		3.4 NATURAL ENVIRONMENT - To support strong communities, a competitive economy and a high quality of life, public and private city-building activities and changes to the built environment, including public works, will be environmentally friendly, based on: d) preserving and enhancing the urban forest by: i. providing suitable growing environments for trees; ii. increasing tree canopy coverage and diversity, especially of long-lived native and large shade trees; and iii. regulating the injury and destruction of trees;	X		X		
		4.3 PARKS AND OPEN SPACE AREAS Policies: [...] Development Criteria in Parks and Open Space Areas: 6. Any development provided for in Parks and Open Space Areas will: a) protect, enhance or restore trees, vegetation and other natural heritage features and maintain or improve connectivity between natural heritage features;	X		X		
		5.1.3 SITE PLAN CONTROL 3. To help achieve environmentally sustainable development, the City may use subsection 114(5)(2)(iv) and (v) of the City of Toronto Act, 2006 to secure the following sustainable design features in development that address exterior building and site matters in Tier 1 of the Toronto Green Standard: e) trees to enhance the urban forest and use of native species to protect, restore and enhance the natural heritage system;	X	X	X		
Private Tree By-Law	2015	813-12. Permit required. [Amended 2008-01-30 by By-law No. 118-2008; 2013-02-21 by By-law No. 248-2013] No person shall injure, destroy or remove or permit the injury, destruction or removal of any tree, including a multi-stem tree having at least one stem that has a diameter measurement of 30 centimetres or more measured at 1.4 metres above ground level in accordance with this article, unless authorized by permit to do so.	X				
		813-14. Applications; form and content. A. An owner who wishes to injure or destroy a tree shall submit an application on the prescribed form and shall provide the following to the satisfaction of the General Manager: [Amended 2008-01-30 by By-law No. 118-2008; 2015-12-10 by By-law No. 1327-2015] (1) The name, address and telephone number of the applicant. (2) The non-refundable application fee set out in Chapter 441, Fees and Charges, Appendix E, Schedule 1. [Amended 2011-09-27 by By-law No. 1174-2011; 2013-02-21 by By-law No. 248-2013; 2015-12-10 by By-law No. 1327-2015] 813-15 December 10, 2015 TORONTO MUNICIPAL CODE - CHAPTER 813, TREES (3) The purpose for which the permit is required.; (4) A tree survey showing the location of trees on the property.; (5) An arborist report. [Amended 2015-10-12 by By-law No. 1327-2015]; (6) A tree protection plan. [Amended 2015-10-12 by By-law No. 1327-2015]; (7) Landscaping and replanting plans.	X				
		813-29. Penalties - A person who is convicted of an offence is liable: A. To a minimum fine of \$500.00 and a maximum fine of \$100,000.00 per tree; and B. A special fine of \$100,000.00 (under subsection 370 (1) (d) of the City of Toronto Act, 2006).					X
Design Guidelines		1. Street trees and landscaping. Seek ways to incorporate and provide healthy growing conditions for trees and/or landscaping to improve air quality, mitigate urban heat-island effect, enhance ecosystem health, and contribute to community character. Select planting locations, spacing and design details (e.g., adequate soil volume, water and sun access) so that trees and landscaping will flourish. Trees can frame and define streets, calm traffic by visually narrowing the roadway, and add texture, shade and visual interest.		X	X		
UF Study	2016	4. Council adopt the following policy with respect to the receipt of replacement tree planting funds collected under the Street Tree and Private Tree By-laws (City of Toronto Municipal Code, Chapter 813, Articles II and III): a. That all replacement tree planting funds collected be contributed to the Tree Canopy Reserve (XR1220) at the end of every fiscal year to ensure actual revenues collected are available to expand the tree canopy and facilitate long term planning; b. As part of the annual operating budget cycle, Parks, Forestry and Recreation estimate the replacement funds collected as current revenue to be received, and an equivalent expenditure in the form of a contribution to the Tree Canopy Reserve (XR1220) be included as part of the Operating Budget; c. That the future expenditures for the Tree Planting Strategy be included as part of future Operating Budgets and funded by withdrawals from the Tree Canopy Reserve (XR1220); and	X		X		
		Achieve the City's tree canopy target of 40 per cent through partnerships and engagement of private landowners					
		Action #1 - Tree Planting and Support Program for Residential Landowners • Subsidize private tree planting and tree care in partnership with community partners such as LEAF.	X		X	X	
		Action #2 - Direct Tree Rebate Program for Residential Landowners • Provide direct rebate for tree planting on residential lots, together with education and outreach activities.	X		X	X	
		Action #6 - Develop an "Every Tree Counts" Campaign • Develop a simple and clear engagement campaign to raise public awareness about the benefits of trees, tree planting opportunities and stewardship.	X		X	X	

			Growing Toronto's Tree Canopy (Tree Planting Strategy) Emphasis on public engagement, education, and fostering stewardship. Very detailed report with analysis including planting and management tools and guidelines.	X		X		
Vaughan	Official Plan	2007	10.1.2.47. That in addition to matters under the Planning Act, the Committee of Adjustment, in determining whether a consent is to be granted, shall have regard for the following matters in consultation with the appropriate departments and agencies: d. Conservation: i. the Toronto and Region Conservation Authority shall be consulted in respect of applications for consent which are subject to flooding, wind or water erosion, or characterized by steep slopes, groundwater recharge, valuable wildlife or fish habitat, mature tree stands and areas of high aggregate potential.	X				
			10.1.3.3. The following information, studies and materials, or other information, that may be identified through the Pre-Application Consultation meeting, may be required to be submitted in support of a complete application for an Official Plan Amendment, Zoning By-law Amendment, Consent, Draft Plan of Subdivision, Draft Plan of Condominium and/or Site Plan Approval: [...] h. Other Reports and Studies [...] viii. Tree inventory and preservation study; and ix. Arborist report.	X				
			3.3.3 Woodlands - Woodlands are comprised of Natural Areas of vegetation in the landscape and their associated wildlife populations. Those woodlands on table lands are smaller and disconnected but provide important ecological functions that will be preserved. The variety of available woodland resources influences the range of native biodiversity in Vaughan. Vaughan will support the maintenance of important environmental functions, attributes and linkages of woodland resources, recognizing that this will lead to more stable, resilient systems of vegetation and wildlife. It is the policy of Council: 3.3.3.1. To protect and enhance woodlands, by: a. prohibiting development or site alteration in woodlands and their minimum vegetation protection zones except as permitted per the provisions of policy 3.2.3.7 and, in the case of significant woodlands and their vegetation protection zones, the appropriate Regional or Provincial policies shall apply; b. encouraging that minimum vegetation protection zones be restored using a diversity of native tree species that are sensitive to the realities of the impact of invasive species and invasive destructive pests in new development; c. seeking public ownership of woodlands and their ecological buffers through the development process; and d. using sound woodland management practices that will maintain or enhance existing functions, attributes and linkages, including entering into heritage conservation and other easement agreements, where woodland resources remain in private ownership.	X				
			3.3.3.2. That an application for development or site alteration on lands adjacent to woodlands will not be considered by Council unless: a. the precise limits of any woodland within the area of the application have been established to the satisfaction of the City; and b. an evaluation is carried out to determine that the required minimum vegetation protection zone between the woodland and the proposed development is sufficient to maintain or enhance existing functions, attributes and linkages of the woodland.	X		X		
			3.3.3.3. That notwithstanding policy 3.3.3.1 and policy 3.3.3.2, outside of the Natural Areas and Countryside on Schedule 1 and within the Urban Area on Schedule 1A, and outside of the Oak Ridges Moraine Conservation Plan and Greenbelt Plan Areas, development or site alteration may be permitted in a woodland if all of the following are met: a. the woodland does not meet any of the following criteria defining a significant woodland in the York Region Official Plan: i. contains globally or provincially rare plants, animals or communities as designated by the Natural Heritage Information Centre; ii. contains species designated by the Committee on the Status of Endangered Wildlife in Canada or by the Committee on the Status of Species at Risk in Ontario as threatened, endangered, or of special concern; iii. is within 30 metres of wetlands, lakes and their littoral zones, permanent and intermittent streams, kettle lakes, seepage areas and springs; iv. is 4 hectares or larger in size; or v. is over 2 hectares and: A. is within 100 metres of another Core Feature; or B. occurs within the Natural Heritage Network; b. the woodland is considered to be early successional or the woodland is dominated by invasive non-native tree species as determined by a Woodland Dominance Study to the satisfaction of the City and York Region; c. the woodland does not contain species or communities listed in policy 3.3.3.3.a.i or policy 3.3.3.3.a.ii; and d. the woodland is located outside of and is not connected to the Natural Heritage Network.	X				
			3.3.3.4. That should policy 3.3.3.3 apply, development and site alteration may be permitted within all or part of the woodland if development or site alteration does not affect the ability of the retained portion of the woodland and/or adjacent woodlands to remain significant in accordance with the criteria in policy 3.3.3.3.a of this Plan. A woodland enhancement plan shall be completed to the satisfaction of the City and York Region. Woodland enhancement will provide ecological gains in areas on or adjacent to the site, adjacent to the Natural Heritage Network, or in areas within the Regional Greenlands System.					
			3.3.3.5. To prepare an urban forest inventory with the objective of creating a forest management plan for Vaughan to include the urban forest (which is a forest resource that occurs within the Urban Area, both in and out of the Natural Heritage Network) and support the active management and long term health of the forest for its intrinsic biodiversity and ecosystem function.	X		X		
			3.3.3.6. That woodlands in the Oak Ridges Moraine Conservation Plan Area and the Greenbelt Natural Heritage System will be evaluated for significance and protected based on the requirements of the Oak Ridges Moraine Conservation Plan or the Greenbelt Plan and associated technical papers.	X				
			3.4.1.5. To assist in the implementation of the Oak Ridges Moraine Conservation Plan by working with the Province in the implementation of tree cutting and site alteration by-laws required by the Oak Ridges Moraine Conservation Act and any subsequent regulations.	X				

			3.7.1.2. To reduce air emissions and impacts from air emissions by: a. increasing opportunities for natural carbon sequestration by establishing annual targets to grow the urban forest through tree planting programs;	X		X		
	By-Law	2007	APPLICATIONS: FORM AND CONTENT 6. An owner who wishes to injure or destroy a tree shall submit to the Manager an application on the prescribed form and shall provide the following: (a) the name, address and telephone number of the applicant; (b) the purpose for which the permit is required; (c) a tree survey showing the location of trees on the property; (d) an arborist report identifying the location, species, size and condition of trees on the property and describing protection measures to be implemented; (e) a tree protection plan identifying the location, species and size of trees on the property and illustrating details of protection measures including protective barriers and hoarding to be implemented to protect trees that are to be retained; (f) landscaping and replanting plans.	X			X	
			OFFENCES 19. (1) Any person who contravenes any provision of this by-law is guilty of an offence and is liable: (a) on a first conviction, to a fine of not more than \$10,000 or \$1,000 per tree, whichever is greater; and (b) on any subsequent conviction, to a fine of not more than \$25,000 or \$2,500 per tree, whichever is greater. (2) Any corporation that contravenes any provision of this by-law is guilty of an offence and is liable: (a) on a first conviction, to a fine of not more than \$50,000 or \$5,000 per tree, whichever is greater; and (b) on any subsequent conviction, to a fine of not more than \$100,000 or \$10,000 per tree, whichever is greater.				X	
			PERMIT REQUIREMENTS AND EXCEPTIONS - 3. (1) No person shall, within the City's boundaries, injure or destroy any one (1) or more trees having a tree diameter of twenty (20) centimetres or more or having a base diameter of twenty (20) centimetres or more unless authorized by permit to do so pursuant to this by-law. (2) Despite subsection (1), a permit is not required: (a) for emergency work; (b) for the pruning of a tree; (c) for the removal of dead branches (d) to injure or destroy trees located on rooftop gardens, interior courtyards, or solariums; or (e) to injure or destroy trees on a nursery or golf course. FILING FOR A PERMIT - 4. An Owner who applies for a permit shall submit to the Manager the following: (1) a completed application; (2) a plan or drawing of the lot to the satisfaction of the Manager illustrating which trees are to be injured or destroyed; (3) payment of the required fees as prescribed by the City; (4) an arborist report, if required by the Manager; (5) where the base of a tree straddles a property line, the written consent to the permit issuance from the affected adjacent property owner; and (6) where the person is not the Owner, the written authorization of the Owner consenting to the application.	X			X	
	Design Guidelines	2007	2.2.1 A Green City Approach - The City of Vaughan is made up of almost 40% natural areas and countryside, including watercourses, woodlands (11.3%), forest cover (16%), wetlands (1.5%), greenbelt protection (38%) related open spaces, agricultural lands and a system of multi-use trails that connects many of these areas. Vaughan is home to the headwaters of the Humber and the Don Rivers and also contains parts of the Greenbelt and the Oak Ridges Moraine. Conceptually, the focus on knitting these natural areas together with a network of green streets is Vaughan's "Green Approach" to urban redevelopment.	X		X		
Waterloo	Official Plan	2007	(16) If illegal acts, including but not limited to tree removal, wetland filling or draining, or diverting of watercourses, cause a reduction in the form or function of a natural feature, such reduced form or function will not be recognized as existing conditions within the development application review process. Restoration of the damaged area may be required prior to, or as a condition of approval of any development application, excluding site plan applications, and where applicable, through the City's Site Alteration By-law.	X			X	
			(2) It is the City's intent to protect existing trees and plant new ones where feasible and appropriate. When considering development applications and site alteration permit applications, the City will require that only the trees that directly impede the proposed work be removed and that the applicant replace them in reasonable amount, with trees of sufficient maturity. The amount and maturity of replacement trees will be determined based on the amount, maturity, species, and health of the trees to be removed. A Tree Preservation Plan may be required to provide an inventory of all trees on the site, an assessment of their health and condition, recommendations regarding which trees should be saved and which will be removed, tree protection measures, and replacement trees. As part of any Tree Preservation Plan, the City may require tree loss totals and corresponding compensation estimates. Tree Preservation Plans must be prepared by qualified professionals.	X			X	
			(3) Development or site alteration will not be permitted within Supporting "A" Natural Features, except for: (a) restorative, scientific, and educational uses related to on-site resources, including forest, fish, and wildlife management and conservation; (b) flood or erosion control projects demonstrated to be in the public interest for which no other alternative is feasible; (c) essential infrastructure for which no other alternative is feasible and where crossings and the area of disturbance will be minimized; (d) minor alterations to legal non-conforming land uses; and, (e) new mineral aggregate operations in accordance with Section 9.C of the Regional Official Plan. (4) Development or site alteration proposed in accordance with policy 8.2.5(3) will require the submission of an Environmental Impact Statement or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, to determine the mitigation measures to be implemented, as appropriate, through the development application review process	X				

Windsor	Design Guidelines	2007	(6) The City will implement planting programs of desired and compatible species, with preference given to native species, on public lands or, in conjunction with landowners, on private lands. (7) To generate appreciation and stewardship towards the urban forest, the City will encourage public education and involvement.					
			3.11.1 General Urban Design Policies - The following General Urban Design policies are intended to support the design objectives established in policy 3.1(4) of this chapter and define the primary design elements and expectations that will apply to all development in the City in the public and private realm: [...] (5) Existing Site Features: Identify opportunities to retain prominent site features and vegetation through sensitive or innovative design strategies and to protect adjacent site features and vegetation on abutting properties through the development review process including, but not limited to, the location and massing of buildings, site grading, landscape and buffer opportunities, tree protection measures and alternative stormwater management strategies. [...]	X	X			
			8.2.2 General Policies (1) The Natural System consists of Landscape Level Systems, Core Natural Features, Supporting Natural Features, fish habitat, Restoration Areas, and Linkages.					
			8.2.5 Supporting Natural Features (1) Supporting Natural Features are those natural features not meeting the criteria for provincial or regional significance (i.e. designation as Landscape Level Systems or Core Natural Features) but which are locally significant. These features are the most significant elements of the local landscape in terms of protecting and enhancing ecological functions. Supporting Natural Features are identified by the City and are shown on Schedule 'A4' - Natural System. Supporting Natural Features are categorized as either Supporting "A" Natural Features include: (a) Locally Significant Wetlands; (b) Locally Significant Woodlands; (c) Significant Wildlife Habitat; and, (d) Perennial Watercourses. Supporting "B" Natural Features include: (a) Intermittent Watercourses; (b) Other Wetlands; (c) Other Woodlands; and, (d) Environmentally Significant Discharge Areas and Environmentally Significant Recharge Areas.	X				
			The Natural System is shown on Schedule 'A4' - Natural System. The boundaries of the natural features that make up the Natural System will be delineated more precisely through watershed studies, Environmental Impact Statements, or other appropriate studies accepted by the City and the other public agencies having jurisdiction. The natural features that comprise Core Natural Features and Supporting Natural Features are mapped collectively. Consultation with the City is required for further categorization of these elements.					
			Where elements of the Natural System have not been adequately identified through a watershed study or other appropriate study, development and site alteration will be prohibited until such time as a natural heritage review is completed by an owner/applicant, to the satisfaction of the City and the other public agencies having jurisdiction, to identify any such elements on the subject lands and, wherever appropriate, contiguous lands. Where such elements are identified, an Environmental Impact Statement or other appropriate study accepted by the City and the other public agencies having jurisdiction, in accordance with Section 8.2.11, may be required.	X				
	Official Plan	2000	2.2.1 6) Design sites to avoid or minimize impacts to existing site features and vegetation. Provide adequate buffers and protection measures through the approvals and construction processes.		X			
			Basic Design Principles: 1. Design sites to incorporate existing natural vegetation as focal points or for tree preservation opportunities. - Guideline Tip: prepare tree preservation plan to preserve prominent vegetation on site. Review Ministry of Natural Resources Species at Risk Act to ensure plant species are not subject to Ministry regulations.		X			
			Development Strategy - Distinctive Neighbourhood Character - 3.2.1.3 Windsor will keep much of what gives its existing neighbourhoods their character - trees and greenery, heritage structures and spaces, distinctive area identities, parks, and generally low-profile development outside the City Centre. Around the neighbourhood centres, the existing character of the neighbourhood will be retained and enhanced. Newly developing areas will be planned to foster their own unique neighbourhood identities with a mixture of homes, amenities and services.	X				
			Urban Forestry Policies - 5.3.6.1 Council will recognize and encourage the protection of trees as essential to the health and welfare of the community and the natural environment.	X		X		
			Urban Forestry Policies - 5.3.6.2 Council will recognize that a diversity of trees contributes to the distinctive character of neighbourhoods and promotes the planting of species which further enhance this character.	X				
				X				
				X				
				X				



Urban Forestry Policies - 5.3.6.6 The Municipality will create, maintain and enhance treed areas along infrastructure rights-of-way and in public open spaces.		X			
Urban Forestry Policies - 5.3.6.7 Council may require proponents of development and infrastructure undertakings to submit an inventory of trees on site and prepare and implement a tree conservation and replacement plan.				X	
Urban Forestry Policies - 5.3.6.8 The Municipality will endeavour to protect trees on public and private lands from damage by mechanical equipment during construction and maintenance activities by developing guidelines and standards to protect trees from damage associated with construction and maintenance operations.					
Urban Forestry Policies - 5.3.6.9 The Municipality will maintain a city-wide inventory of trees along public rights-of-way as the basis to monitor the effectiveness of urban forestry policies and practices.				X	
Urban Forestry Policies - 5.3.6.10 The Municipality will encourage the relocation and transplanting of trees to municipal lands in situations where trees would have been lost due to development activities.	X				
Urban Forestry Policies - 5.3.6.11 The Municipality will maintain the character of its mature tree-lined streets by replacing any tree within the public right-of-way requiring removal with a new tree planted as close as practical to the location of the original.	X	X			
Atmospheric Air Quality Policies - 5.3.7.2 Council will contribute to the reduction of air pollution by using the following land use planning approaches: (e) protecting and improving trees and natural areas.			X		
An application to allow a maximum height of up to 8m through a minor variance may be considered where the external second unit is proposed to contain all of its habitable space above a garage subject to the following criteria: (b) Significant trees and plantings are preserved on the subject property;	X				
Urban Forest - 6.112.4 - Council shall encourage the provision of trees within the City Centre Planning District.	X				
Front Yard Parking: 8.11.2.22 Council will limit the construction of parking spaces in the required front yards of dwellings, in order to protect the aesthetic character of older residential neighbourhoods, ensure the availability of on-street public parking, ensure unhampered pedestrian movement within the public right-of-way and prevent harm to boulevard trees.	X	X			
Pedestrian Scale 8.3.2.2 Council will encourage buildings and spaces that establish a pedestrian scale by promoting: (b) the repetition of landscaping elements, such as trees, shrubs or paving modules; and		X			
Tree Conservation: 8.5.2.7 Council will conserve and protect trees in accordance with the urban forestry policies of this Plan (see Environment Chapter)	X				
Heritage Resources and Planning Initiatives - (e) Having regard to the following factors when assessing applications such as zoning amendments, site plan control applications, demolition control and payment-in-lieu, which may impact heritage resources: (iii) Respecting the yards, gardens, trees and landscaped grounds associated with the heritage properties and districts which contribute to their integrity, identity, and setting;	X				
For Planning Applications: The municipality may require the applicant to submit any of the following information at any time during an application under the Planning Act: (r) Tree Inventory and Preservation Study;				X	
10.2.1.15 At the time of application for a heritage permit in the Sandwich Heritage Conservation District, Council may require an applicant to submit any of the following information: (c) Tree survey;				X	
Landscaping Policies - 1.13.15 - The following policies will guide the design and development of Central Riverfront Landscaping: (a) the majority of trees and shrubs will be low-maintenance, open crowned, non-toxic, thornless and produce as little litter (twigs, seeds) as possible;		X			
Scenic Drive Policies - 1.13.18 - The following policies will guide the future development of Riverside Drive: (a) Riverside Drive will be developed as a scenic tree-lined drive encouraging reduced traffic speeds and volumes and greater opportunities for cycling;		X			
Parking Policies - 1.13.21 - The following policies will guide the design and development of Central Riverfront parking areas: (d) riverfront parking courts should integrate tree planting at a preferred minimum ratio of one tree for every four parking spaces		X		X	
Trees - 1.22.15 Existing street trees shall be maintained and protected, to the extent that it is technically feasible, from damage due to site development, redevelopment, paving modifications, and street and infrastructure works. In order to maintain the tree canopy that helps to define the spatial volume of the block, any trees lost will be	X			X	

	replaced with trees of a minimum trunk diameter of ten centimetres (4 inches). The City Forester will determine the species of tree that will maintain the canopy cover. (Note: the same wording if found in policy 1.26.14)					
	1.26 Sandwich Heritage Conservation District - Contextual value 1.26.6 One of the greatest assets contributing to the overall heritage character of Sandwich is the mature trees found on both public and private property. Often they provide an immeasurable benefit to the streetscape, providing continuity and rhythm. Not only are their large canopies important visually, but also for the role they have played historically and continue to do so today in mitigating air quality in the district.	X				
	1.26 Sandwich Heritage Conservation District - Building Renovations and new construction - 1.26.8 The objective of the Sandwich Heritage Conservation District is to preserve the buildings and streetscape. Owners of property will require a heritage permit for the following changes to their property: (s) Removal of trees with a minimum trunk diameter of 10 centimetres	X			X	
	1.26 Sandwich Heritage Conservation District - 1.26.16 Fences, trees and hedges form an important part of the character of each property, and should be reflective of the heritage character of the building or structure. Existing fences, trees and hedges should be maintained, and new ones should reflect heritage designs, materials and species over more modern styles, materials and species.	X	X			
	Screening of Parking Areas - 1.39.12 Parking areas described in Sections 1.39.3 and 1.39.4 shall be subject to the provisions of the zoning by-law and site plan control by-law. Appropriate screening through the use of decorative fencing, decorative walls or living walls, tree planting, low berms and other landscape elements will be required, to the satisfaction of the City Planner. These elements serve to reduce the visual impact of the parking areas from the streetscape. Screening of parked vehicles shall also consider safety of users by permitting views to adjacent rights-of-way or access ways for orientation and safety		X			
	Woodlots and Tree Stands: 2.7.2.38 Woodlots and tree stands worthy of preservation shall be incorporated into parks as areas for passive recreation, wherever desirable as part of the Public Open Space system and wherever the active recreational needs of the residents of the park service area can be or has been provided for. In cases where active recreational needs have not been provided for, other means will first be pursued for acquisition before using the parkland conveyance requirement under the Planning Act.	X				
	Landscape Plan - 4.7.2.3 Prior to development approval the owner shall prepare a landscape plan which shall also include the following: (a) a plan showing the inventory of existing trees, their location, size, species and condition; (b) the relationship of the trees to all proposed buildings and paved areas; (c) an identification of which trees are to be removed and which are to be retained and maintained; (d) an analysis demonstrating how the long term survival of the retained trees is to be ensured. Such plans shall be required either as a condition of removal of the "H" (holding) zoning prefix or as a condition of site plan control approval as appropriate. A specific objective of a landscape plan shall be to retain the maximum number of mature healthy trees.				X	
	Large Lots 4.7.2.4 To provide flexibility for tree retention and maintenance, large lots shall be required for development. In no case shall lot sizes be less than 18 metres in overall width, however, larger lots will be required where the ownership pattern permits the retention of mature healthy trees. Zoning controls will be imposed, where appropriate, to minimize the building coverage and allow for flexibility in siting in order to protect trees. Wherever more than one lot is proposed by the owner, the zoning shall require use of an "H" (holding prefix) and the landscaping plan shall be prepared and a site plan control agreement shall be entered into showing the building envelopes, paved areas and trees to be retained prior to the removal of the "H".	X			X	
	Street design - 4.7.2.5 In Woodland Residential areas, road design may include mountable (V-type) curbs for a less obtrusive road edge, alternative surface treatment for road, walkway and sidewalks, preservation of natural stands of trees on the street right-of-way itself, and curved pavements where appropriate to protect trees and create a natural road edge.	X				
	Tree Preservation Agreements - 5.7.6.6 Council may require developers to enter into agreements to preserve as many of the existing trees as is feasible in accordance with the current City of Windsor Parks and Recreation Department Landscape Manual.	X			X	
	Open Space - Shading 7.7.8.17 Open Space areas shall include shade trees to enhance the urban forest where space permits, and shall include native deciduous and evergreen materials, woody shrubs, ground covers, grasses and perennials.			X		
	Boulevard Treatments - 7.7.8.18 Open Space areas adjacent to roadways shall include boulevard planting treatments using salt-tolerant, high branching shade trees planted in sodded boulevards whenever conditions permit, to maximize urban forest canopy and to provide a continuous shaded streetscape.		X			



## Appendix B1: Information Letter

*October 28, 2019*

To whom it may concern,

We are a team of Master's students in the School of Planning at the University of Waterloo. This semester, we are working with the City of St. Catharines to help guide their future decisions regarding tree protection and management on private property. To achieve this, we are interested in gathering your perspective on the effectiveness of tree management strategies used in your municipality.

We understand that municipalities in Ontario are becoming increasingly involved in tree protection by adopting a variety of strategies and policies. Through our initial assessment, we found that these strategies and policies vary greatly and that municipalities apply different levels of protection to urban trees. Additionally, we discovered that most municipalities have explicit targets for tree canopy coverage and other tree-related activities (e.g. planting and preservation). Therefore, we are interested in learning how strategies and policies are implemented, and how their objectives are measured.

Your participation in this study will involve either an e-mail response to sent interview questions or a telephone interview. Interview questions will revolve around the themes of policy and program implementation and their outcomes. The information gathered from interviews will be used in conjunction with our own research to develop a practice guideline for municipalities and others interested in the topic of tree preservation and management. As this is a student project that must be completed by mid-November we would appreciate your response if possible no later than November 8.

We very much look forward to speaking with you and thank you in advance for your assistance in this project.

Yours sincerely,

Kaitlin Webber, Melissa Le Geyt, Theresa O'Neill, Stephen Connors, Vignesh Murugesan



## Appendix B2: Key Informant Interview Questions

### Key Informant Interview Questions

- 1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).**
  - a. When were they adopted?
  - b. Why were they adopted?
  - c. What policy do you find to be the most effective? Why?
  - d. What policies do you find to be ineffective? Why?
  
- 2. Describe the process your municipality undertook to adopt these policies.**
  - a. What have been the challenges in adopting management policies?
  - b. How were stakeholders brought on board?
  
- 3. How is the effectiveness of these policies being measured?**
  - a. Have these policies influenced the tree canopy?
  - b. How is tree canopy being measured and tracked?
  
- 4. Does your municipality have a compensation program for the removal of private trees?**
  - a. If so, how is it employed?
  - b. How effective is it?
  
- 5. What additional programs exist related to tree preservation and management in your municipality?**
  - a. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies?



## Appendix B3: List of Participating Municipalities

<i>Participating Municipality:</i>	<i>Page #</i>
1. Town of Ajax	111
2. City of Barrie	114
3. City of Cambridge	118
4. City of Guelph	120
5. City of Mississauga	124
6. City of Niagara Falls	126
7. Town of Oakville	128
8. City of Oshawa	133
9. City of St. Catharines	134
10. City of Thunder Bay	135
11. City of Toronto	137
12. City of Waterloo	140
13. City of Windsor	142



## Appendix B4: Interview Response Data and Transcripts

### 1. Town of Ajax

Submitted via email 11/06/2019

1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).

- a. When were they adopted?
- b. Why were they adopted?
- c. What policy do you find to be the most effective? Why?

- The Town has several mechanisms to address private tree removal, including **Site Plan Control By-law, Tree Protection By-law (By-law 137-2006)** and **Boulevard Tree Protection By-law (By-law 138-2007)**.
- The Tree Protection By-law only applies to lands outside of the Urban Area Boundary, within the Greenbelt Plan Area; and on lands designated Environmental Protection, Open Space or Neighbourhood Park in the Town's Official Plan.
- The Town's Official Plan has sections (s.2.1.4, 2.2.5) that talk about tree protection and restoration. Policies require reimbursement, in the form of new trees or financial compensation, for healthy trees that are removed in development applications.
- There is also a policy identifying that a Town-wide tree cutting by-law be established, however one has not been developed that would apply to private properties within the Urban Area. This action has also been identified in the Ajax Climate Risk and Resiliency Plan, recommending an update to the Town's Tree Protection By-law to include private properties within the Urban Area. Politically this has not been prioritized, and the cost of enforcement needs to be examined more closely.
- The Town completed an Urban Forestry Cover Study in 2008 and subsequently a Urban Forestry Management Plan was completed in 2015, the goal is to enhance tree protection and increase Urban Forestry within the Town.

<https://www.ajax.ca/en/get-involved/resources/Sustainability/Trees/UFMP-14-Dec-2010-Final-with-Appendices.pdf>

- All of the Town's Urban Design Guidelines, including the Employment Area Urban Design Guidelines, and Motor Vehicle Gas Bar / Service Station Guidelines have sections that talk about tree preservation and tree planting.

- d. What policies do you find to be ineffective? Why?



- Site Plan Control By-law, Tree Protection By-law and Boulevard Tree Protection By-law. These by-laws allow Planning and Development Staff to review proposed tree removal during the development application and ask for tree replacement and/or tree compensation cash-in-lieu. All tree compensation cash-in-lieu are deposited into a fund that Operations Staff can withdraw to replant trees elsewhere in the Town to enhance the canopy.

**2. Describe the process your municipality undertook to adopt these policies.**

- a. What have been the challenges in adopting management policies?
  - b. How were stakeholders brought on board?
- Official Plan policies were implemented through Official Plan Amendment No. 38, which also implemented other Climate Change and Environmental policies. This followed the normal Official Plan Amendment process (Open House meetings, Statutory Public Meeting, ect.). There were no major challenges related to the tree protection policies contained within the amendment.
  - Politically a Tree Protection By-law that applies to private properties within the urban area has not been prioritized, and the cost of enforcement has not been examined and is viewed as an impediment.

**3. How is the effectiveness of these policies being measured?**

- a. Have these policies influenced the tree canopy?
  - The Town has successfully protected trees throughout the Town, particularly from development. Where trees have been proposed to be removed through development, applications have resulted a net gain in environmental protection areas and associated vegetation protection zones. Unfortunately, it is too early to determine the success of the policies as the tree canopies have not yet matured. The Town has collected significant money through development applications to enhance planting throughout the Town.
- b. How is tree canopy being measured and tracked?
  - The Urban Forestry Management Plan completed in 2015 indicated that the Town had approximately 18.5% tree canopy. This will be measured again through an updated Management Plan to be completed in the next couple of years. Development applications also track the tree plantings and restoration areas.

**4. Does your municipality have a compensation program for the removal of private trees?**

- a. If so, how is it employed?
- b. How effective is it?



- Only through Development Applications. The Town uses a tree replacement formula to determine the amount of trees to be replaced and an associated cost where cash-in-lieu is to be provided, see attached. Trees are either replaced on-site, or cash-in-lieu is provided and the Town plants trees elsewhere. This process has been successful.
- The Town also participate the **LEAF Backyard Planting program**:  
<https://www.ajax.ca/en/get-involved/trees.aspx#LEAF-Backyard-Planting>

**5. What additional programs exist related to tree preservation and management in your municipality?**

- a. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies?
  - **For other additional programs, please refer to our webpage for more detail:**  
<https://www.ajax.ca/en/get-involved/trees.aspx>





## 2. City of Barrie

Submitted via email 11/05/2019

1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).

- Official Plan (2018) sets out Goals for Natural Heritage Protection (section 3.5), specifically: <https://www.barrie.ca/City%20Hall/Planning-and-Development/Pages/Official-Plan.aspx>

### 3.5 NATURAL HERITAGE, NATURAL HAZARDS AND RESOURCES (Mod D (cc))

#### 3.5.1 GOALS

(a) To identify, protect and enhance natural *heritage features and areas* and their connecting linkages including the land, air and water and the life *they support* for the benefit of future generations by encouraging and, where necessary, only allow land uses which protect the natural heritage features and functions of Environmental Protection Areas. **(Mod D (dd)(i))**

(b) To promote the protection of natural vegetated areas as a contiguous unit.

(c) To maintain or enhance the long term environmental quality of the City of Barrie recognizing that the City is the principal *growth* centre of the region. **(Mod D (dd)(ii))**

(d) To encourage the management of Barrie's waterfront and watersheds to maintain or enhance the natural quality of Lake Simcoe, Kempenfelt Bay, Little Lake and valley and stream corridors within the City.

(e) *To protect people and property and to minimize social disruption within the City from natural hazards including flooding and erosion.* **(Mod D(dd)(iii))**

#### 3.5.2 POLICIES

##### 3.5.2.1 GENERAL POLICIES

(a) The City shall encourage the local Conservation Authorities to prepare watershed management plans as input to the City's role in the management of watershed resources.

(b) In the review of plans, programs and development applications, the City shall protect the natural environment and its ecological functions for conservation, recreation, scientific and educational value, and its benefits to human health.

##### 3.5.2.2 LAND MANAGEMENT

(a) In order to maintain and enhance vegetation cover, the City shall support tree planting, **tree preservation**, conservation initiatives and land stewardship strategies.

(b) New development shall be directed to maintain the natural landscape that shapes and defines the City's landform features, natural watershed drainage patterns and vistas.

##### 3.5.2.4 NATURAL HERITAGE RESOURCES (OPA 14, By-law 2013-059)

(a) The Natural Heritage Resources in the City of Barrie are depicted on Schedule H. Schedule H is intended to be used as an overlay to Schedule A: Land Use. Through the



implementation of the following policies, Schedule H can be used as a guide to promote the protection, enhancement, and restoration of the City's natural heritage features and functions.

i. **Level 1** resources represent critical components of the Natural Heritage Resource network. No development shall be permitted within these areas.

☐ Environmental Protection Area policy 4.7.2.2 would apply to all properties identified as Level 1.

☐ The City will strive to designate all properties identified as having a Level 1 Natural Heritage Resource as Environmental Protection.

☐ An Environmental Impact Study (EIS) will be required for any development or site alteration within 120 metres of an area identified as Level 1 on Schedule H.

ii. **Level 2** resources represent significant components of the Natural Heritage Resource network. The features and function of these areas should be retained, however, there is potential for development if no negative impact can be demonstrated or mitigated

- Natural Heritage Mapping and Categories: <https://www.barrie.ca/City%20Hall/Planning-and-Development/Documents/Official-Plan-Schedules/Schedule%20H-Natural%20Heritage%20Resources.pdf>
- Urban Forest Strategy provides long term management guidelines for future forest conditions, e.g. canopy mapping and development of targets for future diversity and canopy percentages.
- Private Tree By-law: Provides legal protection of trees on private property <https://www.barrie.ca/Living/Environment/Pages/UrbanForestry.aspx> Main protection is through the Private Tree By-law. Private Tree protection for trees growing as part of an ecological woodlot (0.5 acres or larger) is provided within the by-law, guided by the official plan and the Urban Forest Strategy. The first version was adopted in 1990, and has been updated several times (latest in 2014). More info at: <https://www.barrie.ca/Living/Environment/Pages/UrbanForestry.aspx>

a. When were they adopted?

Most current versions are as follows:

- OP – 2018
- Urban Forest Strategy - 2014
- Tree By-law – 2014

b. Why were they adopted?

- OP – The OP is used as a guide to promote the protection, enhancement, and restoration of the City's natural heritage features and functions.
- The Urban Forest Strategy was adopted as a guide to the long term management of forest and tree resources within the City.
- The original 1990 private tree by-law was adopted in reaction to rapid growth and development of lands in Barrie to enforce controls on land owners clearing properties. Current version is a continuation of that need.

c. What policy do you find to be the most effective? Why?



- The by-law is the most effective. While land developers and land owners still periodically ignore by-laws, for the most part it is effective in addressing woodlot protection.
- d. What policies do you find to be ineffective? Why?
- None of the policy documents are completely effective when dealing with land development. Planners and Engineers (private sector) do not give much attention to policy statements, nor does the Ontario Municipal Board. However, the Natural Heritage Resources “protected areas” mapping is the greatest improvement in high level planning to identify areas of significant forested/natural lands for protection from development.
- 2. Describe the process your municipality undertook to adopt these policies.**
- Generally through a public consultation process, staff report to Council and adoption of new policy/by-law.
- b. What have been the challenges in adopting management policies?
- Development community, often through planning consultants challenged any new policy that would affect total development area on private lands.
- c. How were stakeholders brought on board?
- Through a lengthy planning process involving all development companies / land owners groups and an open secondary planning process stakeholders (most) were accepting of the policies.
- 3. How is the effectiveness of these policies being measured?**
- Through the Urban Forest Strategy, forest canopy mapping and tree health assessments have commenced. Long term effect of planning policies have yet to be determined. Barrie is a rapid growth area, residential growth will see reduction in tree canopy over the short term, however active replanting programs, private land planting / landscaping requirements and naturalization programs will show overall canopy growth in the long term.
- a. Have these policies influenced the tree canopy? Yet to be determined.
- b. How is tree canopy being measured and tracked? Satellite photography, aerial mapping and urban forest health card assessments.
- 4. Does your municipality have a compensation program for the removal of private trees? – Not currently. The Lake Simcoe Region Conservation Authority does have a compensation payment requirement for the removal of private trees in our municipality, so at this time the municipality has not pursued that avenue.**
- 5. What additional programs exist related to tree preservation and management in your municipality?**
- Community planting initiatives, community planting partnerships, school greening programs, Site Plan control objectives for greening commercial and industrial properties.



- b. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies?
- Programs tend to be implemented through partners who are interested in growing a green canopy and healthy properties, etc. These programs as a result are far more successful as they start with the same goal in mind and are easy for municipal staff to support/assist with implementation.



### 3. City of Cambridge

Submitted via email 11/04/2019

1. **Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).**
  - a. When were they adopted?
    - i. Urban forest plan in 2014, Official Plan 2012, Urban Design Guidelines 2013
  - b. Why were they adopted?
    - i. Urban forest plan was driven by the outbreak of emerald ash borer, and the need to have a systematic approach to urban forest management
  - c. What policy do you find to be the most effective? Why?
    - i. I have limited experience with the urban design guidelines or the official plan. I led the development of the urban forestry management plan.
  - d. What policies do you find to be ineffective? Why?
2. **Describe the process your municipality undertook to adopt these policies.**
  - a. What have been the challenges in adopting management policies?
    - i. The City has limited involvement in trees on private lands. Overall of the three management options (ownership, education, regulation), the City has decided to approach all 3. The City owns much of the most heavily forested lands in the City, with intent to keep these undeveloped. The Urban forest plan had a public consultation process and education component, including seminars on how to maintain trees on private land (for example, Reep seminar 2019). In 2018, the City passed a new private tree bylaw regulating the removal of trees on private land.
  - b. How were stakeholders brought on board?
    - i. Public consultation during policy development is the most common tool we use to engage stakeholders.
3. **How is the effectiveness of these policies being measured?**
  - a. Have these policies influenced the tree canopy?
    - i. The City has done two canopy assessments to begin the process of measuring canopy change and explore which factors have the biggest effect.
  - b. How is tree canopy being measured and tracked?
    - i. We have done two full-city canopy studies, one in 2013 and again in 2018.



4. **Does your municipality have a compensation program for the removal of private trees?**
  - a. If so, how is it employed?
    - i. The private tree bylaw employs a disincentive to removing non-hazardous and non-dead trees. If the owner is able to plant sufficient compensation trees on the property their incentive is reduced or waived. If they are unable to plant enough compensation trees, they pay into a private tree planting reserve fund.
  - b. How effective is it?
    - i. The private tree bylaw has not been formally evaluated, but initial results seem positive. Comments from applicants seem to indicate that they are using a financial cost-benefit analysis to determine whether tree removal is 'worth it'.
  
5. **What additional programs exist related to tree preservation and management in your municipality?**
  - a. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies?
    - i. Policies form the foundation of programs, so they are each important in their own way. The private tree bylaw has a clear effect on private property, both large scale development and single family residential.
    - ii. We also recently started a pilot with Reep – a backyard tree planting program. It is subsidized through customer fees and the private tree bylaw replanting fund.
    - iii. There are a number of bylaws and policies that relate to tree preservation: boulevard bylaw, parks bylaw, cemetery bylaw, but most of these prevent damage to trees on public lands



#### 4. City of Guelph

Submitted via email 11/07/2019

1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).
  - a. When were they adopted?
  - b. Why were they adopted?
  - City of Guelph Strategic Plan (2019) Protecting the green infrastructure provided by woodlands, wetlands, watercourses and other elements of Guelph's natural heritage system
  - City of Guelph Official Plan March 2018 Consolidation includes Natural Heritage System policies that protect and enhance natural heritage features and areas, including Significant Woodlands, Significant Wetlands, Cultural Woodlands and Other Wetlands, and protection of the city's Urban Forest, which includes trees located beyond the limits of the Natural Heritage System. The City of Guelph Official Plan also includes policies pertaining to Natural Heritage Stewardship and Monitoring, which include policies on invasive species management, land stewardship, monitoring, etc.
  - Clair Maltby Secondary Plan (in progress):
    - Comprehensive Environmental Impact study – identifies the need for protection and preservation of wooded natural areas
    - Road cross sections potentially inclusive of trees to be developed – not confirmed
  - Guelph Innovation District Block Plans (in progress)
  - The City of Guelph has a Private Tree Protection By-law (2010) – 19058 which applies to regulated trees. A "Regulated Tree" means a specimen of any species of deciduous or coniferous growing woody perennial plant, supported by a single root system, which has reached, could reach or could have reached a height of at least 4.5 metres from the ground at physiological maturity, is located on a Lot larger than 0.2 hectares (0.5 acres) in size and has a DBH of at least 10 cm.
    - If an Owner wishes to Destroy or Injure one or more of the Owner's Regulated Trees or wishes to undertake an activity which might Destroy or Injure one or more of the Owner's Regulated Trees, and if none of the exemptions set out in the by-law are applicable (refer to Part IV – Permit Exemptions of the by-law), then the Owner must submit an Application Fee and Tree Permit Application (refer to Part V – Application for Permit of the by-law)
  - Municipal Class Environmental Assessment process includes tree inventories and classification/assessment of the NHS, which also factors into the assessment of alternatives (e.g. number of tree removals required).
  - Brooklyn and College Hill Heritage Conservation District includes the following objectives:



- To protect and enhance heritage property in both the public and private realm including existing heritage residential buildings, institutional structures, road bridges, parks and open spaces, riverscape corridors and associated trees and vegetation.
  - To maintain and conserve individual trees and other substantial forms of vegetation where they form or contribute to character defining attributes of the Brooklyn and College Hill Heritage Conservation District
  - Refer to Section 4.6.5 Trees and other plant material of the plan.
  - City of Guelph Downtown Streetscape Manual and Built Form Standards: enhancing the tree canopy and benefits to urbanized areas through 'complete streets' inclusive of trees.
  - City of Guelph Commercial Built Form Standards (in progress).
- c. What policy do you find to be the most effective? Why?
- i. The Private tree By-law has been the most effective because it is an actual enforcement tool. It is not as much of a deterrent as we would like but there are opportunities to enhance the By-law in the coming years.
- d. What policies do you find to be ineffective? Why?
- i. Nothing specific but generally policies without regulatory tools such as by-laws are ineffective because they are not enforceable.
- 2. Describe the process your municipality undertook to adopt these policies.**
- a. What have been the challenges in adopting management policies?
  - b. How were stakeholders brought on board?
- 3. How is the effectiveness of these policies being measured?**
- a. Have these policies influenced the tree canopy?
    - i. Unknown at this time.
  - b. How is tree canopy being measured and tracked?
    - i. Urban Forest Study (in process) – this will be our first comprehensive study and set the baseline for monitoring tree canopy (every 10 years).
- 4. Does your municipality have a compensation program for the removal of private trees?**
- a. If so, how is it employed? Compensation is required through the Private Tree By-law using a cash-in-lieu of \$500 per tree if planting cannot be achieved on the site where trees are removed. Otherwise compensation for planting on site to replace removed trees is as per Section 5 in the City's Tree Technical Manual (2018).
  - b. How effective is it? The following aspects of the By-law have been effective:
    - In deciding whether or not to issue a Permit in respect of a Regulated Tree, an Inspector must consider certain criteria (refer to Part VI – Issuance of Permits of the by-law)
    - In issuing a Permit, the Inspector may make the Permit subject to such conditions as the Inspector may consider necessary, including (but not restricted to) any one or more of the following requirements:





- That the Destruction or Injuring occurs in a specified manner;
- That each tree Destroyed or Injured be replaced with one or more replacement trees to be planted and maintained to the satisfaction of the Inspector in accordance with Landscaping, Replanting and Replacement Plans approved by the Inspector;
- That if replacement planting is not achievable on the subject land, it be substituted by a payment of cash in lieu in the amount of \$500.00 per tree Destroyed or Injured;
- That if the land is not subject to an application filed under the *Planning Act*, the Applicant provides a written undertaking, release and security to ensure that replacement planting is carried out and maintained in accordance with Landscaping, Replanting and Replacement Plans approved by the Inspector;
- That the Destruction or Injuring only be carried out by or under the supervision of an Arborist;
- That the tree or trees to be retained be protected in accordance with Good Arboricultural Practice during the Destruction or Injuring or other related activities; and
- That specified measures be implemented to mitigate the direct and indirect effects of the Destruction or Injuring on other nearby trees, land, water bodies or natural areas.

**5. What additional programs exist related to tree preservation and management in your municipality?**

- a. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies?
- b. Urban Forest Management Plan with feedback and monitoring framework
  - i. Monitoring progress and measuring success using criteria and indicators of forest sustainability
  - ii. Developing, implementing and monitoring effectiveness of tree related policies
  - iii. Increased capacity to manage urban forest through hiring of new staff and funding from Council
  - iv. Increased knowledge of resources achieved through complete and sample inventory of urban forest on private and public land
  - v. Recent implementation of the Tree Technical Manual – best practice for tree protection, planting and maintenance includes compensation calculations to be used for tree compensation
  - vi. Promotes community stewardship
- c. Linear Infrastructure Standards includes specifications for tree planting and protection.
- d. Development Engineering Manual includes specifications for tree planting and protection.
- e. Site Plan User Guide – includes requirement for tree related plans (e.g. Tree Inventory and Preservation Plans, Vegetation Compensation Plans, Landscape Plan, Street Tree Plans), tree protection (e.g. tree protection fencing, root



- protection zones), establishment of street trees and establishment of landscaping requirements on private property (e.g. tree planting standard detail, securities collected, inspections and warranty periods)
- f. Conditions of subdivisions – requirements for establishment of street trees, landscaping, tree compensation plantings, maintenance of plantings/warranty period, conveyance of undeveloped lands (e.g. parkland or NHS) into City ownership
  - g. Guidelines for the Preparation of Environmental Impact Studies – As part of the EIS, an inventory and assessment of natural heritage features and areas must be completed, typically using the Ecological Land Classification system, density assessments, and feature staking exercises to identify the limit of the NHS. In addition, an inventory of trees (of at least 10 cm diameter at breast height (DBH)) within 6 meters of proposed development on the subject property must be undertaken to address the City's Private Tree Protection By-law and often includes a Tree Inventory and Preservation Plan and Vegetation Compensation Plans. EIS's typically include management recommendations and recommendations for monitoring.
    - i. The City of Guelph requires, as a condition of development or site alteration, that an Environmental Implementation Report (EIR) be prepared, which is a summary document containing information including but not limited to:
      1. A description of how all the conditions of the decision have been met;
      2. How municipal infrastructure servicing, including but not limited to trails, stormwater management facilities and protection of the NHS and the associated ecological and hydrologic functions have been addressed; and
      3. Any other special requirements that are required to protect the overall natural environment of the area.
  - Again, we don't have enough information on the effectiveness of these programs. However, they are only effective if required as a condition to a permit under the Tree By-law.



## 5. City of Mississauga

Submitted via email 11/08/2019

1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).

### Mississauga Private Tree Protection By-law

(<http://www.mississauga.ca/portal/residents/parks-private-tree-protection>) administers tree on private lands. The most recent by-law was done in 2012. Forestry staff are currently doing another review. This by-law is the main mechanism staff have to protect trees on private lands and is most effective.

### Mississauga Official Plan

Chapter 6 – Value the Environment, policies included in this section speak to the protection of Natural Areas throughout the City whether that be hazards lands, valley lands etc. This chapter is important when it comes to development that is proposed adjacent to any lands included in the natural areas. Policies typically requires the protection and enhancement of natural areas, which can contribute to the urban canopy as a whole. Often times, these lands are recommended to be put in public ownership to ensure the long term survival of the natural area.

Chapter 16 – Neighbourhoods contains certain policies for particular neighbourhood areas in Mississauga that are subject to Site Plan Control. These policies are considered to apply to our infill areas and generally encourage the preservation of mature vegetation. This is supplemented by our detached infill guidelines.

[http://www6.mississauga.ca/onlinemaps/planbldg/UrbanDesign/NewDwelling\\_Sept2014.pdf](http://www6.mississauga.ca/onlinemaps/planbldg/UrbanDesign/NewDwelling_Sept2014.pdf).

### Zoning By-law

The Zoning By-law for these areas has regulations on lot coverage and building size however, there are no regulations that restrict the removal of trees. While staff, through development applications, encourage the retention of trees, there really isn't enough authority for staff to refuse or withhold an approval to save trees, unless a tree is designated under the Ontario Heritage Act.

### Summary of Challenges

- Through the Site Plan process, if the Zoning By-law requirements are adhered to, staff cannot withhold the approval of an application that proposes to cut down a healthy private tree. In the past, Legal Services has given the opinion that the Zoning By-law trumps the ability to require an applicant to redesign to save a private tree, provided the applicant is meeting private tree by-law requirements such as cash-in-lieu or replacement trees.
- It is similar when assessing a proposal against Official Plan policies that encourage the preservation of private trees. Staff cannot withhold Site Plan approval when the Zoning By-law has been met.
- Applications for permission to cut down trees made under the Private Tree By-law cannot be refused in the instance where it negates the approval of a development application.



- In addition to the footprint of new homes resulting in the loss of private trees, applicants will also apply for permits to construct accessory structures such as cabanas, sheds and pools which often result in the destruction of trees within the rear yard.
  - The City has found that there are instances where landowners cut down trees prior to submitting a Site Plan application or Building Permit. In these instances and where the City is able to prove that this has occurred, fines and penalties are pursued.
- 2. Describe the process your municipality undertook to adopt these policies.**
- a. What have been the challenges in adopting management policies? **When the review of the private tree by-law occurred in 2012, challenges to perhaps have a more restrictive by-law was met with friction of Councillors and residents. While there are groups that advocate for more retention, there are also groups that want to be able to take down trees when they can. Often times, when staff review this topic, the question comes down to how to balance the rights of property owners and encourage tree retention.**
  - b. How were stakeholders brought on board? **Public meetings and working groups**
- 3. How is the effectiveness of these policies being measured?**
- a. Have these policies influenced the tree canopy?
  - b. How is tree canopy being measured and tracked? **Forestry keeps track of replacement tree planting**
- 4. Does your municipality have a compensation program for the removal of private trees?**
- Yes, Please see Private tree By-law**
- a. If so, how is it employed? **Urban Forestry accept Tree Removal Permits. Helps control number of trees removed per year.**
  - b. How effective is it? **It ensures there are replacement trees however, the replacement trees are never at the same caliper as the tree removed typically.**
- 5. What additional programs exist related to tree preservation and management in your municipality?**
- a. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies? **One Million Trees Program (<https://www.onemilliontrees.ca/>) Ultimately adds to the overall tree canopy of the City. There has been uptake on behalf of residents and staff to continue this program and plant trees.**



## 6. City of Niagara Falls

Submitted via email 11/07/2019

1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).

The Official Plan for the City of Niagara Falls recognizes the values and benefits of trees and woodlands and encourages the retention of tree cover for aesthetic and environmental reasons. However, individual trees on private lands are not specifically protected through the policies.

These general policies have been ineffective in situations where Owners/Developers clear their land prior to submission of a Planning Application.

The Environmental policies in the Official Plan were approved in 2014. (Official Plan link: <https://niagarafalls.ca/city-hall/planning/official-plan.aspx> )

The protection of wooded areas that are part of a stand that is greater than 0.2 ha in size has been uploaded to the Niagara Region's Tree and Forest Conservation By-law which: sets out the requirements for woodland management, and can provide exemptions where a tree study has been approved through an application under the Planning Act. The City has also used this By-law to protect an individual tree on private lands that was deemed to be significant by Council due to its species and size.

The use and reference to the Region's By-law has been effective in preventing the pre-cutting of trees. There is a penalty under the by-law for not obtaining a permit. (link: <https://www.niagararegion.ca/government/bylaws/tree/default.aspx?redirect=1>)

2. Describe the process your municipality undertook to adopt these policies.

The City of Niagara Falls does not have specific policies to protect individual trees or small wooded areas on private property. The City has significant tree cover outside of its Urban Area Boundary, especially to the south where they overlap with wetlands. Within the Urban Area Boundary there has not been an overall canopy cover target set. There is reference to canopy cover within individual watershed plans, however there are only limited areas within our Urban Area Boundary that have a completed watershed plan.

3. How is the effectiveness of these policies being measured?
  - a. Have these policies influenced the tree canopy?



b. How is tree canopy being measured and tracked?

**4. Does your municipality have a compensation program for the removal of private trees?**

The Official Plan does contain a policy supporting a compensation program for the removal of private trees however a formal program has not yet been created.

**5. What additional programs exist related to tree preservation and management in your municipality?**

A Woodland Management Plan was completed by the Parks Department for City owned/controlled woodlands identifying the health and potential improvement areas of these woodlands and surrounding natural features. The objectives of the Woodland Management Plan would benefit from a formal tree compensation program. (link: <https://niagarafalls.ca/living/conservation/woodland-management-plan.aspx>)

As noted previously, the City has uploaded the protection of wooded areas greater than 0.2ha under the Region's Tree and Forest Conservation By-law. This regulation has been the most effective method to deal with tree cutting prior to development.

The City also has 2 individual trees that have been designated as culturally significant under the Ontario Heritage Act. The designation is registered against title. There must be a demonstrated level of historical significance associated with the tree/tree stand to offer this protection and therefore it can only be applied on a limited basis.



## 7. Town of Oakville

Submitted via email 11/05/2019

1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).

The urban forest is managed in a variety of ways. Requirements for tree planting and management is rooted in policy. As you can see below, the various policies from the different levels of government nest into one another, and form the rationale for what we are asking for.

Ontario's Provincial Policy Statement:

- promotes green infrastructure to complement infrastructure (1.6.2)
- supports improved air quality, and climate change adaptation, by promoting design and orientation of land use, that consider the mitigating effects of vegetation and maximizing vegetation within settlement areas where feasible. (1.8.1)

Ontario's Planning Act through site plan control allows municipalities to:

- require drawings showing sustainable design elements on any adjoining highway, including trees (41(4)2.(e))
- require the owner to provide trees for the landscaping of the lands or the protection of adjoining lands. (41(7)(a)6.)

Oakville's Official Plan (Livable By-Design) 2009

- under the landscaping section it states that the urban forest should be maintained with healthy trees, provided with suitable growing environment, be enhanced with increasing tree canopy. Landscaping should also provide shade and wind protection. (6.10)
- under the parking section it states that parking areas should incorporate landscape areas that provide shaded and support tree growth.(6.13)
- under sustainability it states that a general objective for sustainability is to progressively increase the urban forest to achieve a canopy cover of 40% Town-wide beyond the life of the plan. (10.1.1)
- under urban forests, for every square metre of leaf area that is removed from Town property or from Town road rights-of-way, sufficient trees will be replanted to replace the lost square metres of leaf area.(10.12.1)

Oakville's Zoning By-law 2014-014

- section 4.11 provides landscaping regulations. The required widths for landscaping are particularly useful for providing the space on sites needed for, among other things, tree planting.



#### Oakville's Site Plan By-law 2005-062

- outlines that the entire town is a site plan control area, and that all development is subject to site plan control. Site plan approved by the Director of Planning or the Site Plan Committee basically includes all medium and high density residential, all non-residential development, and residential development within 50m of Lake Ontario or on severed parcels. All other low density residential development site plan approvals go through the Director of Development Services.

#### Oakville's Private Tree Protection By-law 2017-038

- is a by-law to regulate or prohibit the injury or destruction of trees on private property. Applies to any property not subject to site plan control (not development). Basically restricts the number and size of trees that can be removed on a property and stipulates replanting requirements. This is not a process that I am regularly involved with. For more information I recommend you contact Michelle Drmanic, Tree Protection Inspector, in Development Engineering (call Service Oakville main line and they can put you through).

#### Livable by Design Manual (Part C) (2017)

- A comprehensive set of detailed standards and technical direction to achieve the best possible site development and functionality. Includes canopy cover targets and planting standards.

All the by-laws were adopted in order to implement provincial / town policy. Town policy responding to the values of the local community as expressed through studies (like the Residential Character Study) and through council direction. (like the Mayors challenge to increase canopy cover in the town to 40% by 2057)

The policies that I rely on the most in my review of development applications, with regards to supporting the urban forest, would be the section 41 provision in the Planning Act which requires owners to provide trees for the landscaping of the lands, and the Official Plan policy which provides a measureable objective of increasing the urban forest canopy to 40% town wide. These are important because they form the backbone of my rationale for asking for tree planting as part of a development review. The 40% canopy cover objective, because it is measureable, establishes a deliverable that town staff are striving to achieve. This objective led to the incorporation of land use canopy cover targets being included in the Urban Forest Strategic Management Plan. These targets giving me the ability to fairly and equally apply the policy, so all developments can do their part. As a reviewer I use these targets as a benchmark to gauge whether more trees are required on a site or whether what the applicant is proposing is sufficient.

But I have to point out that although these policies are particularly important, all of the policies related to landscape are important. (nothing is ineffective) Design is a real balancing act, with competing interests. Carving out some breathing room for supporting ecological systems is critical, in a world where short term savings is often valued more than long term sustainability.





Above ground canopy cover is flashy and it is what draws the most political attention, but what is arguably more important is what happens below ground. Rooting environment, soil volume, planting bed widths, etc. are the unsung heroes of canopy cover. Without appropriate space for tree planting, trees will not grow to their potential, and canopy cover objectives will not be achieved. The policy direction we have at the town has given us the ability to develop strong implementing regulations and standards. Living by Design Manual (Part C) provides soft and hard landscape standards including canopy cover targets and planting space requirements.

## **2. Describe the process your municipality undertook to adopt these policies.**

Challenges in adopting these policies/regulations would include appeals to the then OMB with regards to the zoning landscape regulations. At a site plan or plan of subdivision level, implementing policies that stipulate providing suitable growing environments for trees is challenging, due to development pressures and other policy direction for more intense development of the land. (trying to find that balance)

With regards to the planning policy process and stakeholders, since I'm not a planner I'm not well suited to answer this question. You may consider reaching out to one of our policy planners, such as Kirk Biggar, with specific questions.

## **3. How is the effectiveness of these policies being measured?**

With regards to canopy cover, the policy effectiveness is measured through ongoing studies. For example, the town undertakes regular reviews of the Urban Forest Strategic Management Plan. The management plan is a 20 year plan that sets out the steps necessary to achieve short, medium, and long-term goals for the urban forest within the framework of the town's official plan. The 20 year period (2008-2027) is supported by a series of four management plans of five year duration. Annual operating plans complement the five year plan. The principle of adaptive management permits flexible tree operations by town staff that responds to changes in the environment, the community and the direction of town policy.

The UFSMP in my work, is mainly used only for the canopy cover targets to make sure I am asking for enough tree planting. It is not used to determine whether or not to ask for tree planting. The municipality's power to require tree planting comes from the policies stated earlier, not from the UFSMP.

On the macro level, for the Management Plan, tree canopy is measured using town wide aerial photo imagery, various sampling methods, in the field verification, and a lot (and I mean a lot) of statistics. If you need specifics on this I recommend contacting Curtis Marcoux in the towns Forestry Department.

On the micro level, though site plan control, applicants are required to submit a canopy cover plan and canopy calculation chart in addition to the standard landscape package. A canopy



cover plan illustrates the retained existing and proposed tree canopy for a development site. A canopy calculation chart itemizes and tabulates the contributions to tree canopy coverage for the site. Through these submissions the applicant demonstrates compliance with applicable land use canopy cover targets. [Development application guidelines](#) for preparing these documents are available online.

**4. Does your municipality have a compensation program for the removal of private trees?**

As mentioned earlier the town has a private tree by-law (Private Tree Protection [By-law 2017-038](#)). The by-law regulates the removal of private trees, establishes a permit system for tree removals, and criteria for replacement planting. If you have any questions after you review the by-law, I recommend contacting Michelle Drmanic. Please note that this by-law does not apply to development applications falling under site plan control.

In 2017 the Tree Protection By-law was updated. The reason for undertaking a review of the current by-law was in large part a result of reviewing canopy loss under the current by-law through the Notification Form process and the property owner's ability to remove 4 trees between 20 cm – 76 cm per year. Significant canopy is lost annually and when added together represents more than 1% canopy loss for the period 2012-2016. To try to reverse this trend significant changes were proposed to the by-law such as:

- All removals of trees greater than 15 cm will now require a permit issued by the town as well as all trees required to be retained or planted as a condition of an approved site plan;
- A permit fee will now be charged for all removals except for dead, high risk ALHB and EAB infested trees, or a buckthorn species.
- Property owners are now required to post a tree removal permit at the site where the tree is being removed a minimum of five business days prior to removal.
- Residents applying for the removal of high risk trees will now have to provide an arborist report and the tree(s) will be inspected by forestry staff within 5 business days following receipt of a permit application
- Where an extreme risk tree has been removed, the property owner will be required to notify the town and provide supporting documentation.
- The proposed bylaw retains the automatic permission to remove a tree or part of a tree that poses an extreme risk where the likelihood of failure is imminent without prior inspection by town staff. Staff will be reporting back to Council further on this matter. A separate confidential memo from the Legal department is attached to this report for the Mayor and Members of Council only.
- There are now new conditions of approval requirements for tree replacement
- Tree planting requirements have been made much more practical for residents who are required to replant a tree(s) as a condition of tree removal.
- In the fall of 2017, arborist firms and certified arborists working in Oakville will have to be licensed by the town.



As with all regulations, the effectiveness of these stronger regulations will be monitored, and adjusted if needed. The full [Updated Private Tree Protection By-law 2017-038](#) staff report can be viewed on line.

With regards to removal of municipal street trees (not private), as per Livable Oakville, for every square metre of leaf area that is removed from Town property or from Town road rights-of-way, sufficient trees will be replanted to replace the lost square metres of leaf area.

**5. What additional programs exist related to tree preservation and management in your municipality?**

You can't regulate everything. There needs to be a balance of sticks and carrots. In the town, with regards to canopy cover, a large amount of existing canopy is on private property, and a large amount of potential growing space for trees is located on private property. For the town to meet its canopy cover goals, it needs the support of local residents and business owners. For example, 2,072 trees were planted on private properties in 2017/2018 under the revised private tree by-law. An additional 101 trees and 89 shrubs were planted on private properties in 2017-2018 through Oakville Green's Backyard tree planting program.

I don't think it is a matter of what's better, policies or programs. To be successful you need both.

More information on private [tree planting](#) is available online.



## 8. *City of Oshawa*

**Submitted via email 11/18/2019**

Email response below:

I have spoken with our Landscape Architect and Forestry supervisor and reviewed the questions with them. Unfortunately, the City of Oshawa does not currently have any policies related to private tree management although it is something that the City is working to create.

Our current practice for tree management on private property is related to development applications. Through the subdivision approval process and site plan approval process we require applicants to provide tree preservation plans identifying all existing trees on the property and advising which ones, if any, are proposed to be removed. For certain applications where there are significant trees, trees on neighbouring properties that may be affected by the proposed development or portions of woodlots proposed to be removed we will also ask the applicant to submit an arborist report to evaluate the condition of the existing trees. In some instances, in consultation with the local conservation authority, an environmental impact study (EIS) may also be required if the tree removal is related to a woodlot.

The only piece of documentation that I can provide is a link to the forestry section of the City's website: <http://www.oshawa.ca/residents/trees.asp>



## 9. City of St. Catharines

Submitted via email 11/12/2019

**1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).**

- a. When were they adopted?
- b. Why were they adopted?
- c. What policy do you find to be the most effective? Why?

Zoning by-law and urban design guidelines have been very effective at setting minimum requirements for new development. We have seen increased site plan standards and landscaping for new development.

- d. What policies do you find to be ineffective? Why?

With limited recourse for the removal of trees (before or after development) tree protection plans have had limited success.

**2. Describe the process your municipality undertook to adopt these policies.**

- a. What have been the challenges in adopting management policies?

Council and the general public are concerns about policies which restrict what can be done on private property. Further, a tree protection by-law is only as effective as it's enforced. Staffing for review, implementation and enforcement is also a concern.

- b. How were stakeholders brought on board?

Committees of Council and the general public have been consulted through the development of these polices through meetings, and general outreach.

**3. How is the effectiveness of these policies being measured?**

- a. Have these policies influenced the tree canopy? We don't currently have a consistent, accurate method of measuring the canopy or tracking changes.
- b. How is tree canopy being measured and tracked?

**4. Does your municipality have a compensation program for the removal of private trees? No.**

- a. If so, how is it employed?
- b. How effective is it?

**5. What additional programs exist related to tree preservation and management in your municipality?**

- a. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies?

Tree giveaways are successful in the number of trees given away, but we don't know how many are planted or survive.



## 10. City of Thunder Bay

**Submitted via email 11/06/2019**

Email conversation below:

The UFMP was adopted by our Council in 2011, was more of a wish list and recommendations than a guide. It remained, as so many plans do, on a dusty shelf with little appeal for higher ups to initiate.

In it's current form however, it meshed idealistically at some level with the climate change initiative, storm water management plan, and sustainability.

We have, after a significant reorganization started to finally implement recommendations in the UFMP. A long way to go but we are making headway finally.

As a result of EAB being found here in 2015 and reactions/actions taken to deal with the issue, our little group has begun to undertake an updated UFMP that will deal with issues that were not readily apparent in the 2011 plan.

The biggest impact to our ability to deal with canopy issues is the arrival of EAB here in Thunder Bay. Before the arrival, we were not keeping up with the number of removals in our tree planting efforts. Early detection of the insect, promotion of the impacts of potentially losing over 25% of our canopy as a result and identifying to council the cost of replacement vs treatment finally freed up some much needed funding.

Our climate here is likely helping us in conjunction with our treatment program. We have not had a significant "hot" tree in two years, our pheromone monitoring has actually indicated a decrease in the number of adult beetles being caught. I know that this can and likely will change at any given time but for now, we have been very lucky.

Due to the UF budget increase to deal with EAB, we started ramping up our tree plant in anticipation of the eventual loss of many of our ash. It's really too soon to say that our canopy has increased but a recent canopy study seems to reflect a gradual increase.

Our most recent canopy study done internally has identified areas that need our focus in tree plant. This study was conducted using 2017 imagery and will be compared with 2019 imagery as soon as we are able to access.

Moving forward, the canopy study(s) will be used in the 2020 UFMP to direct our tree planting efforts and will tie directly into the storm water management/climate change initiatives.

We do have a tree protection Bylaw for our owned trees on City Boulevards and Parks which we are currently reviewing to hopefully add some more teeth to it. Currently our Bylaw only allows us to collect 2 trees for each removed and does not reflect that impact of the removal of a large diameter tree vs the planting of 2 small 50mm caliper trees in replacement. Moving forward, we will be attempting to change the Bylaw to reflect tying the DBH to the number of replacements, i.e. 1 tree per 10cm dbh and a valuation using the Landscape Guide.



I'd like to include a private tree bylaw in our efforts but suggestions so far have gotten negative responses.

We are losing a lot of our private and municipal canopy to efforts from local utilities who seem to strong arm homeowners into complete removal of back yard easement assets instead of trimming and we are constantly battling with the local municipal electrical provider who has gone back to very questionable arboriculture practices and their desire to top boulevard trees or completely remove them instead of trimming.

Another initiative that we began last year was to remove the onus of tree planting from the developer and contractor. We take the money that would be allocated to the tree plant requirements under site plan control and look after planting the trees using our own contractor. This means no more warranty period for the contractor and no more battles with them. So far, it's working with little to no push back.

We also started working with our engineering department in regards to large capital rebuilds. In addition to doing all of the tree related work prior to construction projects, we follow directly behind completion and replant boulevards regardless if there was a tree there or not. Homeowners feel that this is part of the construction process and we very little push back regarding tree plant.

We've tossed around the idea of a City supplied and sponsored tree plant on private property. Gone as far to look at suppliers and cost of the program but as yet, have not initiated it yet. Not for the lack of interest but more the lack of time and manpower. Like most urban cities with a managed urban forest, we continually ask for an increase in compliment to deal with issues and continually get ignored at budget time. It's seems that large events turn on tiny hinges in our field of practice.

Like many cities in Ontario, Thunder Bay has a high percentage of lead in our water delivery system. We've been focusing large scale construction on the removal of City owned lead pipe up to property lines. Another canopy issue it seems as lead pipe trumps trees and we've lost a good number of mature boulevard street trees in the process mostly in areas that cannot afford to lose canopy as Thunder Bay is a flood prone city.

We've been working hard with our engineering department to identify trees that we want/need to keep. The need to get out in front of the proposed project long before it goes out to tender is critical. Contractors who are aware the we have identified the tree as important will need to find a work around and to that end we've started looking for smaller trench box structures that we will purchase and make available to contractors in order to avoid open trench 3:1 slope that dooms the street tree that is close by.



## 11. City of Toronto

Submitted via email 11/14/2019

### 1. Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).

#### a. When were they adopted?

- i. Toronto's Official Plan contains policies related to Natural Heritage, Parks and Greenspace. It was last updated in 2015.
- ii. Municipal Code Chapter 813, Article III, Private Tree Protection was last amended and updated in 2015.
- iii. The City's Strategic Forest Management Plan was adopted in 2013.
- iv. The Toronto Green Standard is Toronto's sustainable design requirements for new private and City-owned developments. It was last updated (Version 3) in 2018.

#### b. Why were they adopted?

- i. The City of Toronto has various by-laws in place to protect and preserve tree, as well as associated natural land features. They have been developed in response to a growing understanding of how trees are damaged, as well as an increasing awareness of the loss of benefits that result from tree damage.

City of Toronto Municipal Code, Chapter 813, Trees, provides for the protection of City-owned street trees of all diameters and trees on private property having a diameter of 30 cm or greater. City of Toronto Municipal Code, Chapter 658, Ravine and Natural Feature Protection, provides for the protection of all trees and natural features in designated areas of the city.

By-laws to protect trees as well as ravines and natural features were created with the intent of deterring unnecessary injury and removal of trees and natural features and to promote tree preservation. The tree by-laws exist within the framework of Toronto's Official Plan. The policies within the OP strive to balance economic, social and environmental factors.

#### c. What policy do you find to be the most effective? Why?

- i. The Municipal Code Chapter 813, Article III, Private Tree Protection and Chapter 658, Ravine and Natural Feature Protection are the most effective tools at our disposal for private tree management. These By-





laws provide Urban Forestry with the authority to regulate private tree injuries and removals. Compensation planting for tree removals are required under the By-law, which is an essential mechanism for fostering the sustainability of our urban forest. The Tree By-laws - Compensation Planting Ratios policy standardizes compensation requirements of the By-laws.

d. **What policies do you find to be ineffective? Why?**

- i. Maintaining and expanding the urban forest is an important part of city building for the City of Toronto, however, the City must balance tree preservation with other aspects of development. In scenarios where private trees must be injured or removed to accommodate an as-of-right build, Urban Forestry will not use the By-laws and related policies to frustrate the development process. Permit conditions will still be applied, as required. This is not to say that the By-laws and policies are ineffective, but to point out that all By-laws and policies have limitations.

**2. Describe the process your municipality undertook to adopt these policies.**

a. **What have been the challenges in adopting management policies?**

- i. Consistent application of the policies across the City was one of the challenges. The inconsistencies could have been the result of a myriad of factors: different kinds of projects and nuances in different parts of the City, staff with different levels of training and experience, etc. Urban Forestry has since adopted additional procedures, policies and training to increase consistency. An example of an adopted policy that has been effective in addressing inconsistencies is the aforementioned Tree By-laws - Compensation Planting Ratios policy.
- ii. Compensation planting verification is a challenge due to the immense operational resources required. Also, as planting guarantee deposits are not collected for private trees, when compensation planting is lacking, we could only reiterate private compensation planting permit conditions to the applicant or property owner or to initiate a by-law contravention investigation. To improve compensation planting verification, Urban Forestry has secured additional resources to increase staffing and is also in the process of drafting and implementing new procedures and training.
- iii. Stakeholder buy-in is sometimes a challenge that we face. Compensation requirements of By-laws can become a significant financial cost depending on the scope of a project and the number of tree injuries and removals. However, consistent and fair application of the By-laws allows us to defend our position. It is worth noting that the financial disincentive to injure or remove trees has influenced project design to preserve trees.

b. How were stakeholders brought on board?

**3. How is the effectiveness of these policies being measured?**

- a. Have these policies influenced the tree canopy?



- i. The existence and evolution of our By-laws and policies have a positive correlation with tree canopy as Toronto's tree canopy has increased over the past decade. For further details, please keep an eye out for our canopy study which will be released soon.
  - b. How is tree canopy being measured and tracked?
    - i. Toronto produces a canopy study every 10 years and data is collected and analyzed using LiDAR and satellite imagery. The continuous land classification method, which is an algorithm based method, is used with LiDAR. Satellite imagery is analyzed using the random point sampling method, where random satellite images are classified manually.
4. **Does your municipality have a compensation program for the removal of private trees?**
  - a. If so, how is it employed?
    - i. **NO**
  - b. How effective is it?
5. **What additional programs exist related to tree preservation and management in your municipality?**
  - a. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies?
    - i. Community Stewardship Program
    - ii. Tree Planting Strategy
    - iii. Ravine Strategy
    - iv. Biodiversity Strategy
    - v. Parkland Strategy

Above are examples of programs of the City of Toronto that complement formal policies. The effectiveness of these programs should be evaluated in conjunction with the effectiveness of the formal policies as programs and policies serve different purposes and fill different gaps. The Community Stewardship Program provides education, experience and fosters community development, which are areas not encompassed by formal policies. The Planting Strategy expands the City's ability to influence private tree planting beyond compensation planting requirements of permitted tree injuries and removals.



## 12. City of Waterloo

Submitted via email 11/22/2019

1. **Describe how private tree management is addressed in your municipal policy (e.g. Official Plan, By-Laws, Urban Forestry Management Plan, Urban Design Guidelines).**
  - a. When were they adopted? **No Private Tree Bylaw (PTB). Public tree bylaw in place (last update 2014).**
  - b. Why were they adopted? **N/A**
  - c. What policy do you find to be the most effective? Why?  
**Public education: understanding env. benefits and appreciation of trees and the urban forest.**  
**Stormwater Credit Program: an incentive program where residents can gain credits for caliper sized trees on their property to acknowledge the stormwater benefits provided by large trees. For more info, see website.**  
**<https://www.waterloo.ca/en/living/stormwater-management.aspx#Trees>**
  - d. What policies do you find to be ineffective? Why?  
**Private Tree Bylaws that are not enforced (ie. politically or lack of staff) or that simply collect application and replacement tree funding but do not actually save large canopy, significant or heritage trees. Many cities have PTBs in place. The better question to ask is how many trees have been saved (\*not replaced with new trees).**
2. **Describe the process your municipality undertook to adopt these policies.**
  - a. What have been the challenges in adopting management policies?
  - b. How were stakeholders brought on board?
3. **How is the effectiveness of these policies being measured? Public Tree protection bylaw is effective, but rarely does it needed to be enforced.**
  - a. Have these policies influenced the tree canopy? **unknown**
  - b. How is tree canopy being measured and tracked? **In-house GIS staff.**
4. **Does your municipality have a compensation program for the removal of private trees? Yes**
  - a. If so, how is it employed? **Developers undertake a vegetation management plan to review and identify # of trees, to be replaced or cash-in-lieu.**
  - b. How effective is it? **For cash-in-lieu, the program is effective as the City plans for, plants and monitors all trees planted. However, success is highly dependent on effective communication between the various internal departments (ex. Operations and Planning). Most staff are very familiar with value and protection**



of trees and work collaboratively to identify and save significant trees within development applications.

**5. What additional programs exist related to tree preservation and management in your municipality?**

- a. How would you compare the effectiveness of the programs in relation to the effectiveness of formal policies?

In my 25+ years' experience, I have worked in municipalities where I oversaw PTBs and in other municipalities without PTBs. If the goal of PTBs is to save and protect significant trees (size, species, age, cultural), I have found PTB not to be effective. This is particularly so where municipalities lack adequate staffing to oversee and enforce the bylaw. In these situations, the PTB simply collects application fees and replacement tree funding, but very rarely is an identified tree saved. It is a punitive approach that becomes burdensome to enforce and a great annoyance to the average resident. I have witnessed many healthy trees nearing the identified protection caliper size (often 20cmDBH) suddenly be removed as the property owners did not want the liability of having a protected tree on their property. I have also witnessed the mass destruction of trees just prior to a PTB being adopted.

If the goal is to save and protect significant trees, less punitive measures (carrot vs. stick) and education programs are much more effective. If property owners are given rebates for significant trees (however you wish to define that), those trees become an asset to the property NOT a liability. Where municipal staff, developers and local residents are able to come together and share an understanding and appreciation of the many benefits (environmental, social, economic) of trees, the outcomes are much better for the trees.



### 13. City of Windsor

Phone call conducted on 11/14/2019

\* The following notes were taken by Kaitlin Webber from a telephone call with staff members from the City of Windsor.

- Idea for a private tree by-law has been presented to Council (planning tried twice, individual councillor tried third time) - in general, lots of interest, but not from Council
- By-law (135-2004) "Trees on Highways" - public tree by-law for City ROW (restricts the planting of Poplar, Willow, Thorney Honey Locust or Manitoba Maple) and City trees (fines \$1000-\$10,000)
  - Challenge of implementing by-laws - city resources for policing
- Designating trees through Ontario Heritage Act - used this to protect 2 trees (one died) - difficult process to undertake but effective
- Case of 200-year-old tree in the papers:  
<https://nationalpost.com/news/canada/sycamores-last-stand-battle-over-200-year-old-ontario-tree-pits-owner-against-neighbours>
- Official Plan as policy trigger - one thing to have a "mother earth" statement, another thing to actually employ
- UFMP - currently in the process - working with consultant
- Currently in the process of updating environmental planning policies - expected next year
- Also in the process of re-writing landscape manual - governs most tree requirements at Site Plan level
  - One subdivision - homebuilders footprints ruined trees
  - Assess property - if there is a tree there and one desired to be saved
  - As subdivisions moving into wooded areas, enacting it - the problem is way system works, as long as there is no planning application
- Compensation through site plan control process
  - Replacement value at caliper-per-caliper - inspired from Winnipeg (e.g. if 100mm caliper tree removed, two 50mm trees can be planted)
- ERCA - Essex region conservation authority
  - District Rotary - 100 clubs - with ERCA - one tree per "rotarian"
  - Paul Giroux - linking with club to do tree planting on one street - raise money to provide funding
- Constraints - issue of human resources for monitoring
- Most planting programs happen on public lands
- Something as a follow-up/next step/concerns - dealing with climate change issues - as temperatures move upward - some trees existing are more stressed