



Hamilton

City of Hamilton

TREE PROTECTION GUIDELINES - CITY WIDE
Community Planning and Design Section
Planning Division
Planning and Economic Development Department

Revised October 2010

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1.0 Introduction

The City of Hamilton's Tree Protection Guidelines (TPG) are intended to provide guidance, advice and direction for landowners and developers on how to inventory trees on a proposed development site and prepare a Tree Protection Plan. The guidelines also lay out the principles for retaining trees, protecting trees during construction, and replanting requirements.

Until now, there have been no standard requirements for Tree Protection Plans (TPPs) and the quality of plans has varied greatly. The City wishes to enhance tree preservation on development sites, to ensure a healthy, sustainable urban forest and a green, livable city. These guidelines conform with the City of Hamilton's VISION 2020 initiative and the City's Corporate Strategic Plan by ensuring that that City's natural heritage resources are protected. Landowners applying for Planning Act and Niagara Escarpment Plan permit application approval for projects involving tree cover must fulfill the requirements of the guidelines prior to any tree removal.

Tree protection is divided among trees on private property and those on public property (e.g. parks, roadways). It is the intent of the Tree Protection Guidelines to protect and preserve trees and woodlands on **private** lands. As well, some areas of the City of Hamilton have existing tree cutting by-laws in effect which regulate the removal of trees on private property (Ancaster, Dundas, Stoney Creek, and the Region of Hamilton-Wentworth). For trees located on **public** lands owned by the City of Hamilton, a Tree By-law and Tree Protection Policies have been developed through the Forestry Division of the Public Works Department. The By-laws and guidelines for both public and private lands will work together to protect trees on all lands in the City of Hamilton.

2.0 Tree Protection Guidelines

2.1 General Approach

The Tree Protection Guidelines require the applicant to provide information and analysis of trees early in the planning process, to ensure that trees worth retaining are identified. This evaluation will then be used along with engineering and grading information to guide the layout of the development proposal.

The Guidelines apply to privately-owned lands subject to Planning Act approvals, (such as draft plans of subdivision/condominium, site plan approvals, part lot control, and consent applications), and/or Niagara Escarpment Plan permit.

There is a four-step process to ensure tree protection for Planning Act applications proposed within regulated areas:

- (a) General Vegetation Inventory (GVI) - required for all portions of the site.
- (b) Tree Protection Plan (TPP) - required only for lots and blocks containing existing quality vegetation that requires further study as identified and approved by the City during the General Vegetation Inventory.
- (c) Implementation (installing tree protection measures during construction and monitoring).
- (d) Landscape Plan (re-planting and transplanting).

The applicant has the option of submitting the full TPP at the time of application, eliminating the need to prepare and submit a GVI. The City may accept this approach, as it provides detailed information on trees early in the development review process and allows grading and servicing plans to reflect tree protection requirements. However, if the TPP is submitted at the time of application, it should be understood that, despite the amount of work already completed by the applicant, it is still possible that the City will request changes to the site layout. At the time of formal consultation, City staff and the applicant would discuss using this approach to determine if it is feasible for that particular site.

The owner/developer must employ a recognized tree management professional (e.g. certified arborist, registered professional forester, or landscape architect, as defined in the Glossary of Terms, Section 5.0) who will assess and evaluate the vegetation on a proposed development site. Depending on the nature of the vegetation and the development proposal, an application may not be required to go through all four steps.

The process will seek to:

- Ensure preservation of existing valuable trees in new development sites will be optimized.
- Ensure that the General Vegetation Inventory (or Tree Protection Plan if this approach is agreed to during formal consultation) is used to guide the layout of a proposed development.
- Ensure a consistent standard and clear process for staff, applicants, and the development industry, eliminating unnecessary delays.

- Maximize protection of trees worthy of saving by identifying them early in the process and in conjunction with designing road pattern, lot layout, building locations, and preliminary and final grading.
- Provide clear recommendations for tree management in relation to servicing, grading, drainage, and storm water management.
- Identify opportunities to restore tree and woodland health through pruning, transplanting, re-planting, and landscaping.

The City recognizes that not all trees can and should be preserved. Trees that are structurally unstable, in poor health, or an undesirable species may be candidates for removal.

Also, with new urban intensification targets, there may not be sufficient space at some development sites to permit saving all trees. City staff will assess tree preservation along with grading and servicing constraints, to ensure that any trees identified for protection will be likely to survive. Staff recognizes that the goal of maximizing tree preservation cannot be carried out in isolation, and planning and engineering constraints may exist which affect tree preservation.

2.2 Process

2.2.1 Step 1: General Vegetation Inventory (GVI)

The General Vegetation Inventory will provide a description of the area proposed for development and the natural features on and abutting the site. This inventory must be included as part of the formal submission of Planning Act approvals (e.g. draft plan of subdivision/condominium, site plan control, part lot control, and consent applications) and/or as part of a Niagara Escarpment permit application.

The intent of the GVI is to ensure that the applicant considers existing natural features and, where possible, incorporates them into site design at an early stage to maximize tree preservation. It is not intended to be a detailed inventory or tree protection plan, but to provide a general overview of vegetation on site.

The GVI will include:

- An inventory and brief description of vegetation units on site (trees, shrubs, and other vegetation);
- Site topography, soils, and drainage;
- Any significant natural and physical features (e.g. streams, ponds, steep slopes, wildlife habitat); and,

- Reasons for whether vegetation units require further analysis through a Tree Protection Plan (TPP). Areas of high quality vegetation must be identified for further study in the TPP (Step 2).

Requirements for Submission

A digital (pdf) and one hard copy of the GVI must be submitted to the Director of Planning with the Planning Act application. The City will not begin the internal review of the application until the GVI and requisite fee have been received. The GVI will be circulated to appropriate departments, divisions, and sections (e.g. Building and Licensing, Community Planning and Design, Development Engineering, Public Works, and Forestry) and agencies (Conservation Authority, Niagara Escarpment Commission). The GVI will form the basis to determine whether more detailed information and analysis is required as part of a Tree Protection Plan.

The GVI must be completed by a tree management professional. Some items listed below may not be pertinent to a particular project. The Hamilton Natural Areas Inventory, Secondary and Master Plans, Source Water Protection Plans, and watershed studies (where they have been completed), may provide some of the required inventory information (such as soils, topography, wildlife habitat, surface features).

The following information is required for the GVI:

- Inventory of vegetation units;
- Map; and,
- Analysis of vegetation units on site.

These are described more fully in the following section.

Inventory of Vegetation Units

Distinct individual trees, groups of trees, or larger vegetation units must be identified on the site. General biophysical characteristics for each feature must also be identified, including:

- Vegetation type (e.g. coniferous, deciduous, hedgerow, deciduous woodland, marsh, etc). It is not necessary to identify vegetation communities using Ecological Land Classification (ELC) at this point.
- Number of trees (general descriptions of relative species abundance, dominant tree species, and density).

- Trees or groups of trees that are significant to the local community and should be preserved for this reason (e.g. local landmarks, visual screens, heritage trees, rare or unusual species).
- General tree condition (health and structural condition).
- For woodlands, generally indicate the range of tree size using dbh to provide an indication of tree maturity and woodland age. It is not necessary to measure every tree in a woodland.

Mapping

A map (preferably overlaid on an air photo) must be provided that shows the following information:

- Vegetation units surveyed and accurately located relative to property boundaries;
- Tree drip line or woodland boundary locations that define the edge of a vegetation unit;
- Identification number for all vegetation units;
- Topography and slope;
- Existing drainage patterns;
- Surface characteristics (streams, ponds, wetlands); and,
- Ground water features (recharge and discharge areas, seeps and springs) may be required to be mapped for some applications.

Analysis

The Analysis must identify the following using diagrams and text:

- Priority areas for tree retention (rare or unusual trees, heritage trees, high quality vegetation);
- Potential development constraints;
- Linkages to other natural habitat;
- Recommendations and rationale for the future layout/design/grading for the proposed development; and,

- Recommendations and rationale for whether vegetation units require further analysis (through the more detailed TPP).

If the City is satisfied that the GVI finds no trees or vegetation worth retaining, no further analysis is needed.

2.2.2 Step 2: Tree Protection Plan

If the General Vegetation Inventory concludes that more detailed analysis is required, a Tree Protection Plan must be submitted with storm water management, grading, and servicing plans as a condition of draft plan of subdivision and condominium, site plan, or consent approval.

The applicant also has the option of proceeding directly to this step and eliminating the need for a GVI if this approach is agreed to at the Formal Consultation stage. In this case, the applicant would submit the TPP at the time of application.

While the GVI identifies vegetation units worthy of protection, the TPP focuses on exactly which trees will be preserved and what protection and tree maintenance measures will be implemented to ensure their survival. At this point, the applicant will have reviewed the details of subdivision design (e.g. infrastructure, lot lines, building envelopes, and storm water management facilities) to preserve as many high quality trees as possible. The TPP requires an assessment of individual trees. The decision on whether to retain individual trees within a vegetation unit is determined based on their vigour, condition, aesthetics, age, and species.

The TPP will be carried out only for those high quality trees/vegetation units requiring it, as recommended in the GVI.

If pre-grading is requested, the TPP must be approved before the grading approval is issued.

Requirements for Submission

The applicant must provide one digital (pdf) and one hard copy of the TPP and the requisite fee to the Director of Planning. The TPP will be circulated to staff for review and comment. Where another environmental study, such as a subwatershed study, Secondary or Master Plan, Source Water Protection Plan or Environmental Impact Statement contains recommendations relating to tree preservation, these recommendations should be incorporated into the TPP.

The TPP is to consider and tag:

- Individual trees or trees in woodlands having a dbh of 10 cm or more; and,

- Rare, unusual, and heritage trees.

All trees must be tagged as a means of identification in the field and accurately located and assessed to determine:

- Which trees are to be protected and which are to be removed and why;
- Potential impacts of the proposed development layout, storm water management ponds, grading, and servicing on the remaining vegetation;
- How existing trees will be protected during construction (e.g. hoarding);
- Possible preservation or management techniques to enhance the condition of remaining trees (e.g. pruning);
- Recommendations of which individual trees or groups of trees should be transplanted; and,
- Mitigation options.

On sites with woodland or extensive tree cover, it is not necessary to tag every tree. On sites where there are scattered trees, every tree must be individually located by a surveyor.

The TPP must include a tree inventory chart, map, and analysis.

Tree Inventory Chart

The TPP must include a chart (as illustrated in Appendix 2) with the following information for each tagged tree:

- Tree tag number;
- Tree species (common and scientific names-including genus and species);
- Diameter at breast height (dbh);
- Tree condition (vigour, specimen) rated in the following manner:
 - o GOOD - dead branches less than 10%; signs of good compartmentalization on any wounds, no structural defects.
 - o FAIR - 10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects.

- o POOR - more than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects.
- o DEAD - tree shows no signs of life; and,
- Recommended action (retain, remove, transplant).

Map

The TPP must include a map prepared at an appropriate scale (e.g. 1:500) which clearly shows the following information:

- The drip line (refer to Figure 1, Page 12) of existing individual trees and/or woodlands, as well as an accurate location of all tagged trees showing their drip line relative to property boundaries;
- Tree Inventory Chart (showing tag number, tree species, condition, dbh, recommended action);
- Symbolized recommendations for each tree (retain, remove, transplant);
- Proposed lot locations, street layout, driveway locations, and building envelope;
- Location of all services and infrastructure;
- Grading information (existing and proposed grades, cut and fill areas, potential disruption of water drainage);
- Location and size of storm water management facilities;
- Location and nature of tree protection measures (e.g. hoarding);
- Location of soil stockpiles; and,
- Title with north arrow and legend, name of development, lot and concession, municipal address, scale, date, and a place for the Forester / Arborist / Landscape Architect stamp.

Appendix 3 includes a sample of the map layout and required information.

Analysis

The analysis must contain the following information:

- Recommendation for each individual tree/woodland and the rationale for removal or transplanting;
- Summary of anticipated grading and construction impacts;
- Description of protective measures, including:
 - o Erosion control.
 - o Protective fencing/hoarding and signs.
 - o Buffers from natural features.
 - o Tree transplanting and planting (timing, locations, moving procedures).
 - o Maintenance of trees to remain on site (pruning, watering).
 - o Landowner Maintenance Guide (stewardship).

2.2.3 Step 3: Implementation of the TPP

Once the TPP has been approved by the City, implementation according to the measures outlined in the TPP may begin. This includes having a recognized tree management professional on site at certain times during construction, monitoring protective fencing, and using reports and securities to ensure the work is completed as agreed to. These implementation measures are outlined below.

Tree Protection Measures - Verification Letter

Tree protection measures prevent injuries from construction activity by keeping equipment and materials away from the tree. The tree management professional must provide a Verification of Tree Protection Letter to the Director of Planning to confirm that all tree protection measures have been installed, as shown in the TPP approved by the City of Hamilton.

The Verification of Tree Protection Letter must be provided to the City before any rough grading on the site can occur, servicing can commence, or building permit can be issued. The grading consultant must confirm that the TPP conforms to the Lot Grading Control Plan before these Plans are approved by the Planning Division.

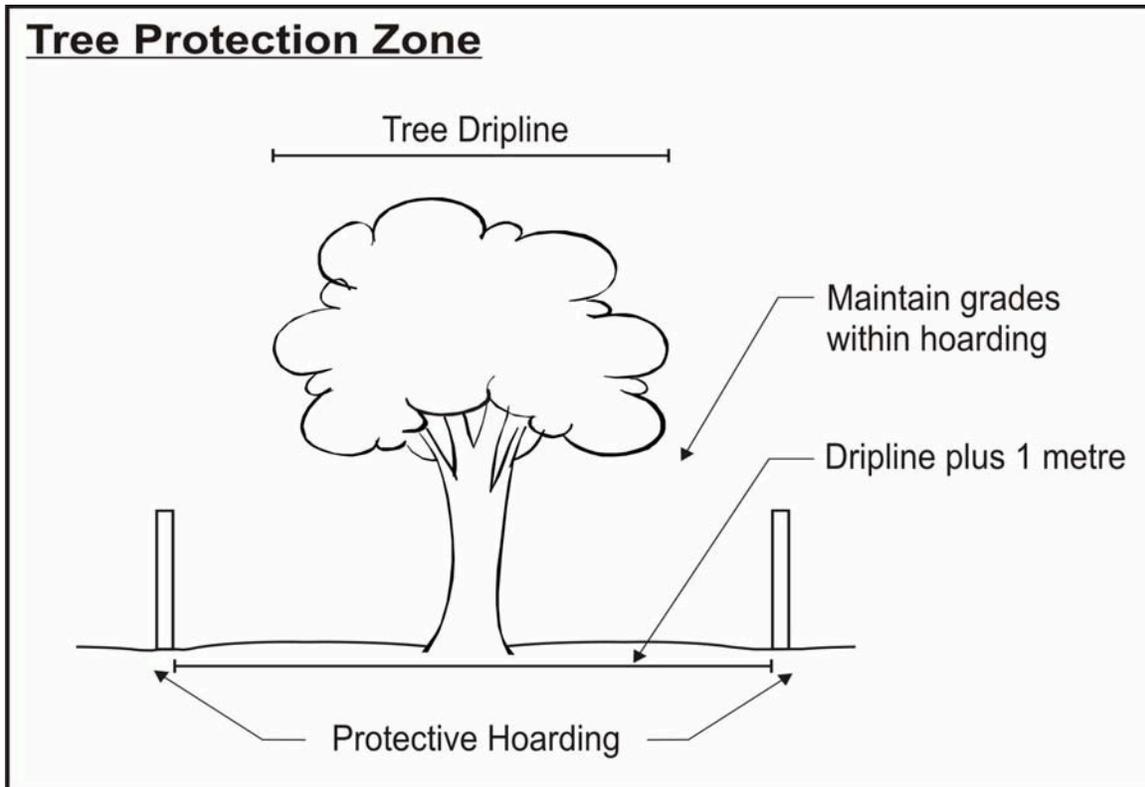
Where existing tree cutting by-laws are in effect, the City Forest Conservation By-law Officer may also check the site during the construction period.

Tree Protection Fencing

The applicant is responsible for ensuring that tree protection fencing (hoarding) is maintained throughout all phases of construction in the location and condition approved. Hoarding will provide protection to the individual trees, clumps of trees, and woodland edges to be retained. It should be placed a minimum of one metre from the drip line of the tree/woodland around the perimeter of

individual/grouped trees/woodland (refer to Figure 1). Paige wire farm fencing shall be the standard form; snow fencing is not acceptable. A sign must be posted on the fence to indicate that it delineates a tree protection zone.

Figure 1: Diagram showing the proper way of measuring protection zone



To avoid damage to trees and soil compaction, access routes should be established away from tree protection zones. Areas protected by temporary fencing will remain undisturbed and will not be used for temporary storage, placement, or excavation of fill, top soil, construction materials or equipment, or debris. Construction contaminants (fuels, oils) must be kept clear of tree protection zones. The existing grades within the tree protection areas must not be disturbed.

Wherever possible, avoid cutting surface roots of trees to be retained. In excavation, if root cuts are necessary, they should be done quickly, making smooth, flush cuts supervised by a tree management professional. Then the roots should be backfilled and watered before they have a chance to dry out.

For the best results, developers must ensure their builders and subcontractors are educated about the TPP and its requirements before starting their work. All subcontractors must be supplied with a copy of the approved TPP.

Post-Grading Tree Maintenance Report

After grading has been completed, the City requires that a Post-Grading Tree Maintenance Report be prepared and submitted to the Director of Planning.

The Post-Grading Tree Maintenance Report should:

- Assess damage to trees that were to be retained but have inadvertently been damaged or removed by site grading and clearing;
- Identify a dollar value for damaged trees and propose a compensation plan for replacing them; and,
- Recommend preservation methods such as crown and root fertilization, watering and pruning to improve the health of remaining trees.

Release of the tree protection security deposit may be delayed until this report has been received and the requirements have been satisfied.

Security Deposits

A security deposit in the form of cash or acceptable letter of credit will be required for the TPP on lots or blocks that involve tree protection as part of an approved TPP. The dollar value of trees to be retained through the TPP will be determined through consultation with City staff. Factors to be considered in valuing the trees are: species, condition/quality of trees, and quantity of trees. Seventy-five percent of the deposit will be released once the consultant who prepared the TPP certifies that it has been implemented as shown. If trees have been removed or irreparably damaged during construction, the owner/developer must replace them, to the satisfaction of the City, or the deposit fee (or a portion of it) will not be refunded. Twenty-five percent of the fee will be held for a two year maintenance period. The amount returned at the end of the maintenance period may be reduced based on the survival of the trees.

2.2.4 Step 4: Landscape Plan

A Landscape Plan showing new planting must be submitted to the Director of Planning. All Landscape Plans must be prepared by or under the guidance of a Landscape Architect registered as a full member in good standing with the Ontario Association of Landscape Architects and must conform to the TPP and Site Plan.

The following information is required on the Landscape Plan:

- Name of development, consultant, lot and concession, municipal address, location within Hamilton, north arrow, scale, legend;

- Property boundaries and dimensions, existing and proposed uses, utilities, roads, fencing, parking;
- Location of trees to be retained or transplanted;
- Planting details, including tree species or variety, location, caliper/size, quantity, spacing;
- Description of proposed plantings and maintenance methods; and,
- Location of landscape features, topography, drainage, storm water management ponds, and grades.

Compensation

To ensure existing tree cover is maintained, the City requires 1 for 1 compensation for any trees to be removed.

If it is not possible to replant trees on site (i.e. no space), Cash-in-lieu will be provided to the City to plant trees elsewhere.

Where compensation planting is required, credit will be given for street trees planted, as required under a Subdivision Agreement.

General Principles for Planting

Native plant species are to be used wherever possible. Appendix 4 includes a list of native plant species. The use of non-native, invasive plant species, as indicated in Appendix 5, is not permitted adjacent to Core Areas in the Natural Heritage System, as identified in the Official Plan. Plantings adjacent to high quality natural habitat (Core Areas in the Official Plan) should include species representative of the existing native vegetation. Also, using drought-resistant plant material to conserve water and reduce long term maintenance requirements is recommended.

Other landscape guidelines:

- Transplanted stock should be restricted to specimens under 20 mm dbh.
- Minimum caliper for deciduous planting stock is 50 mm dbh.
- Minimum height for a conifer is 1.5 metres.
- Include a mix of tree species (no monocultures).
- Invasive species should not be transplanted. A list of invasive species in Hamilton is provided in Appendix 5.

3.0 Summary of the Approval Process

1. During Formal Consultation, City staff will discuss with the applicant whether a GVI or a full TPP will be required when the Planning Act application is submitted. If a GVI is required, proceed to Step 2. If a TPP is required, proceed to Step 5.
2. Applicants for Planning Act approval (e.g. draft plan of subdivision/condominium, site plan control, and consent applications) and/or as part of a Niagara Escarpment permit application will be required to **submit one hard copy and one digital (pdf) copy of the GVI and the requisite fee to the Planning Department with their application.** The tree management professional should contact the City's Planning and Economic Development Department before undertaking a GVI. Staff will clarify what is required and may have background information on the site to provide.
3. City staff will conduct a site visit, if required.
4. City staff will provide comments on the GVI report to the tree management professional and applicant. Staff will advise of any changes to the proposed plan that will be recommended and any **draft conditions** that will be included in the report to the Planning Committee. The applicant will be informed **whether a Tree Preservation Plan (TPP) (detailed information) is required.**
5. If a TPP is required, one hard copy and a digital (pdf) copy of the TPP and the requisite fee must be submitted to the Planning and Economic Development Department. As a **condition of draft plan approval, the TPP must be approved** by the Planning and Economic Development Department before any grading, servicing or construction can begin.
6. Once the TPP is approved by the City, the tree protection areas must be identified on all grading plans and servicing drawings to ensure co-ordination between tree protection and site development.
7. Before any grading, servicing, or construction can occur, a **Verification of Tree Protection Letter** must be prepared by the tree management professional and submitted to the Director of Planning. This will ensure the applicant is complying with the requirements of the TPP. If pre-grading is requested, the TPP must be approved **before** any grading can occur.
8. During construction, the applicant is responsible for ensuring that **tree protection measures are maintained throughout construction.** City staff will also visit the site during this time.

9. To implement the approved TPP through the subdivision or development agreement, **securities will be deposited.**
10. A **Post-Grading Tree Maintenance Report** must be prepared by the tree management professional before the tree protection security deposit is released.
11. If trees are to be planted or transplanted on site, a **Landscape Plan** must be submitted to the Director of Planning for City staff review and approval.

4.0 Conclusion

The Tree Protection Guidelines will assist the City of Hamilton and the development community in ensuring that high quality vegetation is preserved on development sites. There are a number of actions the City of Hamilton is taking, through these Tree Protection Guidelines, to ensure that existing trees are protected to the greatest extent possible, including:

- Encouraging consideration of the natural features of the site early in the development process, so that sites are designed with a respect for these features. The technical information in these reports should be considered, along with engineering and grading when designing the layout of the site.
- Clarifying the process for tree protection in the development review process, minimizing time and cost.
- Recognizing that tree management is not an isolated process. Each participant in a project, from the owner, engineer, architect, and landscape architect to the grading, construction, and landscape contractors, must be committed to tree preservation and information must be communicated to everyone involved.
- Providing clear guidelines on submission requirements for tree protection plans.
- Requiring mapping of sites to accurately identify tree locations.
- Ensuring co-ordination between tree protection, grading, servicing and lot layout.
- Ensuring that the TPP is being implemented properly by conducting follow-up site inspections.

Properly implemented, these guidelines will benefit the community by creating healthy, green, and attractive neighbourhoods.

5.0 Glossary of Terms

Arborist:

A person who is a certified arborist under the International Society of Arboriculture.

Basal Area:

Basal area means:

- (i) The area of the cross-section of a trunk of a tree including the bark measured at the diameter breast height measured as $m^2/ha.$; and,
- (ii) Where there are multiple trunks, the total area of the cross-sections of the multiple trunks of a tree including the bark measured at the diameter breast height;

Caliper:

The diameter of a tree measured 1.3 metres above ground level.

City:

The City is the geographical area of the City of Hamilton or the municipal corporation.

Diameter:

The diameter of the stem or trunk of a tree including any existing bark at a specified point of measurement.

Diameter at Breast Height (dbh):

Diameter breast height means:

- (i) The diameter of a trunk of a tree including the bark measured at 1.37 metres above the highest point on the tree where the ground meets its trunk; and,
- (ii) Where there are multiple trunks, the total diameters of the multiple trunks of a tree including the bark measured at 1.37 metres above the highest point on the tree where the ground meets one of those trunks.

Development Application:

An application under the Planning Act, specifically, applications for draft plan of subdivision, plans of condominium, site plan approval, and consents. Development applications also include Niagara Escarpment Plan permits.

Drip Line:

An imaginary line running directly beneath the outermost branches of an individual tree or the trees forming the perimeter of the woodland.

Good Forestry Practices:

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, including the aesthetics and recreational opportunities of the landscape.

High Quality Vegetation:

Trees, groups of trees, and shrubs that are desirable in terms of health, condition, growth form, species, age, heritage value, aesthetic value, cultural significance, rare or uncommon species, or value for wildlife.

Hoarding:

A temporary fence placed around a tree, group of trees, or woodland which physically separates and protects them from construction activities.

Invasive Tree Species:

A tree species having the tendency to disrupt and/or invade a natural area through natural succession.

Landscape Architect:

A person who is registered as a Landscape Architect by the Ontario Association of Landscape Architects (OALA).

Native Tree:

A tree growing naturally in Canada, being indigenous to the Hamilton area.

Rare or Unusual Tree Species:

A tree that may be described as a heritage, historic, landmark, special interest, mature tree, or an interesting or rare species locally that should be protected.

Registered Professional Forester (R.P.F.):

A person who is certified as a R.P.F. under the Professional Registered Foresters Act, 2000, as amended.

Tree Management Professional:

Includes an arborist, registered professional forester, or landscape architect.

Woodland:

A treed community with 35 to 60% cover of coniferous or deciduous trees.

6.0 References

City of Kitchener. Feb. 2002. Tree Management Policy - Council Policy Resolution. 38 pgs.

City of London. 2005. Tree Preservation Policy.

City of Mississauga. 2002. Tree Protection Measures (diagram).

City of Ottawa. Tree Protection Guidelines. 2 pgs.

City of Owen Sound. Tree Preservation Policy. 4 pgs.

City of Surrey, B.C. 1997. Developer's Guideline to the Tree Preservation By-law. 4 pgs.

City of Thunder Bay. 2005. Tree Protection Standards 1 page.

City of Toronto. June 2002. "Tree Protection Policy and Specifications for Construction near Trees". Urban Forestry Services. 8 pgs.

City of Waterloo. 2001. Urban Forest Policy. 32 pgs.

City of Waterloo. "Protective Measures for trees during Construction". 6 pgs.

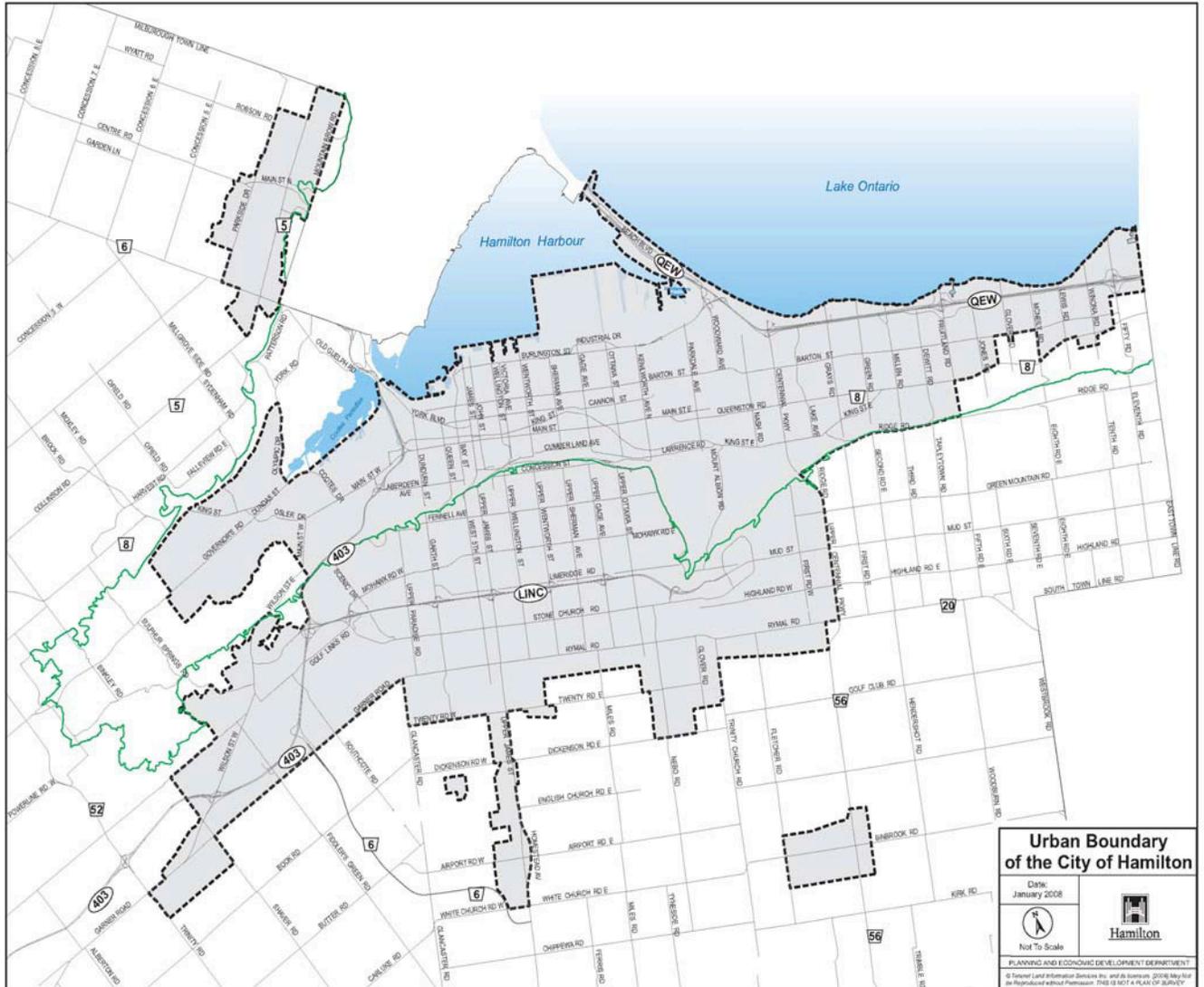
OMNR. 2000. A Silvicultural Guide to Managing Southern Ontario Forests. Version 1.1 Ont. Min. Nat. Resources. Queen's Printer for Ontario, Toronto, 648 pgs.

Matheny, Nelda and James R. Clark, Trees and Development, A Technical Guide to Preservation of Trees During Land Development, 1998, International Society of Arboriculture, ISBN 1-881956-20-2.

The Corporation of the City of Cambridge, Tree Management Policies and Guidelines for New Developments, (April 1999)

Town of Newmarket. Tree Preservation, Protection, Replacement, and Enhancement Policy. 8 pgs. Appendix "B" to Report PD02229(c) (Page 23 of 28)

Appendix 1: Map of Hamilton's Urban Boundary



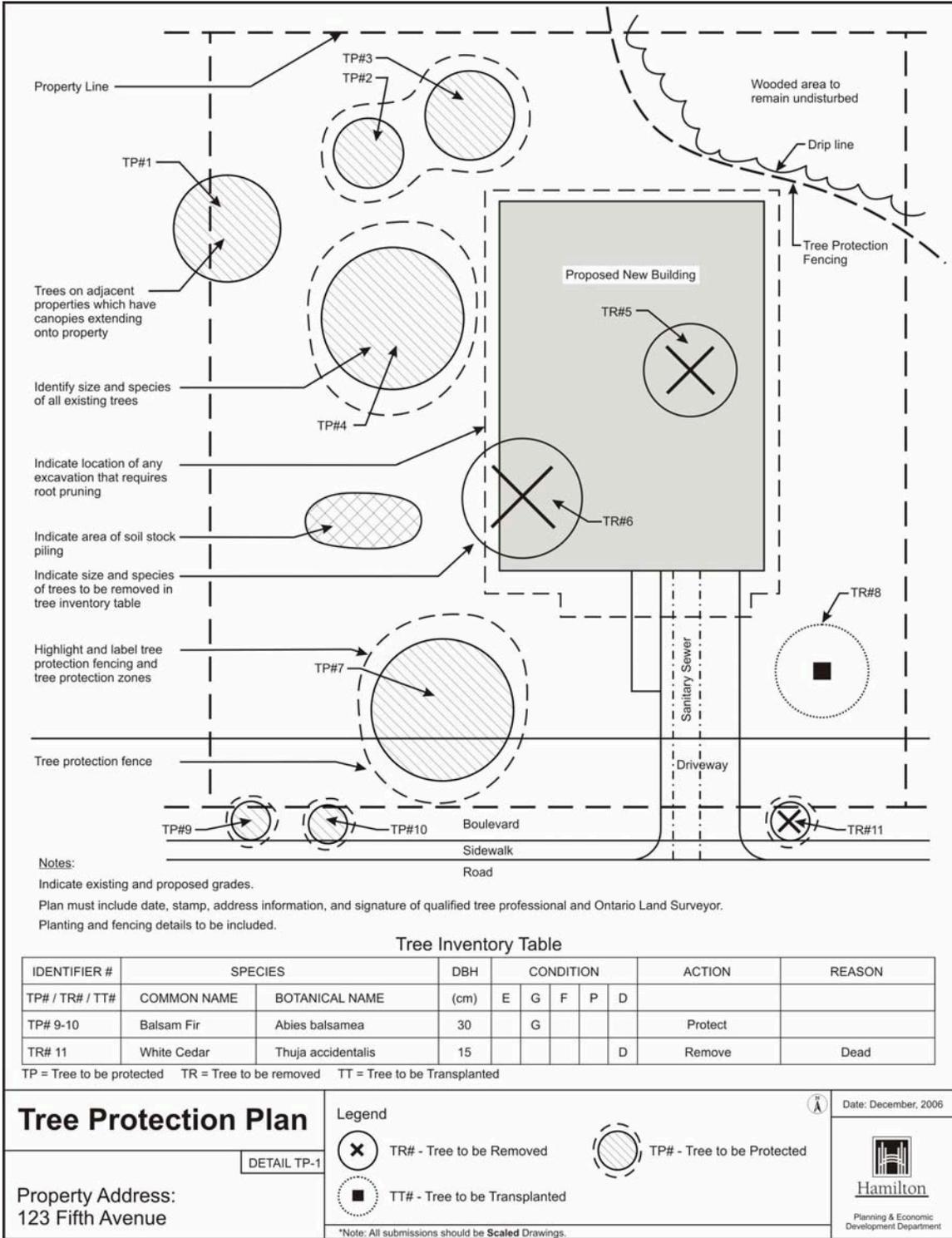
Appendix 2:

Tree Protection Plan - Sample Tree Inventory Chart (to be included on or attached to the map for the Tree Protection Plan).

TREE #	SPECIES (botanical name)	CALIPER (DBH in cm)	TREE CONDITION	ACTION	REASONS (for removal or transplanting)
1.	Sugar Maple (Acer saccharum)	25	good	retain	
2.	Beech (Fagus grandifolia)	25	fair	retain	
3.	White Ash (Fraxinus Americana)	32	poor	remove	Condition, split trunk
4.	Mixed Forest	5 to 20	poor-good	retain	
5.	Sugar Maple (Acer saccharum)	13	good	relocate	Conflict with infrastructure

Consultant: _____
 Address: _____
 Telephone: _____
 Fax #: _____
 E-Mail: _____
 Date of Inventory: _____

Appendix 3: Sample Tree Protection Plan Map



Tree Inventory Table

IDENTIFIER #	SPECIES		DBH (cm)	CONDITION					ACTION	REASON
	COMMON NAME	BOTANICAL NAME		E	G	F	P	D		
TP# 9-10	Balsam Fir	Abies balsamea	30		G				Protect	
TR# 11	White Cedar	Thuja occidentalis	15					D	Remove	Dead

TP = Tree to be protected TR = Tree to be removed TT = Tree to be Transplanted

Tree Protection Plan

Legend

- TR# - Tree to be Removed
- TP# - Tree to be Protected
- TT# - Tree to be Transplanted

Property Address:
123 Fifth Avenue

DETAIL TP-1

Date: December, 2006



*Note: All submissions should be Scaled Drawings.

Appendix 4:

List of Native Tree Species (recommended for planting)

Acer rubrum (Red Maple)
Acer saccharinum (Silver Maple)
Acer saccharum spp *nigrum* (Black Maple)
Acer saccharum (Sugar Maple)
Abies balsamea (Balsam Fir)
Betula alleghaniensis (Yellow Birch)
Betula papyrifera (White Birch)
Carpinus caroliniana (Blue Beech)
Carya cordiformis (Bitternut Hickory)
Carya glabra (Sweet Pignut Hickory)
Carya ovata (Shagbark Hickory)
Castanea dentata (Sweet Chestnut)
Celtis occidentalis (Hackberry)
Cornus florida (Flowering Dogwood)
Fagus grandifolia (American Beech)
Fraxinus americana (White Ash)
Fraxinus nigra (Black Ash)
Fraxinus pennsylvanica (Red Ash)
Hammamelis virginiana (Witch-hazel)
Juglans cinerea (Butternut)
Juglans nigra (Black Walnut)
Juniperus virginiana (Red Cedar)
Larix laricina (Tamarack)
Liriodendron tulipifera (Tulip Tree)
Morus rubra (Red Mulberry)
Nyssa sylvatica (Black Gum)
Ostrya virginiana (Ironwood)
Picea mariana (Black Spruce)
Pinus strobus (White Pine)
Platanus occidentalis (Sycamore)
Populus balsamifera (Balsam Poplar)
Populus deltoids (Cottonwood)
Populus grandidentata (Large-toothed Aspen)
Populus tremuloides (Trembling Aspen)
Prunus serotina (Black Cherry)
Prunus virginiana (Chokecherry)
Quercus alba (White Oak)
Quercus bicolor (Swamp White Oak)
Quercus ellipsoidalis (Hill's Oak)
Quercus macrocarpa (Burr Oak)

Appendix 4 (Continued):

List of Native Tree Species (recommended for planting) (Continued)

Quercus muehlenbergii (Chinquapin Oak)

Quercus rubra (Red Oak)

Quercus velutina (Black Oak)

Salix nigra (Black Willow)

Sassafras albidum (Sassafras)

Thuja occidentalis (White Cedar)

Tilia americana (American Basswood)

Tsuga canadensis (Eastern Hemlock)

Ulmus Americana (White Elm)

Ulmus rubra (Red Elm)

Ulmus thomasii (Rock Elm)

Appendix 5:

List of Invasive Tree Species (not recommended for planting; do not plant adjacent to Core Areas in the Natural Heritage System)

Acer platanoides (Norway Maple)
Acer negundo (Manitoba Maple)
Aesculus hippocastanum (Horse Chestnut)
Ailanthus altissima (Tree-of-heaven)
Alnus glutinosa (European or Black Alder)
Betula pendula (Silver Birch or European White Birch)
Elaeagnus angustifolia (Russian Olive)
Elaeagnus umbellata (Autumn Olive)
Morus alba (White Mulberry)
Picea abies (Norway Spruce)
Pinus sylvestris (Scots or Scotch Pine)
Populus alba (White Poplar)
Populus nigra var. *italica* (Lombardy Poplar)
Rhamnus cathartica (European or Common Buckthorn)
Rhamnus frangula (Glossy Buckthorn)
Robinia pseudoacacia (Black Locust)
Sorbus aucuparia (European Mountain Ash)
Ulmus pumila (Siberian Elm)