



# TREE PROTECTION MANUAL

(Version 2, Revised January 2010)





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## 1.0 General Tree Protection Policy

The tree protection policies and specifications outlined in this Manual reflect the policy of the City of Barrie Council. Anyone failing to adhere to these tree protection policies and / or the specifications will be financially responsible for any resulting damage to trees. Note that the financial responsibilities are outlined in the Tree Appraisal Section (7.0) of this Manual.

All trees situated on City property are protected under the provisions of City By-laws. On private property, all trees within an ecological woodlot of 0.2 ha (1/2 acre) or greater are protected under the provisions of the Tree Preservation By-law (2005-120) or its successor (Appendix 1).

Trees designated by City Council as a “Heritage Tree” under the provisions of the Tree Preservation By-law (2005-120) may not be removed, injured or destroyed in any way, with the exception of authorized activities detailed in Section 5.0. By way of motion, City Council may remove a tree from “Heritage” status.

Trees protected by City By-laws may not be removed, injured or destroyed in any way without written authorization from the City. Written authorization may require the issuance of a Tree Removal Permit and/or Right-of-Way Activity Permit. Note that the term “tree” refers to all parts of the tree; roots, branches, leaves and stem. No objects are permitted to be attached to trees protected by City By-laws.

An applicant for development (e.g. site plans, subdivisions) on lands with existing tree(s) must prepare a Tree Preservation Plan certified by a qualified Landscape Architect or Registered Professional Forester (Section 3.0).

Trees within or adjacent to a work area under authorization of a development agreement or Right-of-Way Activity Permit must be protected by the appropriate barrier (Section 4.0).

Pruning of a City owned tree’s branches or roots may only be done by:

- City of Barrie Forestry staff;
- Under the direction of a qualified individual authorized by a Right-of-Way Activity Permit; or
- Under a legal agreement executed between the City and the adjacent property owner.

Note: The term “qualified individual” or “qualified professional” refers to an International Society of Arboriculture Certified Arborist, Registered Professional Forester or other tree professional approved by the Director.

## **2.0 List of Definitions and Standard Terminology**

The following are a list of standard terms used throughout the Manual, as well as within existing City of Barrie By-laws.

**CITY AND CITY OF BARRIE** - The municipality of The Corporation of the City of Barrie.

**CITY HIGHWAY** - A common or public highway, road, street, lane, avenue, parkway, driveway, square, place, bridge, viaduct or trestle any part of which is intended for or used by the general public for the passage of vehicles and includes the area between the lateral property line thereof.

**CONTRACTOR** - Defined in the Right-of-Way Activity By-law 2005-256, means any person(s), company or firm engaged in providing labour, equipment, materials, etc. necessary to complete the work described.

**COUNCIL** - The Council of The Corporation of the City of Barrie.

**DBH** - "Diameter at breast height" and refers to the diameter of the stem of a tree measured outside the bark at a point 1.37 metres (4.5 feet) above the highest point on the tree where the ground meets the stump.

**DESTROY/DESTRUCTION** - To remove, cut down or in any other way cause major damage to a tree to the extent that it is considered necessary to remove or cut down the tree. Major damage to a tree shall mean any one of:

- i. a wound greater than the square of the DBH of the tree (for example, a wound with an area of 100 square centimeters is major damage to a tree with a DBH of 10 cm);
- ii. any wound greater than 1000 square centimeters;
- iii. if the wound in paragraph 1(l)(i) or 1(l)(ii) contacts the ground then the wound shall be considered major damage if it is 60% of the size specified in paragraph 1(l)(i) or 1(l)(ii) respectively;
- iv. broken branches destroying more than 33% of the Crown;
- v. the exposure, severing or compaction of more than 25% of the root area;
- vi. the breaking off of any tree;
- vii. the noticeable tipping of any tree.

**EMERGENCY WORK** - Includes work associated with drain repairs, utility repairs and structural repairs to a building or any other work of an emergency nature as defined in the City of Barrie's Road Right-of-Way Activity By-law 2005-256 (or its successors).

**FILL** - Earth, sand, gravel, rubble, rubbish, garbage, or any other material whether similar to or different from any of these materials, whether originating on the site or elsewhere, used or capable of being used to raise, lower, or in any way effect the contours of the ground.

**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 habitats, soil and water quality and quantity, forest productivity and health and the aesthetics and recreational opportunities of the landscape.

And Good Forestry Practices permits the destruction or injuring of trees that:

- (a) Have been damaged by disease, insects, wind, ice, fire, lightning, or other natural causes to an extent that the health of such trees is likely to further deteriorate;

- (b) Should be cut or removed to prevent disease or insects from spreading to other trees;
- (c) Are cut in accordance with the Provincial Silvicultural Guidelines as referred to in the Forest Operations and Silviculture Manual and its revisions prepared under the authority of the Crown Forest Sustainability Act, S.O. 1994, c. 25. These Provincial Silvicultural Guidelines include, but are not limited, to: A Silvicultural Guide to Managing Southern Ontario Forests, Silvicultural Guide for the Tolerant Hardwood Forest in Ontario, A Tree Marking Guide for the Tolerant Hardwood Working Group in Ontario, A Silvicultural Guide for the Great Lakes – St. Lawrence Conifer Forest in Ontario; or
- (d) Are marked and cut as part of a woodlands management plan approved by a Registered Professional Forester.

**GRADE** - A defined elevation of land that has been established as a result of geologic, hydrologic, or other natural processes or by human alteration; that defines ravines, depressions, hills, stream channels, eskers or steepness of terrain.

**HERITAGE TREE** - A tree that has been designated under Part IV of the *Ontario Heritage Act*, R.S.O. 1990, c. O.18 and/or a tree that Council formally designates as being unique and of importance to the City in terms of distinctive form, size, age and/or historical significance.

**HAZARD** - Where a tree has been destabilized or structurally compromised, the supporting roots have failed or are cut, the main stem is cracked, the tree has a disease causing branch or stem decay sufficient to create significant risk of structural failure, or any other structural problems that result in an immediate danger of the tree or parts of the tree breaking and causing potential damage or injury to life or property. A qualified arborist or Registered Professional Forester can assess the nature and risk of the hazard.

**INJURE and INJURY** - Failure to protect a tree in accordance with the City of Barrie's "Tree Protection Manual" or other standards set out by the Director, entirely or in part, or any act that will harm a tree's health in any manner.

**LANDSCAPE PLAN** - A plan or set of drawings which shows all related landscape works and details and is signed and stamped by a qualified Landscape Architect.

**MAINTENANCE** - The care and maintenance of trees in accordance with good arboricultural standards and includes planting, inspection, pruning, cabling and bracing, treatments for insect and disease problems, watering and fertilization.

**PERSON** - Includes any individual, corporation, partnership, association, firm, trust, or other entity and includes anyone acting on behalf or under the authority of such entity.

**PUBLIC PARK** - means all lands owned by or belonging to the City and as otherwise may be designated for use as a public park.

**PUBLIC TREE** - Any tree which has 50 percent or more of their main stem situated on a public park or a City street.

**QUALIFIED ARBORIST** - A person who is a specialist or expert in the area of the care and maintenance of trees and includes an arborist qualified by the Ontario Training and Adjustment Board Apprenticeship and Client Services Branch, a certified arborist qualified by the International Society of Arboriculture, a consulting arborist registered with the American Society of Consulting Arborists, a Registered Professional Forester or a person with other similar qualifications as approved by the Director.

QUALIFIED PROFESSIONAL/INDIVIDUAL - An Arborist, Landscape Architect or Registered Professional Forester who is qualified to complete the activity required, subject to the respective scope of practice and individual competency requirements of their discipline.

QUALIFIED LANDSCAPE ARCHITECT - A registered Landscape Architect in good standing with the Ontario Association of Landscape Architects.

REGISTERED PROFESSIONAL FORESTER - defined in the Professional Foresters Act, S.O. 2000, c.18.

SILVICULTURE - The theory and practice of controlling forest establishment, composition, growth and quality of forests to achieve the objectives of management.

SPECIFICATIONS - The most recent version of the City of Barrie's tree protection specifications set out within the Tree Protection Manual and the Barrie Standard Details.

STANDARDS - The minimum requirements or guidelines established by the Director for the protection and preservation of trees.

TREE - Any species of woody perennial plant including its root system which has reached or can reach a height of at least 4.5 metres (15 feet) at physiological maturity. The term "tree" refers to all parts of the tree; roots, branches, leaves and stem.

TREE PLANTING DETAIL - The most recent version of Barrie Standard Details with notes pertaining to the planting of trees on any City street.

TREE PROTECTION MANUAL - means the manual maintained by Barrie's Director of Engineering setting out standards for protection of trees in the City of Barrie, as amended from time to time.

TREE VALUE/APPRaised VALUE - The monetary value of a tree as determined under the tree appraisal method within the City of Barrie's Tree Protection Manual.

UNSAFE CONDITION – Any tree, whether healthy or hazardous including, but not limited to, a hazard tree, a tree growing in a location that does not meet the current City of Barrie Standard Details, a tree which impedes safe views or sightlines at or adjacent to a City street or intersection, or any tree which, in the opinion of the Director, creates an unsafe condition for the public.

WOODLOT – A woodlot as defined in paragraph 2 of by-law 2005-120 is land of at least 0.2 hectares (0.5 acres) in area covered with a density of trees that is not less than:

- (1) 1000 trees of any size per hectare;
- (2) 750 trees, measuring over 5 centimeters in DBH per hectare;
- (3) 500 trees, measuring over 12 centimeters in DBH per hectare;

OR

- (4) 250 trees, measuring over 20 centimeters in DBH per hectare;
- as illustrated by the City of Barrie's Official Woodlot Map, as amended from time to time.

ZONING BY-LAW – The By-law regulating land use as provided for under the Planning Act within the City of Barrie.



### 3.0 Trees in Development Areas

All trees in development areas that are part of an ecological woodlot (1/2 acre or greater, irrespective of property boundaries) are protected under the provisions of the Private Tree By-law (2005-120). Individual trees on private property may also be protected under the Subdividers Agreement, Site Plan Agreement or the Conditions of Severance. An applicant for a Tree Removal Permit is responsible for all legal, consultation and any other fees incurred for its application and administration.

### 3.1 Tree Preservation and Removal Process

The City of Barrie requires the preservation and incorporation of existing trees into new development proposals wherever practical and feasible. Figure 1, 1a, 1b and 1c describes the process of obtaining approval to remove trees in a development area within the City of Barrie. Each of the steps within the process are numbered and described in greater detail within the corresponding paragraphs.

**Figure 1. The Three Stages of Tree Preservation and/or Removal for Development Applications**

Stage 1: Pre-Submission – Tree Inventory, Assessment and Preservation Plan

A qualified professional shall be retained by the owner/applicant to complete an inventory and assessment of the vegetation on site to ensure that trees are appropriately addressed. The process in which an owner/applicant's consultant (qualified professional) prepares an application for tree preservation and/or removal is detailed in Figure 1a.



Stage 2 : Development Application – Submission, Review and Approval

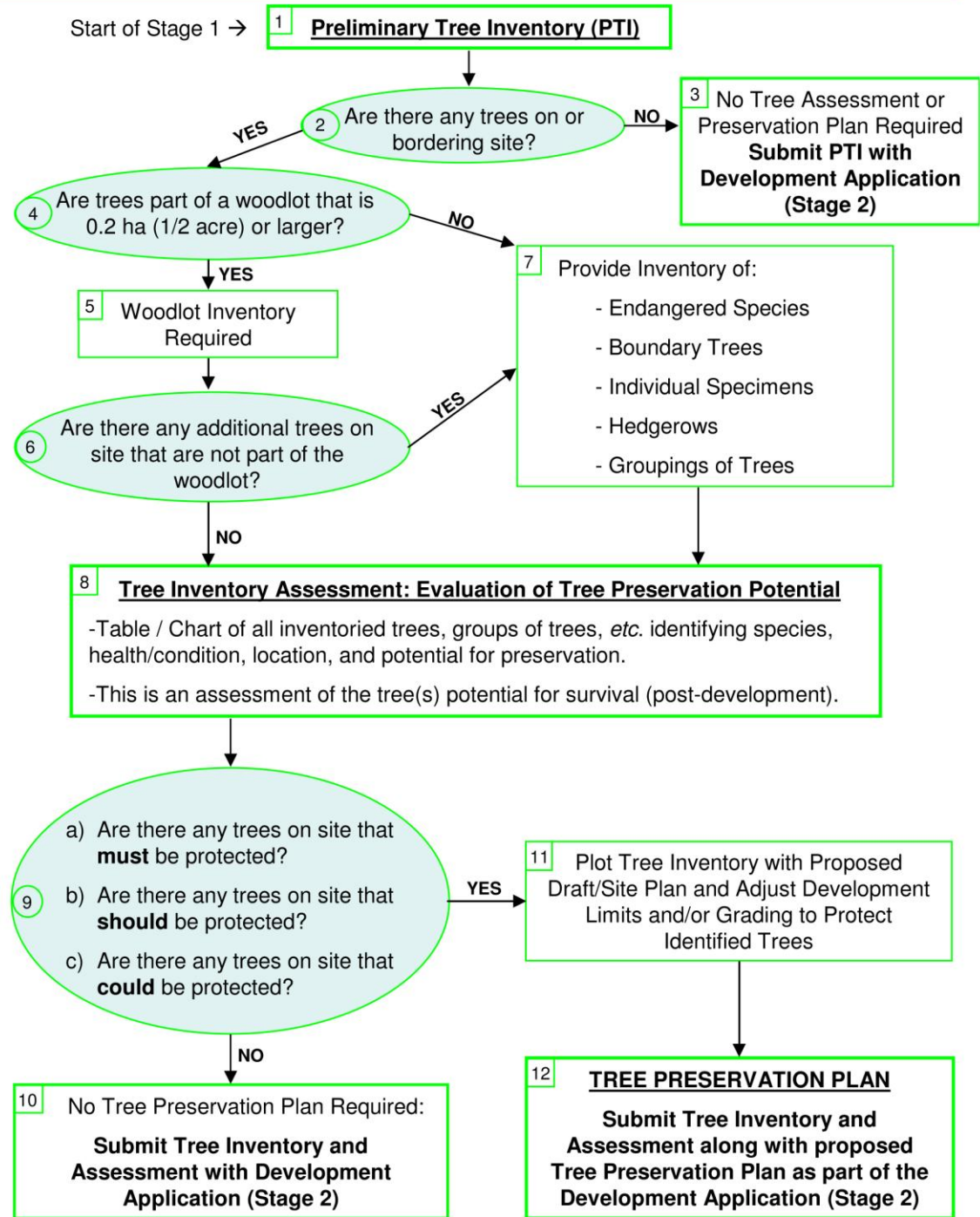
All development applications are required to address tree removals and/or preservation. The process of development application, review and approval of the Tree Inventory, Assessment and Preservation Plan are detailed in Figure 1b.



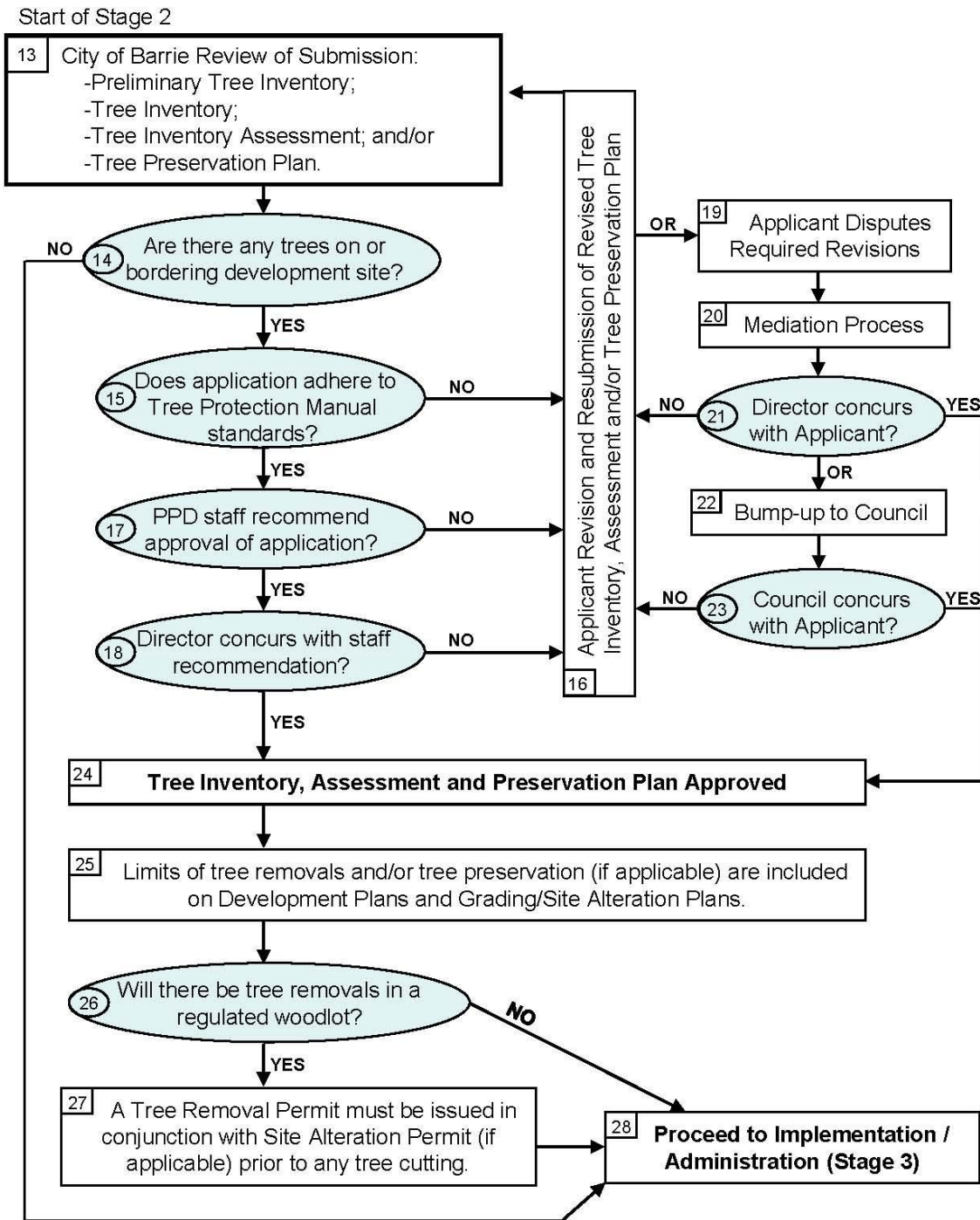
Stage 3: Implementation / Administration - Tree Preservation Measures and Tree Removals

Once the Tree Preservation Plan is approved and/or a Tree Removal Permit is issued, the owner is responsible to ensure all tree protection measures are implemented on site prior to tree removals and site alteration commencing. The process of implementation and administration of the tree removal stage of site development is detailed in Figure 1c.

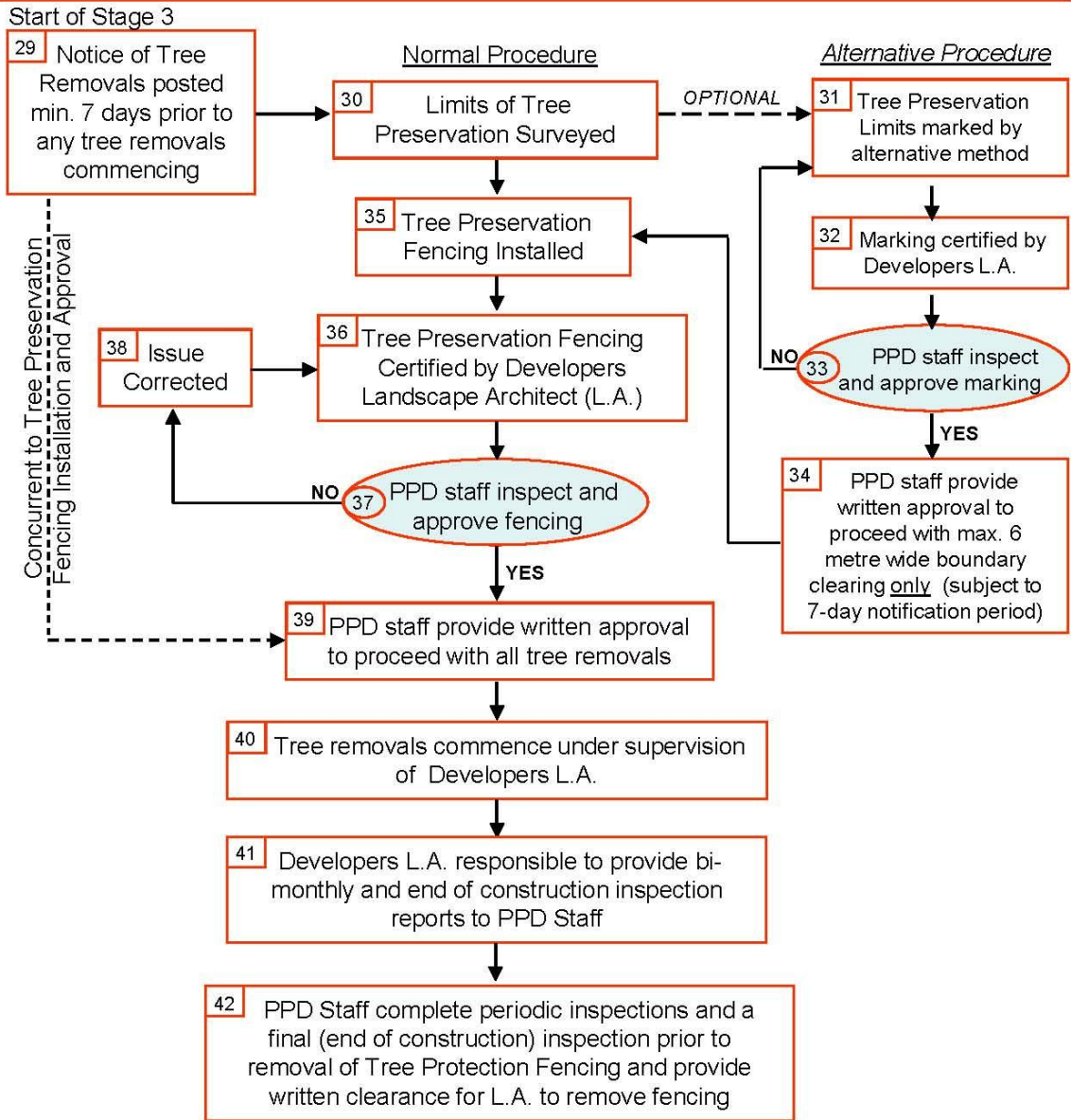
**Figure 1a. Stage 1: Pre-Submission – Tree Inventory, Assessment and Preservation Plan**



**Figure 1b. Stage 2 : Development Application – Submission, Review and Approval**



**Figure 1c. Stage 3: Implementation / Administration - Tree Preservation Measures and Tree Removals**



### 3.2 Tree Preservation and Removal Process Description

#### **STAGE 1: Pre-Submission – Tree Inventory, Assessment and Preservation Plan**

**STEP 1.** A qualified professional shall be retained by the developer to undertake a preliminary tree inventory to determine if there are trees on or bordering (adjacent) the property, and if any of those trees are subject to By-law 2005-120. The Preliminary Tree Inventory must include the following information:

- a) Identify the development and its current planning status;
- b) Identify the owner(s), applicant(s) and developer(s);
- c) Identify the qualified professional(s) completing the inventory work and their qualifications and experience;
- d) Provide a simple map of the property showing its location within the City of Barrie;
- e) Describe the property's size, zoning, current land use and context, including a general description of the history of use of the property and its current importance to the surrounding landscape;
- f) Summarize the methodology employed including fieldwork, aerial photo interpretation and any other reference material used; and
- g) Note reference to any existing Environmental Assessment Report(s).

**STEP 2.** The Preliminary Tree Inventory will ascertain whether there are any trees on the development property, or bordering the property (part or all of the tree growing on or overhanging the development property). If yes, proceed to Step 4.

**STEP 3.** If the Preliminary Tree Inventory determines that there are no trees on or bordering the subject site, all data supporting that finding should be submitted in a Preliminary Tree Inventory Report as part of the development application and the applicant proceeds to Stage 2 (Step 13). Supporting data may also be provided as part of the report including, but not limited to, aerial photography, site photographs and the qualified professional's site inventory notes.

**STEP 4.** Determine whether the trees on the development site are part of an ecological woodlot as defined in the Tree Preservation By-law (2005-120). If no, proceed to Step 7.

**STEP 5.** A comprehensive Woodlot Inventory must be prepared by a qualified professional as specified within Schedule 'A' of the Tree Preservation By-law (2005-120). The Woodlot Inventory will include, but not be limited to:

- a) A detailed inventory map of the property showing the property boundary, vegetation type boundaries, adjacent property vegetation, fences, road, access roads or trails, hydro lines, utility lines, windbreaks, watercourses, grass fields, railways, buildings, towers, bridges, quarries, dams, treed floods or swamps, mines, brush, marshes, debris piles, shallow rocky areas, orchards, hazard areas, developed agricultural lands, plantations, and woodland areas;
- b) Details with respect to soil types, topography, physical features, water features, drainage, access, wildlife, and existing grade;
- c) An inventory of trees and tree regeneration and the method of assessing the inventory of trees with respect to each distinct area or compartment within the woodlot. The qualified professional shall complete the following:
  - i. Correlate and categorize the trees within the woodlot into forest stands (*i.e.* groups of similar tree composition, age, structure and/or plant associations with soil, topography, moisture, and sunlight);
  - ii. Survey the limits of each forest stand and locate any rare, regionally significant and/or specimen trees of particular significance;
  - iii. Survey the location of all threatened or endangered species present on the site (as defined in the *Endangered Species Act*), including the dripline of any endangered tree species. Any threatened or endangered species on site must

be reported to the Ministry of Natural Resources, and direction on how to address these species obtained from the Midhurst District Office;

- iv. Plot the forest stand information on a contour survey base plan at a minimum scale of 1:500; and
- v. Describe each forest stand or individual tree in terms of the following:
  - Species (dominant and secondary);
  - Size (average diameter at breast height (DBH) and/or height);
  - Form and spread of canopy;
  - Maturity;
  - Health (noted disease, hazards or structural issues);
  - Buffering and aesthetic significance; and
  - Label this information on the plan and/or code on an inventory table.

**STEP 6.** If there are additional trees on the site that are not part of a woodlot, an inventory of other trees on or bordering the site must also be completed. If not, proceed to Step 8.

### **STEP 7. Tree Inventory**

The objective of the tree inventory is to present detailed and accurate information regarding a site's existing trees (not part of a woodlot) to be able to assess its quality and determine its potential to survive after development. The tree inventory will include, but not be limited to:

- a) List all of the existing tree species present on the site;
- b) Correlate and categorize the trees on site into broad vegetation units, *i.e.* individual trees, specimen trees, Heritage Trees, boundary trees, groups of trees, hedgerows, woodlots, plantations;
- c) Survey the limits of each vegetation unit and locate any rare and/or specimen trees of particular significance.
- d) Survey the location of all threatened or endangered species present on the site (as defined in the *Endangered Species Act*), including the dripline of any endangered tree species. Any threatened or endangered species on site must be reported to the Ministry of Natural Resources, and direction on how to address these species obtained from the Midhurst District Office.
- e) Plot the vegetation unit's location and canopy overhang on a contour survey base plan at a minimum scale of 1:500.
- f) Each vegetation unit or individual tree must be described in terms of the following:
  - i. Species (dominant and secondary);
  - ii. Size (average diameter at breast height (DBH) and/or height);
  - iii. Form and spread of canopy;
  - iv. Maturity;
  - v. Health (noted disease, hazards or structural issues);
  - vi. Buffering and aesthetic significance; and
  - vii. Label this information on the plan and/or code on an inventory table.

### **STEP 8. Tree Inventory Assessment**

- a) Assign a value to each forest stand, vegetation unit or individual tree based on its overall quality as determined by the inventory (*i.e.* specimen, good, fair, poor, dead or hazardous).
- b) Assign a "high", "medium" or "low" preservation value to each forest stand, vegetation unit or individual tree based on its potential to survive as determined by the following criteria:
  - i. Existing maturity and condition;
  - ii. Sensitivity to proposed changes in wind and sun exposure;
  - iii. Sensitivity to proposed change in grading and soil strata;
  - iv. Proposed density and proximity of development or lot coverage;
  - v. List additional observations and relevant comments; and
  - vi. Submit any pertinent photographs.

**STEP 9.** Based on the Tree Inventory and Assessment, recommendations for tree preservation are made by the qualified professional using three simple categories:

- a) Level 1 Protection Trees: Trees that must be protected would include:
  - i. Endangered species and/or their habitat;
  - ii. Heritage Trees; or
  - iii. Boundary trees which the adjacent property owner does not provide written consent to remove.
- b) Level 2 Protection Trees: Protect, where feasible, any tree or group of trees assigned a “high” preservation value that would result in minor or no impact on the proposed development plan and/or grading limits. Accommodations to be considered for site development in terms of grading and/or lot fabrics. The qualified professional will recommend modifications to proposed development plans which are sensitive to Level 2 Protection Trees.
- c) Level 3 Protection Trees: Protect, where feasible, any tree or group of trees assigned a “medium” preservation value that would not result in any impact to the proposed development plan and/or grading limits.

If there are no trees that must be protected and no other opportunities to preserve trees on the site, proceed to Step 10. Otherwise, proceed to Step 11.

**STEP 10.** Where there are no trees proposed for preservation on the development site, the applicant is to submit the Tree Inventory and Assessment with the development application (proceed to Step 13).

**STEP 11.** Where there are trees to be preserved (Step 9), the qualified professional will plot the surveyed dripline of these trees on the proposed development plan and adjust the limits of development/grading accordingly, following the Tree Protection Standards within this manual (Appendix 2), and/or follow an approved mitigation measure (Appendix 5). The limits of tree preservation should be forwarded digitally to the engineering consultants preparing the soil and erosion control plan to be shown on their drawing.

**STEP 12. Tree Preservation Plan**

The Landscape Architect will develop a Tree Preservation Plan and submit it along with the Tree Inventory and Assessment as part of their application for development (Step 13). The Tree Preservation Plan will:

- a) Clearly illustrate the tree preservation, conditional tree preservation and/or removal areas in relation to any proposed development plan and show the location of tree preservation fencing. The plan must indicate trees to be removed and trees to be preserved, in a standard drawing and/or tabular format;
- b) Indicate any temporary preservation measures required to protect trees to be preserved (i.e. hoarding, mitigation, etc);
- c) Include comments regarding the extent of preservation and any specific measures required such as selective cutting, pruning, tree wells, retaining walls, irrigation and aeration pipes and include a section detail showing specifications. The specifications will include the appropriate Barrie Standard Details, at a minimum (Appendix 2);
- d) Include monitoring notes and a notation regarding the requirement for bi-monthly inspection reports for the duration of active development on the property; and
- e) Indicate areas of tree restoration, where applicable.

## **STAGE 2: Development Application – Submission, Review and Approval**

**STEP 13.** The applicant will submit the following information to the City of Barrie for review as part of their application for development (subject to Stage 1 Pre-Submission requirements):

- Preliminary Tree Inventory;
- Tree Inventory;
- Tree Inventory Assessment; and/or
- Tree Preservation Plan.

Each submitted report and/or plan must be signed and stamped by the qualified professional to be accepted for review. Staff in the Parks Planning and Development (PPD) section will review the information provided in context of the development plans and grading/site alteration plans.

**STEP 14.** If staff confirm through on-site and/or information review that there are no trees on or bordering the development site, proceed to Stage 3 (Step 30). Written confirmation of PPD staff findings will be provided to the Planning Department. If there are trees on site, but no tree information provided, the applicant must return to Step 1 and assess or reassess the site.

**STEP 15.** PPD staff will review the information provided in context of the development plan and site and confirm that the application adheres to the standards within the Tree Protection Manual (proceed to Step 17).

If there are any deficiencies, a “red-lined” plan and/or written comments on the submission will be provided directly to the Landscape Architect/qualified professional who produced the plan. Depending on the nature of the comments, a meeting may be requested to go over the issues (Step 16).

**STEP 16.** The applicant’s qualified professional will receive written comments and/or instructions to revise the submitted Tree Inventory, Assessment and/or Tree Preservation Plan. Once revisions are completed, the applicant’s qualified professional will resubmit the required information along with the original “red-line” drawings and/or reports. However, should the applicant dispute the required revisions, and no consensus can be obtained with PPD staff, they must enter the mediation process (Step 19).

**STEP 17.** Once PPD staff confirm that the submitted information is in conformance with applicable policies, by-laws and regulations, they make recommendation on approval of the plans to the Planning Department and Director of Engineering.

**STEP 18.** The Director of Engineering reviews the recommendation by PPD staff, and may concur (proceed to Step 26). If not, the Director may request additional revisions of the applicant prior to providing approval of the Tree Preservation Plan (Step 16).

**STEP 19.** In the event that the applicant does not agree with required alterations to submitted plans, they have the opportunity to commence a mediation process.

**STEP 20.** If a consensus can not be reached in a meeting between principle parties (PPD staff, applicant and qualified professional completing the work on behalf of the applicant) the applicant can appeal to the Director of Engineering.

**STEP 21.** The principle parties meet with the Director of Engineering to discuss the specific issues in question. If the Director agrees with the applicants position, the Director has the option of issuing approval of the Tree Inventory, Assessment and Preservation Plan (proceed to Step 26). Otherwise, the applicant must revise the plans accordingly (Step 16), or proceed with the next step of mediation (Step 22).



**STEP 22.** If the applicant does not concur with the Director of Engineering, they have the option to bump-up the application to City Council.

**STEP 23.** City Council may accept the application as submitted (proceed to step 26), or accept the application subject to conditions (Step 16).

**STEP 24.** Approval of the Tree Inventory, Assessment and/or Preservation Plan issued in writing by PPD staff to the applicant. The applicant must submit three (3) final copies (signed and stamped by the qualified professional) of the Tree Preservation Plan (if applicable) to PPD staff. All three copies will be signed and dated as approved by the file manager (or Director of Engineering), and one approved copy returned to the applicant.

**STEP 26.** If any number of trees are to be removed from a woodlot area of 0.2 ha (2,023 m<sup>2</sup>) or ½ acre, irrespective of property delineations, then the development will require a Tree Removal Permit. If not, proceed to Step 30.

**STEP 27.** A Tree Removal Permit must be issued prior to any trees being removed from an ecological woodlot. The application for tree removals must be accompanied by the Tree Removal Permit Fee (as set in By-law 2009-020) and the current contact information (legal company name or person, primary company contact person's name, mailing address, telephone number(s), fax number, email address) for the following:

1. Property Owner;
2. Consultant (Qualified Professional); and
3. Tree Removal Contractor.

The owner of the property (or a person with legal signing authority for the owner) must sign the Tree Removal Permit. The Tree Removal Permit will not be released until the Soil and Erosion Control Plan, showing the limits of tree preservation, has been approved by the Engineering Department.

**STEP 28.** Proceed to Stage 3, implementation and administration of tree preservation and removals (Step 31) once all approvals have been obtained.

### **STAGE 3: Implementation/Administration – Tree Preservation Measures and Tree Removals**

**STEP 29.** “Notice of Tree Removals” sign to be posted by the applicant in a clearly visible location on site a minimum of 7 days before any tree removals begin (Appendix 2). This notice can be posted at any time during the process after approval of the Tree Preservation Plan (Step 26), but no less than 7 calendar days prior to any tree removals taking place on site. The applicant may submit a dated, digital photograph to PPD staff at the time of installation to confirm the timelines associated with this requirement.

**STEP 30.** The limits of the tree preservation areas (and property boundaries) are surveyed and clearly marked by a licensed Ontario Land Surveyor.

**STEP 31.** In the situations where access to the site is restricted (e.g. fully wooded parcels), an alternative process may be followed, subject to a written request to PPD staff by the applicant's qualified professional supervising the tree preservation and removal process. This process is only used where it would be extremely difficult or not possible to install the full Tree Preservation Fencing (BSD-23A, Appendix 2) without first removing trees to obtain access/clearance to install the fencing. First, the limits of tree preservation are clearly marked by an approved method by the qualified professional and/or licensed Ontario Land Surveyor. The method must be approved in writing by the PPD staff prior to use on the site.

**STEP 32.** The alternative marking method is inspected and certified by the applicant's qualified professional. Written notice is provided by the applicant's qualified professional to PPD staff, along with a request for inspection. The request should allow for a minimum of 48 hours notice to PPD staff to schedule a joint site inspection.

**STEP 33.** PPD staff inspect the alternative marking with the applicant's qualified professional and the applicant's tree removal contractor. The inspection is to identify any issues, and to ensure that the tree removal contractor is aware of the limits of cutting, and confirm that no trees can be felled into any tree preservation areas. If there are issues with the marking identified during the joint inspection, they must be corrected (return to Step 33) prior to written approval to commence cutting.

**STEP 34.** PPD staff issue written approval prior to the applicant's tree removal contractor commencing work on site. The approval will identify that tree removals may only take place within a 6 metre wide strip along the boundary of the tree preservation areas to facilitate installation of the Tree Preservation Fencing. Written approval will not be provided until the minimum 7-day public notification period has expired.

**STEP 35.** Tree Preservation Fencing to be installed and inspected by the applicant's qualified professional. Tree Preservation Area signs to be posted at 50 metre intervals along tree preservation fencing before tree removals begin. The Tree Removal Permit (if applicable) to be posted or available on site at all times.

**STEP 36.** Written notification of certification of the Tree Preservation Fencing is provided to PPD staff by the applicant's qualified professional, along with a request for inspection. The request should allow for a minimum of 48 hours notice to PPD staff to schedule a joint site inspection.

**STEP 37.** PPD staff inspect the Tree Preservation Fencing with the applicant's qualified professional. If there are no issues to be corrected, proceed to Step 41,

**STEP 38.** If there are issues with the installation of the Tree Preservation Fencing and/or signage the applicant must have these corrected and recertified by the qualified professional (return to Step 38).

**STEP 39.** PPD staff issue written approval to proceed with all tree removals identified on the approved Tree Preservation Plan. Written approval will not be provided until the minimum 7-day public notification period has expired. Tree removals may not commence until written authorization has been received by the applicant.

**STEP 40.** Tree removals may commence under the supervision of the applicant's qualified professional. Any issues that arise during the tree removal process are to be promptly dealt with, and summarized within the bi-monthly inspection reports. Should the issues be of a serious nature, requiring the involvement of PPD staff, an immediate request for site meeting will be requested by the applicant's qualified professional.

**STEP 41.** Qualified professional to provide bi-monthly Tree Preservation Fencing inspection reports to the City during the period of active construction on the site. A final inspection report is to be submitted to PPD staff by the applicant's qualified professional for review prior to final inspection of the site.

**STEP 42.** A final (end of construction) inspection will be scheduled by the applicant's qualified professional with PPD staff. Written authorization by PPD staff will be provided to the applicant's qualified professional to remove the Tree Preservation Fencing upon completion of all site development, construction and final grading.

#### 4.0 Trees Within or Adjacent to a Municipal Road Right-of-Way

Trees within or adjacent to a Municipal Road Right-of-Way are protected under the provisions of the Public Tree By-law (76-162) and/or the Right-of-Way Activity By-law (2005-256), or their successors. No person shall destroy, injure, remove, trim or alter any tree unless authorization is first received from the Director of Operations or officially appointed designate.

#### 4.1 Tree Protection Zone

Section 22 of the Right-of-Way Activity By-law (2005-256) stipulates the requirement for instituting a Tree Protection Zone (TPZ) when activities are planned near trees on or adjacent to a Municipal Right-of-Way. The following is a chart showing minimum required distances and best management practices (optimum) for determining a Tree Protection Zone. Some trees and some site conditions may require an even larger TPZ than those stated below.

Table 1. Tree Protection Zones for Trees On or Adjacent to a Municipal Right-of-Way.

DBH	Minimum TPZ Distance	Optimum TPZ Distance
>=10 cm	1.0 m	dripline
11-25 cm	1.5 m	dripline
26-40 cm	2.0 m	dripline
41-60 cm	2.5 m	dripline
61-80 cm	3.0 m	dripline
81 cm +	4.0 m	dripline

- Notes:
- "DBH" means "diameter at breast height" and refers to the diameter of the stem of a tree measured at one and thirty-seven one hundredths of a metre (1.37 metres) above the ground in an undisturbed state at the base of the tree.
  - The TPZ distances are to be measured from the outside edge of the tree base (BSD-21B, Appendix 2).
  - The TPZ only applies to soft landscaped areas, and does not extend over existing sidewalks, roads or driveways.
  - Scientific research (Bader 2000, Wessolly 1998, Sin 1995) has shown that only roots near the trunk were stressed when a tree is subjected to pulling forces. A severe uprooting danger occurred when the roots were severed within the zone of rapid root taper (minimum TPZ).

Within the area defined as the "Minimum Tree Protection Zone" (TPZ) there must be:

- no alteration or disturbance to existing grade of any kind;
- no changes to the grade by adding fill, excavating or scraping;
- no storage of construction materials or equipment;
- no storage of soil, construction waste or debris;
- no disposal of any deleterious materials e.g. concrete sleuth, gas, oil, paint;
- no movement of vehicles, equipment or pedestrians.

The Optimum TPZ is at the limit of canopy, and should be protected whenever feasible.

The above mentioned requirements are for area(s) designated as a TPZ. These requirements should be used as guidelines for all other areas where tree roots are impacted. The roots of a tree can extend from the trunk to more than 2 times the distance of the dripline (See BSD-21A, Appendix 2).

Trees growing on a municipal boulevard will have roots growing greater distances parallel to the road, and restricted root growth where the roots meet sidewalks, curbs, driveways and other solid

obstructions (e.g. transformer foundations). ST-1 and ST-2 (Appendix 3) illustrate the typical root growth for a mature tree on a boulevard.

#### **4.2 Tree Protection Barriers**

For construction projects longer than 2 weeks (10 business days), the minimum TPZ must be delineated by a preservation fence following City of Barrie Standard Details drawing BSD-23A (Appendix 2).

For construction projects longer than 2 days, but less than 10 business days, one of the following barriers must be used to delineate the minimum TPZ:

- 1.2 metre (4ft) high orange plastic web snow fencing on a 2"x 4" frame or attached to 2"x2" wooden stakes;
- 1 metre (3 ft) high silt cloth attached to 2"x2" wooden stakes; or
- Other cladding can be considered subject to approval by the Director of Operations.

For construction projects less than 2 days, a more temporary barrier may be used subject to approval of the Director of Operations. One option is the use of wooden barricades set at the limit of the minimum TPZ.

#### **4.3 Excavation, Trenching, Tunnelling and Road Widening**

The following is a list of the basic rules surrounding work near or under a TPZ:

- No excavating or trenching is permitted within the minimum TPZ;
- Directional micro tunnelling and boring is permitted within (under) a TPZ as long as it is at a minimum depth of 1 metre; and
- When using open face cuts, root pruning must be completed by a qualified arborist or approved tree professional.

##### Excavation and Trenching

Open excavations must be completed outside of the minimum TPZ. Excavations and trenches that run parallel to the road create the least disturbance of the rooting zone (ST-1). Excavations and trenches that run perpendicular to the road and are within the dripline of a tree (ST-2) are to be avoided wherever possible, as they sever the greatest percentage of root mass from the tree.

Excavations that are under the dripline of a tree should be completed by the use of a trencher, vacuum truck, air-blaster or high pressure water excavation technique to reduce the damage to the tree roots. An excavation or trench may run up to the limit of the minimum TPZ (ST-3), however, large roots (>5 cm in diameter) must be pruned and sealed by a qualified professional or a trencher used as detailed in Section 6.2. All excavation materials must be piled outside of the minimum TPZ, and no equipment may enter the minimum TPZ at any time.

##### Micro-Tunnelling and Boring

Directional micro-tunnelling and boring are permitted activities within (under) a TPZ, provided the required open excavation and materials remain outside of the minimum TPZ (ST-3). Boring or tunnelling should not go directly under the trunk of the tree to avoid disturbing the root plate or major anchor roots. Boring should remain at least 1.0 m (horizontally) away from the trunk of the tree, and be at least 1.0 metre in depth.

## Road or Sidewalk Re-Construction

To minimize the impact to tree roots during road widening or sidewalk installations, excavations within the optimum-to-minimum TPZ should be completed by the use of a trencher, vacuum truck, air-blaster or high pressure water excavation techniques. Roots in open face cuts must be pruned and sealed under the direction of a qualified professional.

### Method:

1. Erect a TPZ barrier (as per Section 4.1, 4.2) and maintain throughout the period of construction (ST-3).
2. At the extent of construction limits, either:
  - i. Trench cut with trencher or rock saw to a depth of 45-60 cm (18-24"). Backfill with soil or mulch until excavation of the construction area commences; or
  - ii. Vacuum, air-blast or high pressure wash soil to a depth of 45 cm (18") and width of approximately 30 cm (12"). Prune and seal all roots >5 cm (2") in diameter at the construction limit.
3. Excavate as per normal operations outside of the minimum TPZ / limit of construction.
4. When approved construction limits are adjacent to, or must encroach upon, the minimum TPZ boundary, implement mitigation measures outlined in Section 6.0, or removal and replacement of the tree will be required using the Tree Appraisal values outlined in Section 7.0.

## **4.4 Tree Removal or Relocation**

Any requests for removal, cutting, pruning or relocating a tree protected by City By-laws must be made in writing to the Director of Operations. In some instances, requests for tree removal will be forwarded to City Council for approval (e.g. designated heritage tree, refusal of request by Director of Operations).

If approval is granted for removal of City owned tree(s), applicants will assume all costs involved which include tree value (Section 7.0), removal, and replacement costs. Where removal of a significant tree(s) is required, a tree replacement plan may be required at the discretion of the Director of Operations. Where tree relocation is approved, applicants will assume all relocation costs.

## **4.5 Injury or Destruction of a City Tree**

The permit holder shall be responsible for the cost of tree removal and replacement and shall pay to the City the value of the removed tree using the Appraisal calculations in Section 7.0 where the following is the case:

- Prior to construction, it is determined that the road right-of-way activities can not adequately protect the tree(s) and the tree(s) must be removed to facilitate the activities; or
- If, during road right-of-way activities, the tree(s) is destroyed or injured to the point that it must be replaced as a result of not adhering to the tree protection specifications as detailed in this Manual.

## **4.6 Arboricultural Work**

Any roots or branches which require pruning must be pruned by a qualified arborist or other tree professional as approved by the Director of Operations. All pruning of tree roots and branches must be in accordance with good arboricultural standards. Mitigation measures are further detailed in Section 6.0.

#### **4.7 Letters of Credit**

Protection of Trees: The Director of Operations may request a Letter of Credit to secure the protection of trees. The Letter of Credit will be calculated at the total estimated cost of tree(s) removal, tree(s) replacement and appraised tree(s) value as calculated in Section 7. A Letter of Credit may be held by the City until determined by the Director of Operations and shall be released by the City provided that the trees are healthy and in a state of vigorous growth after the stipulated time period (minimum 1 year).

Replacement Tree Planting or Relocation: The Director of Operations may request a Letter of Credit in an amount appropriate to secure the planting or relocation of trees. A Letter of Credit may be held by the City until after the planting of the trees for a period of time determined by the Director of Operations and shall be released by the City provided that the trees are healthy and in a state of vigorous growth after the stipulated time period (minimum 1 year).

#### **4.8 Services and Utilities**

The contractor is responsible for all services and utilities in the planned work area. The contractor responsible for the activity in the Municipal Right-of-Way shall be responsible for obtaining all necessary information in regard to the exact location of utilities, including service connections.

The contractor completing the work will be held responsible for the protection of all services, whether aerial or underground, during the time of construction and will be held liable for any damage to same. Prior to commencing any excavation operations, the contractor shall give sufficient notice (as defined in By-law 2005-256) to Utility Companies concerned and the City of Barrie Operations Department and arrange for, at his/her own expense, any temporary utility relocations that might be required.

#### **4.9 Emergencies**

Emergency repairs to underground utilities are permitted to commence immediately by a qualified person(s). The utility company concerned is responsible for notifying the Operations Department at 705-739-4255 as soon as possible after emergency repairs have commenced. Emergencies are defined in the Right-of-Way Activity By-law (2005-256). The utility company must notify the Operations Department of any trees impacted by emergency repair work within 48 hours of the emergency work being commenced.

## **5.0 Heritage Trees**

Council may designate a tree(s) as being unique and of importance to the City in terms of form, size, age and/or historical significance. Injury or destruction of a Heritage Tree is prohibited by the provisions of the Tree Preservation By-law (2005-120).

The definition of “Heritage Tree” adopted by the Ontario Heritage Tree Alliance is (courtesy of Paul Aird, Professor Emeritus, Faculty of Forestry, University of Toronto):

*A heritage tree is an outstanding specimen because of its size, form, shape, age, colour, rarity, genetic constitution or other distinctive community landmark; a specimen associated with an historic person, place, event or period; representative of a crop grown by ancestors and their successors that is at risk of disappearing from cultivation; a specimen recognized by members of a community as deserving heritage recognition.*

### **5.1 Nomination of a Tree(s) for Heritage Designation**

Any person or organization may apply to the Director of Engineering to have a tree on their own property or on public property (within the City of Barrie limits) designated as a “Heritage Tree”. Once written application is received (Heritage Tree Application Form, Appendix 4) staff will evaluate the tree against the established criteria set out by the Ontario Heritage Tree Alliance (Appendix 4). If the tree meets the established criteria, staff will provide a report to the Community Services Committee with a recommendation on designation of the tree as a Heritage Tree. Community Services Committee may decide to recommend to Council the tree(s) designation as a Heritage Tree, or may request further review by staff and/or further committees (e.g. Cultural Heritage Committee).

### **5.2 Criteria to Establish a Heritage Tree**

The use of the Ontario Heritage Tree Alliance evaluation charts is essential to ensure that a tree worthy of heritage status conforms to a set of standard criteria for the sake of consistency, validity, and data gathering. The standard criteria has been developed and tested by the Ontario Urban Forest Council and the Ontario Heritage Tree Alliance. The most current criteria (Heritage Tree Toolkit) shall be used as the benchmark to establish whether a tree(s) may be considered for “heritage” status.

A community heritage tree, an avenue of trees, a windrow of trees, a grove of trees, or a arboreal remnant could be rare, culturally or historically significant, a prominent landmark, unusual in this area, a particularly noteworthy specimen, and/or significantly large or old for its species. Ultimately, Council may designate any tree as a Heritage Tree, but it is essential that a nominated tree(s) be recognized under at least one of the following heritage tree categories:

- Outstanding because of size, age, shape or other distinctive feature (extraordinary, unique or unusual form or colour) and/or species rarity or genetic constitution;
- A tree having some outstanding qualities, together with being a distinctive community landmark located in a commanding community location;
- Associated with an event, a period, a structure, a noted person, or can be tree(s), groves or arboreal remnants of spiritual significance;
- Recognized by members of a community as deserving heritage recognition simply as “a treasured tree to the community”. It could be (but not necessarily so) rare or culturally or historically significant, a prominent landmark, unusual in the particular area, a particularly noteworthy specimen or significantly large size or age for its species;
- Representative of a crop tree grown by ancestors and their successors that is at risk of disappearing from cultivation; and/or
- Part of a group of trees or avenue of trees on a property designated under the Ontario Heritage Act.

The Heritage Tree Evaluation Chart is used to quantify and evaluate the candidacy of a tree for Heritage designation (Appendix 4). A tree that scores 4/4 in one chart, and achieves an overall total chart scoring of 75% or greater qualifies to be recommended to Council for Heritage Tree designation. Details on the nomination, process and evaluation are contained within Appendix 4.

### **5.3 Maintenance of a Heritage Tree**

Due to the maturity of a tree that would typically qualify as a Heritage Tree, it is likely to require regular inspection and maintenance activities. The International Society of Arboriculture Best Management Practices must be employed during inspection, maintenance and care of a Heritage Tree. Heritage Trees on public property shall be maintained by City forestry crews, while a Heritage Tree on private property must be maintained by a certified Arborist.

### **5.4 Criteria to Remove a Heritage Tree**

By way of motion, City Council may remove a Heritage Tree's status. However, should a tree that is designated by Council as a Heritage Tree die or otherwise be deemed hazardous by a qualified professional, it would require removal. A formal written request to the Director of Engineering which includes the arborists report would be required to remove a Heritage Tree on private property. The City of Barrie's Urban Forester would be required to inspect and confirm the current health and condition of the tree (private or municipal property), and recommend to the Director of Engineering that it be removed. In the case of disagreement on the health and/or condition of the tree(s), a third-party professional would be hired by the owner of the tree to provide expert opinion and an arborist report to the Director of Engineering.

Notification of the change in status of the Heritage Tree would be provided to Council via Staff Memo prior to its removal. However, if the tree was deemed an immediate risk to public safety by the Urban Forester, removal, partial removal or pruning would commence, and Council members would be notified in the most expedient manner, with a formal Memo to Council.

Any Heritage Tree removed from public property would be replanted during the next planting season by the City of Barrie, using the same species of tree (unless recommended by the Urban Forester), and as close as possible to the same location where the original tree was removed.



## 6.0 Standard Mitigation Measures for Approved Construction Near Trees

### 6.1 Preventative Mitigation

The most successful mitigation techniques are preventative. By following the Tree Protection Zone (TPZ) and Tree Preservation limits and specifications (Appendix 2), injury to trees will be minimized such that trees adjacent to construction areas have a reasonable likelihood of survival. However, in some instances access and/or construction activities must impinge upon the TPZ of trees that are to be saved. When approval is granted for activities to be within or adjacent to the TPZ, standard preventative mitigation techniques can be employed to reduce the chance of injury to the trees to be protected. Other preventative mitigation techniques may be employed with prior approval of the City of Barrie's Urban Forester.

#### Root Protection

*Root Buffering:* A Root Buffer is a temporary layer of material designed to protect the soil texture and roots within a TPZ. The buffer shall consist of a base course of tree chips spread at a 15 cm (6") depth over the root area (keeping one foot clear of the trunk), and covered with ¾" plywood placed over the wood chips. Once the construction project is completed, the plywood and wood chips are carefully removed without disturbing the original soil surface.

*Grade Changes:* Where approved construction activities require the cutting or filling of grades adjacent to the TPZ limits, damage to roots can be reduced through proper pre-construction activities. Root prune (TPZ-1, Appendix 5) along the perimeter of the TPZ limits prior to excavation using a trencher or rock saw to a depth of 45-60 cm (18-24"). Backfill trench within 1 hour to minimize roots drying out. Then excavate, fill, or construct retaining wall as per normal procedures outside of the TPZ. This will sever roots cleanly, protecting the remaining roots from cracking, invasion by diseases and root rot fungi.

When it is necessary to fill around a significant tree that must be retained, a dry-well procedure may be implemented as per the specifications illustrated in TPZ-2 (Appendix 5).

#### Branch Protection

Care shall be taken to ensure that the branches of trees to be protected are not injured by the adjacent activities. However, when construction works are in proximity to trees, there may be branches present that could interfere with those approved activities. Rather than risk damage to branches, careful pruning to facilitate construction activities can be requested of the City of Barrie Operations Department (for municipal trees), or with prior approval, a Certified Arborist or approved forestry professional could be employed by the contractor (as defined in Section 4.8) to carry out tree pruning (for private trees).

Typically, City of Barrie parkland and boulevard trees are pruned to the following standards:

- 4 metres (13') over curbs and streets
- 2.5 metres (8') over sidewalks and lawns

Should a contractor find that the tree(s) in the planned work area not meet these height clearances, please notify the Operations Department prior to commencing work. The City Forestry staff will prune the municipal tree(s) to at least the minimum clearances to assist in reducing conflicts during construction activities. Should timing be an issue, approval can be granted for the contractor to hire an arborist to prune the tree(s).

## Stem Protection

Where equipment movement within a TPZ has been approved by the Director of Engineering, and root and branch protection measures have been implemented, stem protection measures will reduce the possibility of major damage to the stem of the tree. Protection of the stem is crucial to maintaining healthy trees, as they play two vital roles for trees: structural support for the tree canopy; and the only means of translocating water and nutrients from the roots to the crown.

One method to mitigate the risk of stem damage is to completely plank around the tree with 1" x 6" planking, plywood (or approved equivalent) prior to work commencing. Planks are wired to each other (not the tree), and should extend at least 2.5 metres up the tree where possible. No other materials of any kind may be attached to, or leaned up against the tree.

## **6.2 Injury Mitigation**

A mitigation program is required if the approved activities will cause injury to trees (that are to be protected) through impacts including, but not limited to, drought stress, dust accumulation or soil compaction. To reduce injury, one or more of the following mitigation measures shall be implemented and supervised by a Certified Arborist, Landscape Architect or Registered Professional Forester.

**Note: Injury** - means bruising, scarring, tearing or breaking of roots, bark, trunk, branches or foliage, herbicide or poisoning, or any other action which is likely to cause the death or permanent damage to a tree.

**Mechanical Injury** - means a noninfectious injury which often leads to poor growth, a damaged appearance or death to the tree and commonly creates source points for the entry of tree diseases. Common causes of mechanical injury are construction equipment, staking damage, vehicles, vandalism, weather, insects and animals.

## Soil Compaction Damage

Compaction of the soil is the largest killer of trees on construction sites due to suffocation of roots. 95% of lethal soil compaction takes place within the first 3 passes of equipment over the soil. If compaction to the upper 30 cm (12") of soil within the TPZ has occurred, then one or more of the following mitigation measures shall be implemented to reduce injury as recommended by the Landscape Architect or Certified Arborist:

Type I Mitigation:

If an approved paving, hardscape or other compromising material encroaches within the TPZ, an aeration system shall be designed by a certified arborist or landscape architect and used within this area.

Type II Mitigation:

If inadvertent compaction of the soil has occurred within the TPZ, the soil shall be loosened by an approved method such as Vertical Mulching or Soil Fracturing. Note: Soil Fracturing - means the loosening of hard or compacted soil around a tree. Vertical Mulching - means auguring, hydraulic or air excavation of vertical holes within a tree's root zone to loosen and aerate the soil, typically to mitigate Soil Compaction.

## Root Injury

If trenches are cut and tree roots 50 mm (2") or larger are encountered they must be cleanly cut back to a sound wood lateral root under the supervision of the project arborist. The end of the root shall be sealed and kept moist. All exposed root areas within the TPZ shall be backfilled or covered within one hour. Exposed roots may be kept from drying out by temporarily covering the

roots and draping layered burlap or carpeting over the upper 1 metre (3 feet) of trench walls. The materials must be kept moist until backfilled to reduce evaporation from the trench walls.

#### Scaffold Branch or Leaf Canopy Injury

Within five days, remove broken or torn branches back to an appropriate branch capable of resuming terminal growth. If leaves are heat scorched from equipment exhaust pipes, consult the project Landscape Architect, Arborist or City of Barrie within 24 hours.

#### Bark or Trunk Wounding

Current bark tracing and treatment methods shall be performed by a qualified tree care specialist (arborist, landscape architect or registered professional forester) within two days, and reported in the bi-monthly inspection report (Section 6.3).

### **6.3 Reporting of Unanticipated Injury to Trees**

Any damage or injury to trees shall be reported within one business day to the consulting Arborist or Landscape Architect and the City of Barrie so that mitigation can take place. All mechanical or chemical injury to branches, trunk or roots over 50 mm (2") in diameter shall be reported in the next bi-monthly inspection report. Note: for long-term projects (e.g. development sites), a bi-monthly inspection report is required during the period of active construction with a final inspection report summarizing the project; for short-term (< 2 months) projects a final inspection report will summarize any injury to trees, and the method employed to mitigate the damage.

### **6.4 Significant Injury of a Tree**

It is considered significant injury to a tree if any of the following criteria are met:

- Crown: Damage or removal of greater than one-third (33%) of the tree's branches/foliage.
- Roots: The exposure, severing or compacting of greater than one-quarter (25%) of the trees root area or open excavation (not including exceptions described in Section 4.3) within the minimum Tree Protection Zones as described under Section 4.1.
- Stem: Bark or Trunk wounding that creates:
  - a) a wound greater than the square of the DBH of the tree (for example, a wound with an area of 100 square centimeters is major damage to a tree with a DBH of 10 cm);
  - b) any wound greater than 1000 square centimeters;
  - c) if the wound in paragraph a) or b) contacts the ground then the wound shall be considered major damage if it is 60% of the size specified in paragraph a) or b) respectively;
- Other: The breaking off or noticeable tipping of any tree.

### **6.5 Appraised Value**

If a tree is significantly injured or destroyed, the City of Barrie determines the Tree Appraisal value by adjusting a tree's basic value by its condition, location, and species based on the *Guide for Plant Appraisal*, published by the Council of Tree and Landscape Appraisers and the International Society of Arboriculture Tree Evaluation Guide. The party responsible for injury to the tree shall replace the tree based on the appraisal methods outlined in Section 7.0 of this manual.

## 7.0 Appraisal of Trees Protected by City By-laws

Periodically, the City of Barrie is required to provide the “value” of a tree(s) that is protected under City By-laws. The most common and accepted method of valuing trees is the *Guide for Plant Appraisal*, published by the Council of Tree and Landscape Appraisers, and the International Society of Arboriculture Tree Evaluation Guide. There are four key pieces of information required to provide a monetary value of a tree; species, size, location and its current condition (a measure of tree health).

Species: The value of a tree is based on many factors related to the “cost” of growing and planting the tree. Tree species vary in the ease in which they are planted and transplanted, rate of growth, phenotypic and genotypic characteristics, retail demand, etc. This results in varying values by species.

Tree species are to be assessed to genus, species and cultivar where appropriate and possible. The tree species pricing and species values are recorded from Table 1 and 2 (Appendix 6), respectively. If a tree cultivar is not listed in Table 2, the species value and pricing are used for the cultivar (e.g. a red maple cultivar is priced/valued under red maple). If a species is not listed in the pricing/value table, the tree is recorded as “other conifer” or “other deciduous” species, and valued accordingly.

Size: Measurements of tree size are recorded for conifer trees by height (in cm) and for deciduous trees by diameter at breast height (DBH; in cm).

Location: The tree’s location affects the perceived “landscape value” or social value of the tree. For example, a tree growing in a residential landscape has a higher intrinsic landscape value than a tree growing in a woodlot. This results in variation from low to high location indices.

Trees are categorized into one of ten possible tree locations, ranging from native, open woods trees to specimen or heritage trees (Table 3, Appendix 6). The most appropriate location index must be assigned to each tree being valued.

Condition: The greatest effect on the value of a tree is its current condition. A tree that is in poor health has a lower overall value than a tree in perfect health. The condition, or level of maintenance that a tree has received can affect this value, reflecting the investment that has been put into the tree.

The health and condition of each tree must be assessed by a qualified individual using the categories described in Table 4 (Appendix 6). In the event that the trees condition can not be assessed (e.g. unauthorized removal), a minimum condition of “Good” shall be used in the calculation of the tree’s value. Any previous information, photographs, or inspection data can also be used to increase this value to “Excellent” if warranted.

### 7.1 Method for Tree Appraisals

Each tree must be appraised individually by recording the tree species, size, location and evaluating its current condition. The appraisal must be completed by a qualified person (Landscape Architect, qualified arborist, Registered Professional Forester or approved landscape appraiser) and is subject to review and approval by the Director of Engineering. An example Tree Valuation Form and calculation is provided in Appendix 6 for use. The process for assigning tree value is as follows:

- Step 1. Assess tree species and assign corresponding Species Pricing (Table 1) and Species Value Index from Table 2 (Appendix 6).
- Step 2. Assess tree location and assign corresponding Location Value Index from Table 3 (Appendix 6).
- Step 3. Assess tree health and assign corresponding Health Value Index from Table 4 (Appendix 6).
- Step 4. Measure tree size:  
 Conifers - measure tree height in metres  
 Deciduous - measure tree diameter at breast height (DBH) at 1.37 metres above grade).
- Step 5. Once the required information (steps 1-4) is gathered on the tree to be valued, the following calculation is used to calculate the value of a tree:

Current Tree Value = the Greater of its Current Base Value<sup>(1)</sup> OR:

Tree Value per Unit Growth <sup>(2)</sup> (\$/ht or \$/cm)	X	Species Value Index	X	Location Value Index	X	Health Value Index	X	Current Tree: Ht (m) - Conifer OR DBH (cm) - Deciduous
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- <sup>(1)</sup> Note: Current Base Value is set at \$500.00 for deciduous trees and \$400 for conifers, based on the cost of planting a standard nursery stock tree (including purchase, delivery, installation, warranty, and administration).
- <sup>(2)</sup> Note: Tree Value per Unit Growth = \$160.00 per metre Height for coniferous trees and \$100.00 per centimeter DBH for deciduous trees.

## APPENDIX 1: TREE PROTECTION BY-LAWS

**Bill No. 123**



### **BY- LAW NUMBER 2005-120**

#### **A By-law of The Corporation of the City of Barrie to prohibit or regulate the injuring or destruction of trees on private property in the City of Barrie**

**WHEREAS**, Section 135 of the Municipal Act, 2001, S.O. 2001, c. 25, as amended, permits the enactment of a by-law by the Council of The Corporation of the City of Barrie for prohibiting or regulating the injuring or destruction of trees or any class of trees;

**AND WHEREAS**, Council may require that a permit be obtained for the injuring or destruction of trees or any class of trees specified in the by-law and prescribe the fees for the permit and the circumstances under which a permit may be issued;

**AND WHEREAS**, by Resolution 05-G-261, the Council of the Corporation of the City of Barrie has determined that it is desirable to enact such a by-law;

**AND WHEREAS** Council enacted By-law Number 2002-12 on the 14th day of January, 2002 to prohibit or regulate the injuring or destruction of trees on private property in the City of Barrie and the Council of The Corporation of the City of Barrie has determined that it is desirable to repeal By-law 2002-12 and enact a new by-law to prohibit or regulate the injuring or destruction of trees as authorized in accordance with the Municipal Act, 2001;

**NOW THEREFORE**, the Council of The Corporation of the City of Barrie enacts as follows:

#### **1. DEFINITIONS**

In this by-law:

- (a) "basal area" of a tree shall mean the area of a cross-section of the tree at "breast height" (1.37 metres or 4.5 feet) measured in square metres;
- (b) "basal area" of a woodlot shall mean the ratio of the sum of the basal areas of the trees within the woodlot in square metres to the area of the woodlot in hectares;
- (c) "breast height" refers to a point of measurement 1.37 metres above the highest point on the tree where the ground meets the stump;
- (d) "Building Permit" means a Building Permit issued under the *Building Code Act, 1992*, S.O. 1992, c23, as amended;
- (e) "City" and "City of Barrie" means the municipality of The Corporation of the City of Barrie;
- (e) "Clerk" means the Clerk of The Corporation of the City of Barrie;
- (f) "Council" means the Council of The Corporation of the City of Barrie;
- (g) "destroy" means the removal of trees or harm resulting in the death or ruin of trees by cutting, burning, uprooting, chemical application or other means including irreversible injury that may result from neglect, accident or design and the term "destruction" shall have a corresponding meaning;

- (h) "Diameter" means the diameter of the stem of a tree measured outside the bark at a specified point of measurement.
- (i) "Director" means of the Director of the Leisure, Transit and Works Department for the City of Barrie or his or her designate, provided such designate is an Officer appointed under this by-law;
- (j) "DBH" means "diameter at breast height" and refers to the diameter of the stem of a tree measured at a point 1.37 metres (4.5 feet) above the highest point on the tree where the ground meets the stump;
- (k) "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 habitats, soil and water quality and quantity, forest productivity and health and the aesthetics and recreational opportunities of the landscape;

And Good Forestry Practices permits the destruction or injuring of trees that:

- i) have been damaged by disease, insects, wind, ice, fire, lightning, or other natural causes to an extent that the health of such trees is likely to further deteriorate;
  - ii) should be cut or removed to prevent disease or insects from spreading to other trees;
  - iii) are cut in accordance with the Provincial Silvicultural Guidelines as referred to in the Forest Operations and Silviculture Manual and its revisions prepared under the authority of the *Crown Forest Sustainability Act*, S.O. 1994, c. 25. These Provincial Silvicultural Guidelines include, but are not limited, to: A Silvicultural Guide to Managing Southern Ontario Forests, Silvicultural Guide for the Tolerant Hardwood Forest in Ontario, A Tree Marking Guide for the Tolerant Hardwood Working Group in Ontario, A Silvicultural Guide for the Great Lakes – St. Lawrence Conifer Forest in Ontario;
  - iv) are marked and cut as part of a woodlands management plan approved by a Registered Professional Forester.
- (l) "Heritage Tree" means a tree that Council designates as being unique and of importance to the City in terms of distinctive form, size, age and/or historical significance
  - (m) "injure" means to harm, damage or impair trees and includes, but is not limited to, harm, damage or impairment caused by changing grades around trees, compacting soil over root areas, severing roots, proper application of chemicals, improper pruning or the removal of branches and bark and the term "injury" shall have corresponding meaning;
  - (n) "Major Damage" to a tree shall mean any one of:
    - (i) a wound greater than the square of the DBH of the tree (for example, a wound with an area of 100 square centimeters is major damage to a tree with a DBH of 10 cm.)
    - (ii) any wound greater than 1000 square centimeters
    - (iii) if the wound in paragraph 1(l)(i) or 1(l)(ii) contacts the ground then the wound shall be considered major damage if it is 60% of the size specified in paragraph 1(l)(i) or 1(l)(ii) respectively
    - (iv) broken branches destroying more than 33% of the Crown
    - (v) the exposure, severing or compaction of more than 25% of the root area
    - (vi) the breaking off of any tree
    - (vii) the noticeable tipping of any tree
  - (o) "officer" means an individual designated in accordance with this bylaw for the administration and enforcement of this by-law;
  - (p) "orchard" means a plantation of fruit or nut trees;
  - (q) "owner" means the registered Owner(s) of the property;
  - (r) "permit" means the authorization from the Director to injure or destroy trees pursuant to this by-law;
  - (s) "person" means any individual, corporation, partnership, association, firm, trust, or other entity and includes anyone acting on behalf or under the authority of such entity;

- (t) “qualified forest technician” means someone who has graduated from a recognized College with a diploma in Forestry who is also certified as a tree marker by the Ontario Ministry of Natural Resources;
- (u) “qualified RLA” means a “Registered Landscape Architect” certified by the Ontario Association of Landscape Architects”;
- (v) “Registered Professional Forester” as defined in the *Professional Foresters Act, 2000*, S.O. 2000, c.18.
- (w) “Silviculture” means the theory and practice of controlling forest establishment, composition, growth and quality of forests to achieve the objectives of management.
- (x) “tree” means a plant of any species of woody perennial plant including its root system which has reached or can reach a height of at least 4.5 metres (15 feet) at physiological maturity;
- (y) “Tree Protection Manual” means the manual maintained by Barrie’s Director of Leisure, Transit and Works setting out standards for protection of trees in the City of Barrie as amended from time to time. Copies of which may be viewed and printed from the City of Barrie website at [www.city.barrie.on.ca](http://www.city.barrie.on.ca);
- (z) “woodlot” means a woodlot as defined in paragraph 2 of this by-law;
- (aa) “Zoning By-law” means the by-law regulating land use as provided for under the Planning Act within the City of Barrie;

## **2. DEFINITION OF WOODLOT**

- (a) For the purposes of this By-law a “woodlot” shall mean land of at least 0.2 hectares (0.5 acres) in area covered with a density of trees that is not less than:
  - (1) 1000 trees of any size per hectare;
  - (2) 750 trees, measuring over 5 centimeters in DBH per hectare;
  - (3) 500 trees, measuring over 12 centimeters in DBH per hectare;
  - OR
  - (4) 250 trees, measuring over 20 centimeters in DBH per hectare;

as illustrated by the City of Barrie’s Official Woodlot Map, as amended from time to time.
- (b) For the purposes of this by-law, a boundary woodlot shall be defined by the ecological limit of the woodlot and not by private property boundaries.
- (c) Notwithstanding paragraph 2(b), where a woodlot is dissected by a road, path or natural feature such as a creek, the boundary of the woodlot shall be deemed to cross the road, path or natural feature but the area of the woodlot shall be calculated exclusive of the area of the municipal road or natural feature.

## **3. 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.

## **4. PROHIBITIONS**

Subject to Section 5 of this by-law:

- (a) No owner shall cause or permit the injury or destruction of a tree that is on the owner’s land without first obtaining a permit under this bylaw;
- (b) No person shall injure or destroy a tree without first having obtained a permit under this by-law;



- (c) No person shall injure or destroy a tree other than in compliance with the terms and conditions of a permit issued under this by-law;
- (d) No person shall fail to comply with an Order issued under this By-law;  
and
- (e) No person shall pull down or deface any Order posted under this bylaw.

## **5. EXEMPTIONS FROM APPLICATION OF BY-LAW**

Notwithstanding paragraph 3 and 4, this by-law does not apply to:

- (a) Trees injured or removed by or with the permission of the City of Barrie that are situated on lands owned or controlled by it;
- (b) The removal of damaged or destroyed trees in the interests of public safety, health and general welfare following any man-made or natural disasters, storms, high winds, floods, fires, snowfall, freezes or as a result of insects, disease or wildlife;
- (c) Activities or matters prescribed by regulation by the Lieutenant Governor in Council;
- (d) Activities or matters undertaken by the provincial government or federal government or their authorized agents;
- (e) Trees located within waste disposal sites as defined in Part V of the Environmental Protection Act, R.S.O. 1990, c.E.19;
- (f) The destruction or injury of trees required in the exercise of the rights or powers of a hydroelectric corporation or any public utility board or commission;
- (g) Activities or matters authorized under the Crown Forest Sustainability Act, S.O. 1994;
- (h) Trees cut by a person licensed under the Surveyors Act, R.S.O. 1990, c. S.29 to engage in the practice of cadastral surveying or any person in his or her employ while making a survey;
- (i) Trees on land described in a license for a pit or quarry or a permit for a wayside pit or wayside quarry issued under the Aggregate Resources Act, R.S.O. 1990, c.A.8;
- (j) Trees destroyed in order to lawfully establish and operate or enlarge any pit or quarry on land that has not been designated under the Aggregate Resources Act or a predecessor of that Act;
- (k) Trees that are part of plantations for the purposes of an Orchard, nursery, or Christmas tree farm;
- (l) The unavoidable injury or destruction of trees necessitated by works authorized under subdivision approval, under an approved site plan where a building permit has been issued unless otherwise authorized by the Director in writing, or pursuant to a site alteration permit or building permit issued by the City of Barrie provided such removal is in compliance with any tree preservation plans required as a condition of those approvals or as a term of any subdivision or site plan agreement. For the purposes of this paragraph, the injury of trees is not unavoidable if it could have been prevented using tree protection measures such as those outlined in the City of Barrie's Tree Protection Manual.

## **6. APPLICATION FOR PERMIT TO INJURE OR DESTROY TREES**

Where a permit is required under this by-law:

- (a) The owner shall submit an application to the City containing the information set out in Schedule "A" to this by-law, in such form as may be approved by the Director;
- (b) Each application shall be accompanied by the prescribed fee payable in accordance with By-law 2004-146, as it may be amended;
- (c) Every application shall be accompanied by a report from either:
  - (i) a qualified RLA providing such information with respect to the woodlot as may be specified in Schedule "A" and certifying that the injury or 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 to the injury or destruction of the tree(s); OR
  - (ii) a Registered Professional Forester providing such information with respect to the woodlot as may be specified in Schedule "A" and, if applicable, certifying that the proposed injury to or destruction of the tree(s) is in accordance with good forestry practices.
- (d) No application shall be considered complete unless accompanied by the information and fee required in accordance with this by-law.

## **7. ISSUANCE OF PERMIT**

- (a) Subject to paragraph 7(b) the Director may issue a permit to injure or destroy tree(s) where the Director is satisfied that:
  - (i) The injury or destruction of the tree(s) is in accordance with good forestry practices, OR
  - (ii) The injury or 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 to the injury or destruction of the tree(s).
- (b) A Permit shall not be issued where:
  - (i) an Application required under this By-law has not been submitted in full or the required fee has not been paid;
  - (ii) a report as required by paragraph 6(c) has not been submitted or in the opinion of the Director is not satisfactory;
  - (iii) the permit would result in the destruction of a tree that is an endangered species as defined in the Endangered Species Act, R.S.O. 1990, c. E.15, or successor legislation;
  - (iv) the permit would result in the destruction of a tree that is designated as a heritage tree by City Council;
  - (v) flood or erosion control, or the ecological integrity of a natural area, will be negatively affected;
  - (vi) the destruction of the tree would have the effect of reducing:
    - (1) the density of trees in the woodlot below the density of trees necessary to constitute a woodlot; or
    - (2) the basal area of the woodlot in which the tree stands below 20 square metres per hectare (85 square feet per acre), 15 square metres per hectare (65

square feet per acre) of which is contained in the size class, or classes 24 cm. (9.5 inches) DBH or greater, unless the reduction of the basal area of the woodlot below these standards is in accordance with good forestry practices.

## **8. CONDITIONS TO PERMIT**

The following shall be deemed to be conditions to the issuance of every permit under this by-law:

### **(a) Marking of Trees**

At least 7 days prior to injuring or destroying any tree, but not prior to the issuance of the permit, the owner shall cause all trees which are to be removed or destroyed to be marked by a Registered Professional Forester, qualified forest technician or qualified RLA with clearly visible marks of yellow paint at breast height and upon the stump to remain after cutting.

### **(b) Notice of Intent**

For at least 7 days prior to injuring or destroying any tree the owner shall post a sign, having dimensions of not less than 28 cm. (11 in.) x 43 cm. (17 in.) in a conspicuous place on the private land that is adjacent to a public road or at such other location designated by the Director and providing the following information:

- (i) notice that the work will occur in accordance with this by-law;
- (ii) the name of the owner;
- (iii) the name of the person or company retained to work on the trees on the land; and
- (iv) the address and telephone number of a person acting on behalf of the owner from whom further information on the proposed tree work may be obtained.

### **(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 Registered Landscape Architect or Registered Professional Forester and approved by the City of Barrie. Such measures shall be inspected on a regular basis by the registered professional and a bi-monthly report made to the Director for the duration of the active period of construction.

### **(d) Limitation of Damage to Residual Trees**

During the course of injuring or destroying trees within a woodlot pursuant to a permit issued in accordance with this by-law, no person shall:

- (i) cause Major Damage to trees forming more than 10% of the total residual basal area of the portion of the woodlot which is the subject of the permit;
- (ii) cause Major Damage to trees forming more than 15% of the residual basal area in the size class of 10 cm DBH or more in the portion of the woodlot which is the subject of the permit;
- (iii) cause major Damage to trees forming more than 15% of the residual basal area in the size class of 10 cm DBH or less in the portion of the woodlot which is the subject of the permit;

- (iv) create or permit skid trails covering more than 20% of the ground area in the portion of the woodlot that is the subject of the permit.

**(e) Conditions required by the Director**

- (i) In addition to the above conditions, the Director may attach conditions to the Permit which in the opinion of the Director are reasonable and related to the purposes of this By-law or the safety and convenience of the public.
- (ii) Prior to the commencement of any work that would result in injury to or destruction of trees authorized pursuant to this bylaw, the person causing such work to be carried out shall ensure that the permit is posted in a conspicuous place within the woodlot or is available on site and can be produced upon request by an officer. The failure to post or produce a permit as required shall constitute an offence.

**9. DURATION OF PERMIT**

- (a) Every permit shall be issued to the owner and shall expire twelve (12) months after issuance. For greater certainty, to the extent that the expiry date would occur during the restricted period between March 15 to April 15 in any year as provided in paragraph 9(b) below, the expiry date in the permit shall be deemed to have been extended to a date in the month next following the restricted period that would have the effect of granting the permit to an owner for a full twelve month period clear not including the restricted period.
- (b) All permits for the injury or destruction of trees within woodlots will be deemed not to be in effect during the period of March 15 to April 15. The Director may grant exemptions to this requirement in writing having regard to the potential for rutting of soil and subsequent damage to the ecology of the woodlot or designated area during the spring break up period.
- (c) The Director may extend the expiration date of a Permit if a written request for an extension is received by the Director a minimum of three (3) working days before the date the Permit expires. Any request which is received after this time may require the submission of a new application. Subject to paragraph 9(a), in no case shall the Director extend a Permit for a period of greater than one year.

**10. APPEALS FROM DECISIONS REGARDING PERMITS**

A person that has applied for a permit in accordance with this by-law may appeal to the Ontario Municipal Board:

- (a) if the Director refuses to issue a permit, within 30 days of the refusal;
- (b) if the Director fails to make a decision on the application, within 45 days after the application is received by the Clerk; or
- (c) if the applicant objects to a condition in the permit, within 30 days after the issuance of the permit.

A copy of any notice of appeal to the Ontario Municipal Board shall be delivered to the Clerk who shall notify the Ontario Municipal Board.

**11. DESIGNATION OF OFFICERS**

In addition to Barrie's Municipal By-law Enforcement Officers, who are deemed to be designated as Officers for the purposes of enforcing this bylaw, the individuals employed by Barrie and filling the positions set out in Schedule "B" are hereby designated as Officers pursuant to the provisions of this by-law and the Clerk is authorized to issue Certificates of Designation to these individuals.

**12. INSPECTIONS BY AN OFFICER OTHER THAN A MUNICIPAL BY-LAW ENFORCEMENT OFFICER**

- (a) During daylight hours and upon producing a Certificate of Designation, an officer, other than a Municipal By-law Enforcement Officer, may enter and inspect any land to which this by-law applies. A Municipal By-law Enforcement Officer may enter and inspect any land to which this by-law applies at any time.
- (b) Any person who obstructs an officer in carrying out an inspection under this by-law is guilty of an offence.

**13. ENFORCEMENT**

- (a) This by-law may be enforced by any person designated as an officer for the purposes of this by-law;
- (b) An officer may, in carrying out an inspection be accompanied by an assisting person.

**14. ORDERS**

- (a) Where an officer is satisfied that a person has contravened any provision of this by-law, the officer may make an order requiring the person to stop the injuring or destruction of trees and shall set out the particulars of the contravention. The order shall set out the information contained in Schedule "C".
- (b) Where the Director is satisfied that a person has contravened any provision of this by-law, the Director may make a repair order requiring the person to rehabilitate the land or to plant or replant trees in such a manner and within such period as the Director considers appropriate, including any silvicultural treatment necessary to re-establish the trees.
- (c) An Order issued under this section may be served personally or served by sending it by mail to the last known address of;
  - i) the owner of the Woodlands; and
  - ii) the person identified as injuring, destroying or harvesting a tree or trees.
- (d) Where service of an Order is made by mail, service shall be deemed to have been served on the fifth day after the order is mailed.
- (e) Where service cannot be carried under section 8, subsection (b), it is deemed sufficient if the Officer places a placard containing the terms of the Order in a conspicuous place on the affected lands and the placing of the placard shall be deemed to be sufficient service of the Order on the person to whom the Order is directed.
- (f) A person to whom an order under this section has been directed may appeal the order to Council by filing a written notice of appeal with the Clerk within 30 days after the date of the order. Council may confirm, alter or revoke the order.
- (g) As soon as practicable after a notice of appeal is filed, council shall hear the appeal and may confirm, alter or revoke the order and the decision of Council shall be final.

## **15. PENALTY**

- (a) Any person who contravenes any provision of this by-law, contravenes the terms or conditions of a permit, or an order issued under Section 8 is guilty of an offence and on conviction is liable.
  - (i) On a first conviction to a fine of not more than \$10,000.00 or \$1,000.00 per tree, whichever is greater; and
  - (ii) On any subsequent conviction to a fine of not more than \$25,000.00 or \$2,500.00 per tree, whichever is greater.
- (b) If a person is convicted of an offence for contravening this By-law or an Order issued under section 14, the court in which the conviction has been entered, and any court of competent jurisdiction thereafter, may order the person to rehabilitate the land or to plant or replant trees in such a manner and within such period as the court considers appropriate, including any silvicultural treatment necessary to re-establish the trees.

## **16. CONFLICT WITH OTHER BY-LAWS**

- (a) If there is a conflict between this by-law and a by-law passed under the *Forestry Act* or *Municipal Act*, the provision that is most restrictive of the injuring or destruction of trees prevails;
- (b) Nothing in this by-law shall exempt any person from complying with the requirements of any by-law in force or from obtaining any license, permission, permit, authority or approval required under any by-law or legislation.

## **17. ADMINISTRATION**

- (a) Schedules “A – C” shall form part of this By-law.
- (b) If any section or sections of this By-law or parts thereof are found by any Court to be illegal or beyond the power of the Council to enact, such Section or Sections or parts thereof shall be deemed to be severable and all other Sections or parts of this By-law shall be deemed to be separate and independent there from and continue in full force and effect unless and until similarly found illegal.
- (c) The short title of this By-law is the “Private Tree By-law”.
- (d) By-law 2002-12 of the Municipality of the City of Barrie shall be repealed effective on the coming into force and effect of this By-law.
- (e) Despite subsection (d) of this section, By-law 2002-12 of the Municipality of the City of Barrie shall continue to apply to proceedings in respect of offences that occurred before its repeal.

**THAT** this By-law shall come into force and effect upon the day of passing thereof.

**READ** a first and second time this 6<sup>th</sup> day of June, 2005.

**READ** a third time and finally passed this 6<sup>th</sup> day of June, 2005.

***THE CORPORATION OF THE CITY OF BARRIE***

**B. \_\_\_\_\_  
MAYOR - R. J. HAMILTON**

**\_\_\_\_\_  
CLERK - JOHN R. SISSON**

## **SCHEDULE 'A'**

### **Information Required for Application**

1. Name, address and telephone number of all owners
2. Signature or authorization of all owners
3. Name, address, and telephone number and qualifications of RLA, RPF or qualified forest technician submitting report as part of application
4. Names, address, and telephone number of person retained to perform work on trees under permit, and contact name if corporation or company
5. Fax numbers and e-mail addresses for the owner(s), RLA, RPF, qualified forest technician and person performing work on trees where available
6. Municipal address of property (if assigned)
7. Legal description of property

**AND**

8. A Tree Inventory and Preservation Plan prepared and signed by a RLA containing but not limited to:
  - (a) a general description of the history of use of the property.
  - (b) importance of the property to the surrounding landscape.
  - (c) a key map of the property showing the location of the property within the City of Barrie.
  - (d) a detailed inventory map of the property showing the property boundary, vegetation type boundaries, adjacent property vegetation, fences, road, access roads or trails, hydro lines, utility lines, windbreaks, watercourses, grass fields, railways, buildings, towers, bridges, quarries, dams, treed floods or swamps, mines, brush, marshes, debris piles, shallow rocky areas, orchards, hazard areas, developed agricultural lands, plantations, and woodland areas.
  - (e) details with respect to soil types, topography, physical features, water features, drainage, access, wildlife, existing grading and proposed grading and an inventory of trees and tree regeneration, and the method of assessing the inventory of trees with respect to each distinct area or compartment within the woodlot
  - (f) an analysis and prescription for each vegetation area regarding preservation, conditional preservation, removals and revegetation in accordance with the establishment or extension of a use permitted by the Zoning By-law
  - (g) a map showing the extents of the areas of preservation, conditional preservation, vegetation removals and restoration where applicable
  - (g) a prescription for tree preservation measures, including monitoring, notes, specifications and details for the duration of active development on the property.

**OR**



9. A Woodlot Management Plan and/or Managed Forest Plan prepared in accordance with all applicable Federal, Provincial and Municipal laws which is certified by a Registered Professional Forester and includes, but is not limited to:
- (a) a general description of the history of use of the property.
  - (b) importance of the property to the surrounding landscape.
  - (c) a key map of the property showing the location of the property within the City of Barrie.
  - (d) a detailed map of the property showing the property boundary, vegetation type boundaries, fences, road, access roads or trails, hydro lines, utility lines, windbreaks, watercourses, grass fields, railways, buildings, towers, bridges, quarries, dams, treed floods or swamps, mines, brush, marshes, debris piles, shallow rocky areas, orchards, hazard areas, developed agricultural lands, plantations, and woodland areas.
  - (e) details with respect to soil types, topography, physical features, water features, drainage, access, wildlife, and inventory of trees and tree regeneration, and the method of assessing the inventory of trees with respect to each distinct area or compartment within the woodlot which may be subject to different considerations in accordance with good forestry practices.
  - (f) a description of the short term and long term objectives of the landowner with respect to environmental protection, income/investment from the woodlot, wildlife habitat, recreation, forest products, or other objectives, the priorities assigned to these objectives and the plans for accomplishing these objectives
  - (g) a silvicultural prescription for each forest compartment within the woodlot including a description of any trees to be injured, destroyed or removed, together with a statement that the silvicultural prescription is in accordance with good forestry practices.

## **SCHEDULE 'B'**

### **Appointment of Officers**

The following persons are designated as officers with authority to administer this by-law, and the Clerk is authorized to issue a Certificate of Designation confirming such appointment as is appropriate from time to time:

- Director of Leisure, Transit and Works
- Manager of Parks, Leisure and Culture
- Superintendent of Parks Planning and Development
- Urban Forester employed by the City of Barrie
- Landscape Architectural Technologists employed by the City of Barrie
- Such other person(s) employed by the City of Barrie as may be appointed by the Director of Leisure, Transit and Works

**SCHEDULE 'C'**

**STOP WORK ORDER**

**YOU ARE HEREBY DIRECTED AND ORDERED TO forthwith stop, halt, cease, and desist from any and all works associated with the destruction of trees or removal thereof from those lands comprising;**

**MUNICIPAL ADDRESS / LEGAL DESCRIPTION OF THE PROPERTY:**

\_\_\_\_\_

**LOT: \_\_\_\_\_ CONCESSION: \_\_\_\_\_ MUNICIPALITY: \_\_\_\_\_**

**OWNER / INDIVIDUAL RESPONSIBLE FOR DESTRUCTION OR INJURY OF TREES:**

**DESCRIPTION OF INFRACTION:**

**Date of Inspection: \_\_\_\_\_**

**Effective Order Date: \_\_\_\_\_ TO \_\_\_\_\_**

**Signature of Officer: \_\_\_\_\_ Date: \_\_\_\_\_**

**Pursuant to By-law 2005-120 Section 14, subsection (f) Where the person to whom the Order is directed has been served in accordance with this By-law is not satisfied with the terms of the Order, the person may appeal to Council by filing Notice of Appeal by personal service or certified mail to the Clerk within 30 days after the date of the Order.**

**{Contact Information, Phone Number}**

**Copy to: By-law Enforcement, Director, Consultant, Planning, Engineering, Clerks**

## BILL 107

### PUBLIC TREE PROTECTION AND MAINTENANCE BY-LAW 2009-098

A By-law of the Corporation of the City of Barrie, regulating the planting, protection, maintenance and removal of public trees or trees growing on adjacent privately owned lands and to repeal By-law 76-162 and all amendments thereto.

**WHEREAS** Section 8 of the *Municipal Act*, 2001, S.O. 2001, c. 25 as amended (“the *Municipal Act*, 2001”), confers broad authority on the municipality to enable the municipality to govern its affairs as it considers appropriate and to enhance the municipality’s ability to respond to municipal issues;

**AND WHEREAS** Section 9 of the *Municipal Act*, 2001 provides that a municipality has the capacity, rights, powers and privileges of a natural person for the purpose of exercising its authority under the Act;

**AND WHEREAS** Section 10 of the *Municipal Act*, 2001, provides that a single-tier municipality may pass by-laws respecting matters set out therein including, *inter alia*, the economic, social and environmental well-being of the municipality;

**AND WHEREAS** Section 135 of the *Municipal Act*, 2001 provides that a municipality may prohibit or regulate the destruction or injuring of trees;

**AND WHEREAS** the Council of The Corporation of the City of Barrie adopted motion 09-A-284;

**AND WHEREAS** the Council of The Corporation of the City of Barrie deems it expedient to regulate the planting, protection, maintenance and removal of public trees or trees growing on adjacent privately owned lands adjacent to public lands and to repeal By-law 76-162 and all amendments thereto;

**NOW THEREFORE** the Council of The Corporation of the City of Barrie enacts the following:

#### DEFINITIONS

1. As used in this by-law, the following terms shall have the meanings indicated:
  - b) CITY and CITY OF BARRIE - The municipality of The Corporation of the City of Barrie.
  - c) HIGHWAY - A common or public highway, road, street, lane, avenue, parkway, driveway, square, place, bridge, viaduct or trestle any part of which is intended for or used by the general public for the passage of vehicles and includes the area between the lateral property line thereof.
  - d) COUNCIL - The Council of The Corporation of the City of Barrie.
  - e) DBH - “Diameter at breast height” and refers to the diameter of the stem of a tree measured outside the bark at a point 1.37 metres (4.5 feet) above the highest point on the tree where the ground meets the stump.
  - f) DESTROY/DESTRUCTION - To remove, cut down or in any other way cause major damage to a tree to the extent that it is considered necessary to remove or cut down the tree. Major damage to a tree shall mean any one of:
    - i. a wound greater than the square of the DBH of the tree (for example, a wound with an area of 100 square centimeters is major damage to a tree with a DBH of 10 cm);
    - ii. any wound greater than 1000 square centimeters;

- iii. if the wound in paragraph (i) or (ii) contacts the ground then the wound shall be considered major damage if it is 60% of the size specified in paragraph (i) or (ii);
  - iv. broken branches destroying more than 33% of the Crown;
  - v. the exposure, severing or compaction of more than 25% of the root area;
  - vi. the breaking off of any tree; or
  - vii. the noticeable tipping of any tree.
- g) DIRECTOR - The Director of the Operations Department for the City of Barrie or his or her designate.
  - h) EMERGENCY WORK - Includes work associated with drain repairs, utility repairs and structural repairs to a building or any other work of an emergency nature as defined in the City of Barrie's Road Right-of-Way Activity By-law 2005-256 (or its successors).
  - i) FILL - Earth, sand, gravel, rubble, rubbish, garbage, or any other material whether similar to or different from any of these materials, whether originating on the site or elsewhere, used or capable of being used to raise, lower, or in any way effect the contours of the ground.
  - j) GRADE - A defined elevation of land that has been established as a result of geologic, hydrologic, or other natural processes or by human alteration; that defines ravines, depressions, hills, stream channels, eskers or steepness of terrain.
  - k) HERITAGE TREE - A tree that has been designated under Part IV of the *Ontario Heritage Act*, R.S.O. 1990, c. O.18 and/or a tree that Council formally designates as being unique and of importance to the City in terms of distinctive form, size, age and/or historical significance.
  - l) HAZARD - Where a tree has been destabilized or structurally compromised, the supporting roots have failed or are cut, the main stem is cracked, the tree has a disease causing branch or stem decay sufficient to create significant risk of structural failure, or any other structural problems that result in an immediate danger of the tree or parts of the tree breaking and causing potential damage or injury to life or property.
  - m) INJURE and INJURY - Failure to protect a tree in accordance with the City of Barrie's "Tree Protection Manual" or other standards set out by the Director, entirely or in part, or any act that will harm a tree's health in any manner.
  - n) LANDSCAPE PLAN - A plan or set of drawings which shows all related landscape works, specifications, standards and planting details and is signed and stamped by a qualified Landscape Architect.
  - o) MAINTENANCE - The care and maintenance of trees in accordance with established arboricultural standards and includes but is not limited to planting, inspection, pruning, cabling and bracing, treatments for insect and disease problems, watering and fertilization.
  - p) MUNICIPAL LAW ENFORCEMENT OFFICER - A person appointed under the authority of the Police Services Act for the purpose of enforcing City by-laws.
  - q) OFFICER - A Municipal Law Enforcement Officer or other law enforcement officer as appointed by the Council of The Corporation of the City of Barrie, the Barrie Board of Police Commissioners, or a Provincial Offences Officer.
  - r) PERSON - Includes any individual, corporation, partnership, association, firm, trust, or other entity and includes anyone acting on behalf or under the authority of such entity.
  - s) PUBLIC PARK - All lands owned by or belonging to the City and as otherwise may be designated for use as a public park.

- t) PUBLIC TREE - Any tree which has 50 percent or more of its main stem situated on a public park, highway or any lands owned by the City of Barrie.
- u) QUALIFIED ARBORIST - A person who is a specialist or expert in the area of the care and maintenance of trees and includes an arborist qualified by the Ontario Training and Adjustment Board Apprenticeship and Client Services Branch, a certified arborist qualified by the International Society of Arboriculture, a consulting arborist registered with the American Society of Consulting Arborists, a Registered Professional Forester or a person with other similar qualifications as approved by the Director.
- v) QUALIFIED LANDSCAPE ARCHITECT - A registered Landscape Architect in good standing with the Ontario Association of Landscape Architects.
- w) REGISTERED PROFESSIONAL FORESTER – As defined in the Professional Foresters Act, S.O. 2000, c.18.
- x) SPECIFICATIONS - The most recent version of the City of Barrie’s tree protection standards set out within the Tree Protection Manual and the Barrie Standard Details.
- y) STANDARDS - The minimum requirements or guidelines established by the Director for the protection and preservation of trees.
- z) TREE - Any species of woody perennial plant including its root system which has reached or can reach a height of at least 4.5 metres (15 feet) at physiological maturity. The term “tree” refers to all parts of the tree; roots, branches, leaves and stem.
- aa) TREE PLANTING DETAIL - The most recent version of Barrie Standard Details with notes pertaining to the planting of trees on any public park or City highway.
- bb) TREE PROTECTION MANUAL - The Manual maintained by Barrie’s Director of Engineering setting out standards for protection of trees in the City of Barrie, as amended from time to time.
- cc) TREE VALUE/APPRAISED VALUE - The monetary value of a public tree as determined under the tree appraisal method within the City of Barrie’s Tree Protection Manual.
- dd) UNSAFE CONDITION – Any public tree, whether healthy or hazardous including, but not limited to, a hazard tree, a tree growing in a location that does not meet the current City of Barrie Standard Details, a tree which impedes safe views or sightlines at or adjacent to a City highway or intersection, or any tree which, in the opinion of the Director, creates an unsafe condition for the public.

**APPLICATION OF BY-LAW**

- 2. This by-law applies to all public trees within the boundaries of the City of Barrie.

**AUTHORITY FOR PLANTING, INSPECTION, MAINTENANCE, PROTECTION AND REMOVAL OF TREES**

- 3. The planting, inspection, maintenance, protection and removal of all public trees shall be under the supervision of the Director.

## **POWERS AND DUTIES OF THE DIRECTOR**

4. The Director is authorized to:
  - a) plant, or cause to be planted, public trees;
  - b) maintain, or cause to be maintained, any public tree;
  - c) inspect, or cause to be inspected, any public tree;
  - d) transplant, remove, or cause to be transplanted or removed, any public tree where deemed necessary in the public interest;
  - e) remove, or cause to be removed, without notice or compensation to any person any object or thing that adversely affects a public tree;
  - f) remove, or cause to be removed, without notice or compensation to any person, any tree planted without permission in a public park or on a highway;
  - g) remove, or cause to be removed, without notice or compensation to any person, any parts of a tree which may be hazardous or create an unsafe condition, is located on private property and extends over a highway or public park;
  - h) implement, or cause to be implemented, necessary treatments for insect and disease problems associated with a public tree;
  - i) remove, or cause to be removed, a public tree which is dead, hazardous, creates an unsafe condition, or no longer viable to maintain, certified as such by the Director;
  - j) remove, injure, or cause the removal or injury of a public tree, as may be required to facilitate emergency work, certified as such by the Director;
  - k) remove, or cause to be removed, a healthy public tree where a written request for tree removal that includes a landscape plan satisfactory to the Director has been received from an adjacent property owner. Such requests for removal may be subject to conditions which include payment to the City of Barrie an amount equivalent to the tree value, removal and replacement costs and the replanting of a replacement tree or trees by the applicant;
  - l) refuse a request for the removal of a public tree;
  - m) permit the pruning of public tree branches or roots in accordance with good arboricultural practices causing minimal damage to the tree. Such requests for injury may be subject to conditions which include the payment of tree value, removal and replacement costs, the posting of a letter of credit and the planting of a tree or trees by the applicant; or
  - n) stop any work causing injury or destruction to a public tree that is taking place without permission from the Director and/or contrary to the City's Tree Protection Manual and/or other standards set out and imposed by the Director for the protection of a tree or trees.

## **PROTECTION**

5. Every person doing any work in a public park or a highway shall carry out such work in accordance with the City's Tree Protection Manual and any other standards set out by the Director.

## **INJURY AND REMOVAL OF TREES**

6. No person shall injure, destroy or remove a public tree without the prior written approval of the Director. Approval may be subject to such conditions as the Director may impose, including payment of the tree value, removal and replacement costs, replanting, posting a letter of credit in a form and content acceptable to the City in an amount sufficient to cover the appraised value of the subject tree as well as removal and replacement costs, provision of a detailed Tree Protection Plan and provision of a qualified Arborist's, qualified Landscape Architect or Registered Professional Forester's report detailing specific arboricultural procedures to be undertaken.

## **PROHIBITED ACTIVITIES**

7. Subject to Section 11 of this by-law:
  - a) no person shall remove, cut down, destroy or injure a public tree except with the prior written approval of the Director;
  - b) no person shall mark, cut, break, peel or deface a public tree or any part of a public tree;
  - c) no person shall bury the roots of a public tree by placing or dumping fill or refuse, or otherwise altering the grade of land under the branches of a public tree;
  - d) no person shall undertake or cause to undertake any activities that are contrary to the City's Tree Protection Manual and any other standards or conditions imposed or set out by the Director for the protection of a public tree except with the prior written approval of the Director;
  - e) no person shall attach in any manner any object or thing to a public tree or part of a public tree except with the prior written approval of the Director; and
  - f) despite Subsection 7(e), no person shall attach decorative lights to a public tree except with the prior written approval of the Director and upon production of satisfactory evidence that all other requisite approvals have been obtained. The approval of such request may be subject to conditions imposed by the Director.
8. No person shall undertake or cause to undertake any activities that are contrary to the provisions of the Endangered Species Act, S.O. 2007, c. 6.
9. No person shall undertake or cause to undertake any activities that would result in the destruction of a Heritage Tree.
10. No person shall undertake or cause to undertake any activities that would negatively affect the flood or erosion control, or the ecological integrity of an Environmentally Protected Area (as defined in the City of Barrie's Zoning By-law, as amended from time to time).

## **EXEMPTIONS FROM BY-LAW**

11. Notwithstanding Sections 2 and 7, the prohibitions within this by-law do not apply to:
  - a) public trees injured or removed by or under the direction of the City of Barrie;
  - b) the removal of destroyed public trees in the interests of public safety, health and general welfare following any man-made or natural disasters, storms, high winds, floods, fires, snowfall, freezes or as a result of insects, disease or wildlife;
  - c) activities or matters undertaken by the Provincial Government or Federal Government or their authorized agents;



- d) public trees located within waste disposal sites as defined in Part V of the Environmental Protection Act, R.S.O. 1990, c. E.19;
- e) the injuring or destruction of trees by a transmitter or distributor, as those terms are defined in section 2 of the Electricity Act, 1998, for the purpose of constructing and maintaining a transmission system or a distribution system, as those terms are defined in that section;
- f) trees cut by a person licensed under the Surveyors Act, R.S.O. 1990, c. S.29 to engage in the practice of cadastral surveying or any person in his or her employ while making a survey;
- g) a person working on or adjacent to a public tree pursuant to a Right-of-Way Activity Permit issued under the provisions of By-law 2005-256, provided that the person adheres to the tree protection specifications as set out in that by-law or its successors;
- h) the unavoidable injury or destruction of trees imposed after December 31, 2002 as a condition to the approval of a site plan, a plan of subdivision or a consent under section 41, 51 or 53, respectively, of the Planning Act or as a requirement of a site plan agreement or subdivision agreement entered into under those sections provided such removal is in compliance with any Tree Protection Plans required as a condition of those approvals or as a term of any subdivision or site plan agreement. For the purposes of this paragraph, the injury or destruction of trees is not unavoidable if it could have been prevented using tree protection measures such as those outlined in the City of Barrie's Tree Protection Manual; or,
- i) the unavoidable injury or destruction of trees imposed after December 31, 2002 as a condition to a development permit authorized by regulation made under section 70.2 of the Planning Act or as a requirement of an agreement entered into under the regulation provided such removal is in compliance with any Tree Protection Plans required as a condition of those approvals or as a term of any subdivision or site plan agreement. For the purposes of this paragraph, the injury or destruction of trees is not unavoidable if it could have been prevented using tree protection measures such as those outlined in the City of Barrie's Tree Protection Manual.

## **TREE PLANTING AND TREE REPLACEMENT**

- 12. No person shall plant any public tree without the approval of the Director and such tree shall be planted in accordance with the appropriate City of Barrie Standard Details. Approval by the Director will include the planting location, species, size and condition.
- 13. The City of Barrie's Urban Forester has delegated authority for the selection of location, species, size and condition and the planting of public trees under the City planting program.
- 14. Should the Director approve the planting of any public tree(s), the Director may request a monetary deposit from such person in an amount appropriate to secure the planting of trees. These funds may be held by the City until after the planting of the trees for a period of time determined by the Director and shall be released by the City, provided that the trees are healthy and in a state of vigorous growth after the stipulated time period.
- 15. When a public tree is removed, a replacement public tree must be planted unless otherwise determined by the Director. The planting location, species, size, condition and planting date must be approved by the Director.
- 16. Where the Director has approved the removal of a public tree, such approval may be subject to conditions which include the applicant providing payment of tree value, removal and replacement costs and a minimum of one replacement public tree being planted for each public tree approved for removal.

## **ENFORCEMENT**

17. A Municipal Law Enforcement Officer, Provincial Offences Officer, Police Officer, or other duly appointed individual shall enforce the provisions of this by-law.
18. No person shall obstruct, hinder, or otherwise interfere with a Municipal Law Enforcement Officer, Provincial Offences Officer, Police Officer or other duly appointed individual in the lawful carrying out of their duties and responsibilities under the provisions of this by-law.

## **OFFENCES**

19. Every person who contravenes the provisions of any section of this by-law and every Director or Officer of a Corporation, who concurs in the contravention by the Corporation, is guilty of an offence and liable upon conviction to a fine not exceeding \$100,000.

## **REMEDIAL ACTION**

20. Wherever this by-law directs or requires any matter or thing to be done by a person, in default of its being done by the person directed or required to do it, the matter or thing may be done under the direction of the Director, and the City may recover the costs incurred by action or by adding the costs to the tax roll and collecting them in the same manner as property taxes (Part XII of the *Municipal Act*, S.O. 2001, C. 25).

## **CONFLICT WITH OTHER BY-LAWS**

21. Nothing in this by-law shall exempt any person from complying with the requirements of any by-law in force or from obtaining any license, permission, permit, authority or approval required under any by-law or legislation.

## **ADMINISTRATION**

22. If any section or sections of this by-law or parts thereof are found by any Court to be illegal or beyond the power of the Council to enact, such Section or Sections or parts thereof shall be deemed to be severable and all other Sections or parts of this by-law shall be deemed to be separate and independent there from and continue in full force and effect unless and until similarly found illegal.
23. The short title of this by-law is the "Public Tree By-law".
24. By-law 76-162 of the Municipality of the City of Barrie and all amendments thereto shall be repealed effective on the coming into force and effect of this by-law.
25. That this by-law shall come into force and take effect immediately upon the final passing thereof.
26. Despite Section 24 of this by-law, By-law 76-162 of the Municipality of the City of Barrie shall continue to apply to proceedings in respect of offences that occurred before its repeal.

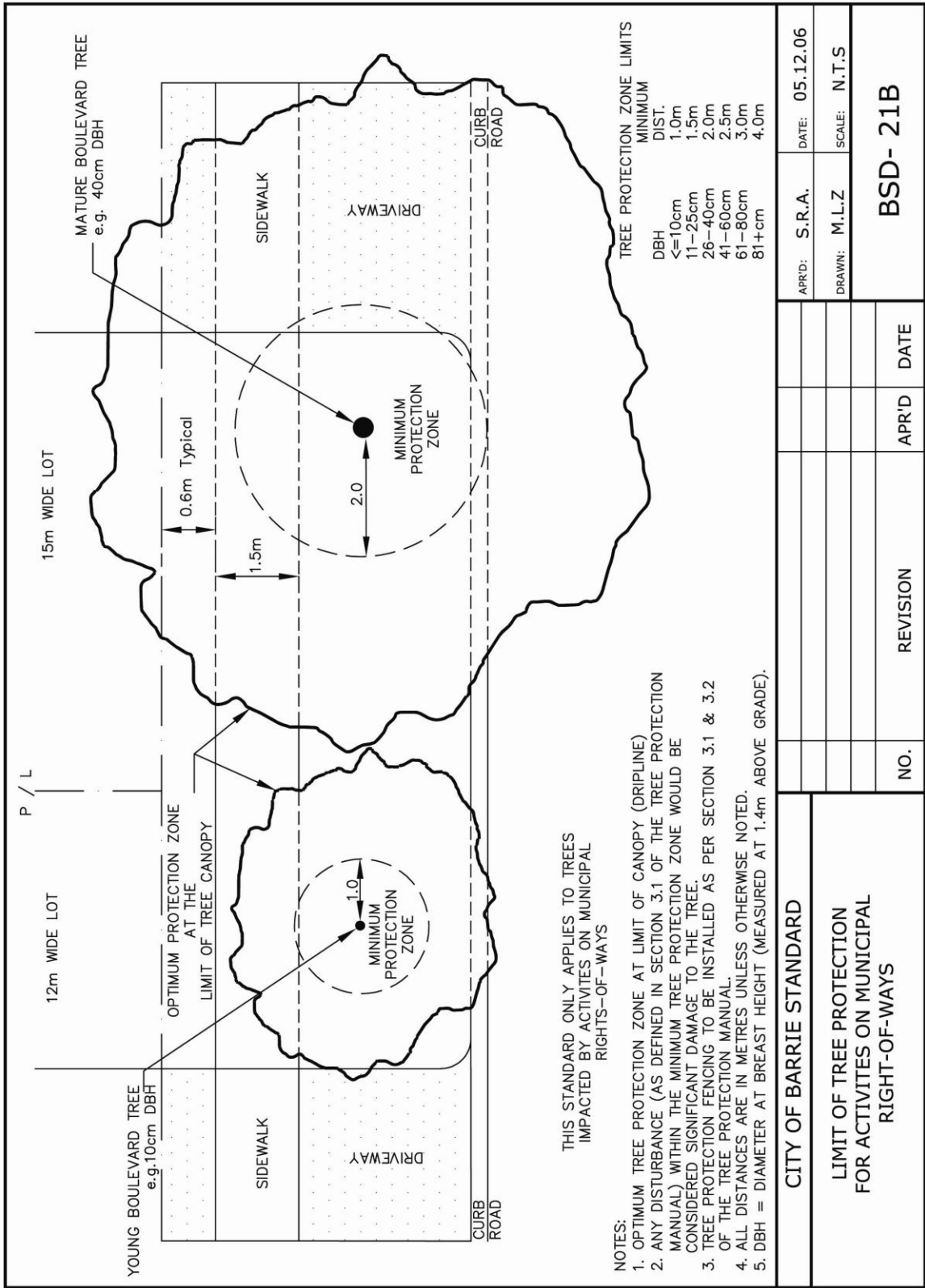
**APPENDIX 2: CITY OF BARRIE STANDARD SPECIFICATIONS**

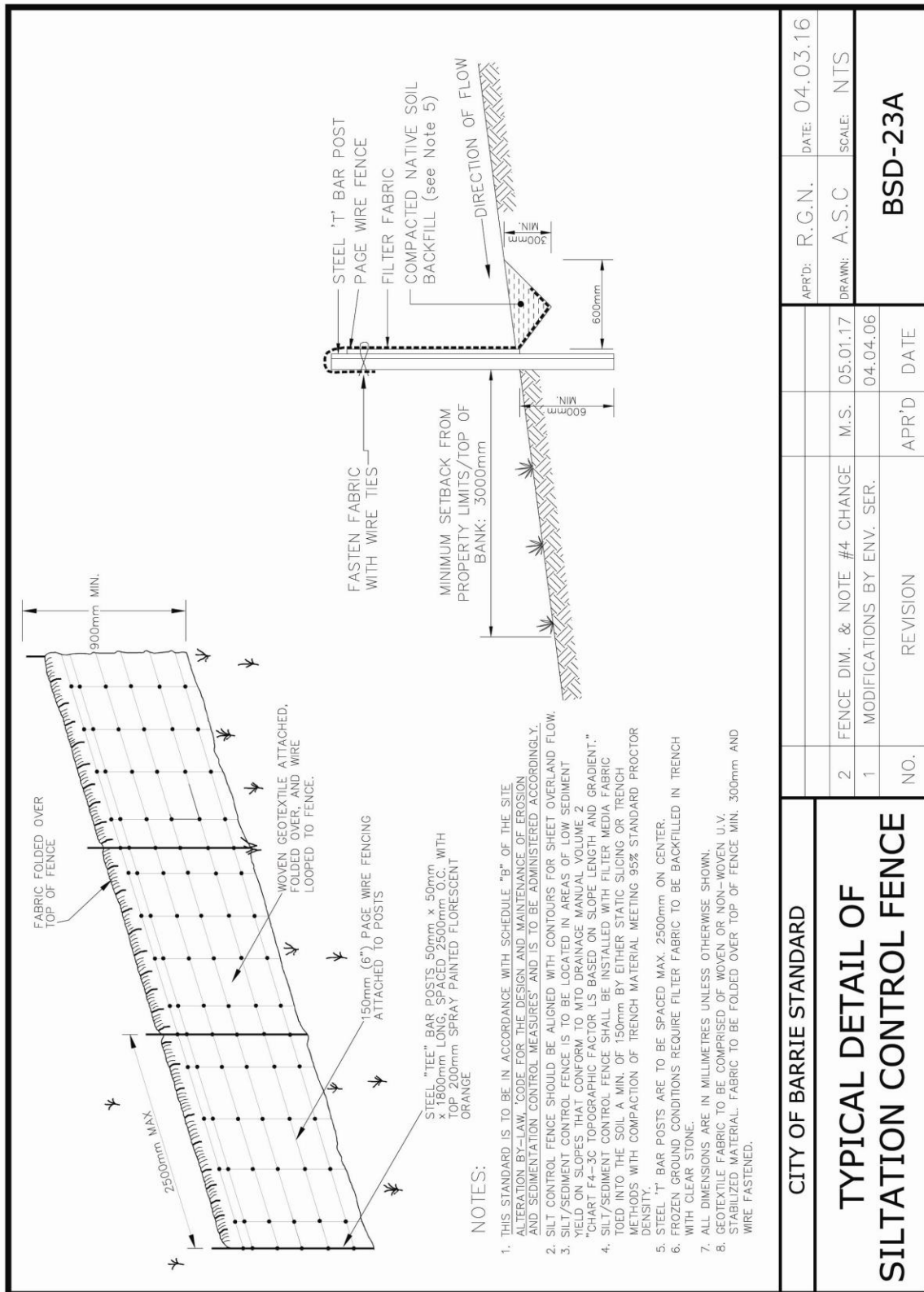
**NOTES:**

1. A TREE'S ROOT SYSTEM GENERALLY GROWS WITHIN 60cm OF THE SURFACE. THE ROOT SYSTEM IS COMPRISED OF LARGE ANCHOR ROOTS WHICH PROVIDE STRUCTURAL SUPPORT, TRANSPORT ROOTS AND A NETWORK OF FEEDER ROOTS WHICH ARE RESPONSIBLE FOR THE MAJORITY OF ABSORPTION FOR BOTH WATER AND NUTRIENTS FROM THE SURFACE.
2. DRIPLINE IS MEASURED TO THE OUTER MOST LIMIT OF BRANCHING WITHIN THE CROWN OF THE TREE. THE FURTHEST DISTANCE SHALL APPLY TO THE ENTIRE PERIMETER OF THE CROWN AS THE "DRIPLINE".
3. WHEN CONSTRUCTION/REMOVALS ARE LIMITED TO ONE SIDE OF A TREE AND/OR GROUP OF TREES THE LIMIT OF PRESERVATION SHALL BE DETERMINED BY THE DRIPLINE. IN THE EVENT INDIVIDUAL TREES ARE BEING PRESERVED WHERE MORE THAN 1/3 OF THE ROOT ZONE WILL BE DISTURBED THE LIMIT OF PRESERVATION SHALL BE 1.5 TO 2 TIMES THE LIMIT OF CANOPY OR AS DIRECTED BY THE CITY.
4. WITHIN THE DEFINED LIMIT OF PRESERVATION THERE WILL BE:
  - NO CHANGE OR ALTERATION TO EXISTING GRADES
  - NO TRENCHING
  - NO REMOVAL OF UNDER STORY VEGETATION
  - NO ADDING OF FILL OR EXCAVATIONS
  - NO STORAGE OF MATERIALS OR EQUIPMENT
  - NO DISPOSAL OF ANY LIQUIDS i.e. GAS, PAINT, OIL
  - NO INTRUSION BY VEHICLES OR EQUIPMENT
  - NO INTRUSION BY PEDESTRIANS
5. PRESERVATION FENCING TO BE INSTALLED AS PER BSD-23 UTILIZING PAGE WIRE FENCING. FILTER FABRIC IS ONLY REQUIRED AS DIRECTED BY THE APPROVED EROSION CONTROL PLANS
6. NOTICE SIGNAGE TO BE PLACED AT 50m INTERVALS ALONG THE ENTIRE LENGTH OF PRESERVATION FENCING. REFER TO BSD-40A FOR DETAILS

**THIS STANDARD  
DOES NOT APPLY TO CITY RIGHTS OF WAY**

<b>CITY OF BARRIE STANDARD</b>	<b>LIMIT OF TREE PRESERVATION FOR DEVELOPMENT APPROVALS</b>	APR'D: S.R.A.	DATE: 01.12.05
		DRAWN: WmMc	SCALE: NTS
NO.	REVISION	APR'D	DATE
			<b>BSD-21A</b>





**CITY OF BARRIE STANDARD**

**TYPICAL DETAIL OF SILTATION CONTROL FENCE**

APR'D:	R.G.N.	DATE:	04.03.16
DRAWN:	A.S.C	SCALE:	NTS
FENCE DIM. & NOTE #4	CHANGE	M.S.	05.01.17
MODIFICATIONS BY ENV. SER.		APR'D	DATE
NO.	REVISION		
<b>BSD-23A</b>			

*Tree Removal Template*

*Note to Owner: This Notice to be 24 inches high x 36 inches long and posted in a visible location seven days prior to injuring or destroying any vegetation.*

# NOTICE OF TREE REMOVALS

All vegetation removal work shall occur in accordance with  
By-law 2005-120.

*Owner: Name of Owner*

*Removals completed by: Name of person or company retained to work on the  
vegetation removal on the land.*

*For Further Information, please contact: Address and telephone number of a  
person action on behalf of the owner from whom further information on the  
proposed vegetation removal work may be obtained.*

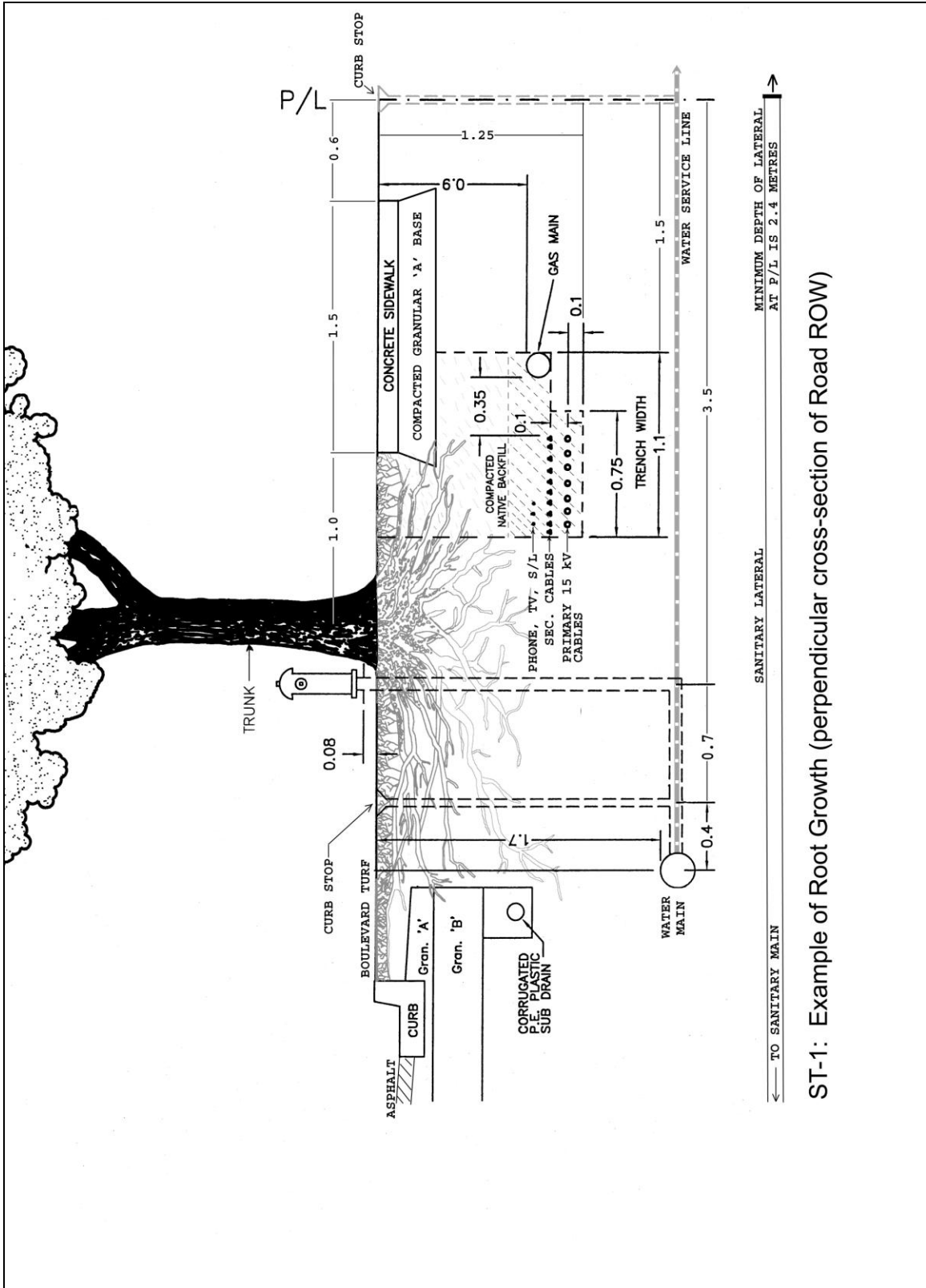
Tree Preservation Area sign template

*Note to Owner: This sign to be 11 inches high by 17 inches long and posted at 50 metre intervals along tree preservation fencing, as per the Tree Removal Permit.*

# TREE PRESERVATION AREA

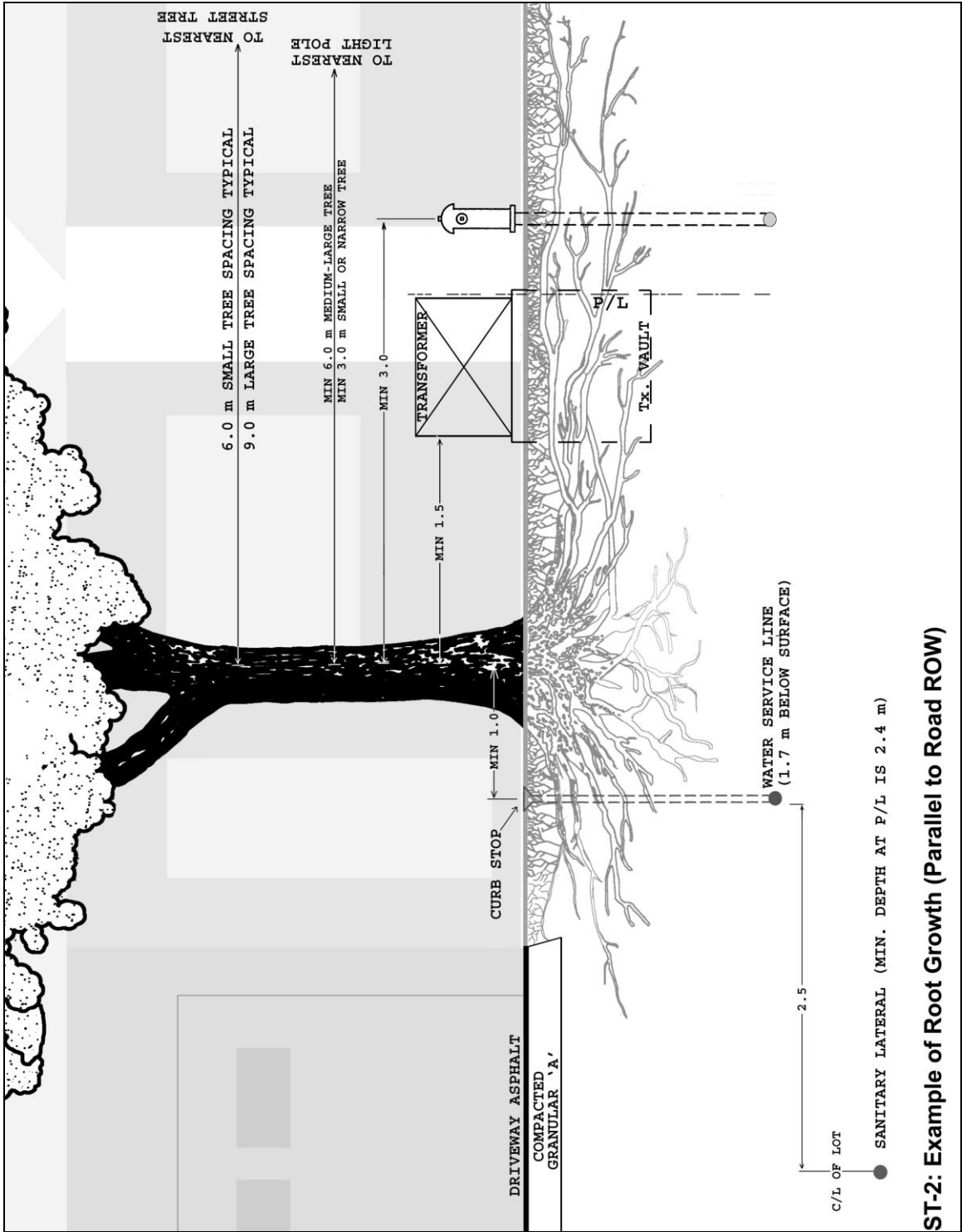
NO UNAUTHORIZED TREE CUTTING  
PERMITTED IN THIS AREA

**APPENDIX 3: STREET TREE GROWTH ILLUSTRATIONS**



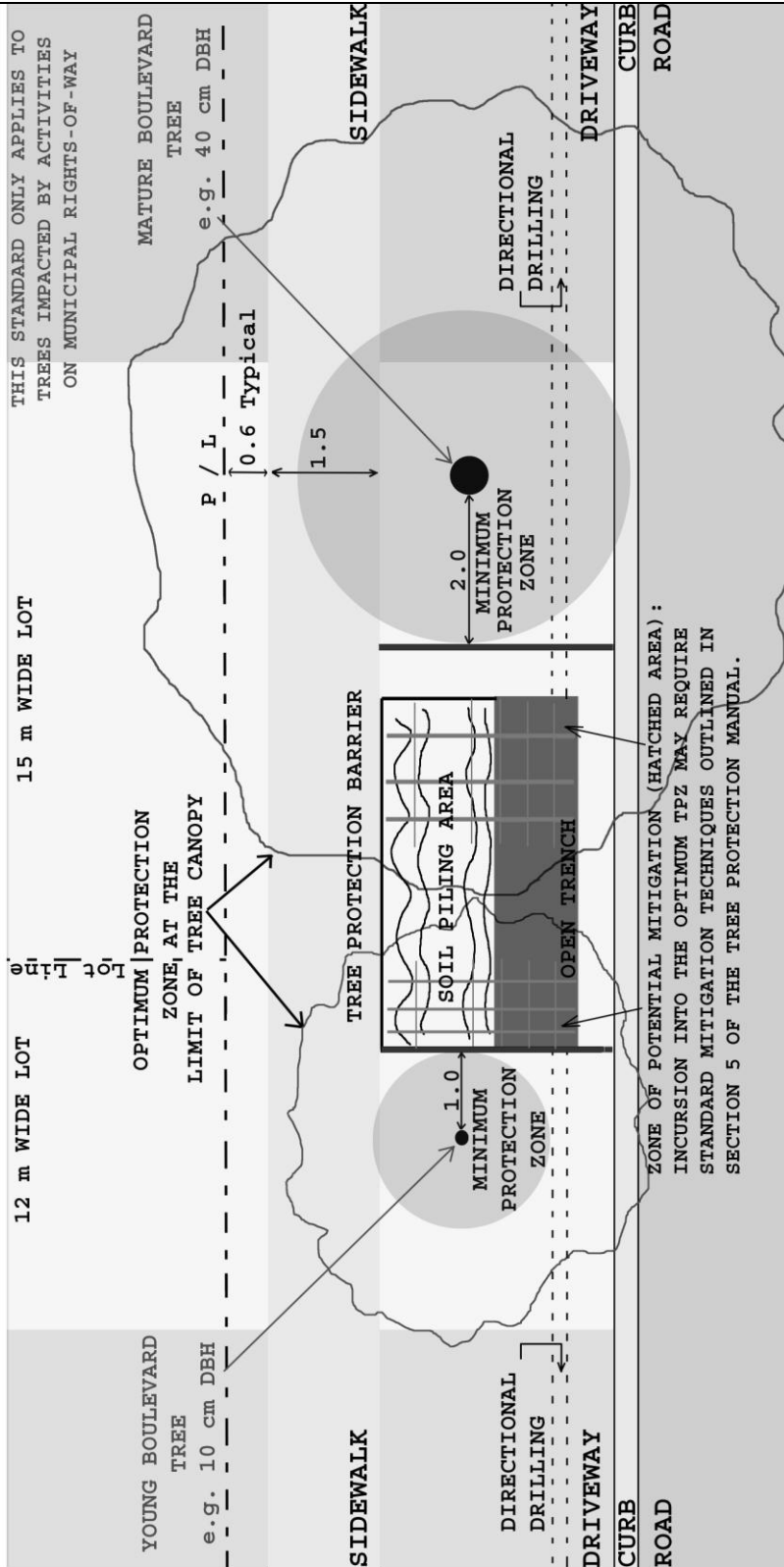
ST-1: Example of Root Growth (perpendicular cross-section of Road ROW)





**ST-2: Example of Root Growth (Parallel to Road ROW)**

**ST-3. LIMIT OF TREE PROTECTION WITH EXAMPLES OF ACTIVITIES ADJACENT TO TREES ON A MUNICIPAL RIGHT-OF-WAY**



- NOTES:**
1. OPTIMUM TREE PROTECTION ZONE AT LIMIT OF CANOPY (DRIPLINE).
  2. ANY DISTURBANCE (AS DEFINED IN SECTION 3.1 OF THE TREE PROTECTION MANUAL) WITHIN THE MINIMUM TREE PROTECTION ZONE WOULD BE CONSIDERED SIGNIFICANT DAMAGE TO THE TREE.
  3. TREE PROTECTION FENCING TO BE INSTALLED AS PER SECTION 3.1.1 & 3.2 OF THE TREE PROTECTION MANUAL.
  4. ALL DISTANCES ARE IN METRES UNLESS OTHERWISE NOTED.
  5. DBH = DIAMETER AT BREAST HEIGHT (MEASURED AT 1.4 m ABOVE GRADE).
- TREE PROTECTION ZONE LIMITS**
- | DBH      | MINIMUM DIST. |
|----------|---------------|
| <=10 cm  | 1.0 m         |
| 11-25 cm | 1.5 m         |
| 26-40 cm | 2.0 m         |
| 41-60 cm | 2.5 m         |
| 61-80 cm | 3.0 m         |
| 81+ cm   | 4.0 m         |

## APPENDIX 4: HERITAGE TREE INFORMATION PACKAGE

### Definitions:

1. "Heritage Tree": includes any native tree, a native/natural hybrid or a non-invasive introduced tree of historic significance, and can be an avenue of trees, grove of trees or arboreal remnant.
2. "Avenue of Trees": can be a wide street, a thoroughfare in the community or park, a rural road or highway with one or more rows of at least five (5) native or introduced trees, spaced at least 10 metres apart on either side of the avenue.
3. "Windrow": All definitions (below) are included in the category Windrow and/or Hedgerow and are to be classified as a linear tree grove. (Hedges consisting of shrub species such as privet are excluded from these definitions).
  - i. Windrow (Fencerow): A long narrow treed area of at least a dozen or more trees less than 40 metres wide to tree crown edges, but which could exceed 0.2 ha in area and consisting of a natural linear group of trees usually seeded in along boundary fences along fields and protected from cultivation by the fence, property line or rock piles (common in southern Ontario).
  - ii. European Hedge Row: Usually extremely dense linear plantings, usually european beech or english oak planted close together and maintained at reduced heights. Historic note: during World War II the allies found them almost impenetrable to tanks.
  - iii. Pioneer Hedge Row: A barrier of small thorny trees planted close together around a house or property to protect against intrusion or to contain cattle and sheep during pioneer times (e.g. osage orange (*Maclura pomifera*), thorny wild honey locust). American beech and hemlock were also used as hedge trees, but when not maintained at reduced height these trees could resume normal height growth to become a tightly packed row of trees.
  - iv. OMNR (Ontario Ministry of Natural Resources) treed hedgerow used for identifying rurally significant woodlands, or linear non-significant woodland areas: Any linear wooded area less than 40 metres wide (to tree crown edges) with openings no greater than 20 metres across, regardless of height or thorniness.
  - v. Windbreak (windrow): One or two rows of trees planted close together, less than 40 metres wide to tree crown edges and maintained to slow the wind. Similar windbreak configurations include:
    - Shelterbelt: A wider windbreak of many rows of trees as used on the prairies.
    - Plantation: A planted non-linear block of native and/or non-native species forming a woodland of  $\geq 0.2$  ha.
4. "Grove of Trees": can be native or introduced trees having a minimum of three (3) individual trees growing in close proximity to one another, with a relatively closed or single canopy, as opposed to a single tree with multiple stems. A grove can be the root suckers at varying distances from the original parent tree (not a single tree with the suckers from a parent tree stump).

The maximum size of a grove is 0.2 hectares. Areas from 0.2 to five (5) hectares are classified as an arboreal remnant. Areas larger than five (5) hectares are considered forests, woodlots or natural areas.

5. "Arboreal Remnant": is a remnant stand of native trees from 0.2 to five (5) hectares in area, representative of a locally typical tree species community as it occurred at time of settlement. It could be an old growth forest, where no trees were cut since settlement, or it could be one of the many farm woodlots where some minor cutting may have occurred but did not significantly alter the local native tree composition.

**CITY OF BARRIE HERITAGE TREE APPLICATION FORM**

The following application outlines the criteria to nominate a tree for Heritage Tree Status with the City of Barrie. All applications will be reviewed by city staff and recommendations provided to the Community Services Committee. The committee understands that some of the questions may be difficult to answer. Please provide as much information as possible for our consideration.

**Tree(s) Location and Ownership Information**

Owner(s) Name: \_\_\_\_\_

Owner(s) Address: \_\_\_\_\_

Contact information: Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

**Owner is nominating tree(s)?**

YES

NO (if owner is not nominating tree(s), explain why:

\_\_\_\_\_

\_\_\_\_\_

*Note: The application must include, the owner(s) support of the nomination of the tree(s).*

**Nominator's Information (if different from Owner)**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Contact information: Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

**Site location and Accessibility** (check box and circle appropriate tree site description):

<b>Land Ownership</b>	<b>Property Type (tree site)</b>
<input type="checkbox"/> Private Land	residential / commercial / industrial / farm
<input type="checkbox"/> Public Land	road / highway / park / waterway / trail / ravine
<input type="checkbox"/> Institutional Land	place of worship / hospital / school / military base
<input type="checkbox"/> Other	Specify: _____

Specify exact location of tree, if not readily evident. Include property address with closest major intersection and note any owner requested restrictions or limitations to tree access by the general public. Attach map or other information as required to detail the tree(s) location.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Briefly describe your interest in having this tree designated as a Heritage Tree and why you think it deserves this designation by Council and protection under the Tree Preservation By-law (2005-120). You may attach additional sheets of paper if necessary.**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



**Tree(s) Description**

**Type of heritage tree nomination** (Check appropriate box):

- A single specimen tree**
- A Tree or trees that are part of an:**
  - Avenue of trees** (multiple trees, aligned on both sides of a roadway or driveway);
  - Windrow** (single or multiple rows of trees, delineating property or land use);
  - Grove** (small usually irregular pocket of trees, up to 0.2 hectares);
  - Arboreal Remnant** (larger pocket of trees, 0.2 to 2 hectares, but not a woodlot);
  - Naturally Forested Area** (woodlot of 0.2 hectares or greater).

**Tree Measurements** (please note measurement units used)

#	Species Name(s)		Stem Circ. (3)	Height (4)	Canopy Width (5)	Health (6)
	Common(1)	Scientific(2)				
1						
2						
3						
4						
5						

Notes:

1. Name used locally for the species.
2. Latin name, genera, species, cultivar.
3. Stem circumference of tree measured in centimeters around the trunk at 1.37metres (4.5ft) above the ground level, or at the narrowest point between ground and multiple branch union(s), if branching starts below 1.37 metres.
4. Height of tree measured in metres if possible, please note if measurement is an estimate.
5. Width of the widest portion of the tree canopy from outer branch to outer branch.
6. Nominator’s estimation of the current condition/health of the tree. Categories are as follows:
  - Excellent* - Tree appears in perfect health.
  - Good* - Tree in good health (almost no dead/damaged limbs).
  - Fair* - Tree in fair health (a few dead limbs or minor stem damage evident).
  - Poor* - Tree in decline (many dead limbs or major stem damage evident).
  - Dying* - Tree in severe decline (tree appears to be dying).

**Identify Encroachment(s)** that are evident under/within the canopy or root zone of the tree (check all those that apply):

- Driveway
- Pathway
- Sidewalk
- Road
- Overhead Utility Lines
- Light Standard
- Building
- Garden
- Buried Utilities
- Retaining Wall
- Structure (specify) \_\_\_\_\_
- Other hard surfacing (specify) \_\_\_\_\_
- Other (specify) \_\_\_\_\_

**Completed applications should be mailed to:**

**Kevin Rankin, R.P.F., Urban Forester**  
**City of Barrie**  
**P.O. Box 400, 70 Collier St**  
**Barrie, ON L4M 4T5**



## NOTES AND ANSWERS FOR EVALUATORS SCORING HERITAGE TREES

### OHTA HERITAGE TREE SCORING

Heritage tree characteristics are rated using ten subclasses (Charts) paired into five classes:

1. **Species Rarity Class:** Its rarity both globally and locally
2. **Prominence Class:** Its prominence due to its size and age
3. **Appearance Class:** Its aesthetic or artistic peculiarity and species form
4. **Significance Class:** Its continuing community historic significance to persons, events or as a cultural community asset, i.e. a landmark
5. **Integrity Class:** Its structural integrity or overall condition and expected remaining longevity

#### Chart I - Rarity of Species: Globally

The relative scale, within natural or equivalent hardiness range:

- Rare** – Outside natural and hardiness range or in poor environment.  
**Infrequent** – Near natural and hardiness range limits or in poor environment.  
**Common** – Within natural and hardiness range and in adequate environment.  
**Ubiquitous** – Well within Natural and hardiness range & in suitable environment.

Globally refers to the universal existence or prevalence of a tree through the natural range of the species. Sugar maple and white pine are common throughout their range in eastern North America, and Norway spruce is common through its west European species range. Scientific names for species follow those shown in “Trees in Canada” by Farrar, Canadian Forest Service (see Table 1, Appendix 4: Tree Species Prevalence).

#### Chart II - Rarity of Species: Locally (Municipality)

Sugar maple, white pine, and Norway spruce are common in Simcoe County, but the same species may be rare, or absent in other Counties. Unfortunately, the MNR, Natural Heritage Information Centre (NHIC) lists species rarity for very few tree species, which most of us would not likely encounter, *i.e.* Shumard oak. This means that sugar maple and white pine, among many other trees that are going to be nominated are not listed on the rarity list (which can be found on the internet at [www.nhic.mnr.gov.on.ca/nhic.cfm](http://www.nhic.mnr.gov.on.ca/nhic.cfm)). Each nominated species must be evaluated based on the individual species rarity within the local area. The current tree inventory can be used as an indicator of local species rarity for use in categorizing the tree into the following:

- Rare** – Species represents less than 0.1% of the local tree inventory.  
**Infrequent** – Species represents less than 1% of the local tree inventory.  
**Common** – Species represents 1% to 5% of the local tree inventory.  
**Ubiquitous** – Species represents greater than 5% of the local tree inventory.

#### Chart III - Prominence of Tree: Size (DBH or Height)

Percent relative to the maximum species DBH and height range as noted in “Trees in Canada” by Farrar, Canadian Forest Service (see Table 1, Appendix 4: Tree Species Prevalence).

- 75% - 100%** = Current tree DBH or height / maximum species DBH or height \* 100%  
**50% - 74%** = Current tree DBH or height / maximum species DBH or height \* 100%  
**25% - 49%** = Current tree DBH or height / maximum species DBH or height \* 100%  
**<25%** = Current tree DBH or height / maximum species DBH or height \* 100%

**Note: DBH = Diameter at breast height**, Forestry term, equates to 1.37 meters above ground level. Measure directly with calipers, diameter tape or calculate from the circumference. If

measuring the circumference of a tree =  $2 \times \pi \times R$ ; R = circumference (in cm) divided by 2 pi (6.28); One foot = 12 inches; one inch = 2.54 cm; One foot = 30.48 cm.

e.g. White pine is listed as up to 100 cm DBH, 30 m in height, and 200 years. If a white pine has a DBH of 98 cm, it practically rates as  $98/100 = 98\%$  relative to the size for white pine and is scored a 4 (out of 4). If the height measured is 34 m, then it is taller than listed and is rated as 100%. The greater of the two prominence scores (% relative height or DBH) is used in the scoring of Chart III.

#### **Chart IV – Prominence of Tree: Age Relative to Human Activity**

- Pre-Settlement** – land / vegetation, virgin and pristine, found by pioneers.  
**Early Settlement** – during time of land clearing for agriculture and settlement.  
**Post Urbanization** – tree growing from time after area designated as towns / city.  
**Preconstruction** – tree present or planted before land division and building of current neighbourhood.

If the age of the tree is undetermined, there may be some difficulty determining between pre-settlement and early settlement. Some times a core sample at the base of the tree may be used to determine age for tree species such as conifers. Taking core samples of trees with hard wood such as sugar maple is very difficult; furthermore the base of the tree maybe decayed or hollow and boring a hole may introduce decay fungi into the tree.

**Open grown trees** are usually wider, but shorter in height, have a spreading crown, branching at a relatively low height, as compared to trees within a forest. An open grown tree, judging from its large crown spread likely dates back to early settlement when the forest was cleared and this tree began its expansion as a free range sugar maple, or white pine, etc. Open grown trees grow faster than trees in a forest, and age can be easily overestimated for open grown trees.

**Forest trees** are usually taller with long trunks clear of low branches and have a smaller crown located towards the upper part of the canopy. Such a tree, if of large size, probably dates back to early settlement or earlier and was likely located in a farmer's woodlot or woodland until present.

#### **Trying to establish age from written history**

When a tree in a specific location is referred to as from "early settlement" the local evaluators must find out what the settlement date was for the area. It differs from location to location. Check age from the records of the Municipal Land Registry Office, when a tree appears to be associated or planted by the first, or later property owners.

#### **Chart V – Appearance of Tree: Aesthetics**

Visual beauty, artistic nature, of tree and specifically it's various components, which is possibly more evident at specific times of the year.

- Striking** – breathtaking, beautiful, in full splendor  
**Significant** – more than one feature with definite charm  
**Notable** – certain distinguishable aspect(s) from neighbours, of the same species  
**Ordinary** – typical, nothing of significant note

OR evaluated on an alternative assessment for the tree's Artistic Peculiarity (visual peculiarity or uniqueness, artistic dimension of crown shape):



- Striking** – unique shape, representative of a well known animated figure
- Significant** – more interesting resemblance of a unique or uncharacteristic form
- Notable** – exhibits a hint of uncharacteristic but interesting form
- Ordinary** – characteristic form with no peculiarities

These categories can be subjective depending on the experience of the evaluator. The evaluation may require a team from various disciplines or backgrounds. Ideally an evaluation team could include an Arborist, Historian, Artist and member of the general public. However, to bestow heritage status to a tree using this assessment as one of the criteria, it must have at least a characteristic score 3 or greater in Aesthetics and/or Form for the “*open grown*” species or cultivated variety (cultivar). An open grown tree might garner more points over a forest tree.

Note: When evaluating a tree that is part of an arboreal remnant representative of an indigenous tree community the Aesthetic and Form categories are not evaluated and other evaluation attributes are used.

#### **Chart VI - Appearance of Tree: Form (Structure) for Species or Cultivar**

Also visual in nature, but less artistic and more formal / functional but relative to species. May be diametrically opposite to ‘aesthetics’.

- Majestic** – full form, well balanced, strong branching & best use of crown space
- Characteristic** – typical for species, with some natural variability in crown
- Atypical** – less typical, with abnormalities, possibly due to storm breaks
- Lacking** – major abnormalities, possibly due to poor location

#### **Chart VII – Significance of Tree: Historical**

Ratings are based on level of importance and influence across four categories:

- National / Provincial** – historic recognition at a national or provincial level
- Regional / Municipal** – historic recognition at a regional / municipal level
- Neighbourhood** – historic recognition at a local / neighbourhood level
- Street** – historic recognition to only a few in the immediate vicinity

The tree’s continuing historical community significance because of person(s), or events must be evaluated based on available information. The onus is on the nominator(s) to produce historical evidence: *i.e.* an event (e.g. historic landing or battle, a dedication to the Queen); a period such as the pioneer era (e.g. the British Empire broad axe marking of white pine trees for her Majesty’s ships until 1850); a structure (e.g. covered bridge, a church); a noted person (e.g. the Queen, fathers of Confederation); a Pioneer Cemetery.

#### **Chart VIII - Significance of Tree: Cultural**

Ratings are based on level of importance and influence across four categories:

- National / Provincial** – cultural significance at a national or provincial level
- Regional / Municipal** – cultural significance at a regional / municipal level
- Neighbourhood** – cultural significance at a local / neighbourhood level
- Street** – cultural significance to only a few in the immediate vicinity

Cultural relates to human activity within living memory. Cultural community significance are things such as: spiritual tree(s), groves, and arboreal remnants associated with First Nation Burial Grounds; or an individual’s tree dedication in cemetery or other location. Cultural significance can also be attributed to a tree planted or preserved as a distinctive community landmark forming part of the cultural community heritage and could be located in a commanding community location (e.g. top of hill, intersection of roads; near a valuable community building, park, etc.). A spruce tree may have been decorated for Christmas celebrations every year for the past century. The cultural-economic significant use in local areas of certain types of trees/wood in early and

later Upper Canada (Ontario) *i.e.* Canada's Sugar Maple industry; or by community based furniture industry of walnut, black cherry, yellow birch, from Ontario's pioneer times well into the 20<sup>th</sup> century.

### **Chart IX – Integrity of Tree: Condition Problems**

The condition of the leaves, crown, trunk, and roots evaluated using the following factors:

- No Apparent Problems** – Healthy and vigorous. No apparent signs of insect, disease, or mechanical injury. No corrective work required.
- Minor Problems** – Average condition and vigor for area. May be in need of minor corrective pruning or repair. May show minor insect, disease, or physiological problems.
- Major Problems** – Shows significant mechanical, insect, or disease injury in part of the tree stem/crown. Requires some major repair or renovation activity to increase the longevity of the tree.
- Extreme Problems** – General state of decline. Shows significant mechanical, insect, or disease injury, but death not imminent. Requires major repair or renovation to reduce hazard and/or decrease chance for structural failure.

Apparent structural issues will need to be evaluated and categorized into the appropriate class (minor, major, hazardous). Tools such as the Engineering Based Hazard Tree Assessment (Brudi *et.al.*) can be used to assess the condition of any noted structural issues in the tree.

### **Chart X – Integrity of Tree: Expected Longevity**

This item reflects the remaining serviceable life of the tree. Remedial tree surgery or plant health care activities may upgrade the ratings.

- >30 years** – little if any structural defects, no sign of disease, good long term prognosis.
- <30 years** – only commencing decline with reasonably minor structural defects or disease.
- <20 years** – declining with significant structural defects, clear signs of disease.
- < 5 years** – dying, mortality imminent with major structural defects or advanced disease.

Evaluator(s) will need to assess the current vigour of the tree during the active growing season, inspect for noticeable symptoms of disease or other forms of tree stress, and evaluate any potential structural defects in relation to the expected longevity of the tree.

**HERITAGE TREE EVALUATION FORM**

**Location of Tree**

Address: \_\_\_\_\_  
 \_\_\_\_\_

**Evaluation Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_  
 dd / mm / yr

**Evaluator(s):** \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Tree Species		DBH (cm)	Height (m)	Canopy Width (m)	Estimated Age
<b>Common Name</b>					
<b>Scientific Name</b>					

**Category of Tree Evaluation** (Check appropriate box):

- A single specimen tree**
- A Tree or trees that are part of an:**
  - Avenue of trees** (multiple trees, aligned on both sides of a roadway or driveway);
  - Windrow** (single or multiple rows of trees, delineating property or land use);
  - Grove** (small usually irregular pocket of trees, up to 0.2 hectares);
  - Arboreal Remnant** (larger pocket of trees, 0.2 to 2 hectares, but not a woodlot);
  - Naturally Forested Area** (woodlot of 0.2 hectares or greater).

**Site location** (check box and circle appropriate tree site description)

<b>Land Ownership</b>	<b>Property Type (tree site)</b>
<input type="checkbox"/> Private Land	residential / commercial / industrial / farm
<input type="checkbox"/> Public Land	road / highway / park / waterway / trail / ravine
<input type="checkbox"/> Institutional Land	place of worship / hospital / school / military base
<input type="checkbox"/> Other	Specify: _____

**Encroachment(s)** that are evident under/within the canopy or root zone of the tree (check all those that apply):

- Driveway
- Pathway
- Sidewalk
- Road
- Overhead Utility Lines
- Light Standard
- Building
- Garden
- Buried Utilities
- Retaining Wall
- Structure (specify) \_\_\_\_\_
- Other hard surfacing (specify) \_\_\_\_\_
- Other (specify) \_\_\_\_\_

The evaluator's task is to score a candidate tree by circling the appropriate 1 to 4 rating point, in each Subclass on the Evaluation Table on the reverse of this page. Clearly indicate submission status of each Subclass, with either a 'Y' where 4/4 or 3/4 evaluation rating was obtained, or a 'N' where a 2/4 or 1/4 evaluation rating was obtained. Subclasses determined not to be considered should be eliminated, crossed/blocked out. The more Classes represented, the higher the profile for potential Heritage Tree status.

### EVALUATION CHART

Category	Subclass Score		Notes
<b>RARITY:</b> <b>CHART I</b> Species Rarity Globally	4	Rare	
	3	Infrequent	
	2	Common	
	1	Ubiquitous	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>RARITY:</b> <b>CHART II</b> Species Rarity Locally	4	Rare	
	3	Infrequent	
	2	Common	
	1	Ubiquitous	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>PROMINENCE:</b> <b>CHART III</b> DBH or Ht: % Relative to Maximum for Species	4	75% - 100%	
	3	50% - 74%	
	2	25% - 49%	
	1	< 25%	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>PROMINENCE:</b> <b>CHART IV</b> Age Relative to Human Activity	4	Pre-Settlement	
	3	Early Settlement	
	2	Post Urbanization	
	1	Pre-Construction	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>APPEARANCE:</b> <b>CHART V</b> Aesthetics &/or Artistic Peculiarity	4	Striking	
	3	Significant	
	2	Notable	
	1	Ordinary	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>APPEARANCE:</b> <b>CHART VI</b> Form (Structure) for Species or Cultivar	4	Majestic	
	3	Characteristic	
	2	Atypical	
	1	Lacking	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>SIGNIFICANCE:</b> <b>CHART VII</b> Historical Significance	4	National/Provincial	
	3	Municipal/Regional	
	2	Neighbourhood	
	1	Street	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>SIGNIFICANCE:</b> <b>CHART VIII</b> Cultural Significance	4	National/Provincial	
	3	Municipal/Regional	
	2	Neighbourhood	
	1	Street	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>INTEGRITY:</b> <b>CHART IX</b> Condition Problems (crown, root, stem, foliage)	4	No apparent	
	3	Minor	
	2	Major	
	1	Extreme	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>INTEGRITY:</b> <b>CHART X</b> Expected Longevity	4	> 30 years	
	3	< 30 years	
	2	< 20 years	
	1	< 5 years	
Subclass Total	Rating / 4 x 100% =		Submission Consideration: Yes No
<b>TOTAL</b>	Sum of Classes % / # of Subclasses submitted =		%

**Table 1: Tree Species Prevalence**

For use with Chart I and Chart III. The list of trees includes most trees that evaluators might find in Ontario communities (globally). Rare\* species of trees are those listed as Threatened or Endangered and protected under the *Endangered Species Act*. Site occurrence (soil moisture regime) of trees as listed in the appendix for species: W=wet site, M=moist site, D=dry site, A = Acid soil.

Species Common Name	Species Scientific Name	Natural Range	Soil Regime	DBH (cm)	Height (m)	Age (Yrs)
Balsam fir	<i>Abies balsamea</i>	Common	M	70	25	150
White fir	<i>Abies concolor</i>	Infrequent	DM	70	30	150
Manitoba maple	<i>Acer negundo</i>	Common	DW	75	20	60
Norway maple	<i>Acer platanoides</i>	Ubiquitous	M	80	25	100
Red maple	<i>Acer rubrum</i>	Common	DW	60	25	100
Silver maple	<i>Acer saccharinum</i>	Common	MW	100	35	125
Sugar maple	<i>Acer saccharum</i>	Ubiquitous	M	90	35	200+
Ohio Buckeye	<i>Aesculus glabra</i>	Infrequent	M	50	15	80
Horse Chestnut	<i>Aesculus hippocastanum</i>	Common	M	50	25	150
Yellow buckeye	<i>Aesculus octandra</i>	Infrequent	M	100	25	200
Tree of Heaven	<i>Ailanthus altissima</i>	Common	MD	75	25	90+
Juneberry	<i>Amelanchier arborea</i>	Infrequent	M	na	na	na
Pawpaw	<i>Asimina triloba</i>	Infrequent	na	na	na	na
Yellow birch	<i>Betula alleghaniensis</i>	Infrequent	M	60	25	150
Cherry birch	<i>Betula lenta</i>	Rare*	M	na	na	na
White birch	<i>Betula papyrifera</i>	Ubiquitous	DW	40	25	100
European birch	<i>Betula pendula</i>	Common	DM	40	25	100
Blue beech	<i>Carpinus caroliniana</i>	Infrequent	MW	25	10	na
Bitternut hickory	<i>Carya cordiformis</i>	Infrequent	M	90	30	175
Pignut hickory	<i>Carya glabra</i>	Infrequent	D	50	25	200
Shellbark hickory	<i>Carya laciniosa</i>	Infrequent	W/M	90	30	200
Shagbark hickory	<i>Carya ovata</i>	Infrequent	DM	60	25	200
American chestnut	<i>Castanea dentata</i>	Rare*	DM	na	na	na
Northern catalpa	<i>Catalpa speciosa</i>	Infrequent	na	80	30	na
Hackberry	<i>Celtis occidentalis</i>	Infrequent	DW	50	20	150
Redbud	<i>Cercis canadensis</i>	Infrequent	na	20	10	50+
Flowering dogwood	<i>Cornus florida</i>	Infrequent	MD	na	na	na
Turkish hazel	<i>Corylus colurna</i>	Infrequent	MD	60	25	100
Hawthorn	<i>Crataegus</i>	Common	na	na	na	na
Persimmon tree	<i>Diosporous virginiana</i>	Infrequent	M	30	15	na
American Beech	<i>Fagus grandifolia</i>	Infrequent	M	100	30	200
White ash	<i>Fraxinus americana</i>	Common	W	100	30	200
European ash	<i>Fraxinus excelsior</i>	Common	M	100	30	na
Black ash	<i>Fraxinus nigra</i>	Infrequent	W	50	20	na
Red/ Green/ash	<i>Fraxinus pennsylvanica</i>	Ubiquitous	W/M	60	25	100
Blue ash	<i>Fraxinus quadrangulata</i>	Rare	DM	20	20	na
Ginkgo Maidenhair Tree	<i>Ginkgo biloba</i>	Rare	M	80	25	300+
Honey locust	<i>Gleditsia triacanthos</i>	Infrequent	WMD	90	30	120

**Table 1: Tree Species Prevalence (continued)**

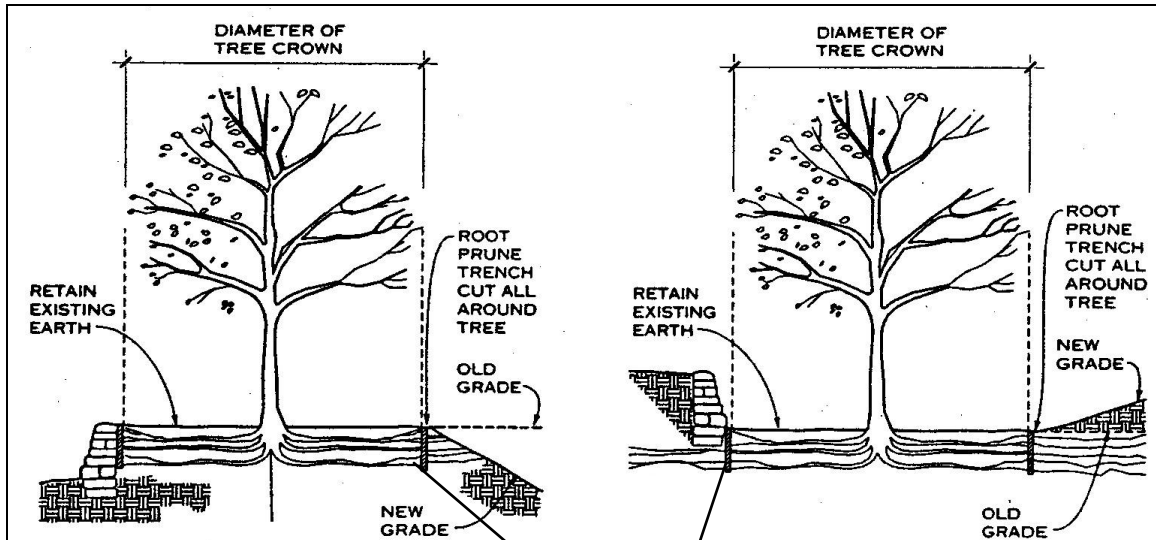
Species Common Name	Species Scientific Name	Natural Range	Soil Regime	DBH (cm)	Height (m)	Age (Yrs)
Kentucky coffee tree	<i>Gymnocladus dioica</i>	Rare*	MW	60	25	75
Butternut	<i>Juglans cinerea</i>	Rare*	M	75	25	80
Black walnut	<i>Juglans nigra</i>	Infrequent	M	120	30	150+
English walnut	<i>Juglans regia</i>	Infrequent	M	na	na	na
Red Cedar	<i>Juniperus virginiana</i>	Common	D	20	10	na
European larch	<i>Larix decidua</i>	Infrequent	M	100	30	100
Eastern larch	<i>Larix laricina</i>	Infrequent	W	40	25	150
Tulip tree	<i>Liriodendron tulipifera</i>	Common	M	100	35	150
Cucumber tree	<i>Magnolia accuminata</i>	Rare*	M	75	25	100
Wild Crab apple	<i>Malus coronaria</i>	Common	na	na	na	na
Orchard apples	<i>Malus cultivars</i>	Common	na	na	na	na
Dawn Redwood	<i>Metasequoia glyptostroboides</i>	Rare	M	300	35	150+
White mulberry	<i>Morus alba</i>	Common	M	80	25	100+
Red mulberry	<i>Morus rubra</i>	Rare*	M	na	na	na
Black gum	<i>Nyssa sylvatica</i>	Infrequent	DM	na	na	na
Ironwood	<i>Ostrya virginiana</i>	Infrequent	M	25	12	100
Amur cork tree	<i>Phellodendron amurense</i>	Infrequent	na	na	na	na
Norway spruce	<i>Picea abies</i>	Common	M	130	35	200
White spruce	<i>Picea glauca</i>	Common	M	60	25	200+
Black spruce	<i>Picea mariana</i>	Ubiquitous	W	30	20	200
Serbian Spruce	<i>Picea omorika</i>	Rare	DM	60	25	100+
Blue spruce	<i>Picea pungens</i>	Infrequent	na	90	30	300+
Jack pine	<i>Pinus banksiana</i>	Ubiquitous	D	30	20	150
Austrian Pine	<i>Pinus nigra</i>	Common	DM	50	30	100+
Red pine	<i>Pinus resinosa</i>	Common	DM	75	25	200
Pitch pine	<i>Pinus rigida</i>	Infrequent	D	30	20	200
White pine	<i>Pinus strobus</i>	Ubiquitous	DM	100	30	200+
Scots Pine	<i>Pinus sylvestris</i>	Ubiquitous	D	50	30	100+
London plane	<i>Platanus acerifolia</i>	Infrequent	M	100	30	100+
Sycamore	<i>Platanus occidentalis</i>	Infrequent	WM	200	35	250
Silver poplar	<i>Populus alba</i>	Common	DM	100	30	70+
Balsam poplar	<i>Populus balsamifera</i>	Infrequent	MW	50	25	70+
Cottonwood poplar	<i>Populus deltoides</i>	Infrequent	DM	100	30	50+
Large tooth aspen	<i>Populus grandidentata</i>	Infrequent	D	30	20	60
Trembling aspen	<i>Populus tremuloides</i>	Ubiquitous	DW	40	25	80
Black cherry	<i>Prunus serotina</i>	Infrequent	M	60	22	150
Douglas fir	<i>Pseudotsuga menziesii</i>	Common	na	100	35	300
Hop tree	<i>Ptelea trifoliata</i>	Rare*	na	na	na	na
Wingnut tree	<i>Pterocarya fraxinifolia</i>	Infrequent	M	100	30	100+

**Table 1: Tree Species Prevalence (continued)**

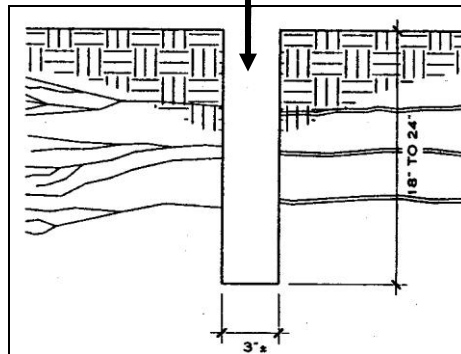
Species Common Name	Species Scientific Name	Natural Range	Soil Regime	DBH (cm)	Height (m)	Age (Yrs)
White oak	<i>Quercus alba</i>	Infrequent	DM	100	30	300+
Swamp white oak	<i>Quercus bicolor</i>	Infrequent	W	90	20	200+
Scarlet oak	<i>Quercus coccinea</i>	Common	D	90	25	80+
Bur oak	<i>Quercus macrocarpa</i>	Common	DW	90	25	200+
Chinquapin oak	<i>Quercus meuhlenbergii</i>	Infrequent	D	60	20	100+
Pin oak	<i>Quercus palustris</i>	Infrequent	W	60	20	100+
English oak	<i>Quercus robur</i>	Common	M	150	35	500+
Red oak	<i>Quercus rubra</i>	Common	DM	90	25	200+
Shumard oak	<i>Quercus shumardii</i>	Rare	MW	125	35	200+
Black oak	<i>Quercus velutina</i>	Common	DM	90	25	150
Black locust	<i>Robinia pseudoaccacia</i>	Infrequent	D	90	30	50+
Weeping willow	<i>Salix alba pendula</i>	Common	na	100	25	50+
White willow	<i>Salix alba x fragilis</i>	Common	na	100	25	50+
Crack willow	<i>Salix fragilis</i>	Common	na	100	30	50+
Black willow	<i>Salix nigra</i>	Infrequent	W	40	15	50+
Laurel willow	<i>Salix pentandra</i>	Infrequent	A	50	20	50+
Sassafras	<i>Sassafras albidum</i>	Infrequent	DM	50	20	50+
American Mountain ash	<i>Sorbus Americana</i>	Infrequent	M	20	10	50+
European Mountain ash	<i>Sorbus aucuparia</i>	common	na	25	15	50+
Showy Mountain ash	<i>Sorbus decora</i>	Infrequent	na	25	15	50+
Eastern white cedar	<i>Thuja occidentalis</i>	Common	DW	30	20	300+
Basswood	<i>Tilia Americana</i>	Infrequent	M	100	35	150
Little leaf linden	<i>Tilia cordata</i>	Common	M	na	na	na
Eastern hemlock	<i>Tsuga canadensis</i>	Infrequent	M	100	30	300+
White elm	<i>Ulmus Americana</i>	Common-rare	DW	175	35	200
English elm	<i>Ulmus procera X</i>	Common	MW	100	30	200
Siberian elm	<i>Ulmus pumila</i>	Common	MD	60	25	100
Red elm	<i>Ulmus rubra</i>	Rare	M	75	25	175
Rock elm	<i>Ulmus thomasii</i>	Rare	DM	60	25	125
Japanese zelkova	<i>Zelkova serrata</i>	Infrequent	MD	25	15	50+

## APPENDIX 5: STANDARD MITIGATION TECHNIQUES

### TPZ-1: Cutting or Filling Grades Around a Tree That is to be Preserved



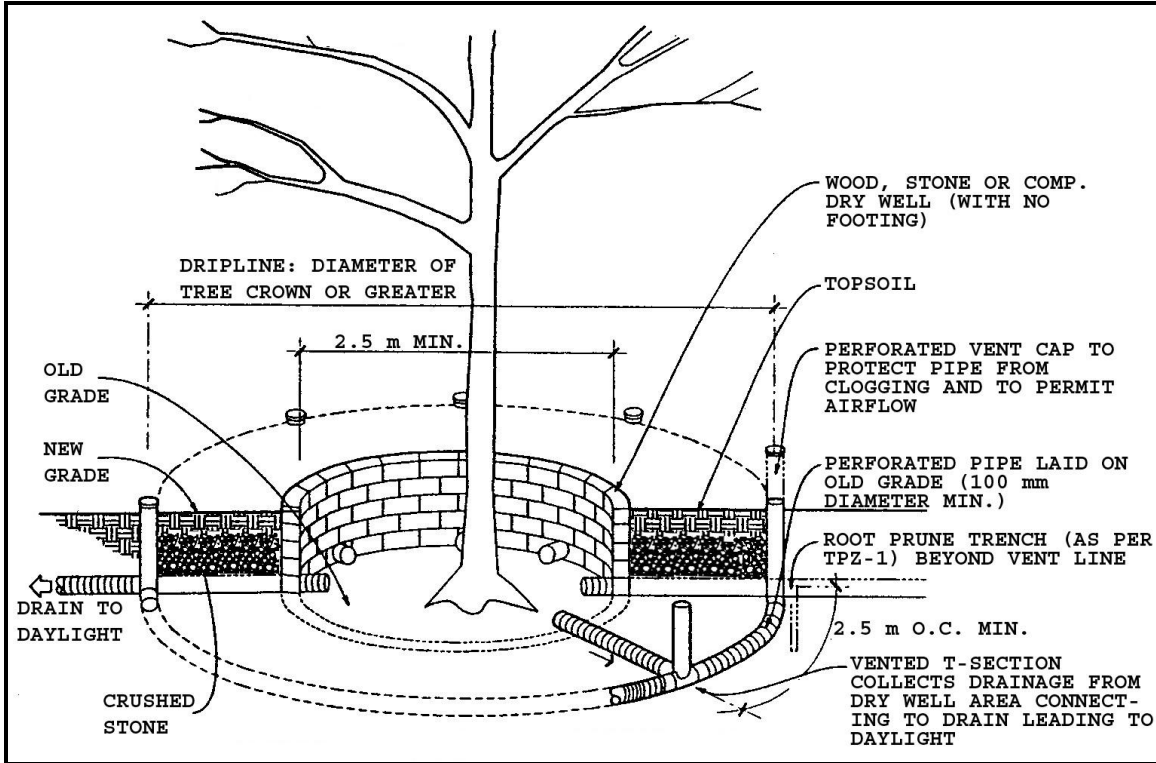
#### Roots Pruned by Trench Cut



Note: A root pruning trench cut severs roots cleanly, protecting the remaining roots from cracking, invasion by diseases and root rot fungi.



**TPZ-2: Dry-welling around significant trees to be retained.**



Source of tree protection base drawings: Architectural Graphic Standards, Tenth Edition, John Ray Hoke, Jr. FAIA, Ed. In Chief, *Tree Planting and Protection* p. 179.

**APPENDIX 6: Standard Tree Valuation Tables**

**Table 1. Tree Species Pricing**

<b>Tree Species Class</b>	<b>Standard Size</b>	<b>Base Value (\$)</b>	<b>Tree Value Per Unit Growth</b>
Conifers	2.50 m tall	\$400.00	\$160.00 / m Ht.
Deciduous Trees	5.0 cm DBH (60 mm caliper)	\$500.00	\$100.00 / cm DBH

**Table 2. Species Class Value Indices for Landscape Trees**

<b>Common Name</b>	<b>Botanical Name</b>	<b>Species Index</b>
<b>Conifers</b>		
Arborvitae (White Cedar)	<i>Thuja spp.</i>	0.6
Douglas Fir	<i>Pseudotsuga menziesii</i>	1.0
*False Cypress	<i>Chamaecyparis spp.</i>	0.8
Fir, Balsam	<i>Abies balsamea</i>	0.4
Fir, White	<i>Abies concolor</i>	1.0
Hemlock, Canada (eastern)	<i>Tsuga canadensis</i>	1.0
Juniper, Chinese	<i>Juniperus chinensis</i>	0.4
Juniper, American (red cedar)	<i>Juniperus virginiana</i>	0.6
Pine, Austrian	<i>Pinus nigra</i>	0.6
Pine, Eastern White	<i>Pinus strobus</i>	0.8
Pine, Jack	<i>Pinus banksiana</i>	0.2
Pine, Red (Norway)	<i>Pinus resinosa</i>	0.6
Pine, Scots	<i>Pinus sylvestris</i>	0.4
Spruce, Colorado Blue	<i>Picea pungens</i>	1.0
Spruce, Norway	<i>Picea abies</i>	1.0
Spruce, Serbian	<i>Picea omorika</i>	0.8
Spruce, White	<i>Picea glauca</i>	0.8
<b>Deciduous Trees</b>		
Maple, Hedge	<i>Acer campestre</i>	0.8
Maple, Amur	<i>Acer ginnala</i>	0.8
Boxelder (Manitoba Maple)	<i>Acer negundo</i>	0.2
Maple, Black	<i>Acer nigrum</i>	0.8
Maple, Norway	<i>Acer platanoides</i>	0.8
Maple, Sycamore	<i>Acer pseudoplatanus</i>	0.6
Maple, Red	<i>Acer rubrum</i>	0.8
Maple, Silver	<i>Acer saccharinum</i>	0.4
Maple, Sugar	<i>Acer saccharum</i>	1.0
Maple, Tatarian	<i>Acer tatarica</i>	0.8
Horsechestnut, Red	<i>Aesculus carnea</i>	0.8
Buckeye, Ohio	<i>Aesculus glabra</i>	0.6
Horsechestnut, Common	<i>Aesculus hippocastanum</i>	0.8

**Table 2. Species Class Value Indices for Landscape Trees (continued)**

<b>Common Name</b>	<b>Botanical Name</b>	<b>Species Index</b>
Tree-of-heaven	<i>Ailanthus altissima</i>	0.2
Serviceberry	<i>Amelanchier spp.</i>	0.8
Pawpaw, Common	<i>Asimina triloba</i>	0.6
Birch, River	<i>Betula nigra</i>	0.8
Birch species	<i>Betula spp.</i>	0.4
Hornbeam, American	<i>Carpinus caroliniana</i>	1.0
Hickory, Bitternut	<i>Carya cordiformis</i>	0.6
Hickory, Shagbark	<i>Carya ovata</i>	0.6
Chestnut, Chinese	<i>Castanea mollissima</i>	0.6
Catalpa, Southern	<i>Catalpa bignonioides</i>	0.2
Catalpa, Northern	<i>Catalpa speciosa</i>	0.2
Hackberry	<i>Celtis occidentalis</i>	0.8
Katsura Tree	<i>Cercidiphyllum japonicum</i>	1.0
Redbud, Eastern	<i>Cercis canadensis</i>	0.5
Yellowwood, American	<i>Cladastris lutea</i>	0.6
Hawthorns	<i>Crataegus spp.</i>	0.6
Russian-olive	<i>Elaeagnus angustifolia</i>	0.4
Beech, American	<i>Fagus grandifolia</i>	1.0
Beech, European	<i>Fagus sylvatica</i>	0.8
Ash, White	<i>Fraxinus americana</i>	0.8
Ash, Green	<i>Fraxinus pennsylvanica</i>	0.6
Ash, Green, Seedless Cultivars	<i>Fraxinus pennsylvanica</i>	0.8
Ginkgo (Male Tree)	<i>Ginkgo biloba</i>	1.0
Honeylocust, Common	<i>Gleditsia triacanthos</i>	0.4
Honeylocust, Thornless Cultivars	<i>Gleditsia triacanthos</i>	0.6
Coffee-tree, Kentucky	<i>Gymnocladus dioicus</i>	1.0
Butternut	<i>Juglans cinerea</i>	1.0
Walnut, Black	<i>Juglans nigra</i>	0.8
Goldenraintree	<i>Koelreuteria paniculata</i>	0.6
Larch, European	<i>Larix decidua</i>	0.8
Larch, Eastern (Tamarack)	<i>Larix laricina</i>	0.6
Tulip-tree	<i>Liriodendron tulipifera</i>	0.6
Osage Orange	<i>Maclura pomifera</i>	0.4
Magnolia species	<i>Magnolia spp.</i>	0.6
Crabapples (Ornamental)	<i>Malus spp</i>	0.6
Redwood, Dawn	<i>Metasequoia glyptostroboides</i>	1.0
Mulberry species	<i>Morus spp.</i>	0.4
Ironwood	<i>Ostrya virginiana</i>	0.8
Corktree, Amur	<i>Phellodendron amurense</i>	1.0
Planetree, London	<i>Plantanus x acerifolia</i>	0.4
Sycamore, American	<i>Platanus occidentalis</i>	0.4
Cottonwood, Eastern	<i>Populus deltoides</i>	0.4
Poplar, Lombardy	<i>Populus nigra "Italica"</i>	0.2

**Table 2. Species Class Value Indices for Landscape Trees (continued)**

<b>Common Name</b>	<b>Botanical Name</b>	<b>Species Index</b>
Poplars (all other)	<i>Populus spp.</i>	0.4
Plum and Cherry Species	<i>Prunus spp.</i>	0.4
Pear, Callery Cultivars	<i>Pyrus calleryana</i>	0.8
Oak, White	<i>Quercus alba</i>	1.0
Oak, Swamp White	<i>Quercus bicolor</i>	0.8
Oak, Scarlet	<i>Quercus coccinea</i>	0.8
Oak, Bur	<i>Quercus macrocarpa</i>	1.0
Oak, Pin	<i>Quercus palustris</i>	1.0
Oak, English	<i>Quercus robur</i>	1.0
Oak, Pyramidal English	<i>Quercus robur "Fastigiata"</i>	1.0
Oak, Red	<i>Quercus rubra</i>	1.0
Locust, Black	<i>Robinia pseudoacacia</i>	0.2
Willows	<i>Salix spp.</i>	0.2
Sassafras, Common	<i>Sassafras albidum</i>	0.8
Scholar Tree, Chinese	<i>Sophora japonica</i>	0.8
Mountain Ash, American	<i>Sorbus americana</i>	0.6
Mountain Ash, European	<i>Sorbus aucuparia</i>	0.4
Lilac, Japanese Tree	<i>Syringa reticulata</i>	0.8
Bald Cypress, Common	<i>Taxodium distichum</i>	1.0
Linden, American (Basswood)	<i>Tilia americana</i>	0.6
Linden, Littleleaf	<i>Tilia cordata</i>	0.8
Linden, Greenspire	<i>Tilia cordata "Greenspire"</i>	1.0
Linden, Redmond	<i>Tilia x euchlora "Redmond"</i>	1.0
Elm, American	<i>Ulmus americana</i>	0.6
Elm, Siberian	<i>Ulmus pumila</i>	0.2

**Table 3. Site Location Value Indices for Shade and Ornamental Trees.**

<b>Site Location</b>	<b>Location Value Index for use in Formula</b>
Specimen or heritage trees	1.0
Average residential, landscape trees	0.9
Arboretum trees	0.9
Park or public open space trees	0.8
City street trees	0.7
Golf course trees	0.7
Malls and parking area trees	0.6
Environmental screen trees	0.6
Industrial area trees	0.5
Forest / woodlot trees	0.3

**Table 4. Tree Health / Condition Value Indices**

<b>Condition Description Condition Values</b>	<b>Index for use in formula</b>
<p><b>Excellent.</b> Perfect specimen. Excellent form and vigor for species. No pest problems or mechanical injuries. No corrective work required. Minimum life expectancy 30 years beyond the time of inspection.</p>	1.0
<p><b>Good.</b> Healthy and vigorous. No apparent signs of insect, disease, or mechanical injury. Little or no corrective work required. Form representative of species. Minimum life expectancy 20 years.</p>	0.75
<p><b>Fair.</b> Average condition and vigor for area. May be in need of some corrective pruning or repair. May lack desirable form characteristics of species. May show minor insect, disease, or physiological problems. Minimum life expectancy 10 years.</p>	0.50
<p><b>Poor.</b> General state of decline. May show significant mechanical, insect, or disease injury, but death not imminent. May require major repair or renovation. Minimum life expectancy 3 years.</p>	0.25
<p><b>Dead or Dying.</b> Dead, or death clearly imminent within 3 years as a result of severe mechanical, insect, or disease injury.</p>	0%

**TREE VALUATION FORM**

Location: \_\_\_\_\_

Date: \_\_\_\_\_

Appraisor: \_\_\_\_\_

Purpose of Appraisal: \_\_\_\_\_


Tree #	Species	Value Indices		DBH (cm) or Ht (m)	Current Price per m or cm <sup>2</sup>	Current Base Value (\$)	Current Growth Value (\$)	Tree Value (\$)
		Species	Location Health					

**NOTES:**

Current Base Value of Conifer Tree: \$400.00  
 Current Base Value of Deciduous Tree: \$500.00

**Example Tree Valuations**

Deciduous 500 5 100 /cm DBH  
 Conifer 400 2.5 160 /m Height

Address	Species	Ht (m) DBH (cm)	Base Value		Value Indices			Current Price per cm <sup>2</sup> or Ht	Current Growth Value	Tree Value
			Current Price	Current Price	Species	Location	Health			
1 NoStreet	Colorado Spruce	3	\$ 400.00	\$ 400.00	1	0.9	1	\$ 160.00	432.00	\$ 432.00
1 NoStreet	Green Ash	30	\$ 500.00	\$ 500.00	0.9	0.9	0.75	\$ 100.00	1,822.50	\$ 1,822.50
1 NoStreet	Sugar Maple	40	\$ 500.00	\$ 500.00	1	0.9	0.5	\$ 100.00	1,800.00	\$ 1,800.00