

Theia Partners

Tree Conservation Report

30 Cleary Avenue

CIMA+ file number: A001443
November 17, 2023 – Review 002



Theia Partners

Tree Conservation Report

30 Cleary Avenue

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Table of involved resources

In addition to the signatories of this report, the following individuals have also been involved in the study and writing of the report as technical experts within the project team:

Name	Discipline
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Review and submission register			
Review No.	Reviewed by	Date	Description of the change or submission
000	LC	2023-09-07	Executive Summary for Client Review
001	LC	2023-10-04	Existing Conditions Report
002	LC	2023-11-17	Impact Assessment

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1. Introduction

CIMA+ has been retained by Theia Partners (the ‘Client’) to prepare a Tree Conservation Report (TCR) for the proposed residential development located at 30 Cleary Ave, on Part Lot 26, Concession 1, Geographic Township of Nepean – within the Urban boundary of the City of Ottawa (the ‘Site’).

1.1 Project Location and Description

The subject lands are roughly 1.3 acres and consist of the western extents of the property located at 30 Cleary Avenue, Ottawa ON (UTM 18T 437391 m N, 5020475 m E, and Latitude 45.3350438, Longitude - 75.7990933). They form part of Lot 26, Concession 1 in the City of Ottawa. The Site is bordered by a deciduous woodlot to the north that runs parallel to the Sir John A MacDonald Parkway, and the River Parkway Children's Centre to the south. A naturalized strip of vegetation along the western edge separates the Site by a chain link fence along the backyard of homes located on Ayleen Avenue. The First Unitarian Congregation of Ottawa is situated to the east, where a community prayer garden separates the Site from the church. The topography is flat and is currently comprised of an asphalt parking area.

Refer to [Error! Reference source not found.](#) below to view the Site Location.

1.2 Objective

This Tree Conservation Report (TCR) follows the *City of Ottawa Tree Conservation Report Guidelines* (City of Ottawa, 2021), which required a site visit to identify trees that are larger than 10 cm in diameter, which may be impacted by the project. Information on the individual trees and tree groupings, their species, size (diameter-at-breast height, dbh) and health were recorded. The TCR summarizes the results, identifies the ownership of the trees, and based on the preliminary site layout provides commentary on which trees could be retained and those that are recommended for pruning or removal. This information is depicted on the mandatory Map 1 and Map 2 of the TCR, as per the guidelines. In the paragraphs below, we have outlined the field methodology and findings of the tree inventory. This report will help determine the project’s potential impacts and provide general recommendations to avoid and/or mitigate tree loss and injury.

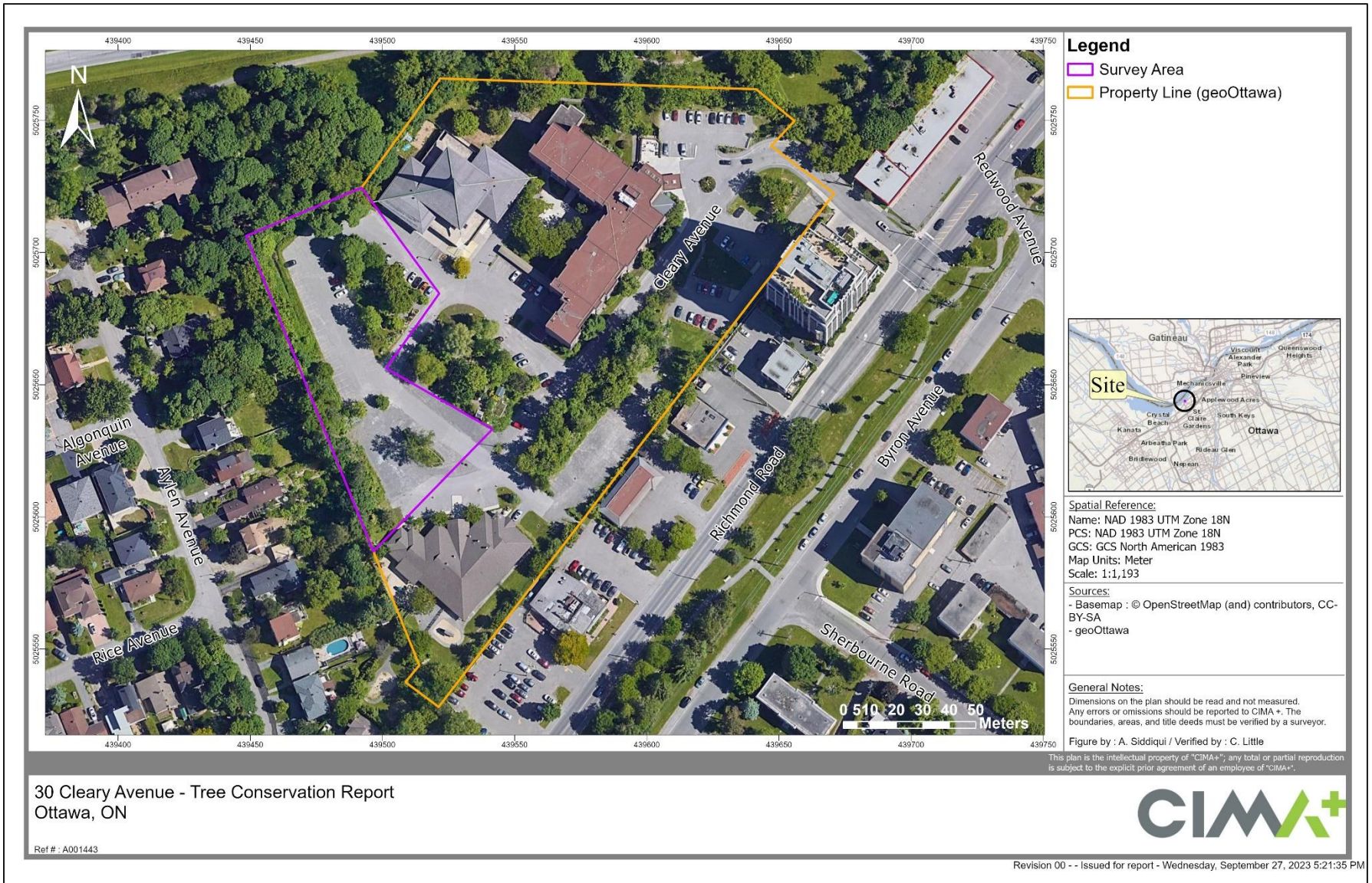


Figure 1 : Site Location

2. City of Ottawa Tree Protection By-Law

The Site is located within the City of Ottawa's Tree Protection By-law No. 2020-340 (January 1, 2021) limits. The intent of this By-Law is to respect the protection of municipal trees and municipal natural areas in the City of Ottawa and trees on private property in the urban area of the City of Ottawa.

Under the Tree Protection By-law, the following protected trees cannot be injured or removed without a tree permit from the City:

- + *All City-owned trees throughout the urban and rural area.*
- + *All trees 10 cm or more in diameter at breast height on private properties within the urban area that are subject to a Planning Act application for Site Plan, Plan of Subdivision, or Plan of Condominium.*
- + *All trees 10 cm or more in diameter at breast height on private properties within the urban area that are over 1 hectare in size.*
- + *All distinctive trees on private properties 1 hectare or less in size, where distinctive trees are defined as:*
 - *Trees measuring 30 cm or more in diameter at breast height within the inner urban area (urban lands inside the Greenbelt).*
 - *Trees measuring 50 cm or more in diameter at breast height within the suburban area (urban lands outside the Greenbelt).*

The Tree Protection By-law requires permits to be obtained before City-owned trees or protected privately owned trees are removed. It also sets out requirements for compensation to be provided when trees are removed, so that they can be replaced.

A Tree Conservation Report (TCR) is required as a part of the application package for all Plans of Subdivision, Site Plan Control Applications, Common Elements Condominium Applications, and Vacant Land Condominium Applications where there is a tree of 10 centimeters in diameter or greater on the site and/or if there is a tree on an adjacent site that has a Critical Root Zone (CRZ) extending onto the development site. The purpose of the TCR is to demonstrate how tree cover will be retained and protected on the site, including mature trees, stands of trees, and hedgerows, using a design with nature approach. A design with nature approach incorporates the natural features of a site into the design and engineering of a proposed development. The TCR will also show which trees must be removed on a site to accommodate the proposed development.

3. Limitations

The assessment presented in this report has been made using accepted standard arboriculture techniques as outlined in the *Council of Tree and Landscape Appraisers Guide for Plant Appraisal, 10th Edition, Second Printing (2020)*. The trees observed were not climbed, cored, or dissected, and excavation for detailed root crown inspection was not performed. Since some symptoms may only be present seasonally, the extent of observations that can be made may be limited by the time of year the inspection took place.

As trees are living organisms, their health and vigour continually change over time due to seasonal variations, changes in site conditions, and other factors. For this reason, the assessment presented in this report is valid at the time of inspection, and no guarantee is made about the continued health of trees that are deemed to be in good condition. It is recommended that the trees be reassessed periodically to identify changes in condition. While every standing tree has the potential for failure and therefore poses some risk, a tree assessment is a good indication of present health and potential problems that could arise in the future.

CIMA+ has prepared this report for the sole use of the client. Any use of this report by a third party, as any decision based on this report, is the singular responsibility of the third party. **CIMA+** will not be held responsible for eventual damages towards a third party resulting from decisions taken, or based, on this report.

4. Methodology

The tree inventory was undertaken on July 21, 2023. Trees were numbered, identified, measured, and assessed for condition. Information collected on the individual trees included:

- + Species
- + Diameter at breast height (DBH)
- + Approximate crown spread
- + Height; and,
- + Condition

The Tree Inventory and Assessment Table containing this information is included in **Appendix A. Figure 2** (mandatory Map 1 as per City of Ottawa, 2021) below depicts the locations of the numbered trees assessed. The assessment methodology is outlined in the sections below.

4.1 Tree Size

Size refers to trunk diameter at breast height (DBH or caliper) measured in centimetres at 1.4 m above the ground. Where trees had more than one trunk from the base, the size of each trunk was recorded. Where trees forked to codominant trunks the diameter was measured at the narrowest point below the fork.

4.2 Tree Assessment

The assessment involved a visual examination of the above-ground parts of each tree. The crown, trunk, and root structure of each tree was observed and assessed noting any abiotic and/or biotic disorders as well as structural defects present. Several structural defects and health problems are included in the Tree Inventory and Assessment Table (**Appendix A**). The following list provides an explanation of the short forms used in the table of the top eight (8) deficiencies observed on Site:

- + DB - Dieback refers to the ends of branches dying, which is often associated with root problems.
- + SMD - Small dead branches are an indicator of crown dieback and can be an early sign of stress.
- + UC - Unbalanced Crown is a tree's crown that is much more extensive in one direction than another, often due to competition from the crown of a nearby tree or exposure
- + COD - Codominant leaders (2 trunks or branches of approximately equal size) often have narrow branch angles and are associated with weak branch attachment. Strong branch attachments occur between 2 limbs of unequal size with enough space for branch enlargement and formation of a branch bark ridge.
- + FC - Frost cracking is a winter injury caused by temperature fluctuations on bark and inner wood when the sun warms a tree trunk and then temperatures drop quickly, causing splitting of the bark that can extend into the wood below. Frost cracking can be associated with snow reflection and southwest-facing trunk exposures, and particularly affects young trees and species with thin bark.

- + LE - A tree with a lean can be more susceptible to windthrow and soil failure. Self-correcting lean refers to a natural correction of the lean by development of new growth that counteracts the lean of the trunk to provide a more balanced form.
- + NRF - No root flare refers to the base of the trunk where it widens as it transitions to the root system.
- + SUP - Suppressed trees are growing under the canopies of neighbouring trees, which can diminish vigour and affect structural form.

4.3 Tree Condition

Each tree was given an overall health condition rating of: Excellent, Good, Fair, Poor, or Dead. The following is a summary of how the ratings are determined:

- + EXCELLENT: No apparent health problems; good structural form.
- + GOOD: Minor problems with health and/or structural form.
- + FAIR: Significant problems with health and/or structural form.
- + POOR: Major problems with health and structural form.
- + DEAD: Dead.

4.4 Tree Protection and Impact Analysis

The Critical Root Zone (CRZ) was determined using the *City of Ottawa's Tree Conservation Report Guidelines* (City of Ottawa, 2021). The CRZ is established 10 centimetres from the trunk of a tree for every centimetre of trunk DBH measured in a radius around the tree. The CRZ is calculated as $DBH \times 10$ cm.

Using data collected during the tree inventory and assessment, a tree impact analysis was performed using ArcGIS software. Based on the location and condition of trees in relation to the proposed area of impact, a recommendation was made (i.e., retain, prune and protect, or remove) for each tree.

The minimum CRZ of each tree canopy is illustrated on **Figure 3** (mandatory Map 2 as per City of Ottawa, 2021) to help determine possible injury and branch pruning that may be required. The Comments section of the Tree Inventory and Assessment Table (**Appendix A**) also includes notes about tree form and canopy location that can help determine any pruning that may be required to accommodate construction equipment.

Tree Impact (retain, prune and protect, or remove) has been determined and is described in Section 5 below, as well as included in the Tree Inventory and Assessment Table located in **Appendix A**, and displayed on **Figure 3**.

5. Existing Conditions

The dates, timing, and environmental conditions at the time of the assessment are presented below in **Table 1**.

Table 1: Site Investigation Details

Date	Start/End Time	Field Surveys	Weather Conditions
2023/07/21	0930 - 1430 hrs	Visual assessment of all trees ≥10 cm dbh on-site	Temperature: 20°C Cloud cover / Precip: mixed sun/clouds, light wind.

The Site has three surface water features; only two of which were observed during the site investigation. One drainage ditch is situated along the western extent within the naturalized vegetation. This feature was approximately 40 m long from north to south, had standing water during the assessment, and consisted of reed canary grass. The second feature is situated within the community garden and flows through a small culvert / pipe that runs underground in this location. Another small drainage feature is depicted on geoOttawa along the northern extent of the Site within the deciduous woodlot, outside the Site boundaries. There was no standing water present or indication of inundation in this area during the site visit. There are no wetlands or watercourses on Site.

The Site is flat with no presence of steep slopes, valleylands or escarpments. There are no valued woodlands designated as Urban Natural Features or Natural Environment Areas, or significant woodlands on or adjacent the Site. There are no riparian woodlots, rare communities, or other unique ecological features. The trees on Site and within the small woodland north of the Site likely provide suitable habitat for migratory bird species and bats, although no high-quality specimen trees were observed.

Majority of the subject lands where the building envelope is planned consist of paved parking areas surrounded by residential and commercial buildings. The woodland to the north is dominated by deciduous tree species generally in good health. The narrow band of vegetation along the western extent of the Site is comprised of a mix of coniferous tree species (red pine) and non-native deciduous trees and shrubs (Norway maple, Manitoba maple, common buckthorn, and honeysuckle). The community garden that separates the Site from the church has numerous tree, shrub, and herbaceous plants species that are well taken care of and provide a peaceful naturalized space for the community members to enjoy. The adjacent lands to the south are fully developed (commercial and residential, respectively).

A total of 53 individual trees were assessed as part of this inventory. The condition of the trees on Site ranged from Good to Poor, 75% of which were in Good condition. The most common species were Norway maple (33%), red pine (26%), and Manitoba maple (9%). There are 28 trees that meet the definition of a ‘Distinctive Tree’ as per Tree Protection By-law No. 2020-340 (any tree located on private property with a DBH of 30 cm or greater, within the inner urban area).

A summary of the trees surveyed on Site is provided in **Table 2** and displayed in **Figure 2** below.

Table 2: Summary of Tree Inventory

Species	Count	Size Range (DBH cm)	Height Range (m)	Crown Spread (m)
American elm	2	42-47	16-21+	9-10
Black Locust	3	9-21	4-15	4
Blue spruce	1	29	12-15	3
Common Hawthorn	1	11	4-7	3
Eastern cottonwood	1	62	21+	11
Eastern white cedar	2	12-15	4-7	3-4
Eastern white pine	1	12	4-7	4
Manitoba maple	5	11-58	4-20	5-9
Northern Catalpa	2	45-48	16-20	6-9
Norway maple	18	10-59	4-21+	4-12
Ohio Buckeye	2	13-18	4-11	4-5
Red maple	1	18	8-11	5
Red pine	14	19-41	8-20	3-7
Total	53	9-62	4-21+	3-12

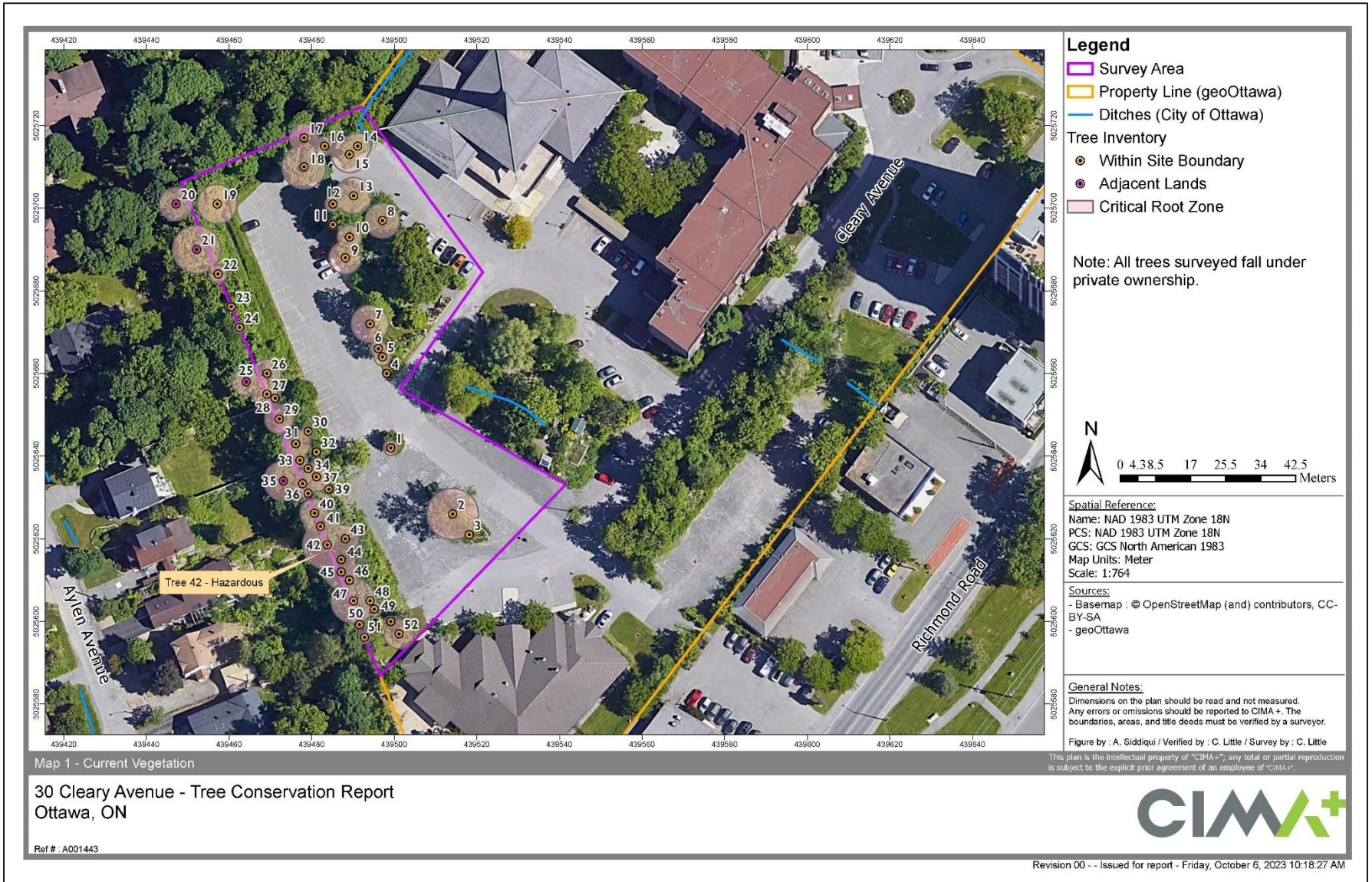


Figure 2 : Current Vegetation (Map 1 as per City Guidelines)

6. Impact Assessment and Recommendations

Based on the conditions of the trees and extent of the proposed construction limits, **Table 3** summarizes the recommended actions of the 53 trees assessed within the Site. These details are depicted in **Figure 3** (mandatory Map 2 as per City of Ottawa, 2021).

It should be noted that the condition of one (1), 2-stem northern catalpa (tree #7 - **Appendix A**) situated within the community garden was assessed as Good, however is experiencing some crotch decay. It is recommended that prior to construction, an ISA certified Tree Risk Assessor (ISA TRAQ) complete a Risk Assessment for this tree, and comment on its candidacy for cabling the 2 stems to strengthen its structure integrity. **Photo 1** below displays the codominant union of the trunks of tree #7.

Table 3: Impact Assessment for Trees on Site

Trees to be Removed	Trees to be Pruned	Trees/Groupings to be Retained
5	2	46



Photo 1 : View of crotch decay and codominant leaders of Tree #7 – Northern Catalpa

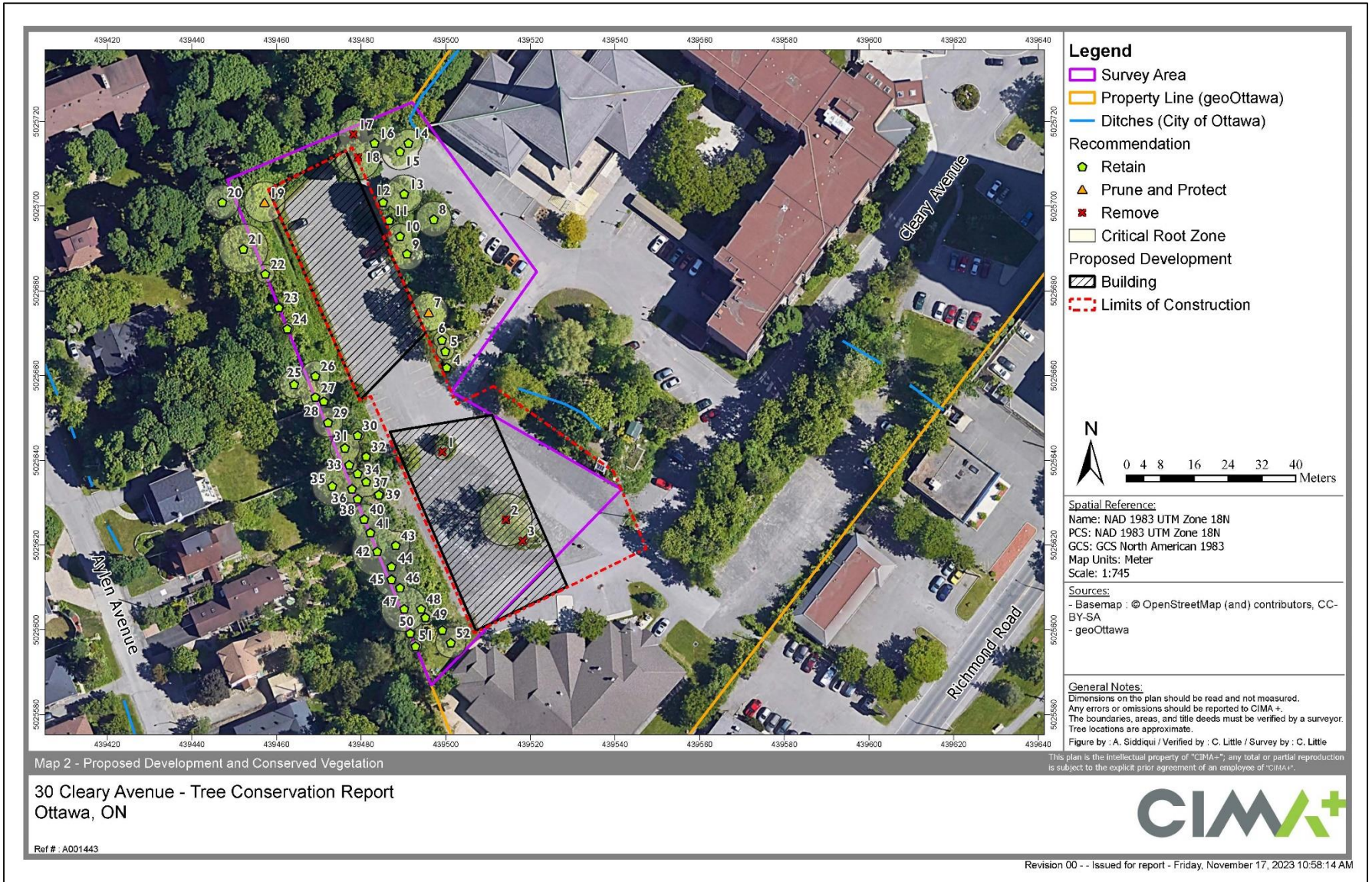


Figure 3 : Tree Impact Assessment and Proposed Recommendations (Map 2 as per City Guidelines)

7. Mitigation Measures and Construction Management

7.1 Tree Removal

Based on the proposed project design and existing conditions of the trees on site, tree removals will be required. The following recommendations are provided:

- + Retain a Certified Arborist during site layout operations to confirm recommended tree removals, pruning, and tree protection fencing in proximity to the construction limits.

7.2 Tree Protection Measures

The most typical construction damage to trees is root damage from compaction and severance. While the drip line of a tree's canopy is typically thought to be associated with the root area, the root zones can extend significantly beyond the drip line of the tree, sometimes up to 2 or 3 times the height of the tree. Some of the trees inventoried are growing close to the edge of the proposed construction and will be at risk of contact with, and damage from, heavy equipment. To protect trees, grade changes and construction activities that could cause soil compaction should generally be kept away from trees as much as possible.

To successfully preserve trees that are recommended for on-site retention, the following series of mitigation measures is recommended. These recommended measures largely center on the minimum CRZ of trees (The CRZ is calculated as $DBH \times 10 \text{ cm}$), as defined by the City's *Tree Conservation Report Guidelines*. The following measures are being recommended to protect the CRZ of all trees slated for retention and/or impact:

- + Delineation of the disturbance limits within work areas will be clearly defined on drawings and on the site prior to construction;
- + Install Tree Protection Fencing prior to commencement of construction activities, and retain fencing until construction activities have been completed, as per City of Ottawa's Tree Protection (By-law No. 2020-340), Part VI:
 - Tree protection fencing shall be at least 1.2 metres in height and installed in such a way that the fence cannot be altered.
- + Do not place any material or equipment within the CRZ of a tree;
- + Do not raise or lower the existing grade within the CRZ of a tree;
- + Do not extend any hard surface or significantly change landscaping;
- + If the construction will have to encroach into a tree's minimum CRZ, installing a temporary layer of 150 mm deep partially composed wood chips mulch over the root zone can help to protect roots from compaction damage, and conserve soil moisture levels;
- + Equipment and materials should not be stored near trees;
- + Ensure that exhaust fumes from all equipment are not directed towards any tree's canopy;

- + Do not attach any signs, notices, or posters to trees;
- + Ensure that site clearing is carried out only in areas where it is specifically required, and that the areas to be cleared are carefully and clearly delineated.
- + Prior to construction, an ISA certified Tree Risk Assessor (ISA TRAQ) should be retained to complete a Risk Assessment of Tree #7, and comment on its candidacy for cabling the 2 stems to strengthen its structure integrity. Refer to Appendix B for the City of Ottawa’s Tree Protection Fencing Specification.

7.3 Branch and Root Pruning

- + If branches are likely to hang in the way of passing equipment, the branches should be pruned by a Certified Arborist or Registered Forester to avoid tearing and undue injury to the tree.
- + All pruning work must be performed under the supervision and guidance of a qualified tree professional in accordance with the latest ANSI A300 Pruning Standards and best management practices identified by the International Society of Arboriculture.
- + Do not damage the root system, trunk, or branches of any tree; if any roots are encountered during excavation while working outside the CRZ, they should be cut off cleanly with sharp pruning tools rather than allow them to be torn by large equipment; clean cuts will help to minimize decay and entry points for disease.
- + All exposed roots of trees to be retained should be covered in a minimum of 5 cm of firm soil within 24 hours of exposure.
- + If root pruning is implemented, the crown of the tree should be reduced proportionately under the direction of a Certified Arborist or Registered Forester, to decrease wind sail. Pruning should be kept to thinning cuts (no major limb removal), and crowns should be monitored, and maintenance carried out for two (2) years after root pruning to remove any dieback under the direction of a Certified Arborist or Registered Forester.

8. Permits and Approvals

The City of Ottawa’s Tree Protection By-law No. 2020-340 describes the rules that govern tree ownership in Ottawa and the responsibility of tree maintenance, including administration and enforcement. As per Part IV: Sections 42 – 44 Prohibition: *No person shall injure or destroy a tree without a permit.* Sections 45 to 48 - Application for tree permit stipulates the process to apply for a permit under this by-law.

Therefore, it is recommended that consultation should be undertaken with the City prior to construction to confirm the requirements for tree removal permits associated with the municipal tree protection by-law. Where required, tree removal permits must be obtained from the City prior to the start of construction.

9. Summary

Fifty-three (53) trees were inventoried within the proposed residential development area located at 30 Cleary, in Nepean, Ontario. Based on the proposed design, the inventory resulted in forty-six (46) trees to be retained, two (2) of which are to be pruned and protected, and five (5) trees proposed for removal.

A list of proposed avoidance and mitigation measures have been included in Section 7 of this report in relation to tree removals, tree protection, and tree preservation. This includes recommendation for further assessment of Tree #7 to determine the potential risk of the tree and whether it would be a good candidate for cabling to strengthen to codominant trunk union.

10. Certification and Closure

We certify that all the statements of fact in this assessment are true, complete, and correct to the best of our knowledge and belief, and that they are made in good faith.

A

Appendix A Tree Inventory and Assessment Table and Figure



APPENDIX A: 30 Cleary Avenue Tree Inventory Assessment Table

Tree No.	Common Name	Scientific Name	No. Stems	DBH (m)	Crown Spread (m)	Structural Defects ⁱ								Overall Condition ⁱⁱ	% CRZ within Proposed Development Area	Recommendations	Comments
						DB	SMD	UC	COD	FC	LE	NRF	SUP				
1	Ohio Buckeye	<i>Aesculus glabra</i>	1	18	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	100	Remove	In parking area.
2	Eastern Cottonwood	<i>Populus deltoides ssp. deltoides</i>	1	62	11	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	100	Remove	In parking area.
3	Eastern White Pine	<i>Pinus strobus</i>	1	12	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Excellent	100	Remove	In parking area.
4	Black Locust	<i>Robinia pseudoacacia L.</i>	4	4;5;6;8	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	In community garden.
5	Black Locust	<i>Robinia pseudoacacia L.</i>	1	21	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fair	0	Retain	In community garden.
6	Black Locust	<i>Robinia pseudoacacia L.</i>	1	20	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	In community garden.
7	Northern Catalpa	<i>Catalpa speciosa</i>	2	44;45	9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	14.8	Prune and Protect	In community garden; Crotch rot; Consider cabling 2 stems; Multi-stemmed Amur maple and lilac underneath.
8	American Elm	<i>Ulmus americana</i>	1	42	9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	In community garden.
9	Norway Maple	<i>Acer platanoides</i>	1	39	8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	In community garden.
10	Blue Spruce	<i>Picea pungens</i>	1	29	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Good	1.2	Retain	In community garden.
11	Common Hawthorn	<i>Crataegus monogyna</i>	1	11	3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Dead	0	Retain	In community garden.
12	Red Pine	<i>Pinus resinosa</i>	1	19	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	6	Retain	In community garden.



Tree No.	Common Name	Scientific Name	No. Stems	DBH (m)	Crown Spread (m)	Structural Defects ⁱ								Overall Condition ⁱⁱ	% CRZ within Proposed Development Area	Recommendations	Comments
						DB	SMD	UC	COD	FC	LE	NRF	SUP				
13	Norway Maple	<i>Acer platanoides</i>	1	44	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	In community garden.
14	Norway Maple	<i>Acer platanoides</i>	1	32	8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fair	0	Retain	Large scarring along entire SW trunk margin.
15	Norway Maple	<i>Acer platanoides</i>	1	44	7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fair	0	Retain	Large scarring along SW side of trunk; Seepage along trunk.
16	Norway Maple	<i>Acer platanoides</i>	2	26;23	7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
17	Norway Maple	<i>Acer platanoides</i>	1	35	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Poor	22.4	Remove	
18	Norway Maple	<i>Acer platanoides</i>	1	53	9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	36.8	Remove	
19	Northern Catalpa	<i>Catalpa speciosa</i>	1	48	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	20.8	Prune and Protect	Leaning east towards development area.
20	Norway Maple	<i>Acer platanoides</i>	1	40	9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	Private property-other side of fence; Estimated dbh.
21	Manitoba Maple	<i>Acer negundo</i>	1	58	9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fair	0	Retain	Private property-other side of fence; Estimated dbh.
22	Norway Maple	<i>Acer platanoides</i>	1	22	7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
23	Manitoba Maple	<i>Acer negundo</i>	1	11	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
24	Manitoba Maple	<i>Acer negundo</i>	3	10;11;14	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	



Tree No.	Common Name	Scientific Name	No. Stems	DBH (m)	Crown Spread (m)	Structural Defects ⁱ								Overall Condition ⁱⁱ	% CRZ within Proposed Development Area	Recommendations	Comments
						DB	SMD	UC	COD	FC	LE	NRF	SUP				
25	Manitoba Maple	<i>Acer negundo</i>	3	11;22;34	7	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fair	0	Retain	Private property - other side of fence; Estimated dbh; One stem broken.
26	Red Pine	<i>Pinus resinosa</i>	1	35	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
27	Red Pine	<i>Pinus resinosa</i>	1	34	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
28	Norway Maple	<i>Acer platanoides</i>	2	11;13	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
29	Red Pine	<i>Pinus resinosa</i>	1	35	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
30	Norway Maple	<i>Acer platanoides</i>	1	15	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
31	Red Pine	<i>Pinus resinosa</i>	1	35	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
32	Norway Maple	<i>Acer platanoides</i>	1	10	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
33	Red Pine	<i>Pinus resinosa</i>	1	19	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
34	Norway Maple	<i>Acer platanoides</i>	1	13	4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
35	American Elm	<i>Ulmus americana</i>	2	50;47	10	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	Private property- other side of fence; estimated dbh.
36	Red Pine	<i>Pinus resinosa</i>	1	34	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
37	Red Pine	<i>Pinus resinosa</i>	1	35	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
38	Norway Maple	<i>Acer platanoides</i>	2	13;10	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Poor	0	Retain	
39	Ohio Buckeye	<i>Aesculus glabra</i>	1	13	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
40	Red Pine	<i>Pinus resinosa</i>	1	35	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	

Tree No.	Common Name	Scientific Name	No. Stems	DBH (m)	Crown Spread (m)	Structural Defects ⁱ								Overall Condition ⁱⁱ	% CRZ within Proposed Development Area	Recommendations	Comments
						DB	SMD	UC	COD	FC	LE	NRF	SUP				
41	Red Pine	<i>Pinus resinosa</i>	1	36	3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Fair	0	Retain	
42	Norway Maple	<i>Acer platanoides</i>	2	38;59	8	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Poor	0	Retain	
43	Red Pine	<i>Pinus resinosa</i>	1	33	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Poor	0	Retain	
44	Red Pine	<i>Pinus resinosa</i>	1	34	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
45	Red Pine	<i>Pinus resinosa</i>	1	41	6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
46	Norway Maple	<i>Acer platanoides</i>	1	18	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
47	Norway Maple	<i>Acer platanoides</i>	1	54	12	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Poor	0	Retain	
48	Norway Maple	<i>Acer platanoides</i>	1	17	5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
49	Red Maple	<i>Acer rubrum</i>	1	18	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
50	Eastern White Cedar	<i>Thuja occidentalis</i>	1	12	3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
51	Eastern White Cedar	<i>Thuja occidentalis</i>	1	15	4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Good	0	Retain	
52	Red Pine	<i>Pinus resinosa</i>	1	36	7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Good	0	Retain	
53	Manitoba Maple	<i>Acer negundo</i>	1	13	5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fair	0	Retain	Multiple stems from cut base.

ⁱ DB - Dieback refers to the ends of branches dying, which is often associated with root problems.

SMD - Small dead branches are an indicator of crown dieback and can be an early sign of stress.

UC - Unbalanced Crown is a tree's crown that is much more extensive in one direction than another, often due to competition from the crown of a nearby tree or exposure.

COD - Codominant leaders (2 trunks or branches of approximately equal size) often have narrow branch angles and are associated with weak branch attachment. Strong branch attachments occur between 2 limbs of unequal size with enough space for branch enlargement and formation of a branch bark ridge.

FC - Frost cracking is a winter injury caused by temperature fluctuations on bark and inner wood when the sun warms a tree trunk and then temperatures drop quickly, causing splitting of the bark that can extend into the wood below. Frost cracking can be associated with snow reflection and southwest-facing trunk exposures, and particularly affects young trees and species with thin bark.

LE - A tree with a lean can be more susceptible to windthrow and soil failure. Self-correcting lean refers to a natural correction of the lean by development of new growth that counteracts the lean of the trunk to provide a more balanced form.

NRF - No root flare refers to the base of the trunk where it widens as it transitions to the root system.

SUP - Suppressed trees are growing under the canopies of neighbouring trees, which can diminish vigour and affect structural form.

ⁱⁱ Excellent: No apparent health problems; good structural form.

Good: Minor problems with health and/or structural form.

Fair: Significant problems with health and/or structural form.

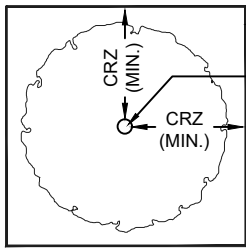
Poor: Major problems with health and structural form.

Dead: Dead.

B

Appendix B Tree Protection Specification (City of Ottawa, 2021)





PLAN VIEW

TREE PROTECTION FENCING

TREE TRUNK

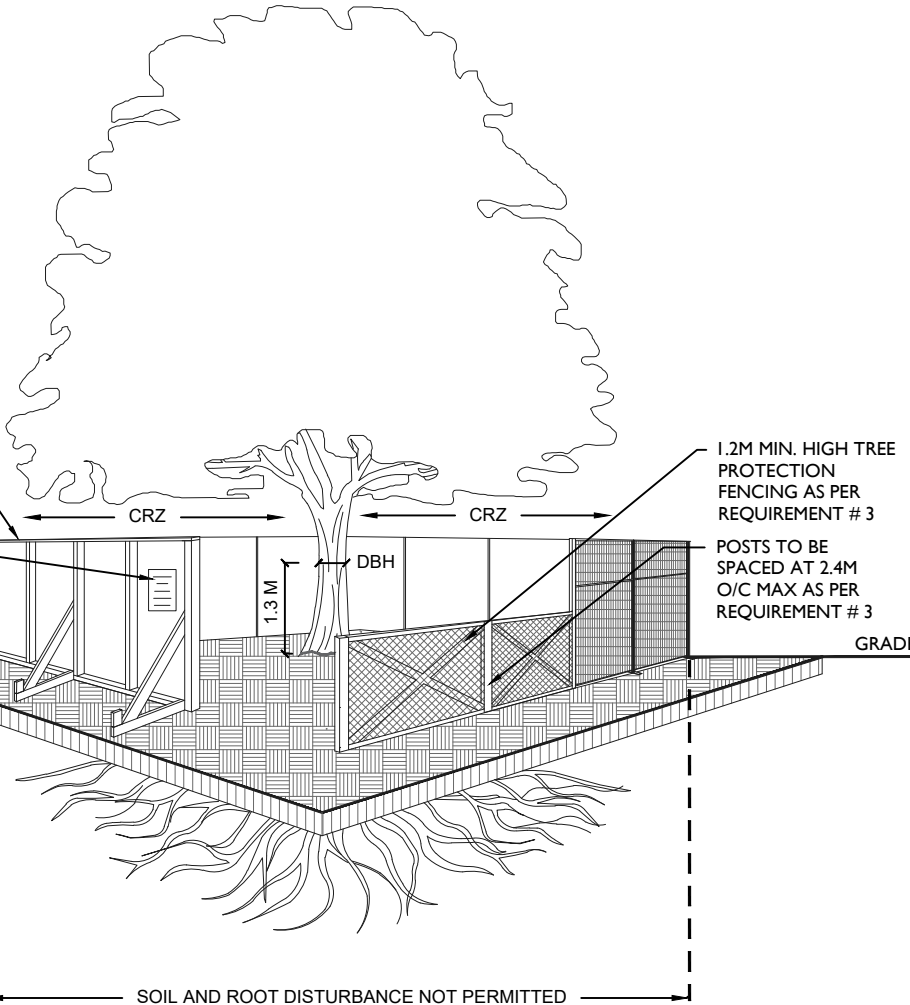
CRZ (MIN.)

CRZ (MIN.)

CRZ = DBH X 10CM.
CRZ IS TO BE MEASURED FROM THE OUTSIDE EDGE OF THE TREE BASE

TREE PROTECTION SIGNAGE AS PER CITY STANDARD

GRADE



1.2M MIN. HIGH TREE PROTECTION FENCING AS PER REQUIREMENT # 3

POSTS TO BE SPACED AT 2.4M O/C MAX AS PER REQUIREMENT # 3

SOIL AND ROOT DISTURBANCE NOT PERMITTED

TREE PROTECTION REQUIREMENTS:

1. PRIOR TO ANY WORK ACTIVITY WITHIN THE CRITICAL ROOT ZONE (CRZ = 10 X DIAMETER) OF A TREE, TREE PROTECTION FENCING MUST BE INSTALLED SURROUNDING THE CRITICAL ROOT ZONE, AND REMAIN IN PLACE UNTIL THE WORK IS COMPLETE.
2. UNLESS PLANS ARE APPROVED BY CITY FORESTRY STAFF, FOR WORK WITHIN THE CRZ:
 - DO NOT PLACE ANY MATERIAL OR EQUIPMENT - INCLUDING OUTHOUSES;
 - DO NOT ATTACH ANY SIGNS, NOTICES OR POSTERS TO ANY TREE;
 - DO NOT RAISE OR LOWER THE EXISTING GRADE;
 - TUNNEL OR BORE WHEN DIGGING;
 - DO NOT DAMAGE THE ROOT SYSTEM, TRUNK, OR BRANCHES OR ANY TREE;
 - ENSURE THAT EXHAUST FUMES FROM ALL EQUIPMENT ARE NOT DIRECTED TOWARD ANY TREE CANOPY.
 - DO NOT EXTEND HARD SURFACE OR SIGNIFICANTLY CHANGE LANDSCAPING
3. TREE PROTECTION FENCING MUST BE AT LEAST 1.2M IN HEIGHT, AND CONSTRUCTED OF RIGID OR FRAMED MATERIALS (E.G. MODULOC - STEEL, PLYWOOD HOARDING, OR SNOW FENCE ON A 2"X4" WOOD FRAME) WITH POSTS 2.4M APART, SUCH THAT THE FENCE LOCATION CANNOT BE ALTERED. ALL SUPPORTS AND BRACING MUST BE PLACED OUTSIDE OF THE CRZ, AND INSTALLATION MUST MINIMISE DAMAGE TO EXISTING ROOTS. (SEE DETAIL)
4. THE LOCATION OF THE TREE PROTECTION FENCING MUST BE DETERMINED BY AN ARBORIST AND DETAILED ON ANY ASSOCIATED PLANS FOR THE SITE (E.G. TREE CONSERVATION REPORT, TREE INFORMATION REPORT, ETC). THE PLAN AND CONSTRUCTED FENCING MUST BE APPROVED BY CITY FORESTRY STAFF PRIOR TO THE COMMENCEMENT OF WORK.
5. IF THE FENCED TREE PROTECTION AREA MUST BE REDUCED TO FACILITATE CONSTRUCTION, MITIGATION MEASURES MUST BE PRESCRIBED BY AN ARBORIST AND APPROVED BY CITY FORESTRY STAFF. THESE MAY INCLUDE THE PLACEMENT OF PLYWOOD, WOOD CHIPS, OR STEEL PLATING OVER THE ROOTS FOR PROTECTION OR THE PROPER PRUNING AND CARE OF ROOTS WHERE ENCOUNTERED.

THE CITY'S TREE PROTECTION BY-LAW, 2020-340 PROTECTS BOTH CITY-OWNED TREES, CITY-WIDE, AND PRIVATELY-OWNED TREES WITHIN THE URBAN AREA. PLEASE REFER TO WWW.OTTAWA.CA/TREEBYLAW FOR MORE INFORMATION ON HOW THE TREE BY-LAW APPLIES.

ACCESSIBLE FORMATS AND COMMUNICATION SUPPORTS ARE AVAILABLE, UPON REQUEST



TREE PROTECTION SPECIFICATION

TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE: NTS

DATE: MARCH 2021

DRAWING NO.: 1 of 1