

CYGNUS DEVELOPMENTS

TREE INVENTORY, ANALYSIS AND PRESERVATION REPORT



189-197 DUCKWORTH ST. BARRIE ONTARIO

LOTS 4, 5 AND 6 AND PART OF LOT 7
REGISTERED PLAN 1104
CITY OF BARRIE
COUNTY OF SIMCOE

JUNE 2021

PREPARED BY:

OUR FILE: LA 433-19



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1.0 Scope/Assignment:

The Landmark Environmental Group Ltd. (LEGroup) is retained by Cygnus Developments. to provide Consulting Arbor services on lands generally between Mountbatten Rd. and Napier St. on the east of Duckworth St. in the City of Barrie. The assignment is to prepare a Tree Inventory, Analysis and Preservation Plan & Report to support the zoning/site plan submission for a new residential development. LEGroup is requested to create a tree inventory, assessment and preservation report to assess the existing trees on the subject site and indicate those trees that can be preserved and the methods for protecting the same. Further, those trees that cannot be preserved either by poor or declining health, structural deficiencies or to facilitate the proposed development on the site, are indicated to be removed.

Specifically, LEG was assigned to provide the following services:

- Review site data including survey, concept drawings and to provide for a site visit and correspond with City staff and the Lake Simcoe Region Conservation Authority (LSRCA) as necessary;
- Conduct a field review to inventory tree specimens, tree groupings, boundary trees visually assessing and identifying the type, location, size and quality of any trees on site within the developable area and indicating the presence of any Butternut (in accordance with the *Endangered Species Act, 2007*);
- Provide a Tree Inventory, Assessment, and Preservation Report that sets out the methodology, observations, criteria, analysis and conclusions of our review and area conditions;
- Indicate on a Tree Inventory and Protection Plan, those trees that are suitable for preservation or removal and providing the methods of protecting the same;

It is the intent in the undertaking of this Report, to comply with the City of Barrie tree preservation policies and the requirements of the LSRCA.

2.0 Proposed Development:

The subject site is located at 189, 191, 195 and 197 Duckworth St. in the City of Barrie, and the entire site is approximately 0.31 ha in area.

The land uses adjacent to the proposed residential development are residential in each direction; Napier St. to the north, Duckworth St. to the west and beyond, and properties along Mountbatten Rd. to the south and east.

The proposed residential development is to be located within the limits of 189, 191, 195 and 197 Duckworth Street. The existing detached residences located at these addresses are proposed to be removed as a result of the development.

The limits of the Arborist study were confined to the lot areas within 189, 191, 195 and 197 Duckworth Street including trees that may be located adjacent to the rear property line of the addresses municipally known as 6 Mountbatten Road and 11 Napier Street.

This Tree Inventory, Analysis and Preservation Report is submitted in support of and accompany the zoning amendment and design submission (engineering, site plan) for the development as noted above.

Below, is an air photo illustrating the location of the subject site (red lines show the site boundaries)



Figure 1 Aerial of Subject Site and Surrounding Area (site boundary highlighted in red) (Courtesy Simcoe County GIS)

3.0 Method:

A summary of inventory, observations and assessments that were determined in the field can be found in **Appendix C** at the end of this Report.

The tree assessments were identified in accordance with the detailed typical criteria used in best arboricultural practices to indicate the merits of tree preservation including the species (*Latin* and common names), size diameter at breast height (DBH), maturity, biological health, structural concerns (if any), condition rating and recommendations for preservation or removal of existing specimen trees.

Condition ratings applied to overall tree assessments using the above-noted criteria range from 1 (poor) to 5 (excellent). Typically, those trees being assessed a condition rating of 1-3 are recommended for removal while those trees being assessed a condition rating of 4-5 are recommended for preservation unless there are extenuating circumstances regarding the development of the site. The criterion is also applied to assist in assessment of their potential for survival in-situ post construction.

For the purposes of this Report, only those trees over 10cm DBH were captured. No shrubs or low understory perennials were captured in the data.

Each tree was assigned a key number (1-27) and observations relating to each tree were tabulated in the Tree Inventory (**Appendix C**). Each tree is also located on a Tree Inventory and Preservation Map corresponding to the number assigned and can be seen in the Tree Inventory, Assessment and Preservation Plan as shown in drawings **EX-1, TP-1 and TP-2** in **Appendix B**.

4.0 Observations

LEGroup staff (Jared Grice) who is a qualified Arborist (ISA Certified Arborist ON-2562A) visited the subject site on two occasions (the latest being June 24, 2021) with the intent to review the trees on the site. Subsequently, LEGroup staff (C. Mordue) attended the site to provide an inventory and assessment of existing individual tree species present. The description below is a culmination of observations obtained

from site visits.

A total of 27 trees were observed at a DBH (diameter breast height) of equal to or greater than 10cm on the subject site and are recorded in **Appendix C**. The majority of these trees were located around the perimeter of the site with only a few located towards the centre (see **EX-1 & TP-1** in **Appendix B**). LEGroup staff also observed that the site ground has a relatively flat grade.

The following woody plant species were observed on the subject site during fieldwork:

Latin Name	Common Name	% Occurrence
<i>Acer negundo</i>	Manitoba Maple	11.1%
<i>Acer saccharum</i>	Sugar Maple	11.1%
<i>Acer platanoides</i>	Norway Maple	33.3%
<i>Betula alleghaniensis</i>	Yellow Birch	3.7%
<i>Fraxinus americana</i>	White Ash	7.4%
<i>Malus ssp</i>	Common Apple	3.7%
<i>Picea abies</i>	Norway Spruce	7.4%
<i>Picea glauca</i>	White Spruce	3.7%
<i>Picea pungens glauca</i>	Colorado Blue Spruce	3.7%
<i>Pinus strobus</i>	Eastern White Pine	3.7%
<i>Sorbus americana</i>	American Mountain Ash	3.7%
<i>Thuja occidentalis</i>	Eastern White Cedar	3.7%
<i>Ulmus pumila</i>	Siberian Elm	3.7%
Total (subject to rounding)		100.0%

Table 1 List of Observed Woody Plant Species on the Subject Site.

As shown in **Table 1** above, Norway Maple makes up the largest composition of trees at 33.3%, followed by Manitoba Maple and Sugar Maple each composing 11.1%. The next largest tree component observed was Norway Spruce and White Ash at 7.4%, followed by Yellow Birch, Common Apple, White Spruce, Colorado Blue Spruce, Eastern White Pine, Eastern White Cedar, American Mountain Ash, and Siberian Elm all at 3.7%.

LEGroup Staff observed that the trees appeared to be generally located along the property limits of each lot. Most of the assessed trees appeared to generally be in poor to fair condition, and LEGroup staff observed that most trees exhibited typical characteristics found within a residential yard habitat including dual leaders, exposed roots, lower branch pruning, trunk wounds, and defects due to their close proximity to fences (trunk rubbing/fences embedded in the trunk) as can be found in the **Tree Inventory Chart – Appendix C**.

Tree Nos. 1-3 (Manitoba Maple and Norway Maples) are located along the south property limit at Mountbatten Rd. along the City of Barrie boulevard, and are generally in poor to marginal condition. With a shed and driveway nearby in this area, it is suspected that the tree base has compacted soil.

Tree Nos. 4-7, 11, 12, 16-21, & 25 (White Spruce, Yellow Birch, Norway Maples, Sugar Maples, Manitoba Maples, and Norway Spruce) are located along the east property line of the subject site (existing fencing does not appear to be on the lot boundary), and exhibit characteristics/defects such as included bark, lower branch dieback, leans, and competition for sunlight. Trees Nos. 18, 19, 20 are located offsite, along the shared property line of 6 Mountbatten Street and Tree No. 21 is located on the property line. In addition, these trees that are located offsite of the existing lots, were observed to have interference from fences. This has contributed to trunk wounds, suckering, and interior decay in some cases.

Tree Nos. 9 & 10 are White Ash located near the centre of the site and show advanced signs of Emerald Ash Borer (EAB) infestation including significant dieback, bark necrosis, and D-shaped holes created by EAB larvae. These trees are both in poor condition, and are in significant decline.

Tree Nos. 14, 15, 22 & 24 are located near the centre of the site. Trees 14 & 22 (Siberian Elm and Manitoba

Maple) are in poor condition, with soil compaction (driveway) which is likely playing a large role in the decline of Tree No. 14. Trees 15 & 24 (Norway Spruce and Eastern White Pine) are in fair condition.

Finally, Tree Nos. 8, 13, 23, 26 & 27 (Norway Maples, Common Apple, American Mountain Ash, are located near the west (Duckworth St.) and north extents of the site. Tree No. 13 (Common Apple) is in poor condition, with three trunks extending from its basal flare as well as significant dieback, dead branches and bark necrosis. Trees Nos. 8, 23, 26 & 27 (Norway Maple, American Mountain Ash, Colorado Blue Spruce, and Eastern White Cedar) are generally in marginal to fair condition with defects including dual trunks, minor dieback, and branch pruning. Additionally, Tree No. 8 has a girdling root, a common defect among Norway Maples.

LEGroup staff did not encounter any Butternut (*Juglans cinerea*) on the subject parcel during the on-site inventory in accordance with the requirements of the *Endangered Species Act, 2007*.

5.0 Study Criteria

Tree observations were recorded individually, as set out in the Tree Inventory and Assessment Table (**Appendix C**), in accordance with the criteria established by common arboricultural practice including:

- ✓ Latin/Common Name of tree;
- ✓ Size (mm cal);
- ✓ Condition/Comments; and
- ✓ Recommendation for Preservation or Removal

Tree locations are on the Tree Inventory and Preservation Plan were recorded and adjusted however, the locations are approximate as shown on Drawing EX-1, TP-1 and TP-2 in **Appendix B**.

6.0 Analysis and Recommendations

6.1 Analysis

The following analysis criteria were generally applied to measure the merits of tree preservation:

- Species (including native & non-native)
- Size/Maturity
- Structure
- Health
- Location
- Areas of proposed development.

These criteria were applied to the tree assessments to determine the extent of preservation and removal. In addition, the criterion is applied to assist in assessment of their potential for survival in-situ post construction.

LEGroup staff are of the opinion that 16 of the 27 (Tree Nos. 1- 3, 9-17, 22-25) trees located on site are in poor to fair condition, conflict with the proposed development, and are of limited aesthetic value to be retained for the development. The majority of these trees are not significant in size and have defects as outlined in the Tree Inventory Table (**Appendix C**). Tree Nos. 9 & 10 are White Ash and show signs of significant decline due to advanced infestation of the Emerald Ash Borer. For this reason and the reasons listed above, it is our recommendation that these trees be removed.

Trees Nos. 11, 12, 16, 17 & 25 are located towards the east portion of the subject site, and conflict with the proposed parking lot/driveway and retaining wall. These trees are in marginal to fair condition with health

defects such as included bark, trunk wounds, corrected leans, enlarged basal flares, and branch pruning. For these reasons we recommend Trees Nos. 11, 12, 16, 17 & 25 be removed.

Tree No. 13 is in poor condition with significant dieback, dead branches and bark necrosis, and a large portion of its canopy and critical root zone will be impacted by the proposed development. Due to its condition, its lack of aesthetic appeal, and its low likelihood of survival post-construction, Tree No. 13 is recommended for removal.

Tree Nos 1, 2 & 3 are located along the shared property line of the City of Barrie's boulevard. For a tree to be considered a "Public Tree", a minimum of 50% of the main stem has to be located on City of Barrie Property (*By-law 2014-116*). LEGroup found that Tree Nos. 1, 2 & 3 do not have a main stem with more than 50% located on City of Barrie property and therefore are not considered Public Trees. Tree Nos. 1-3 are recommended for removal as a significant portion of their critical root zone will be impacted by the proposed sidewalk and they are not expected to survive post-construction. They were found to be in poor to marginal condition.

We note that eight (8) trees recorded to be over 10cm DBH are recommended for retention (Tree Nos. 4-8, 18, 19 & 20 as set out in **Appendix C**) due to their optimum location, buffering screening potential, and their moderate tolerance of in-situ post construction grading changes. These trees are located along the east property line of the proposed site, and are to be protected with tree preservation fencing as laid out in **TP-2**. Tree Nos. 4-7 are boundary trees and Tree Nos. 18, 19 & 20 are located offsite and will require a 'consent to harm' signoff from the adjacent neighbours.

In addition, there are two (2) trees (Tree No. 26 & 27) located onsite along the north property line, bordering 7 Napier Street (refer to **TP-1 & TP-2**). These trees are recommended for retention and are to be protected with tree preservation fencing as laid out in **TP-2**. With many of these trees proposed to have construction activities within their driplines, it is our recommendation that they be monitored during and post construction

6.2 Summary and Recommendations

In summary, as a result of a Zoning Amendment application for the above-noted site by Cygnus Developments, the City of Barrie has required that the developer submit a Tree Inventory and Preservation Report and Plan for their review.

The summarized recommendations are as follows:

- Trees Nos. 1 – 3, 9-17, 22, 24, & 25 on the proposed site are recommended for removal as shown on **TP-1 and TP-2 in Appendix B**;
- Trees Nos. 4 – 8, 18 – 21, 26, & 27 are to be retained and protected with tree preservation fencing as shown on **TP-2**, and to be monitored during and post construction;
- Provide tree preservation fencing at the tree dripline which represents the tree preservation zone (see dwg **LD-1, Appendix B**). Where tree preservation fencing cannot be established at the dripline, the tree preservation fence should be installed as far as practical from the trunk;
- That tree preservation signage (see dwg **LD-1, Appendix B**) be erected at the time of the hoarding installation (tree preservation fencing) attached to the preservation fencing;
- That eight (8) existing trees (Tree Nos. 4-7, & 18-21) located offsite and along the shared property line of 6 Mountbatten are recommended to obtain 'consent to harm' agreements from the respective neighbour;

- No equipment storage or refueling is to take place within the tree preservation zone as established by the preservation fencing;
- Tree preservation fencing is to be removed only after construction on the site is complete;
- Existing tree branching and roots encountered that conflicts with the development works may be lightly pruned and cut cleanly by qualified personnel;
- Removal of Trees should occur outside of breeding bird season (April 1 – August 30), if not possible, consultation with an ecologist preparing a nesting study is recommended prior to construction;
- For other preservation methods, please refer to the Tree Preservation Notes on drawing **LD-1** in **Appendix B**.

7.0 Arborist's Declaration

It is the policy of Landmark Environmental Group Ltd to attach the following clause regarding the limitations:

The Consulting Arborist's visual assessment and recommendations, made in this Report, have been completed based on accepted arboricultural practices and represents a fair and accurate assessment of the number, type, size and condition of trees on the subject property. Such visual assessments of all tree components could include scars, bark damage, external decay, insect infestations, discoloured foliage, crown dieback, an excessive degree of lean from the vertical and above-ground root defects. In addition, environmental conditions, which could affect overall health of the trees such as damaging maintenance practices, have also been taken into consideration where appropriate. However, no tree was dissected, cored or rooting systems assessed through excavation.

I hereby certify that I, James Hosick have:

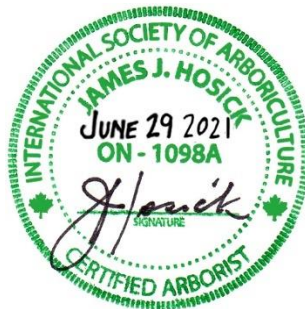
- Personally performed a visual inspection of the trees and property referred to in this letter report and have stated my findings accurately in accordance with accepted arboricultural practices without personal interest or bias;
- No current or prospective interest in the property that is the subject of this Report and have no personal interest or bias with respect to the parties involved;
- That my analysis, opinions and conclusions stated are my own and based on commonly accepted arboricultural practices;
- That my compensation is not contingent on the reporting of a predetermined conclusion that favours the client; and
- That I am a member in good standing with the International Society of Arboriculture (ISA) and the Ontario Association of Landscape Architects (OALA) and the American Association of Consulting Arborists (ASCA).

I trust the above-noted recommendations are of assistance. If there are any questions regarding the Tree Inventory, Analysis and Preservation Report for this proposed residential development at 191 Duckworth Street, Barrie, please do not hesitate to contact our Firm at (705) 796-1122.

Prepared by,



Jim Hosick, OALA, ISA
Landscape Architect-Principal,
ISA Certified Arborist No. 1098-A
MNR Butternut Health Assessor # 451
Landmark Environmental Group Ltd



Prepared by



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8.0 Glossary of Arboricultural Terms

Adventitious – arising from parts of the root of stem and having no connection to apical meristems.

Arboriculture – practice and study of the care of trees and other woody plants in the landscape.

Bleeding – flow of sap from plant wounds, injuries, or pathogen invasion.

Boundary Tree – Tree whose trunk is located on the property line of two separate properties.

Branch – stem arising from a larger stem. A subdominant stem.

Canopy – collective branches and foliage of a tree or a group of trees' crowns.

Cavity – open or closed hollow within a tree stem, usually associated with decay.

Chlorosis – whitish or yellowish leaf discolouration caused by lack of chlorophyll. Often caused by nutrient deficiency.

Co-dominant branches/stems – forked branches nearly the same size in diameter, arising from a common junction and lacking a normal branch union.

Conk – fruiting body or non-fruiting body (sterile conk) of a fungus. Often associated with decay.

Crown – upper part of the tree, measured from the lowest branch, including all the branches and foliage.

DBH – acronym for tree diameter at breast height. Measured 1.4 meters above ground.

Dieback – condition in which the branches in the tree crown die from the tips toward the centre.

Drip-line – imaginary line defined by the branch spread of a single plant or group of plants.

Epicormic Shoot – Shoot arising from a latent or adventitious bud (growth point).

Girdling Root – root that encircles all or part of the trunk of a tree or other roots and constricts the vascular tissue and inhibits secondary growth and the movement of water and photosynthates.

Included Bark – bark that becomes embedded in a crotch (union) between branch and trunk or between codominant stems. Causes a weak structure.

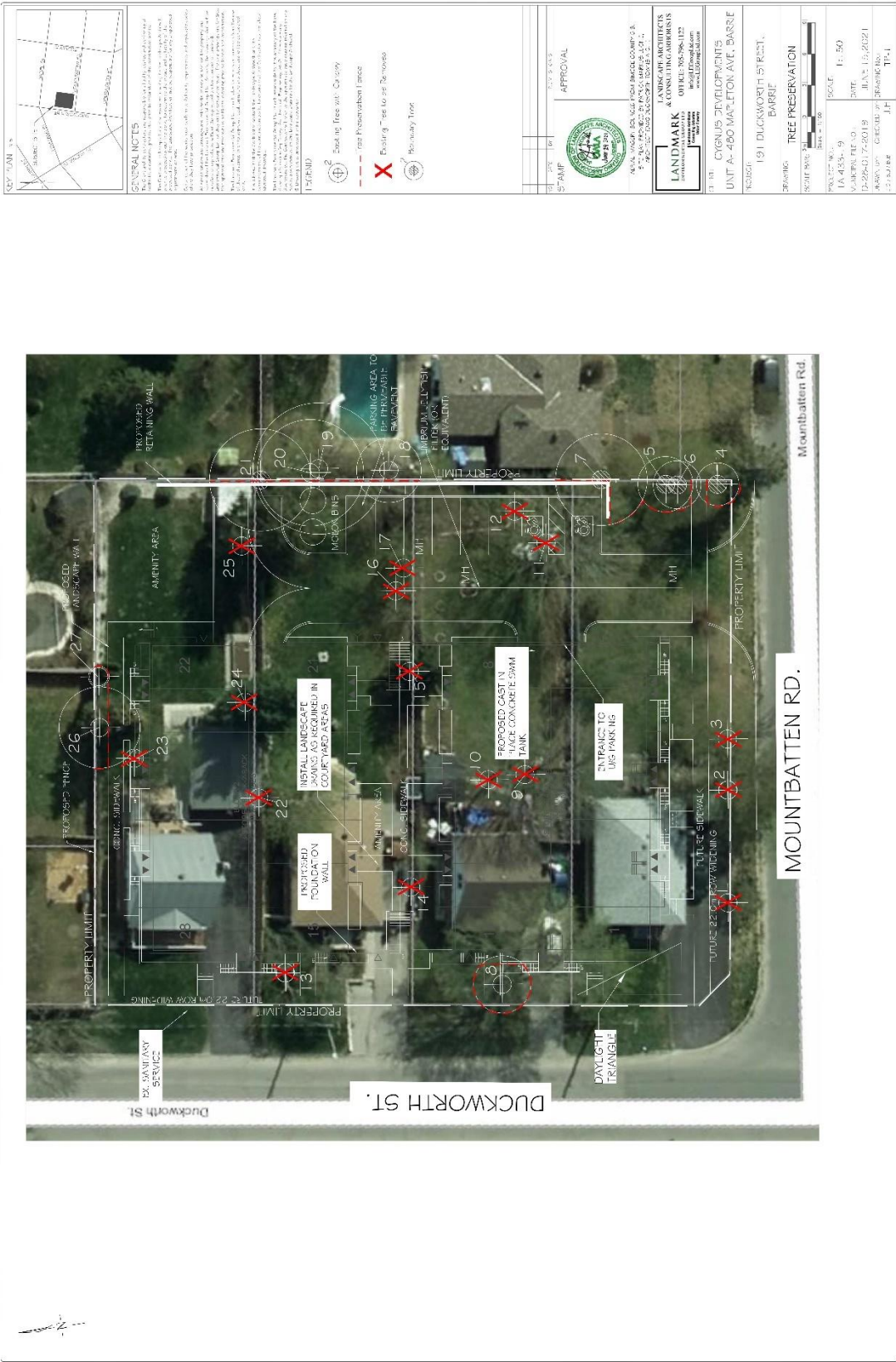
Interior Decay – Moisture or fungus that has entered a wound in a tree and has begun to rot away the internal, structural wood.

Leader – primary terminal shoot or trunk of a tree. Large, usually upright stem. A stem that dominates a portion of the crown by suppressing lateral branches.

Pruning – removing branches from a tree or other plants to achieve a specified objective.

Tree Protection Zone (TPZ) – Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, especially during construction or development.

Appendix B: Tree Inventory, Assessment and Preservation Plan (TP-1)



[illegible]

Appendix C: Tree Inventory and Assessment Table

Key	Latin Name	Common Name	Tree DIA (cm dbh)	Notes	Assessment	Canopy Radius (m)	Canopy Radius (m ²)	Remove/ Preserve
1	<i>Acer negundo</i>	Manitoba Maple	26.7	dual leader, one dead, significant pruning, competition with tree no 2	1 Poor	3.5	38.5	Remove
2	<i>Acer platanoides</i>	Norway Maple	57	dual leaders, leaf scorch/dessication, included bark, exposed basal flare	2 Marginal	8.3	216.3	Remove
3	<i>Acer platanoides</i>	Norway Maple	40.8	dual leaders, included bark, suspected interior decay, branch crossover, significant dieback	1 Poor	6.1	116.8	Remove
4	<i>Picea glauca</i>	White Spruce	41.4	exposed roots, lower branch pruning, sap bleeding, dieback	2 Marginal	4.1	52.8	Preserve
5	<i>Acer platanoides</i>	Norway Maple	18.2, 22.5	dual trunk, competition with tree no. 6, minor leaf dessication, one sided branching	2 Marginal	5.3	88.2	Preserve
6	<i>Acer platanoides</i>	Norway Maple	23.6	winding trunk, one sided branching, minor leaf dessication	2 Marginal	4.6	66.4	Preserve
7	<i>Acer saccharum</i>	Sugar Maple	13.6, 20.1	dual trunk, vines, included bark	3 Fair	4.4	60.8	Preserve
8	<i>Acer platanoides</i>	Norway Maple	71.5	dual leaders, girdling roots, utility wires, branch pruning	3 Fair	5.5	95.0	Preserve
9	<i>Fraxinus americana</i>	White Ash	43.1, 42.4	significant dieback, advanced EAB, bark necrosis	1 Poor	6.0	113.0	Remove
10	<i>Fraxinus americana</i>	White Ash	42.5	dual leaders, advanced EAB, significant dieback, bark necrosis	1 Poor	5.5	95.0	Remove
11	<i>Acer saccharum</i>	Sugar Maple	70.1	debris piled at base, included bark in main leader	3 Fair	8.7	237.7	Remove
12	<i>Betula alleghaniensis</i>	Yellow Birch	12	large trunk wound, gall, suspected interior decay	2 Marginal	2.7	22.9	Remove
13	<i>Malus ssp</i>	Common Apple	25.0, 34.2, 38.1	triple trunk, bark necrosis, significant dieback, dead branches	1 Poor	5.5	95.0	Remove
14	<i>Ulmus pumila</i>	Siberian Elm	14	exposed root, enlarged basal flare, branch pruning, compacted soil	1 Poor	2.7	22.9	Remove
15	<i>Picea abies</i>	Norway Spruce	28	minor sap bleeding, minor branch pruning	3 Fair	3.3	34.2	Remove
16	<i>Acer platanoides</i>	Norway Maple	20.5	corrected lean, minor leaf dessication, lower branch dieback	3 Fair	4.5	63.6	Remove
17	<i>Acer platanoides</i>	Norway Maple	est 15.0, 19.0	dual leaders [conjoined], suspected interior decay, trunk crossover, trunk wounds	2 Marginal	4.0	50.2	Remove
18	<i>Acer platanoides</i>	Norway Maple	22.1	enlarged basal flare, winding trunk	3 Fair	3.1	30.2	Preserve
19	<i>Acer saccharum</i>	Sugar Maple	30.6	rubbing on fence, dual leaders, large wound/cavity, included bark, suspected interior decay	2 Marginal	6.3	124.6	Preserve
20	<i>Acer platanoides</i>	Norway Maple	32.8	lower branch dieback, minor lean	3 Fair	5.1	81.7	Preserve
21	<i>Acer negundo</i>	Manitoba Maple	28.6, 18.0, 22.4	triple trunk, suckering, lower branch dieback, embedded fence, bark necrosis	1 Poor	4.9	75.4	Preserve
22	<i>Acer negundo</i>	Manitoba Maple		triple trunk, one dead [conks], minor lean, suspected interior decay	1 Poor	6.4	128.6	Remove
23	<i>Sorbus americana</i>	American Mountain Ash	34.5	multiple leaders, minor dieback	3 Fair	5.1	81.7	Remove
24	<i>Pinus strobus</i>	Eastern White Pine	54.1	minor winding trunk, broken branch, minor branch pruning	3 Fair	5.2	84.9	Remove
25	<i>Picea abies</i>	Norway Spruce	45.3	minor sap bleeding	3 Fair	6.0	113.0	Remove
26	<i>Picea pungens glauca</i>	Colorado Blue Spruce	36.2	lower branch pruning, moderate dieback	2 Marginal	3.9	47.8	Preserve
27	<i>Thuja occidentalis</i>	Eastern White Cedar	12.0, 14.0	dual trunk	3 Fair	1.0	3.1	Preserve

Appendix D: Selected Site Photos



Photo A: View looking from west to east at trees 1-3 with compacted soil, adjacent to driveway on Mountbatten Rd.



Photo B: Showing Trees 4-7 to be retained at the rear lot line.



Photo C: Showing Trees 9 & 10 with advanced Emerald Ash Borer infestation.



Photo D: Showing Tree 27 with dual trunks to be retained.

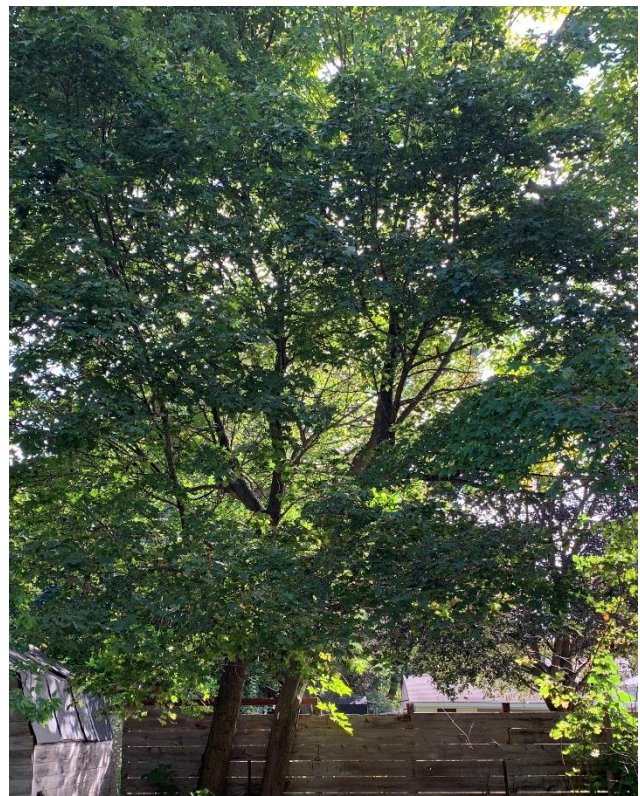


Photo E: Showing Trees 19 & 20 to be retained.