PRE-CONSTRUCTION ARBORIST REPORT

May 5th, 2020

Prepared for:

Siva Kumar
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Site:

2477 Queensway Drive
Burlington, ON

Prepared by:

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Introduction

Glenwood Tree Service Inc. has been contracted by Siva Kumar to prepare an arborist report in preparation for proposed construction at 2477 Queensway Drive, Burlington. The purpose of the report is to provide a plan for tree preservation for all trees located on site that are at risk due to the proposed construction. Chris Tiseo, Ontario Arborist no. 400949814 conducted field observations, including tree inventory, risk assessment and photograph collection on October 3rd, 2016

Assignment

The plot located at the above address is currently not in use. The intended use in the future is for a Montessori school. The existing heritage building located at the above address will be preserved and a new, two story structure will be constructed in the south east area of the lot. As well as the new structure, new parking areas and driveways will also be built. A two storey addition will be added to the existing structure. Glenwood Tree Service Inc. was required to conduct a tree inventory and prepare a pre-construction arborist report in relation to the proposed construction work at the site.

The components of the assignment are as follows:

- Conduct a tree inventory of all trees affected by the proposed development, assess their condition and determine if they are suitable for preservation
- Determine the risk posed by the proposed development to all surveyed trees
- Provide recommendations for preservation for all surveyed trees

Limitations

Glenwood Tree Service Inc. is the assessor of the trees in regards to tree preservation practices as it relates to the most current tree protection by-laws. The client and the construction supervisors should incorporate the information and recommendations provided within this report into their construction methodology to complete their project in a reasonable manner.

Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however Glenwood Tree Service Inc. can neither guarantee nor be responsible for the accuracy of information provided by others.

Field Observations

The subject property is located at the corner of a busy intersection of central Burlington, at Guelph Line and Queensway Drive. It is the only property located on the north side of Queensway Drive.
The site and field observations were made on October 3rd, 2016 by Chris Tiseo, Ontario Arborist (#400949814) of Glenwood Tree Service Inc. There are thirty seven (37) individual privately owned trees, eleven (11) municipally owned trees as well as four (4) groupings of privately owned trees that will be involved with the proposed project.

The tree species encountered on this site include: *Malus sp.* (Crabapple), *Morus alba* (White Mulberry), *Fraxinus pennsylvanica* (Green Ash), *Taxus sp.* (Yew), *Robinia pseudoacacia* (Black Locust), *Gleditsia triacanthos 'inermis'* (Thornless Honeylocust), *Betula pendula* (Silver Birch), *Juglans nigra* (Black Walnut), *Euonymus alatus* (Burning Bush), *Picea abies* (Norway Spruce), *Picea mariana* (Black Spruce), *Picea pungens* (Colorado Blue Spruce), *Juniperus virginiana* (Eastern Juniper), *Thuja occidentalis* (Eastern White Cedar), *Acer palmatum* (Japanese Maple) and *Syringa vulgaris* (Common Lilac).

The condition of the subject trees varies greatly, with some trees in overall good health, some in need of maintenance and some completely dead.

There were no tree species encountered on site that were listed under the Canadian Species At Risk Act, 2002 or the Ontario Endangered Species Act, S.O. 2007.

Methodology

A total of forty eight (48) trees and four (4) tree groupings were inventoried for this report.

The trees that were inventoried for this report have been assessed documenting tree number, botanical and common names, ownership, condition, and size using standard arboriculture practices. The diameter of each tree was measured at 1.37 metres above existing grade using an arborist tape measure and recorded in centimetres (cm) as Diameter at Breast Height (DBH). The trees inventoried in this report were not tagged.

The other information gathered from field observations to aid in assessing the tree protection and/or preservation measures may have included any of the following, but not restricted to: tree height, crown spread, age, predicted longevity, health, form, proximity to construction activity, elevation of tree base, lowest elevation of crown branches, crown structure if trees are closely space, and overall landscape value.

Tree Inventory and Assessment

The tree inventory and assessment is provided in chart form in Appendix I. Site photographs of the trees and site are illustrated in Appendix III. Refer to the Tree Protection Plan (TPP) in Appendix II accompanying this report for specific tree locations.

A brief explanation of the assessment categories follows:

Tree Number (No.): This number refers to the identification number assigned to the tree and corresponding number on the Tree Protection Plan indicating location of the tree.

Botanical name: The internationally recognized scientific nomenclature for each tree.

Common name: The common (English) name in Ontario for each tree.

DBH: Diameter at Breast Height. The diameter of the tree's trunk in centimetres at a height of 1.37 metres above grade. For multi-stemmed trees, the diameter of each stem will be measured and added together to determine the overall DBH. Stems that contribute less to the canopy of the tree will have their measurement adjusted accordingly.

Dripline: The area defined by the outermost circumference of the tree's canopy, where water drips from and onto the ground.

Category: The inventoried trees were placed into one of the following categories: 'Private' for each privately owned client tree, 'Neighbour' for each privately owned neighbour's tree, 'Shared' for every privately owned boundary tree shared between client & neighbour and 'City' for every municipally owned tree.

Condition: The overall condition of the tree based on health, structural integrity, tree age and life expectancy. This is measured on a scale of Good, Fair, Poor & Dead.

Comments: These are specific and relevant comments related to the structure or health of the tree and related field observations.

Risk: The risk posed to the health of the tree due to planned construction. H = High, M = Medium, L = Low

TPZ: Tree Protection Zone (TPZ) establishes a strategy to preserve the health of trees during construction. Preservation recommendations in this category reflect the Tree Protection Zone (TPZ) requirements as set out by the City of Burlington's Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A). TPZ distances (in metres) are to be measured from the outer edge of the tree base towards the drip line and may be limited by an existing paved surface, provided that surface remains intact throughout the site alteration.

Recommendation: This is the recommendation whether to Protect (P), Protect with minor injury (PI), Remove (R), or Remove dead, dying , or hazard tree (RX) based on all assessment

categories and proposed development information provided.

Recommendations

The recommendations in this section were determined after review of the condition of the trees, analysis of the existing site conditions, and review of the proposed development.

Trees to be Preserved

There are twelve (12) trees inventoried in this report that are recommended for protection. All trees to be preserved are to be protected by hoarding per City of Burlington standards and as shown on an Urban Forestry approved Tree Protection Plan to ensure successful preservation. Several of these trees are in fair to poor condition and are recommended for maintenance pruning.

Trees to be Removed

There are a total of thirty two (32) trees and Four (4) tree groupings inventoried in this report that are recommended for removal. The majority of these trees are in conflict with the proposed construction and are mostly in fair to poor condition.

Tree Preservation Guidelines

Trees are particularly susceptible to injury on construction sites due to the invasive nature of construction activities such as foundation excavation, grading, storage of excavated soil or building materials and physical injury from construction equipment. Tree roots that are cut or removed during an excavation hamper a tree's ability to obtain nourishment. Removed roots may also significantly impair the structural integrity of a tree. Soil compaction squeezes out pockets of oxygen in the soil thereby starving the roots of the oxygen necessary to survive. Bark injuries from construction equipment interfere with the delivery of nutrients to the tree as well as provide an entry point for pests and disease. Tree root systems damaged in these ways result in tree decline and mortality. (See Fig.2)

It is necessary, therefore, to take precautions that will minimize the impact of the planned construction activities and maximize the trees' ability to thrive. This can be achieved provided the site developer follows a tree protection plan that includes the establishment of a tree protection zone, root pruning according to proper arboriculture standards, and monitoring of the work site by an arborist to ensure compliance with the tree protection plan.

All trees recommended for preservation in the tree inventory should be contained within a Tree Protection Zone (TPZ). The purpose of the TPZ is to maintain the structural integrity of the tree's anchor roots based on generally accepted arboricultural principles. The minimum TPZ has been determined in accordance with the City of Burlington's Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A).

Tree #36 is located along the southern wall of the current structure which is an area where no construction activity will be taking place. A TPB will be erected 4m from the base of tree #36 on all sides, excluding the side against the wall.

All municipally owned trees to be preserved must be protected within a tree protection barrier. If any excavation, grade change or any other construction activity is to take place within the Minimum Tree Protection Zones of these trees, this work must be undertaken under the supervision of a certified arborist so that correct root pruning can be performed as necessary.

Please see the TPP in **Appendix II** for detailed locations of all proposed TPZs.

<u>Phase I: Pre-Construction</u>

- Prior to construction, the trees to be preserved shall be protected with a tree protection barrier. (See Figure 1 – Tree Protection Barriers). The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2" x 4" frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used.
- All supports and bracing used to safely secure the barrier should be located outside the Tree Protection Zone (TPZ). All supports and bracing should minimize damage to roots.
- The fence is to be installed along the edge of the tree protection zones. This hoarding is to remain in place and remain in good condition throughout the entire duration of the project. Dismantling the tree protection barrier prior to approval by the City of Burlington, Urban Forestry staff may constitute a contravention to the City of Burlington bylaw or permit issue.
- The applicant shall notify the City of Burlington and the Certified Arborist to confirm that the tree protection barriers are in place.
- A sign with a minimum size of 25cm x 35cm must be affixed to all sides of the Tree Protection Barrier for the duration of the project. The signs should be made of white gator board or equivalent material. The sign should be similar to the below image:

- Where some fill or excavated material must be temporarily located near a TPZ, a wooden barrier must be used to ensure no material enters the TPZ.
- Remove any garbage and foreign debris from the tree protection zones.
- All contractors should be informed of the tree preservation and protection measures at a pre-construction meeting.

Phase II: During Construction

- All areas within the protective hoarding shall remain undisturbed for the duration of construction. There will be no grade changes, dumping, and storage of any materials, structures or equipment within these areas. The tree protection barrier must not be removed without written authorization of the City of Burlington.
- Minor grading works will be permitted at the edge of the preservation zone as required to correct localized depressions adjacent to the new development. This work to be undertaken under the direct supervision of a Certified Arborist.
- A qualified Arborist will undertake proper root pruning in accordance with acceptable arboriculture practices when and if roots of retained trees are to be exposed, damaged, or severed by construction work. The exposed roots will be backfilled with appropriate material as soon as possible to prevent desiccation. Root pruning prior to excavation will help prevent unnecessary damage to tree roots.
- The City of Burlington and the Certified Arborist must be notified for all work that impacts the tree preservation zones or for temporary removal of a section of hoarding

to gain access for fine grading or other works. All works to be supervised by the City of Burlington and/or Certified Arborist.

- No cables, wire or ropes of any kind shall be wrapped around or installed in trees to be preserved.
- No contaminants will be dumped or flushed in the TPZ areas or where feeder roots of trees exist (generally beyond the TPZ areas).
- Water tree protection zones during drought conditions, June to September to reduce drought stress.
- Inspect the site daily to ensure hoarding is in place and in good condition. Inspect trees to monitor condition.

Phase III: Post Construction

- Following the completion of all site works, and after review by the Certified Arborist and approval by the City of Burlington Urban Forestry staff, the protective hoarding may be removed.
- After removal of the protective hoarding, the tree preservation areas shall be inspected by the Certified Arborist and City of Burlington Urban Forestry staff. Any remaining dead, diseased, or hazardous limbs or trees are to be removed by a qualified Arborist.

Conclusion

Twelve (12) of the trees inventoried and assessed are suitable candidates for preservation.

Tree Protection Barriers will be erected as shown on the TPP in **Appendix II**. The Tree Protection Barriers should be erected as outlined in the previous section of this report and be affixed with sufficient signage.

It is the author's opinion that if the above tree preservation recommendations are implemented, including erecting Tree Protection Barriers in accordance with the information provided in this report, the proposed demolition and construction will not adversely affect the long-term health, safety and condition of all trees scheduled for preservation.

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Appendix I: Tree Inventory and Assessment

No.	Botanical Name	Common Name	DBH (cm)	Dripline(m)	Category	Condition	Comments	Risk	Recommendation	TPZ (distance in metres)
1	*Malus sp.*	Crabapple	21	3	Private	Fair	Watershoots. In conflict with proposed construction.	H	R	N/A
2	*Malus sp.*	Crabapple	17	2.2	Private	Fair	Watershoots. In conflict with proposed construction.	H	R	N/A
3	*Malus sp.*	Crabapple	14	1.5	Private	Poor	In decline. In conflict with proposed construction.	H	R	N/A
4	*Picea abies*	Norway Spruce	15	1.7	Private	Fair	Deadwood. Damaged bark. In conflict with proposed construction.	H	R	N/A
5	*Betula pendula*	Silver Birch	19.5	2	Private	Poor	Significant dead portions. In conflict with proposed construction.	H	R	N/A
6	*Juglans nigra*	Black Walnut	14	2.1	Private	Poor	Deadwood. Infected with Walnut anthracnose. In conflict with proposed construction.	H	R	N/A
7	*Euonymus alatus*	Burning Bush	N/A	1	Private	Poor	Mostly dead. In conflict with proposed construction.	H	R	N/A
8	*Picea pungens*	Colorado Blue Spruce	30	2	Private	Fair	Lower deadwood. In conflict with proposed construction.	H	R	N/A
9	*Malus sp.*	Crabapple	45	2	Private	Dead	100% dead. In conflict with proposed construction.	H	R	N/A
10	*Robinia*	Black Locust	47	4	Private	Fair	Significant deadwood. In	H	R	N/A

	pseudoacacia						conflict with proposed construction.			
11	*Robinia pseudoacacia*	Black Locust	30	3	Private	Fair	Significant deadwood. In conflict with proposed construction.	H	R	N/A
12	*Robinia pseudoacacia*	Black Locust	34	3.8	Private	Fair	Significant deadwood. In conflict with proposed construction.	H	R	N/A
13	*Morus alba*	White Mulberry	14.5	1.6	Private	Poor	Deadwood. Poor structure. In conflict with proposed construction.	H	R	N/A
14	*Robinia pseudoacacia*	Norway Spruce	34	4	Private	Fair	Considerable dead due to proximity to tree #10	H	R	N/A
15	*Robinia pseudoacacia*	Black Locust	71	3.5	Private	Poor	Broken top. Deadwood. In conflict with proposed construction.	H	R	N/A
16	*Robinia pseudoacacia*	Black Locust	30	2.1	Private	Poor	Broken stem. Deadwood. In conflict with proposed construction.	H	R	N/A
17	*Robinia pseudoacacia*	Black Locust	101	6	Private	Poor	Split at main union. Large cavity. Major deadwood. In conflict with proposed construction.	H	R	N/A
18	*Robinia pseudoacacia*	Black Locust	25	3	Private	Poor	Significant deadwood. Broken limbs. In conflict with proposed construction.	H	R	N/A
19	*Robinia pseudoacacia*	Black Locust	19	2	Private	Dead	100% dead. In conflict with proposed construction.	H	R	N/A
20	*Robinia pseudoacacia*	Black Locust	41	3	Private	Poor	Significant deadwood. Broken top. In conflict with proposed construction.	H	R	N/A

21	*Robinia pseudoacacia*	Black Locust	36	3	Private	Poor	Significant deadwood. In conflict with proposed construction.	H	R	N/A
22	*Robinia pseudoacacia*	Black Locust	17	2.3	Private	Fair	Deadwood. Broken branches. In conflict with proposed construction.	H	R	N/A
23	*Gleditsia triacanthos 'inermis'*	Thornless Honeylocust	30	3	Private	Fair	Suckers and watershoots. Deadwood. Poor structure. In conflict with proposed construction.	H	R	N/A
24	*Robinia pseudoacacia*	Black Locust	82	5.5	Private	Poor	Cavity. Broken limbs. Deadwood. Not viable to maintain	L	R	N/A
25	*Robinia pseudoacacia*	Black Locust	25	2	Private	Poor	Broken stem. Broken top. Not viable to maintain.	L	R	N/A
26	*Robinia pseudoacacia*	Black Locust	38	3	Private	Poor	Dead top. Significant deadwood. Not viable to maintain.	L	R	N/A
27	*Malus sp.*	Crabapple	13	1.5	Private	Fair	Poor location close to wall. Undesirable species.	M	R	N/A
28	*Robinia pseudoacacia*	Black Locust	34	2	Private	Fair	Deadwood. Poor location against wall.	M	R	N/A
29	*Robinia pseudoacacia*	Black Locust	132	5	Private	Fair	Significant deadwood. Unsuitable species for children's play area	L	R	N/A
30	*Thuja occadentalis*	Eastern White Cedar	15	1	Private	Good	In conflict with proposed construction.	H	R	N/A
31	*Picea mariana*	Black Spruce	37	2.5	Private	Poor	Significant dead. In conflict with proposed construction.	H	R	N/A
32	*Robinia pseudoacacia*	Black Locust	30	3	Private	Fair	Deadwood. In conflict with proposed construction.	H	R	N/A
33	*Picea abies*	Norway	50	3.5	Private	Good	Recommend elevation	M	R	N/A

		Spruce					and trimming away from house.			
34	*Thuja occadentalis*	Eastern White Cedar	7.5	0.5	Private	Fair	Deadwood	L	R	N/A
35	*Thuja occadentalis*	Eastern White Cedar	8	1	Private	Fair	Deadwood	L	R	N/A
36	*Syringa vulgaris*	Common Lilac	32	1.5	Private	Good		L	P	4
37	*Acer palmatum*	Japanese Maple	28	1.4	Private	Fair	In conflict with proposed construction.	H	R	N/A
38	*Junglans nigra*	Black walnut	33	3	City	Fair	Will need to be elevated for new building	L	P	2.4
39	*Ulmus pumila*	Siberian elm	59	4	City	Fair	Will need to be elevated for new building	L	P	3.6
40	*Morus alba*	White mulberry	12	3	City	Fair	Will need to be elevated for new building	L	P	2.4
41	*Juglans nigra*	Black walnut	29	3	City	Fair	Will need to be elevated for new building	L	P	2.4
42	*Robinia pseudoacacia*	Black locust	56	2.5	City	Poor	Deadwood; Decay	L	P	3.6
43	*Acer negundo*	Manitoba maple	35	4	City	Fair	Stem going over fence will need to be removed	L	P	2.4
44	*Robinia pseudoacacia*	Black locust	8	1	City	Fair		L	P	1.8
45	*Ulmus pumila*	Siberian elm	27	2	City	Fair		L	P	2.4
46	*Robinia pseudoacacia*	Black locust	5	0.5	City	Fair		L	P	1.8
47	*Robinia pseudoacacia*	Black locust	12	1.5	City	Fair		L	P	2.4
48	*Ulmus pumila*	Siberian elm	26	2	City	Fair		L	P	2.4

Tree Grouping Inventory:

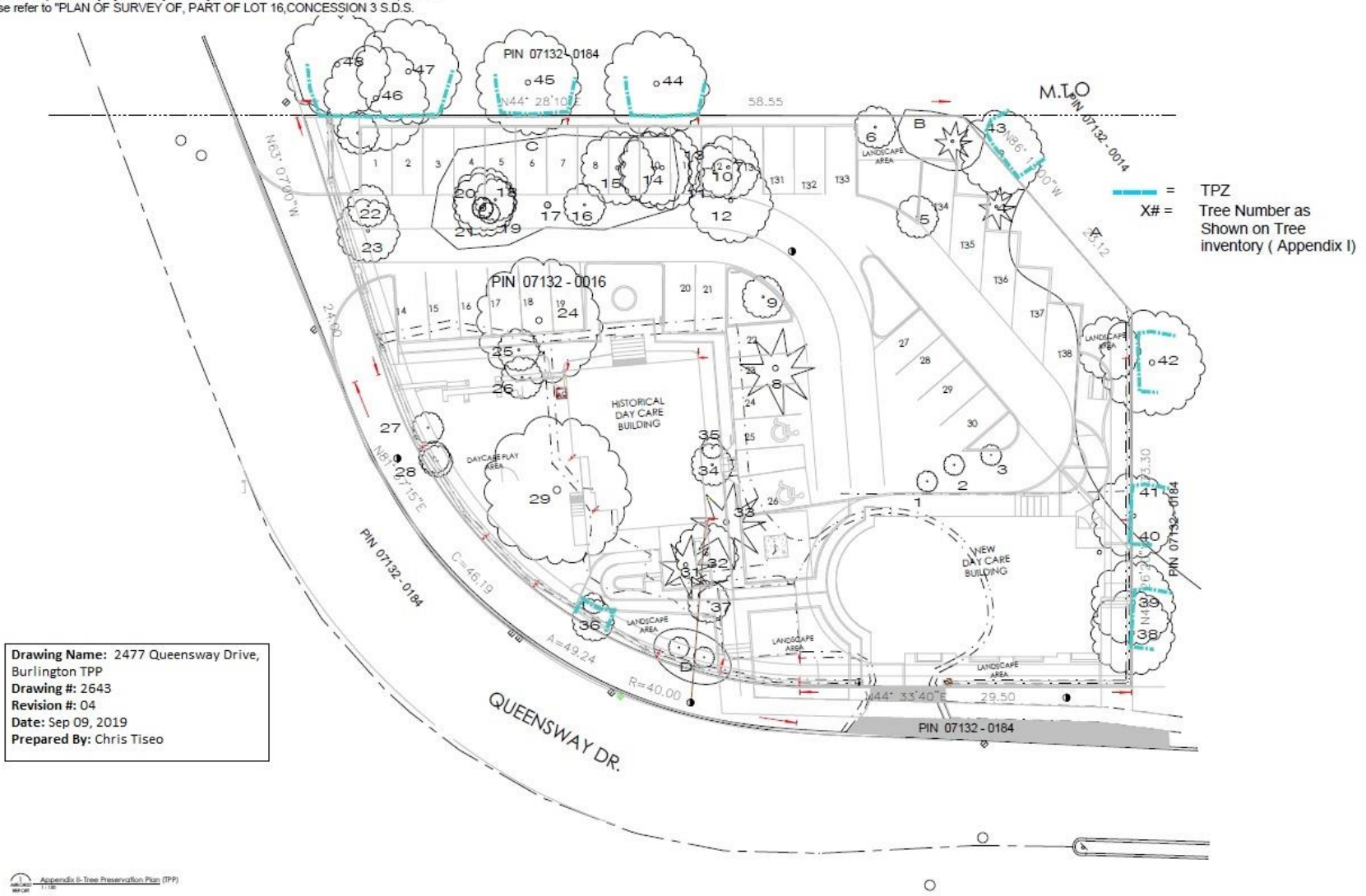
Tree Grouping	Dominant Species	DBH Range	Category	Condition	Comments	Risk	Recommendation
A	*Robinia pseudoacacia; Morus alba; Taxus sp.; Fraxinus pennsylvanica*	5-21	Private	Fair	Ash infected with EAB. Dead stem on Mulberry. Overall grouping overcrowded. In conflict with proposed development	H	R
B	*Robinia pseudoacacia; Picea pungens; Juniperus virginiana*	3-19	Private	Fair	Junipers overgrown and in decline; overall grouping overcrowded. In conflict with proposed construction	H	R
C	*Robinia pseudoacacia; Morus alba; Acer ginnala*	3-18	Private	Poor	Considerable dead in all trees and shrubs. Grouping extremely crowded and overgrown. In conflict with	H	R

					proposed development		
D	*Robinia pseudoacacia; Morus alba*	4-16	Private	Poor	Deadwood. Overcrowded. Invasive species encroaching on more desirable species in area	L	R

Appendix II: Tree Preservation Plan (TPP)

sc: 1:150

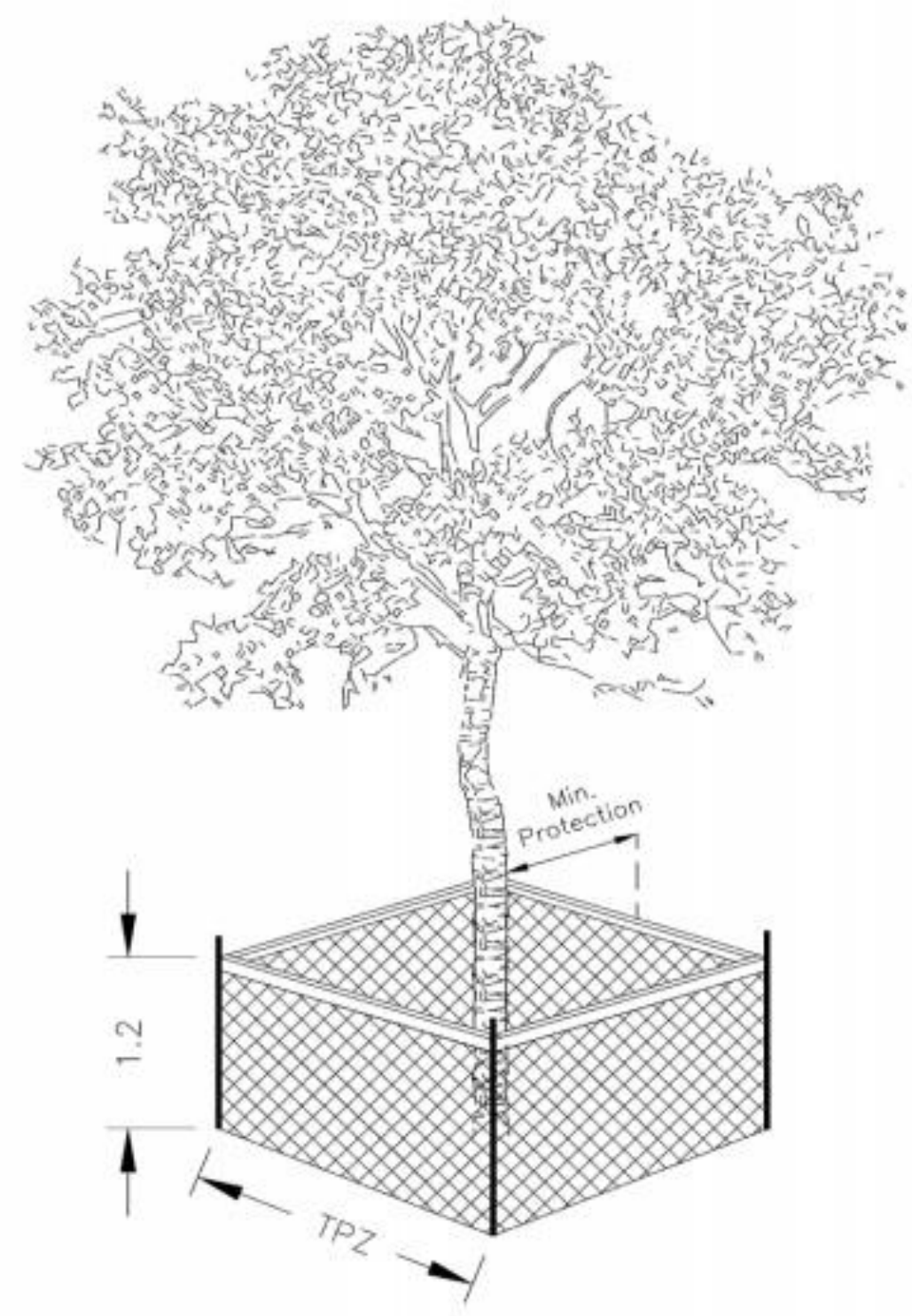
Tree location per Survey by "Mackay Mackay & Peters Limited" Dated " Feb 2nd, 2017"-
Please refer to "PLAN OF SURVEY OF, PART OF LOT 16,CONCESSION 3 S.D.S.



Drawing Name: 2477 Queensway Drive, Burlington TPP
Drawing #: 2643
Revision #: 04
Date: Sep 09, 2019
Prepared By: Chris Tiseo

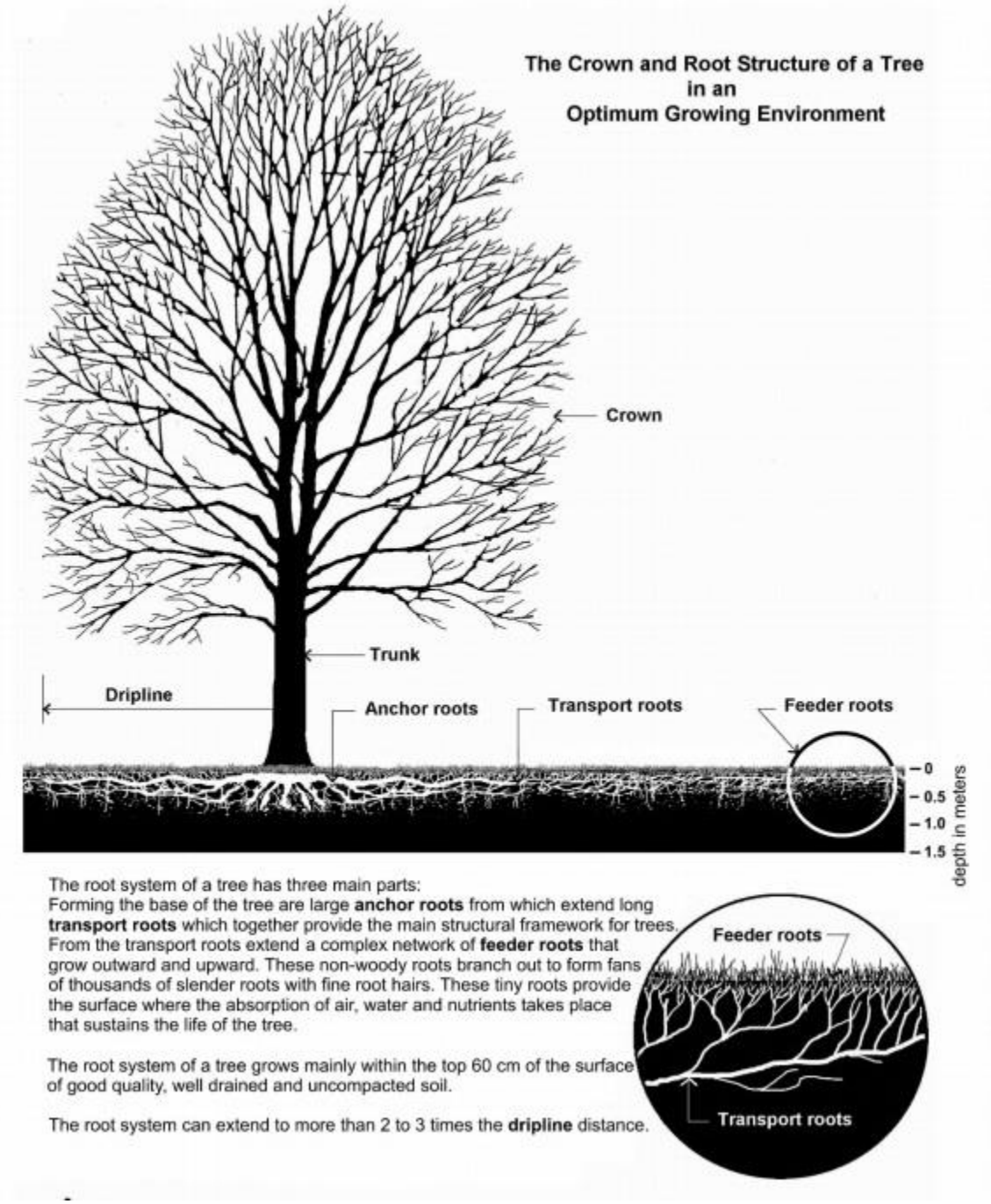
Appendix II- Tree Preservation Plan (TPP)

FIGURE #1



Tree Proection Zone (TPZ)

FIGURE #2


The Crown and Root Structure of a Tree
in an
Optimum Growing Environment
Crown
Trunk
Dripline
Anchor roots
Transport roots
Feeder roots
0
0.5
1.0
1.5
depth in meters
The root system of a tree has three main parts:
Forming the base of the tree are large **anchor roots** from which extend long **transport roots** which together provide the main structural framework for trees. From the transport roots extend a complex network of **feeder roots** that grow outward and upward. These non-woody roots branch out to form fans of thousands of slender roots with fine root hairs. These tiny roots provide the surface where the absorption of air, water and nutrients takes place that sustains the life of the tree.
The root system of a tree grows mainly within the top 60 cm of the surface of good quality, well drained and uncompacted soil.
The root system can extend to more than 2 to 3 times the **dripline** distance.
Feeder roots
Transport roots

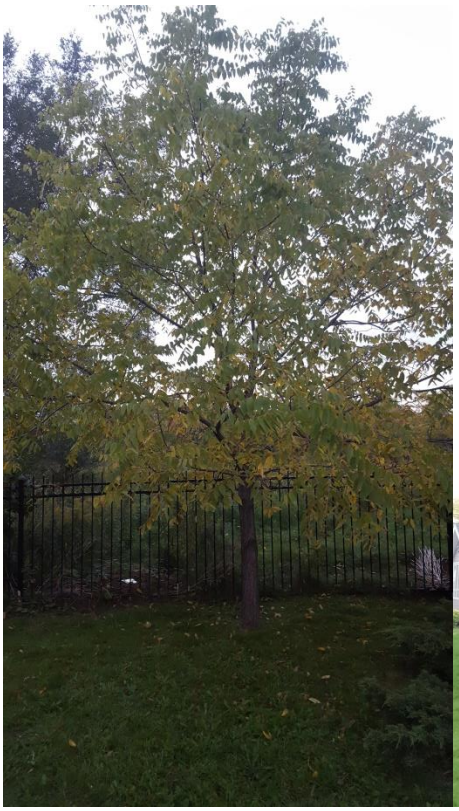
APPENDIX III: Digital images of subject trees

Below: Trees #1-#3

Below: Tree #5

Below: Tree #4

Below: Tree #6

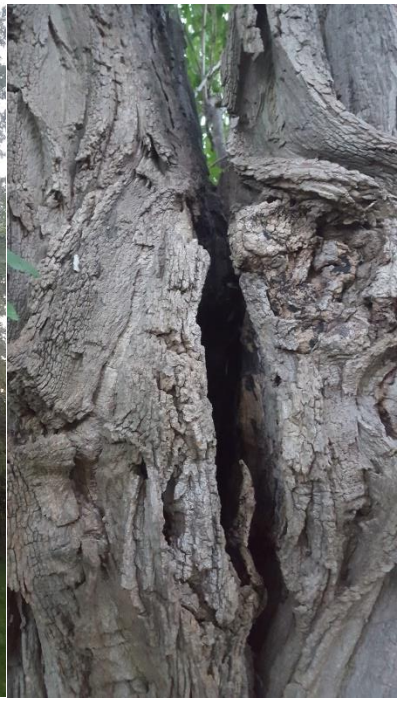


Below: Tree #8

Below: Tree #9

Below: Trees #14, #15, #16

Below: Tree #17



Below: Trees #18, #19, #20, #21

Below: Trees #22, #23

Below: Trees #25, #26

Below: Trees #27, #28

Below: Tree #29

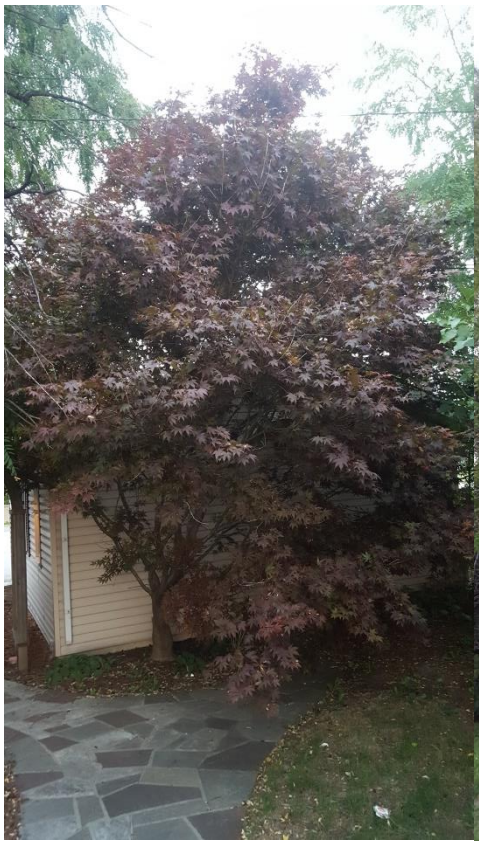
Below: Tree #30

Below: Trees #31, #32

Below: Trees #32, #33

Below: Trees #34, #35

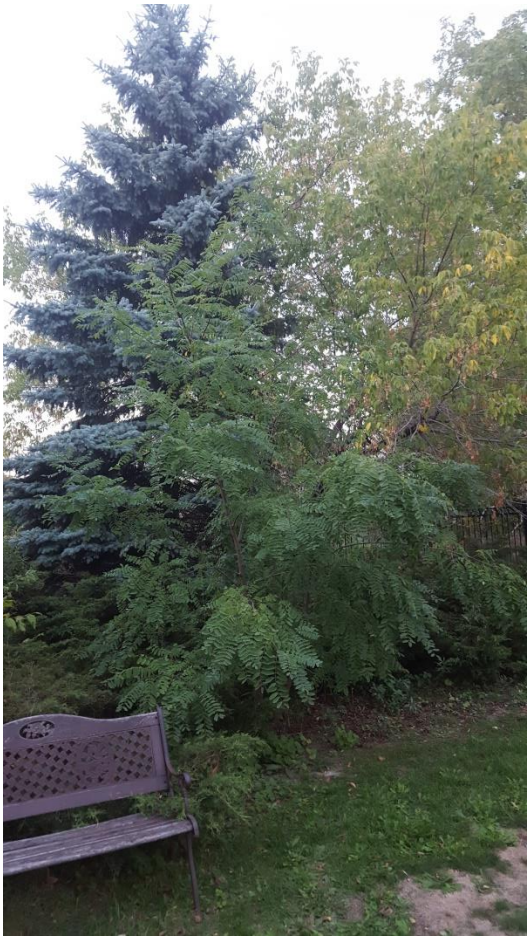
Below: Tree #37



Below: Tree Grouping A

Below: Tree Grouping A

Below: Tree Grouping B



Below: Tree Grouping C

Below: Tree Grouping D, Tree #37, Tree #38