Arborist Report

Pre-Construction

Prepared For:

Hafiz Qaddafi

Site Address:

825 Wharncliffe Road South, London
ON N6J 2N9

October 27th, 2023

Prepared By:
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Summary

The following Arborist Report is with respect to the proposed extension on the existing house and construction of a new parking lot on the property of 825 Wharncliffe Rd South, London ON. Nearby trees are located on the property of 825 Wharncliffe Rd South, London and adjacent neighboring properties.

Currently within the property is a house and multiple trees scattered throughout the property. The construction plan will require the removal of the trees within and close to the proposed construction site of the extension and parking lot. The intent of this report is to provide an assessment of impacts on trees located within and surrounding the property, in accordance with requirements set forth by the City of London for a Tree Preservation Plan.

Thirty-Six (36) trees in total were assessed on site.

- Individual Private Trees at 825 Wharncliffe Rd South: **16**
- City-Owned Trees: **0**
- Neighbor-Owned Trees: **20**

Thirty-One (31) trees are recommended to be retained close to the expected construction activity with hoarding installed to protect them from soil compaction and cutting during construction. Tree protection fencing is recommended within the TPZ's of these trees to minimize injury from soil compaction, and some pruning of their roots may be necessary to minimize injury and ensure proper recovery.

Five (5) trees are recommended to be removed. Trees were recommended to be removed if the planned construction would likely incur significant damage to the root system and/or crown branches of the tree, or if they are either dead or in hazardous condition and within 3m of proposed development.

It is imperative for all crew contracted to perform this construction to thoroughly understand this report and the recommendations stated within.

Introduction

Davey Resource Group (DRG) was retained by the client Hafiz Qaddafi (herein referred to as the Client) to develop an Arborist Report and Tree Protection Plan for the purpose of obtaining a building permit. This contract is in regard of the proposed extension and parking lot construction at 825 Wharncliffe Rd South, London.

An inventory and assessment of all the trees within the scope of the assignment was conducted. The Arborist was to document the current condition, size, and location of the trees as they relate to the proposed work. In accordance with City of London requirements for Arborist Reports and Tree Protection Plans, the whole of the property as well as the closest 6 meters of the adjacent properties and the city rights-of-way were surveyed for this report. All trees over 5cm in diameter within the scope of the survey were included in an inventory.

Recommendations for tree maintenance and information on tree injury or removal permit qualifications follow City of London By-laws as well as their Tree Protection and Planning Guidelines.

This report must be accompanied by the following additional documents:

1. A full printing of the tree inventory performed by Davey Resource Group (DRG), otherwise known as the Tree Protection Action Key (TPAK). (Appendix 1)
2. The lot survey maps with the Arborist Comments and tree inventory, otherwise known as the Tree Protection Plan (TPP). (Appendix 2)

Limitations of the Assignment

It must be understood that DRG is the assessor of the trees in relation to tree preservation practices. 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.

This Arborist Report is based on the project scope and details for tree assessment as discussed. The Arborist has made determinations on tree locations based on the survey supplied. Declarations included within this report are based upon supplied materials, specifications held within by-laws pertaining to tree preservation in the City of London and industry best practices. The tree inventory was compiled from field data collected from the ground. A basic visual assessment of each tree was performed. No level of ISA Tree Risk Assessment was performed. More data on risk may be obtained through a basic or advanced ISA Tree Risk Assessment.

Methods

- Tools used to assess the trees included a metric DBH measuring tape, metric measuring tape, metric measuring wheel and camera.
- Photographs included in this report are copies of their originals and may have been cropped for formatting.
- All trees over 5cm within the site property as well as any on neighboring properties within 6 meters or subject to possible future construction impact due to their size were collected in the inventory.

Observations

- The site was inspected on October 19th, 2023, by DRG Employee Zachariah Innis.
- During the assessment, no evidence of construction was present, and work had not yet started. No injuries to any trees, nor any construction material storage or soil compaction within Tree Protection Zones was noted during the assessment.
- **36** trees were assessed for this report and labeled #1-36 in the inventory and Tree Protection Plan included within Appendices 1-2.
- **31** trees were in good condition (Trees #1-#3, #5-#18, #20-#22 #24, #25, #27-#31, and #33-#36), **4** trees were in fair condition (Trees #4, #19, #26, and #32) and **1** tree was in poor condition (Tree #23)
- Trees #3-#17 are located on the neighboring property and are recommended to have Tree Protection Fencing installed to assure the protection of the root zone, these trees will be injured by the construction of the new driveway and are recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone.
- Trees #18 and #19 are located at the back of the property and are recommended to be removed as they are located in the middle of the proposed parking lot.
- Trees #20 and #21 are located on the neighboring property and recommended to have Tree Protection Fencing installed to assure the protection of the root zone, these trees will be injured by the construction of the new driveway and are recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone.
- Tree #22 is located at the back of the property and is recommended to have Tree Protection Fencing installed to assure the protection of the root zone, this tree will be injured by the construction of the new driveway and is recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone
- Tree #23 is located at the back of the property and is recommended to be removed as it is dead.
- Tree #24 is located at the back of the property and is recommended to have Tree Protection Fencing installed to assure the protection of the root zone, this tree will be injured by the construction of the new driveway and is recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone

- Tree #25 is located at the back of the property in the neighboring property recommended to use the existing fencing as Tree Protection Fencing
- Trees #26-#28 are located in the neighboring property and are recommended to use the existing fencing as Tree Protection Fencing.
- Trees #29-#34 are located at the side of the property and are recommended to have Tree Protection Fencing installed to assure the protection of the root zone.
- Tree #35 is located at the front of the property and is recommended to be removed as there is concrete proposed to be installed in the same area.
- Tree # 36 is located at the front of the property and is recommended to be removed as it is located where the new parking lot is located.

Discussion

To preserve and protect these trees, proper recommendations must be followed and abided by the client for the duration of the project.

Regulatory context

Trees in London are protected by City by-law C.P.-1515-228 prohibiting the removal and injury of certain trees. Under the by-law, the removal or injury of any tree within a specified "Tree Protection Area" is prohibited without a permit issued by the City of London. The TPA encompasses ravines, natural areas, and forest buffer zones within the Urban Growth Boundary of London. Additionally, the by-law protects "Distinctive Trees", defined as any tree of 50cm DBH or greater in any area of the City excluding the TPA. The City of London also protects trees existing within the any City owned right -of-way. Injury is defined as harming, damaging, or otherwise impairing the natural function of a tree, including the cutting of roots within a tree's "Critical Root Zone

As a condition of tree removal permit approval, the City may impose replacement tree planting requirements. If a property subject to a tree removal permit does not have reasonable space for accommodating tree planting, cash in lieu payments of $350 per replacement tree would be required to fund tree planting on streets and city properties.

This site is not located within the TPA, meaning only Distinctive Trees would require permitting for injury or removal, as well as any trees under city ownership.

Tree Protection Hoarding (Appendix 3)

It is in the best interest of the client to take every precaution possible to minimize damage to trees where work is taking place, and to avoid any unnecessary injury to trees outside of work areas. To accomplish this, hoarding (Tree Protection Fencing (TPF)) is to be used on this construction site. The distance from trees that hoarding is installed is typically defined by a radial distance pursuant

to the city regulations. In the City of London, this distance is equal to half of the CRZ distance for all trees over 10cm, and 1.2m for all trees under 10cm. However, it must be understood that sometimes this distance is not achievable due to hardscapes or other infrastructure being too close. In most situations, hoarding does not need to be installed beyond the closest extent of impermeable and/or paved surfaces. It must be further understood the hoarding distance sometimes must accommodate a larger TPZ (than the typical MTPZ distance) due to a limited root growing area/volume (this area is typically defined by the project arborist.)

On most landscapes within a private property, solid plywood hoarding best serves to protect tree trunks from inadvertent damage. However, along city streets and at driveway entrances, it is recommended that high-visibility snow fence be affixed to a wooden beam frame, which allows for proper tree protection while allowing vehicle and pedestrian traffic to maintain visibility through the tree protection zone.

Problems will arise for tree preservation efforts when anyone removes the hoarding, even temporarily. It takes one instance of soil compaction from a heavy machine for roots to suffer from air and water deprivation and for the tree to become stressed. It is imperative to install and maintain in good condition the hoarding to prevent this from happening before and throughout the entire construction.

Tree Protection Signage

It is recommended for the client to create Tree Protection Signs to affix to tree protection hoarding. A sign should be displayed on the tree protection fencing. These signs could be made in bulk at a discounted rate and installed on the hoarding in various locations. An example Tree Protection Zone sign is included within this report in Appendix 3. Signage informs the public and reminds the contractors the significance of the TPZs and the efforts put forward by the client in tree preservation.

Staging Areas

All staging areas are understood to be outside the TPZs. At no time are materials, vehicles, traffic or debris to be stacked, staged, or piled inside the hoarding (Tree Protection Fencing).

Conclusion

Thirty-Six (36) trees in total were assessed on site.

Twelve (12) trees are recommended to be protected / preserved as indicated in the Tree Protection Plan (TPP). No excavation or storage of material is to be stored inside the Tree Protection Fencing (TPF).

- Tree #1, a 20 cm DBH Blue Spruce tree is located out front of 825 Wharncliffe Rd South and should not be injured, Tree Protection Fence should be installed to assure the protection of the root zone.
- Tree #2, a 15 cm DBH Apple tree is located out front of 825 Wharncliffe Rd South and should not be injured, Tree Protection Fence should be installed to assure the protection of the root zone.
- Tree #25, an 82 cm DBH Black Walnut is located on the neighboring property and is recommended to use the existing fencing as Tree Protection Fencing.
- Tree #26, a 60 cm DBH Manitoba Maple is located on the neighboring property and is recommended to use the existing fencing as Tree Protection Fencing.
- Tree #27, a 38 cm DBH Black Walnut is located on the neighboring property and is recommended to use the existing fencing as Tree Protection Fencing.
- Tree #28, a 55 cm DBH Black Walnut is located on the neighboring property and is recommended to use the existing fencing as Tree Protection Fencing.
- Trees #29-#33 are located at the side of the property and are recommended to have Tree Protection Fencing installed to assure the protection of the root zone.
- Tree #34, a 25 cm DBH Black Walnut is located at the side of the property and is recommended to have Tree Protection Fencing installed to assure the protection of the root zone.

Nineteen (19) trees are located close enough to the proposed construction zone and will be injured:

- Trees #3-#17 are located on the neighboring property and are recommended to have Tree Protection Fencing installed to assure the protection of the root zone, these trees will be injured by the construction of the new driveway and are recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone. **Tree #17 will need a Permit to injure.**
- Tree #20, a 22cm DBH Blue Spruce is located on the neighboring property and is recommended to have Tree Protection Fencing installed to assure the protection of the root zone and will be injured by the construction of the new driveway and are recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone.
- Tree #21, an 80 cm DBH Black Walnut is located on the neighboring property and is as

Tree Protection Fencing recommended to have Tree Protection Fencing installed to assure the protection of the root zone, the tree will be injured by the construction of the new driveway and is recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone **Tree #21 will need a Permit to Injure.**

- Tree #22, a 5 cm DBH Juniper is located at the back of the property and is recommended to have Tree Protection Fencing installed to assure the protection of the root zone, the tree will be injured by the construction of the new driveway and is recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone
- Tree #24, a 5 cm DBH Juniper is located at the back of the property and is recommended to have Tree Protection Fencing installed to assure the protection of the root zone the tree will be injured by the construction of the new driveway and is recommended to have a Certified Arborist prune the roots at the limit of the new driveway within the Tree Protection Zone

Five (5) trees have construction proposed within its Tree Protection Zones (TPZ), and will need to be removed:

- Tree #18, a 43 cm DBH Manitoba Maple located inside the proposed construction zone where the parking lot is proposed and should be removed.
- Tree #19, a 40 cm DBH Manitoba Maple Located inside the proposed construction zone where the parking lot is proposed and should be removed.
- Tree # 23, a 5 cm DBH juniper that is dead and is recommended to be removed.
- Tree #35 a 35 cm DBH Black Walnut located in the proposed construction zone at the front of the existing house and should be removed.
- Tree # 36, a 37 cm DBH Eastern White Cedar located in the proposed construction zone where the parking lot is proposed and should be removed.

Recommendations

In accordance with the numbering of trees in the inventory listed on the Tree Protection Action Key (Appendix 1), we have provided the following recommendations.

Trees to be protected are specified with “Preserve” in the “Action” column in the Tree Protection Action Key (TPAK, Appendix 1).

- Tree protection must be erected as described in **Appendix 3** and inspected prior to beginning construction.
    - This tree protection barrier is to be erected no less than the distances outlined in the By-law and reflected in the TPAK of this document.
    - Any tree preservation barrier erected should be done so to prevent material or equipment storage, foot traffic or construction within the protected areas.

    - Refer to the attached documents for the tree preservation fencing diagram sanctioned by the Municipality of London, ON. In any case where correct and approved procedures cannot be abided by to erect the fencing, contact an ISA certified Arborist to consult and/or construct the proper preservation barrier.
- A "Tree Protection Zone" (**Appendix 3)** sign should be posted on the fencing, as directed by the By-law.
- All staging for materials and equipment needed on this project should take place outside the TPZ of all protected trees throughout the property.
    - No equipment of any sort should be stored within the TPZ of the protected trees. This will be done to avoid compaction of the ground surrounding the root system.

Any necessary excavation should be completed outside the TPZ of all trees with persons and equipment working outside the protected area at all times.

Trees to be injured are specified with "Injure" in the "Action" column in the TPAK.

- For Trees #1, #2, #25-#34 we recommend being protected with Tree Protection Fencing and no injuries are expected. Trees #3-#17, #20, #21, #22, and #24 are recommended to have Tree Protection Fencing but are expected to have injuries and should have a Certified Arborist prune roots before construction begins, **Permits are required for Trees #17 and #21.**

Trees to be removed are specified with "remove" in the "Action" column in the TPAK.

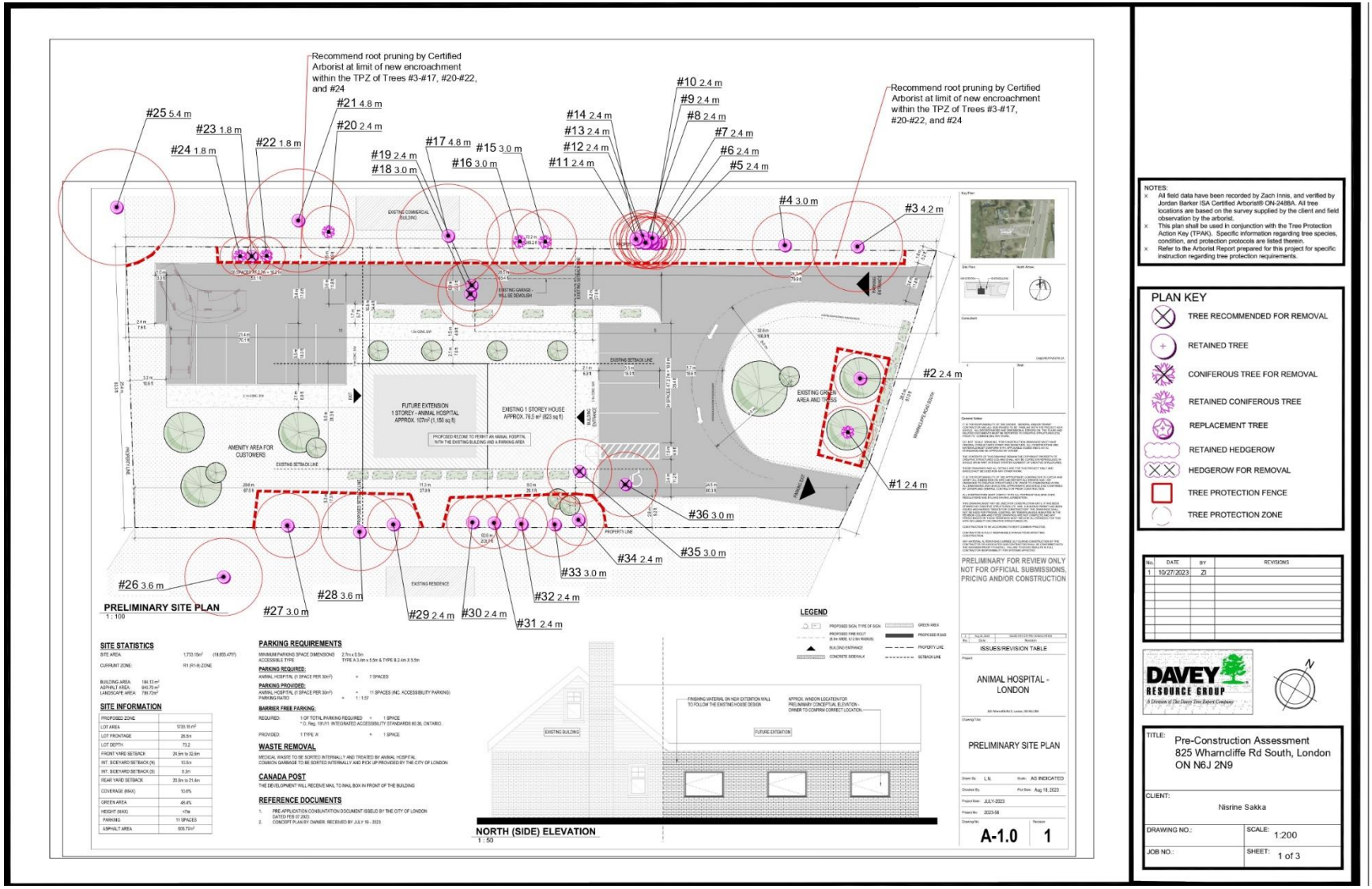
- For Trees #18, #19, #23, #35, and #36 we recommend they be removed.

Appendix 1 – Tree Protection Action Key (TPAK)

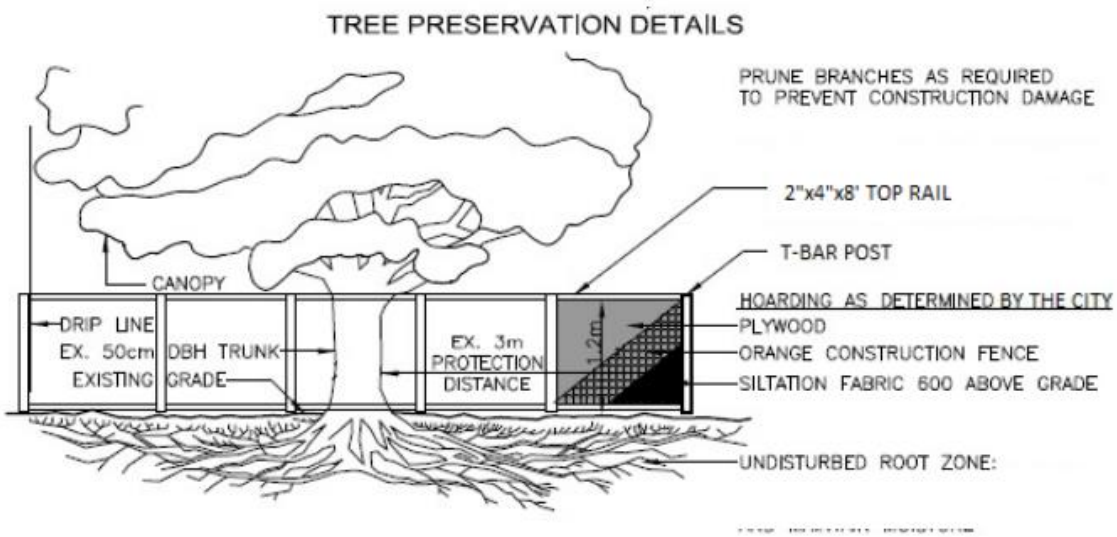
Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Minimum Tree Protection Distance (m)	Health	Structure	Overall Condition	Crown Width (m)	Deadwood (%)	Construction Impact (None, Low, Medium, High)	Action	Permit Required? (Y/N)	Recommendations	Notes and Observations
1	Colorado Blue Spruce	*Picea pungens*	20	Private	2.4	G	G	G	2	5	N	Preserve	N	TPF	
2	Apple	*Malus species*	15	Private	2.4	G	G	G	3	10	N	Preserve	N	TPF	5 / 8 / 10 / 8
3	Black Walnut	*Juglans nigra*	69	Neighbour	4.2	G	G	G	4	15	L	Injure	N	TPF	
4	European Horsechestnut	*Aesculus hippocastanum*	44	Neighbour	3.0	G	P	F	3	10	L	Injure	N	TPF	
5	Manitoba Maple	*Acer negundo*	25	Neighbour	2.4	G	G	G	2	5	L	Injure	N	TPF	
6	Manitoba Maple	*Acer negundo*	24	Neighbour	2.4	G	G	G	2	10	L	Injure	N	TPF	
7	Manitoba Maple	*Acer negundo*	20	Neighbour	2.4	G	G	G	2	5	L	Injure	N	TPF	
8	Manitoba Maple	*Acer negundo*	18	Neighbour	2.4	G	G	G	1.5	5	L	Injure	N	TPF	
9	Manitoba Maple	*Acer negundo*	14	Neighbour	2.4	G	G	G	1	10	L	Injure	N	TPF	
10	Manitoba Maple	*Acer negundo*	12	Neighbour	2.4	G	G	G	1	10	L	Injure	N	TPF	
11	Manitoba Maple	*Acer negundo*	10	Neighbour	2.4	G	G	G	1	5	L	Injure	N	TPF	
12	Manitoba Maple	*Acer negundo*	10	Neighbour	2.4	G	G	G	1	5	L	Injure	N	TPF	
13	Manitoba Maple	*Acer negundo*	10	Neighbour	2.4	G	G	G	1	5	L	Injure	N	TPF	
14	Manitoba Maple	*Acer negundo*	15	Neighbour	2.4	G	G	G	1	10	L	Injure	N	TPF	
15	Norway Spruce	*Picea abies*	40	Neighbour	3.0	G	G	G	2	15	L	Injure	N	TPF	Est DBH
16	Norway Spruce	*Picea abies*	42	Neighbour	3.0	G	G	G	2	15	L	Injure	N	TPF	Est DBH
17	Black Walnut	*Juglans nigra*	74	Neighbour	4.8	G	G	G	4	10	M	Injure	Y	TPF Permit required	Est DBH
18	Manitoba Maple	*Acer negundo*	43	Private	3.0	G	G	G	4	5	H	Remove	N		30 / 32 / 26
19	Manitoba Maple	*Acer negundo*	30	Private	2.4	G	F	F	3	15	H	Remove	N		

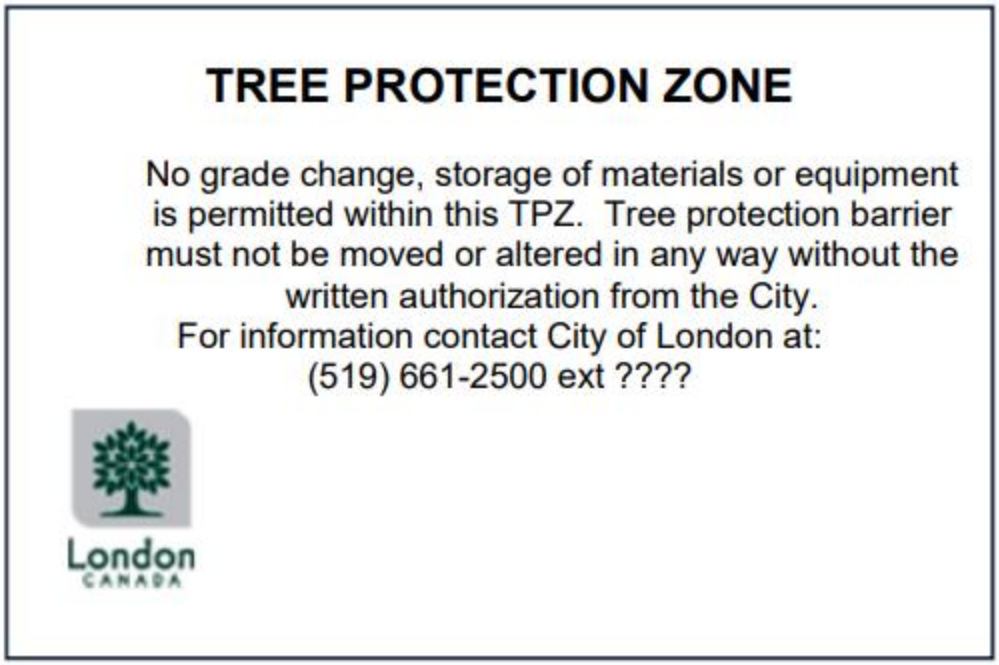
Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Minimum Tree Protection Distance (m)	Health	Structure	Overall Condition	Crown Width (m)	Deadwood (%)	Construction Impact (None, Low, Medium, High)	Action	Permit Required? (Y/N)	Recommendations	Notes and Observations
20	Colorado Blue Spruce	*Picea pungens*	22	Neighbour	2.4	G	G	G	1.5	20	L	Injure	N	TPF	Est DBH
21	Black Walnut	*Juglans nigra*	80	Neighbour	4.8	G	G	G	4.5	15	L	Injure	Y	TPF Permit required	Est DBH
22	Juniper	*Juniperus species*	5	Private	1.8	G	G	G	0.5	5	L	Injure	N	TPF	
23	Juniper	*Juniperus species*	5	Private	1.8	P	P	P	0.5	100	L	Remove	N		Dead
24	Juniper	*Juniperus species*	5	Private	1.8	G	G	G	0.5	0	L	Injure	N	TPF	
25	Black Walnut	*Juglans nigra*	82	Neighbour	5.4	G	G	G	5	15	N	Preserve	N	TPF	Est DBH
26	Manitoba Maple	*Acer negundo*	60	Neighbour	3.6	F	F	F	4	30	N	Preserve	N	TPF	Est DBH
27	Black Walnut	*Juglans nigra*	38	Private	3.0	G	G	G	3	10	N	Preserve	N	TPF	
28	Black Walnut	*Juglans nigra*	55	Neighbour	3.6	G	G	G	3	15	N	Preserve	N	TPF	Est DBH
29	Manitoba Maple	*Acer negundo*	25	Private	2.4	G	G	G	2	5	N	Preserve	N	TPF	
30	Manitoba Maple	*Acer negundo*	15	Private	2.4	G	G	G	2	5	N	Preserve	N	TPF	
31	Manitoba Maple	*Acer negundo*	15	Private	2.4	G	G	G	2	5	N	Preserve	N	TPF	
32	Manitoba Maple	*Acer negundo*	22	Private	2.4	G	F	F	2	25	N	Preserve	N	TPF	Dead Top
33	Manitoba Maple	*Acer negundo*	50	Private	3.0	G	G	G	3	15	N	Preserve	N	TPF	30 / 25 / 32
34	Black Walnut	*Juglans nigra*	25	Private	2.4	G	G	G	2	10	N	Preserve	N	TPF	25 / 25
35	Black Walnut	*Juglans nigra*	35	Private	3.0	G	G	G	3	15	H	Remove	N		25 / 25
36	Eastern White Cedar	*Thuja occidentalis*	37	Private	3.0	G	G	G	2.5	10	H	Remove	N		10/15/8/10/8/15/12/10/15/14

Appendix 2 – Tree Protection Plan (Preview – to be printed to scale)



Appendix 3 – Hoarding (TPF) Diagram and Signage





Appendix 4 – References

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2. Dujesiefken, Dr. Dirk, 2012. Director of the Institute for Tree Care in Germany, The CODIT Principle, research presented on cambial regrowth on trees after injury at the Annual ISA Conference in Kingston Ontario
3. Sinclair and Lyon, 2005. Diseases of Trees and Shrubs, Second Edition
4. ISA, 2010. Glossary of Arboricultural Terms
5. Neely and Watson, ISA, 1994 and 1998. The Landscape Below Ground 1 and 2
6. Matheny and Clark, ISA, 1994. A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas, 2nd Edition
7. Matheny and Clark, ISA 1998. Trees and Development, A Technical Guide to Preservation of Tree During Land Development
8. PNW-ISA, 2011. Tree Risk Assessment in Rural Areas and Urban/Rural Interface, Version 1-5
9. Corporation of the City of London, 2016. Tree Protection By-law C.P.-1515-228

Appendix 5 – Glossary of Common Arboricultural Terms

Arborist	A professional who possesses the technical competence gained through experience and related training to provide for or supervise the management of trees and other woody plants in residential, commercial, and public landscapes.
ANSI A300	Acronym for American National Standards Institute. In the United States, industry-developed, national consensus standards of practice for tree care.
Bark Tracing	Cutting away torn or injured bark to leave a smooth edge.
Branch Bark Ridge	Raised strip of bark at the top of a branch union, where the growth and expansion of the trunk or parent stem and adjoining branch push the bark into a ridge.
Callus wood	Undifferentiated tissue formed by the cambium, usually as the result of wounding.
Clinometer	A device used to calculate the height of trees.
Consulting Arborist	An Arboricultural consultant is one of the following: ● American Society of Consulting Arborists, Registered Consulting Arborist (ASCA RCA#___) ● International Society of Arboriculture, Board Certified Master Arborist (ISA BCMA #_____B) ● ISA Certified Arborist/Municipal Specialist in good standing for a minimum of 6 years with 6 years of proven experience in a management role related to arboriculture, and has attested and signed to a code of ethics related to arboriculture (ISA#_____)
Compartmentalization	Natural defense process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms
Critical Root Zone – (CRZ)	Area of soil around a tree where the minimum amounts of roots considered critical to the structural stability or health of the tree are located. CRZ determination is sometimes based on the drip line or a multiple of dbh (12:1, 12cm of ground distance from the trunk for every cm of dbh) but because root growth is often asymmetric due to site conditions, on-site investigation is preferred.
Daylighting	Also known as Hydro-vac, this is the process by which soil is vacuumed up. In the context of tree care this allows workers to access the soil below the roots without mortal damage to significant roots.
DBH	Acronym for tree diameter at breast height. Measured at 1.4m above ground.
Decurrent	Rounded or spreading growth habit of the tree crown.
Directional Pruning	Providing clearance by pruning branches that could significantly affect the integrity of utility facilities or other structures, and leaving in place branches that could have little or no effect.
Dripline	Imaginary line defined by the branch spread of a single parent or group of plants

Excurrent	Tree growth habit characterized by a central leader and a pyramidal crown.
Included bark	Bark that becomes embedded in a crotch (union) between branch and trunk or between codominant stems. Causes a weak structure.
Lion's Tailing	Poor pruning practice in which an excessive number of branches are thinned from the inside and lower part of specific limbs or a tree crown, leaving mostly terminal foliage. Results in poor branch taper, poor wind load distribution, and higher risk of branch failure.
MTPZ	Acronym for Minimum Tree Protection Zone, also known as the Structural Root Zone (SRZ), which is the distance from the tree equal to 6 times the dbh, within which the likelihood of encountering roots that are structural supports for the tree.
Moment	Rotational force that is created by any line force on a body. The magnitude of a moment is defined as the product of the force magnitude and perpendicular distance from the line of action of the force to the axis of which the moment is being calculated.
Mortality Spiral	A sequence of stressful events or conditions causing the decline and eventual death of a tree.
Mulch	Material that is spread of sometimes sprayed on the soil surface to reduce weed growth, to retain soil moisture and moderate temperature extremes, to reduce compaction from pedestrian traffic or to prevent damage from lawn-maintenance equipment, to reduce erosion or soil spattering onto adjacent surfaces, to improve soil quality through its eventual decomposition, and/or to improve aesthetic appearance of the landscape. Mulch can be composed of chipped, ground, or shredded organic material such as bark, wood, or recycled paper; unmodified organic material such as seed hulls; organic fiber blankets or mats; or inorganic material such as plastic sheeting.
Organic Matter	Material derived from the growth (and death) of living organisms. The organic components of the soil.
CRZ	Acronym for Critical Root Zone, also known as the Critical Root Zone (see definition above), within which there is a high likelihood of encountering roots that are necessary for the survival for the tree.
Project Arborist	The consulting arborist retained to provide all tree preservation recommendations to the project manager or contractors on a given construction project.
Qualified Arborist	An arborist who has documented related training (i.e. ISA, MTCU, or equivalent) and on-the-job experience (minimum of 5 years)
Radial trenching	Technique for aerating the soil or alleviating compaction around a tree by removing and replacing soil (which may be amended) in trenches (typically 300mm deep and 150mm wide) made in a spoke like pattern (radially from the trunk) in the root zone to improve conditions for root growth.

Reaction Wood	Wood formed in leaning or crooked stems or on lower or upper sides of branches as a means of counteracting the effects of gravity.
Removal Cut	A cut that removes a branch at its point of origin. Collar cut.
Reduction Cut	A pruning cut that reduces the length of a branch or stem back to a lateral branch large enough to assume apical dominance.
Resistograph®	A brand name of a device consisting of a specialized micro-drill bit that drills into trees and graphs density differences that are used to detect decay.
Soft-Scaped	Landscaping practices that do not involved solid or deeply-dug foundations. Patios consisting of slab rocks laid on-top of the soil with minimal excavation and base (less than 10cm) and causing minimal damage to existing tree roots.
Static Support System	Cabling system that utilizes rigid materials such as rods and steel cables to limit movement and provide constant support of limbs.
Structural cells	Modular system consisting of units of soil and integrated support structures that serve both as a foundation for paved surfaces and a hospitable environment for tree root growth,
Structural pruning	Pruning to establish a strong arrangement or system of scaffold branches.
Structural Soil™	Pavement substrate that can be compacted to meet engineering specifications yet remains penetrable be tree roots in the urban environment. Composed of angular crushed stone, clay loam, and hydrogel mixed in a weight ratio of 100:20:0.03. Developed at the Urban Horticulture Institute, Cornell University, Ithaca, NY.
Supersonic Air Excavation Techniques (SSAT)	A methodology using a device that directs a jet of highly compressed air to excavate soil. Used within the root zone of trees to avoid or minimizing damage to the roots, or near underground structures such as pipes and wires to avoid or minimize damage to them.
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. TPZ is sometimes based on a minimum multiple of dbh (e.g. 6:1, 6cm of ground distance from the trunk for 1cm of dbh)
Walls	Trees have 4 walls in a process known as compartmentalization. ● Wall 1 prevents decay moving up and down in a tree ● Wall 2 prevents decay moving inward in a tree ● Wall 3 prevents decay moving laterally in a tree ● Wall 4 is the new growth formed on the outside of the tree, callus growth.
Woundwood	Lignified, differentiated tissues produced on woody plants after wounding.

Appendix 6 – Arborist Qualifications

Zachariah J. Innis is a Consulting Arborist with Davey Resource Group. His formal education includes a Diploma in Adventure Recreation and Parks Technician and a Diploma in Forestry Technician. Mr. Innis has three years of varied work experience in the forestry and arboriculture fields and is currently working towards his International Society of Arboriculture Certification (ISA) to further his career in the Arboriculture Consulting field.

Education

Adventure Recreation and Parks Technician Program 2017-2019
Forestry Technician - Conservation Program 2019-2020

Appendix 7 – Photographs

Figure 1: Tree # 1 and #2 Recommended TPF

Figure 2: Tree # 3 Recommended TPF

Figure 3: Tree #4 Recommended TPF

Figure 4: Trees #5 -#14 Recommended TPF

Figure 5: Trees #15, #16, and #17 Recommended TPF

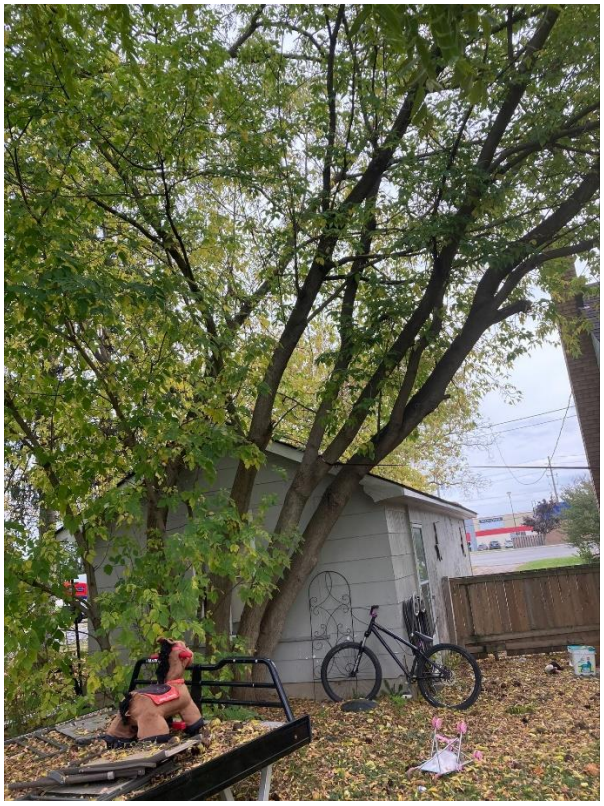

Figure 6: Trees # 18 and #19 recommended for removal.

Figure 7: Trees #20 and #21 Recommended TPF

Figure 8: Trees #22, #23, #24, and #25 remove #23 (dead) TPF for Trees #22 and #24

Figure 9: Trees #26 and 27 Recommended TPF for #27

Figure 10: Tree #28 Recommended TPF

Figure 11: Trees #29, #30, #31, and #32 Recommended TPF

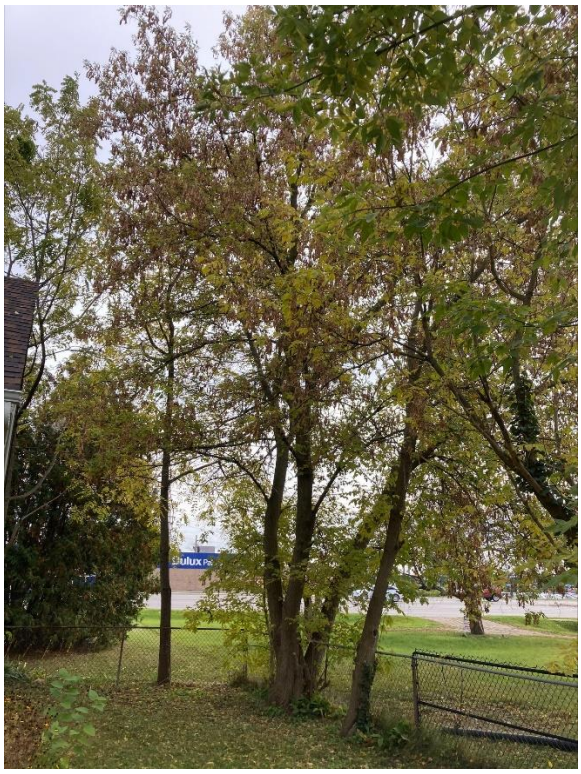

Figure 12: Trees #33 and #34 Recommended TPF

Figure 12: Tree #35 Recommended removal

Figure 14: Tree #36 Recommended for removal.

Conditions of Assessment Agreement

This Conditions of Assessment Agreement is made pursuant to and as a provision of Davey Resource Group, a division of The Davey Tree Expert Co. of Canada, Limited ("Davey"), providing tree assessment services as agreed to between the parties, the terms and substance of which are incorporated in and made a part of this Agreement (collectively the "Services").

Trees are living organisms that are subject to stress and conditions and which inherently impose some degree or level of risk. Unless a tree is removed, the risk cannot be eliminated entirely. Tree conditions may also change over time even if there is no external evidence or manifestation. In that Davey provides the Services at a point in time utilizing applicable standard industry practices, any conclusions and recommendations provided are relevant only to the facts and conditions at the time the Services are performed. Given that Davey cannot predict or otherwise determine subsequent developments, Davey will not be liable for any such developments, acts, or conditions that occur including, but not limited to, decay, deterioration, or damage from any cause, insect infestation, acts of God or nature or otherwise.

Unless otherwise stated in writing, assessments are performed visually from the ground on the above-ground portions of the tree(s). However, the outward appearance of trees may conceal defects. **Therefore, to the extent permitted by law, Davey does not make and expressly disclaims any warranties or representations of any kind, express or implied, with respect to completeness or accuracy of the information contained in the reports or findings resulting from the Services beyond that expressly contracted for by Davey in writing, including, but not limited to, performing diagnosis or identifying hazards or conditions not within the scope of the Services or not readily discoverable using the methods applied pursuant to applicable standard industry practices.** Further, Davey's liability for any claim, damage or loss caused by or related to the Services shall be limited to the work expressly contracted for.

In performing the Services, Davey may have reviewed publicly available or other third- party records or conducted interviews, and has assumed the genuineness of such documents and statements. Davey disclaims any liability for errors, omissions, or inaccuracies resulting from or contained in any information obtained from any third- party or publicly available source.

Except as agreed to between the parties prior to the Services being performed, the reports and recommendations resulting from the Services may not be used by any other party or for any other purpose. The undersigned also agrees, to the extent permitted by law, to protect, indemnify, defend and hold Davey harmless from and against any and all claims, demands, actions, rights and causes of action of every kind and nature, including actions for contribution or indemnity, that may hereafter at any time be asserted against Davey or another party, including, but not limited to, bodily injury or death or property damage arising in any manner from or in any way related to any disclaimers or limitations in this Agreement.

By accepting or using the Services, the customer will be deemed to have agreed to the terms of this Agreement, even if it is not signed.

Acknowledged by:

Name of Customer: _____

Authorized Signature: _____

Date: _____