Arborist Report

1860 & 1900 Appleby Line,
Burlington, ON

adesso design inc
landscape architecture

June 28, 2021

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BACKGROUND

The Subject Site is located at the southwest corner of Appleby Line and Ironstone Drive in Burlington, ON. The site is currently a large commercial plaza with several food service and personal service establishments. Existing buildings are located along the perimeter of the Subject Site with a central, shared surface parking area. Adjacent land uses include small to medium size commercial, residential, as well as a number of neighbourhood parks.

The proposed work includes: demolition and excavation of existing structures; grading and paving for proposed parking facilities; erection of 3 multi-use buildings; and a proposed Privately-Owned-Public-Space (POPS) at ground level.

This report, along with the accompanying Tree Protection Plan (by adesso design inc.), intends to satisfy the City of Burlington requirements for an Arborist Report and any necessary tree-related permit applications. All trees included in this report were inventoried on May 27th, 2021.

METHODS

Trunk size was measured as diameter at breast height (DBH, measured 1.37 m above grade), in accordance with protocols set by the International Society of Arboriculture and adopted by the City of Burlington. All trees with a trunk diameter equal to or greater than the minimum 20 cm DBH have been included in this report. As per the City's Private Tree Preservation By-Law, the total DBH of trees with multiple stems has been calculated as the sum of all stems.

For the purposes of this report, tree ownership is defined as:

1. "Subject Site Tree": Trees with stem(s) situated on the subject site property,
2. "Neighbouring Tree": Trees with stem(s) situated on adjacent private property
3. "Public Tree": Trees with stem(s) situated on City-owned land adjacent the subject site.
4. "Boundary Tree": Trees with stem(s)from the ground level to the first branch straddles or bi-sects the property line of a lot

This report documents the following:

- Biological data (i.e. species, size, condition, notable observations) for all trees,
- Interpretation of the potential impact of the proposed works on the inventoried trees,
- Recommendations for preservation or removal of individual trees based on the nature of the proposed work, the current health of the tree, and the susceptibility/tolerance of the tree species to various stresses/insults related to construction and other sources,
- Recommendations for protective actions to be taken to mitigate construction-related damage to existing trees to be preserved, and
- Compensation for Trees to be removed as required.

This report has been prepared in accordance with the following applicable municipal by-laws and guidelines of the City of Burlington:

- By-Law to conserve and protect trees on private land within the Urban Planning Area Boundary of City of Burlington (02-2020);
- By-law to regulate planting, maintenance and preservation of trees on or affecting public property (68-2013);
- City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A);

INVENTORY DATA

Date/Time: April 16, 2021, 1:00 p.m.
Relative Part of Growing Season: Full Leaf
Weather Conditions: Clear, approx. 25 ºC

TABLE 1. SUMMARY OF TREES INVENTORIED

Tree Ownership Category	Quantity & Species		Count
1. Subject Site Trees	13 Apple Species 2 Armstrong Maple	subtotal	15
2. Neighbouring Trees	none	subtotal	0
3. Public Trees	1 Norway Maple 4 Downy Serviceberry 1 Trembling Aspen 6 Ivory Silk Lilac 4 Little Leaf Linden	subtotal	16
4. Boundary Trees	none	subtotal	0
		total	31

TREE INVENTORY PHOTOS


Tree 1 (Public)


Tree 1 (Public) – Large healed stem wound

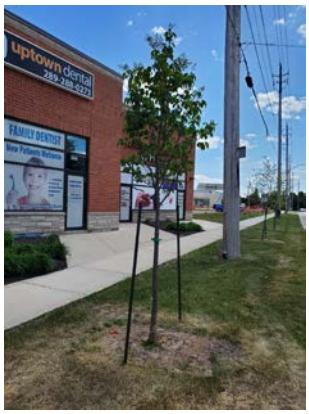

Tree 2 (Public)


Tree 3 (Public)


Tree 3 (Public) – Suspected girdling root


Tree 7 (Public) – Newly planted


Trees 12 & 13 (Public)

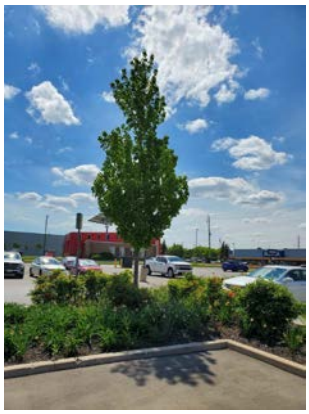


Tree 18 (Public)


Tree 18 (Public) – Exposed root plate


Tree 21 (Subject Site)


Tree 25 (Subject Site)


Tree 28 (Subject Site)

OVERALL FINDINGS

A total of 31 individual trees (15 Subject Site, 16 Public) were recorded at the time of inventory. Trees #1-6 were located by OLS Survey (March 17, 2017) and Trees #7-31 were field located at the time of inventory.

Inventoried trees represented a range of size classes with minor evidence of structural and/or health concerns. All inventoried trees appear to be intentionally planted (i.e. landscape trees) based on location and species selection. Refer to appendix a for individual tree data.

TREES RECOMMENDED FOR PRESERVATION

Trees recommended for preservation have been assessed using one or more of the following criteria:

- Location sufficiently distanced from proposed site works and/or construction related stresses;
- Current health condition is acceptable;
- Tree poses a low hazard level to person or property; and
- General species tolerance to construction-related and other anticipated stressors

Trees recommended for preservation are summarized in table 2 below. All trees to be preserved are to be protected to the satisfaction of the City of Burlington prior to the commencement of construction. All tree protection measures are to remain in place during all stages of construction, as specified in *City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A)*. Refer to the Tree Protection and Mitigation measures section below.

TABLE 2. SUMMARY OF TREES RECOMMENDED FOR PRESERVATION

Tree Ownership Category	Quantity & Species		Count
1. Subject Site Trees	1 Armstrong Maple 2 Apple Species	subtotal	3
2. Neighbouring Trees	none	subtotal	0
3. Public Trees	1 Norway Maple 4 Downy Serviceberry 1 Trembling Aspen 6 Ivory Silk Lilac 4 Little Leaf Linden	subtotal	16
5. Boundary Trees	none	subtotal	0
		total	19

A total of 19 Trees (3 Subject Site, 16 Public) are recommended for preservation due to sufficient distance from the proposed works. There are no trees identified as to be preserved with non-fatal injury; no mTPZ encroachment is anticipated from the extent of the proposed work.

TREES RECOMMENDED FOR REMOVAL

Trees recommended for removal have been assessed using one or more of the following criteria:

- Location is in conflict with proposed works to a degree that would compromise the long term structural and/or health integrity
- Current health condition suggests tree is undergoing significant decline and/or death
- Potential impacts from proposed works will cause the tree to become a hazard to person or property
- General species intolerance of construction-related and other anticipated stressors

TABLE 3. SUMMARY OF TREES RECOMMENDED FOR REMOVAL

Tree Ownership Category	Quantity & Species		Count
1. Subject Site Trees	1 Armstrong Maple 11 Apple Species	subtotal	12
2. Neighbouring Trees	none	subtotal	0
3. Public Trees	none	subtotal	0
5. Boundary Trees	none	subtotal	0
		total	12

Twelve trees (all Subject Site) are recommended for removal due to direct conflict with proposed works, including demolition of existing structures, new building construction, and paving.

All trees recommended for removal are below 20cm DBH, however, City of Burlington *Private Tree By-law* (02-2020) states that the injury or destruction of more than 5 trees with 10 to 20cm DBH in one calendar year requires a Tree Permit. Ten of the 13 trees recommended for removal fall within this DBH size class and a Tree Permit will be required prior to their removal.

TREE PROTECTION AND MITIGATION MEASURES

The impacts to trees from the construction process can be severe and are often latent. Mechanical damage to tree structures (i.e. trunk, roots, and branches) as well as soil compaction from equipment, staging, material storage, and altered drainage patterns can cause potentially fatal impacts that may not become apparent until long-after construction is completed.

For these reasons, all trees to be preserved shall be afforded adequate protection measures in accordance with *City of Burlington Specifications Index for Tree Protection and Preservation (SPEC NO. SS12A)*. Tree protection measures are to be installed prior to and remain throughout all stages of construction.

The location of temporary tree protection hoarding is depicted graphically on the Vegetation Management Plan (by adesso design inc.) accompanying this report. Where possible, the City standard for minimum tree protection zone (mTPZ) has been provided. Table 6 provides a summary of the mTPZ distances per DBH class for the City of Burlington.

TABLE 4. MINIMUM TREE PROTECTION ZONES PER DBH CLASS

Trunk Diameter (DBH)[1]	Minimum Protection Distances Required[2]
< 10 cm	1.8 m
11-40 cm	2.4 m
41 – 50 cm	3.0 m
51 – 60 cm	3.6 m
61 – 70 cm	4.2 m
71 – 80 cm	4.8 m
81 – 90 cm	5.4 m
91 – 100 cm	6.0 m

If any disruption or injury occurs to a tree to be preserved, including planned injuries (e.g. "true injuries) and unplanned or accidental injuries (e.g. roots encountered unexpectedly, crown pruning required for construction access or equipment manoeuvring), it is recommended that a qualified tree care professional is consulted and performs all remedial work on the tree(s). General recommendations for mitigating damage trees include (but are not limited to):

- Excavation within mTPZ is to be done by hand and all tree roots that require removal are to be cleanly pruned by a tree care professional and according to best management practices of arboriculture. All exposed tree roots to remain are to be covered immediately with native soil or imported good-quality planting soil using 150mm lifts and hand tamped to prevent air pockets. All areas of disturbed tree roots to remain are to be thoroughly watered immediately upon completion of excavation and backfilling with soil.
- Damaged branches/limbs are to be cleanly pruned by a tree care professional and according to best management practices of arboriculture.
- Damage to tree trunks is to be reported immediately to a tree care professional for consultation and possible action.

CONCLUSIONS

A total of 31 (15 Subject Site, 16 Public) individual trees have been inventoried and assessed for possible preservation in the context of the proposed work. Nineteen trees (3 Subject Site, 16 Public) are recommended for preservation, and 12 trees (all Subject Site) are recommended for removal.

Ten of the 12 trees recommended for removal have a DBH between 10 and 20cm, and therefore will require a Tree Permit prior to removal (total removals exceed calendar year limit of removals of trees within this size class).

ASSUMPTIONS & LIMITATIONS

The data and assessment presented in this report are only valid at the time of inspection and inventory.

A reasonable effort has been made to assess the overall condition of trees included in this report.

Unless otherwise stated, all tree data and observations were collected from visual inspection of external tree features from the ground level.

This report is to be used only by the intended recipient for the purposes stated in the Background section. Use by any other person or for any other purpose must be authorized in writing by the consulting arborist or adesso design inc.

The data and its interpretation in this report are the sole opinion of adesso design inc. and were not influenced by any other party.



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APPENDIX A – TREE INVENTORY TABLE

Tree #	Species (Common Name)	Species (Botanical Name)	DBH (cm)	mTPZ	Crown Class*	Condition**	Crown Width (m)	Comments	Potential Impacts from Construction	Ownership	Recommendation
1	Norway Maple	*Acer platanoides*	25	2.4	D	Poor-Fair	5	Decay at base or trunk, peeling bark, asymmetrical crown, epicormic branching		Public	SAVE
2	Trembling Aspen	*Populus tremuloides*	20	2.4	D	Good	5	Included bark, poor branching structure (minor)		Public	SAVE
3	Little Leaf Linden	*Tilia cordata*	30	2.4	D	Fair	6	Epicormic branching, possible girdling root, included bark		Public	SAVE
4	Little Leaf Linden	*Tilia cordata*	27	2.4	D	Fair	5	Dead branches (minor), epicormic branches, poor branch structure, included bark		Public	SAVE
5	Little Leaf Linden	*Tilia cordata*	34	2.4	D	Fair-Poor	6	Included bark, dead branches (minor), poor branch structure		Public	SAVE
6	Little Leaf Linden	*Tilia cordata*	33	2.4	D	Fair	6	Included bark, poor branching structure, slight lean		Public	SAVE
7	Downy Serviceberry	*Amelanchier arborea*	4	1.8	D	Fair	1	Newly planted, leaning north, water stressed		Public	SAVE
8	Downy Serviceberry	*Amelanchier arborea*	4	1.8	D	Good	1	Newly planted, leaning southwest		Public	SAVE
9	Apple species	*Malus spp.*	16	2.4	C	Good-Fair	4	Included bark, powdery mildew on foliage, dead branches (minor)	conflict with proposed building	Subject Site	REMOVE
10	Apple species	*Malus spp.*	15	2.4	C	Fair-Poor	3	Crown dieback/sparse crown, co-dominant leaders at 2.0m	conflict with proposed building	Subject Site	REMOVE
11	Ivory Silk Lilac	*Syringa reticulata 'Ivory Silk'*	4	1.8	D	Good	1	Newly planted, healed wound on lower stem		Public	SAVE
12	Ivory Silk Lilac	*Syringa reticulata 'Ivory Silk'*	5	1.8	D	Good	1	Newly planted		Public	SAVE
13	Ivory Silk Lilac	*Syringa reticulata 'Ivory Silk'*	4	1.8	D	Good	1	Newly planted		Public	SAVE
14	Apple species	*Malus spp.*	12	2.4	C	Good	4	Included bark	conflict with proposed building	Subject Site	REMOVE
15	Ivory Silk Lilac	*Syringa reticulata 'Ivory Silk'*	4	1.8	D	Good	1	Newly planted		Public	SAVE
16	Apple species	*Malus spp.*	11	2.4	C	Good	3	Slight lean south	conflict with proposed building	Subject Site	REMOVE
17	Ivory Silk Lilac	*Syringa reticulata 'Ivory Silk'*	4	1.8	D	Good	1	Newly planted		Public	SAVE
18	Ivory Silk Lilac	*Syringa reticulata 'Ivory Silk'*	4	1.8	D	Good	1	Newly planted, root plate partially exposed		Public	SAVE
19	Downy Serviceberry	*Amelanchier arborea*	4	1.8	D	Good	1.5			Public	SAVE
20	Downy Serviceberry	*Amelanchier arborea*	4	1.8	D	Good	1.5	Included bark (minor)		Public	SAVE
21	Apple species	*Malus spp.*	13	2.4	D	Good	3	Longitudinal scar on branch	conflict with proposed building and driveway	Subject Site	REMOVE

Tree #	Species (Common Name)	Species (Botanical Name)	DBH (cm)	mTPZ	Crown Class*	Condition**	Crown Width (m)	Comments	Potential Impacts from Construction	Ownership	Recommendation
22	Apple species	*Malus spp.*	9	1.8	D	Fair	2	crown dieback (minor), dead branches (minor), slight lean north	conflict with proposed building and driveway	Subject Site	REMOVE
23	Apple species	*Malus spp.*	8	1.8	D	Fair	2	Asymmetrical crown, dead branches	conflict with proposed building and driveway	Subject Site	REMOVE
24	Apple species	*Malus spp.*	11	2.4	D	Good	2		conflict with proposed building and driveway	Subject Site	REMOVE
25	Apple species	*Malus spp.*	11	2.4	D	Good	3		conflict with proposed building and driveway	Subject Site	REMOVE
26	Apple species	*Malus spp.*	11	2.4	D	Good	2	Asymmetrical crown	conflict with proposed driveway	Subject Site	REMOVE
27	Apple species	*Malus spp.*	11	2.4	D	Good	3	Healed stem wound at 1.25m, slight lean north, asymmetrical crown	conflict with proposed amenity space	Subject Site	REMOVE
28	Armstrong Maple	*Acer x freemanii 'Armstrong'*	13	2.4	D	Good	3	Water stress, included bark (minor), bark cracks at base of trunk	conflict with proposed amenity space	Subject Site	REMOVE
29	Armstrong Maple	*Acer x freemanii 'Armstrong'*	11	2.4	C	Good	3			Subject Site	SAVE
30	Apple species	*Malus spp.*	11	2.4	C	Good	3			Subject Site	SAVE
31	Apple species	*Malus spp.*	10	1.8	C	Good	3			Subject Site	SAVE

APPENDIX B – CITY OF BURLINGTON TREE PRESERVATION DETAILS

Tree Protection and Preservation
Specification No.: SS12

Detail TP-1 – Tree Protection Detail

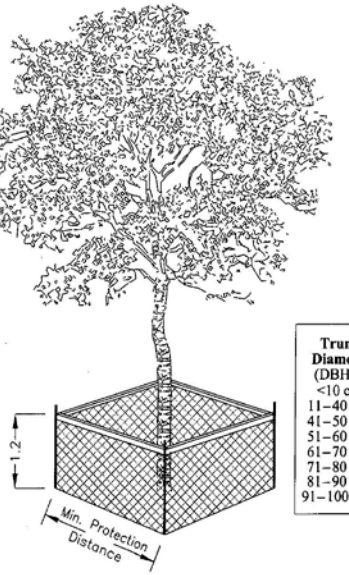


Table 1– Tree Protection Zones

Trunk Diameter (DBH)[2]	Tree Protection Zone (TPZ) Minimum Protection Distances Required[3]	Critical Root Zone (CRZ) Distances Required[3&4]
<10 cm	1.8 m	1.8 m
11–40 cm	2.4 m	4.0 m
41–50 cm	3.0 m	5.0 m
51–60 cm	3.6 m	6.0 m
61–70 cm	4.2 m	7.0 m
71–80 cm	4.8 m	8.0 m
81–90 cm	5.4 m	9.0 m
91–100+cm	6.0 m	10.0 m

TREE PROTECTION BARRIER

1. Tree protection barriers for trees situated on the City road allowance where visibility must be maintained can be 1.2m high and consist of orange plastic web snow fencing on a wood frame of 2" x 4" s, supported on metal " T " bars, 2.0m c/c max. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing shall be used.

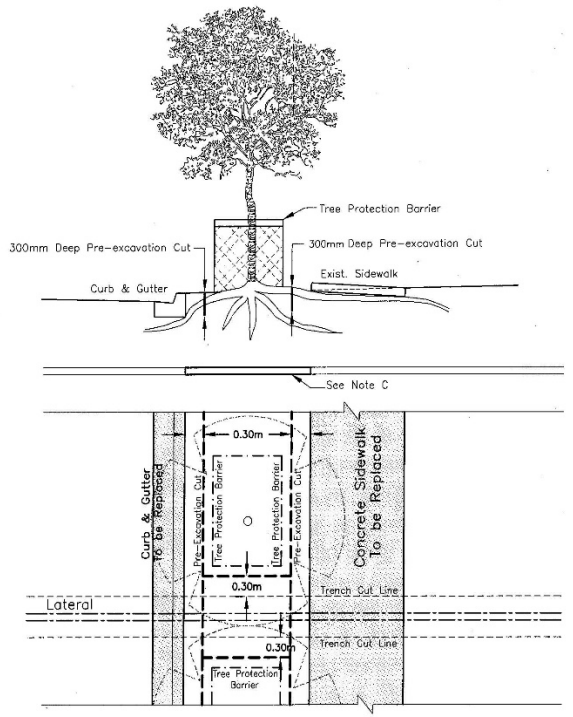
2. Where some excavate or fill has to be temporarily located near a tree protection barrier plywood must be used to ensure no material enters the Tree Protection Zone.

3. All supports and bracing should be outside the Tree Protection Zone. All such supports should minimize damaging roots outside the Tree Protection Barrier.

4. No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the Tree Protection Zone.

Tree Protection and Preservation
Specification No.: SS12

Detail TP-2 – Root Pruning Detail



NOTE:
For excavations perpendicular to the curbing (ie. curbing, sidewalk,water or sewer laterals renewal)

a) when the open cut is within the Critical Root Zone of a tree, the contractor is to pre-cut the earth 300mm wider than the specified trench width to a depth of 300mm.

b) the contractor is to use a trench box to minimize the width of the open cut.

c) when the lateral replacement is within the Tree Protection Zone of a tree, the contractor is to complete the works using trenchless technologies.