Tree Inventory & Preservation Plan

Infill Development
425 King Street East
Cobourg, ON

Prepared for:
Mason Homes
70 Innovator Ave
Stouffville, ON

Prepared by:
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Treescape Consulting Project TC258

Executive Summary

The tree inventory and preservation assessment at the King Street infill site was carried out on the tree resources located within and adjacent to all boundaries of the in-fill site.

Together with an inventory of trees in accord guidelines set by the town arborist, the assessment sought to identify significant trees for retention that;

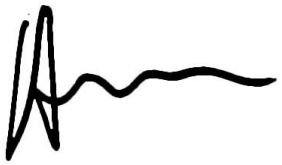
- Have a safe useful life expectancy that justifies their retention, and any design changes and costs associated with that; i.e., extend into the future for an acceptable period in the design life of the intended development,
- Are likely to survive the construction process,
- Are likely to survive within any changed growth environment and,
- Are compatible with, and sustainable within the context of new development.

Development impact highlights are as follows:

- There were 14 potential Butternut trees assessed and were concluded to be Butternut Hybrids. As such, these trees are not protected under the Endangered Species Act and may be removed if required.
- Trees 68-96 and 1876 are municipal trees along Molly Baker trail and must be preserved. Proposed design elements and final grading encroach trees 90-93 but currently respect the tree protection recommendations outlined in this report. Remainder of the proposed design satisfies this preservation requirement.
- Trees 1-13 and Hedge 1&2 are neighbouring trees along Orchard Avenue and must be preserved. Construction limits for storm sewer connection encroach the crown spread of some of these trees and will require some proactive pruning from a certified arborist. The north edge of Hedge 1 needs to be removed to accommodate the storm sewer connection construction. Notification to the homeowner is suggested.
- Trees 1834, 1836, 1872, 1873, 1874, 1875, 1881, 1882, 1883, 1884, 1885 and N1-N3 are neighbouring or shared trees that must be preserved.
- Trees 1863, 1864, 1865, 1866, 1867, 1868, 1869 and 1876 are located within an 8m offset area from the property line for review and preservation.
- Trees 1859, 1860, 1861 and 1862 are to be removed. Engineers have confirmed that space limitations in this area does not allow for design changes to the roadway connection with the existing road and preservation via tree wells was not possible. Tree 1862 is a municipal tree and the Town arborist is in agreement of its removal due to its poor overall condition.
- Through on-site consultation with the Town, it has been decided to remove all of CPT 1 and 2 and replaced with more suitable specimens to create a natural screen to adjacent neighbouring property.
- CPT 7 borders the west side of the infill site and will require the removal and/or pruning of some trees to accommodate the development footprint.

- The remaining trees and treed compartments are in direct conflict with the development footprint. Modifications to the design and/or grading plan is neither practical nor feasible. Trees 1870 & 1871 fall within the 8m zone for review and preservation set by the town arborist but must be removed to accommodate construction of infiltration trench and grading limits in this area.
- Replacement tree compensation has been calculated at ninety-eight (98) 50mm caliper trees and five (5) 100mm caliper plantings.

It is my professional opinion that this report clearly identifies all woody vegetation within, and adjacent to, the development site. Furthermore, it outlines sufficient preservation measures for the maximum number of trees possible/feasible given the extent of the proposed development and grade changes across the site.



Andrew Smit, *ISA ON1292AM*
Senior Consulting Arborist
Treescape Certified Arborists

Introduction

Treescape Certified Arborists was retained by Mason Homes to complete a Tree Inventory and Preservation Plan as part of a development application for preliminary site plan approval of an infill development located at 425 King Street East, Cobourg, ON. The work plan for the tree inventory included the following:

- Utilize site plans provided by the client
- Inventory trees on proposed development site.
- Assess the physiological and structural condition of the trees as compartments and/or any individual trees as appropriate.
- Assess scope of proposed development, identify potential conflicts with tree resources and make recommendations to remove and/or retain any trees or treed compartments based on information found within the preliminary site plan and grading plans (if available).
- Record the assessments in the form of a written report identifying the surveyed tree compartments and/or individual trees on the supplied plan.
- Provide details of aftercare (management recommendations) of trees to be preserved.
- Provide details of how retained trees will be successfully preserved during construction and post-construction.

The initial tree inventory and assessment took place in November, 2017. Assessment and inclusion of trees along Molly Baker trail took place in April as well as in August, 2019. Supplementary detailed data collection as well as assessment of trees along Orchard Avenue took place in March 2020.

Table 1 below includes the assessment of all tree resources identified within, and immediately adjacent to, the subject property. These tree resources include;

- individual trees,
- larger shrub masses,
- tree groupings and treed woodland compartments, and
- significant trees within these groupings and compartments. For the purpose of this report, significant is defined as a tree that is >30cm Dbh in good health with an unimpeded crown and notable for consideration of preservation.

The appended plan TC258-01 identifies the locations of all tree resources and outlines the true canopy area of the woodland portions and tree groupings on the property. Plan TC258-02 illustrates all recommended tree removals and tree protection to be read in conjunction with Table 2 below.

Supporting Documents

- *4-4771 Topo_v3* - Topo Survey, drafted by IBW Surveyors and supplied by Mason Homes
- *11192099* – G102, General Plan, GHD, December 18, 2019 (DWG)
- *11192099* – L101, Grading Plan, GHD, December 18, 2019 (DWG)
- *11192099* – P101 & 102, Orchard Avenue, GHD, December 18, 2019 (DWG)

Limitations of Assessment

The assessment of the tree resources presented in this report has been made using accepted arboricultural techniques. These include a visual examination of the above ground parts of the trees for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of attack by insects, discoloured foliage (if in leaf), the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the trees and the surrounding site and the proximity of property and people and the frequency of use within the context of development. Except where specifically noted, the trees were not cored, probed or climbed and there was no detailed inspection of the root crowns involving excavations.

Notwithstanding the recommendations and conclusions made in this report, it must be recognized that trees are living organisms, and their health and vigour constantly change over time. They are not immune to site changes or seasonal variations in weather conditions.

Although every effort has been made to ensure that this assessment is accurate, the trees must be re-assessed periodically. The assessment presented in this report is valid at the time of inspection.

Individual trees and canopy area for treed compartments and tree groupings have been located utilizing a Trimble R7 GNSS receiver with an accuracy of +/- 1 metre.

Existing Site Conditions

This urban development property fronts King Street East and is bounded on all sides by residential properties. This site has a long history of settlement and has recently been vacated with all buildings being demolished. An asphalt circular drive and parking area is all that remains of the former residential footprint.

Tree resources at this infill site consist of:

- Mix of early mature to mature trees located on the former manicured areas of property. These are primarily broadleaf trees with a compliment of coniferous trees mixed throughout.
- A grouping of middle mature coniferous trees along the east side of site (CPT2).
- A mix of early mature to mature trees (primarily broadleaf trees) located along south eastern, southern and western property lines. A large amount of young volunteer broadleaf trees and Buckthorn has become established in these compartments (CPT4, 5 and 6) and continues to spread inward.
- Numerous Ash trees located around the property with heavy concentrations in CPT 3 and CPT7.
- Trees with Butternut characteristics were found throughout property with majority being located on the east side. Trees are predominantly young with two larger mature trees situated in the southeast section of property. Refer to the Species at Risk section below for details.

Proposed Development

The proposed development is situated on an infill site located at 425 King Street E., Cobourg. The preliminary site plan proposes the construction of:

- 27 freehold townhouses divided into five separate blocks
- construction of a municipal road allowance and related infrastructure
- underground storm water management system
- sanitary and other related services.

As part of the design process, an inventory and assessment has been undertaken of all tree resources on, and immediately adjacent to, the proposed development area that have above and/or below ground parts likely to be affected by the proposed works.

Development Impacts

Construction impacts upon the retained public and private trees, hedges and larger shrub masses are likely to comprise the following:

- Soil compaction with subsequent shearing, suffocation and death of roots
- Physical severance of roots during construction.
- Accumulation of toxic substances in the root zones.
- Physical damage to the trunks and branches of trees due to the operating requirements of plant and machinery.

In order to determine the impact of construction it is necessary to plot the likely distribution and pattern of the root systems of the trees, hedges and larger shrubs identified for retention in the tree inventory. Conversations with Cobourg's Urban Forester, Rory Quigley, suggested that minimum root protection distances for trees, hedges and larger shrubs during construction be similar to other municipal tree protection models found throughout the GTA. In general, 6cm of protection area for every 1cm of trunk diameter (Dbh). These distances are broadly in line with those quoted within the International Society of Arboriculture (ISA) Best Management Practice: Managing Trees During Construction, (companion publication to ANSI Standard A300 Part 5).

The distances are shown in the inventory are based upon a radius of protection measured from the edge of the tree trunk and are minimum protection distances. The tree protection areas are shown on the TC258-02

The minimum specification for barrier fencing is as outlined in Appendix 1, OPSD 219.130, and 220.010.

Results

Detailed results of individual and small compartment tree assessment are reproduced in Table 1 below. The data establishes:

- predominant species
- upper and lower diameter range
- average diameter at breast height (1.4m)
- approximate numbers of significant trees
- age range
- crown radius (where possible)
- overall condition (structural and physiological)
- a retention rating for each tree (refer to the Headings & Abbreviations page for details. Note that trees located on neighbouring properties are automatically assigned a rating of 3 regardless of their species profile and condition),
- development conflicts
- recommendations including tree protection zones (TPZ) where necessary.

Table 2 elaborates on the development impacts upon the assessed tree resources and details the recommendations for management within the context of development.

Species at Risk

During the tree inventory, several potential Butternut trees were identified. As such, a certified assessor was contracted to perform a Butternut Health Assessment (BHA) of these trees as per the Ontario Endangered Species Act.

The assessment was performed by Doug Kennedy, RPF of Green Side Up Environmental Services on July 12th and 26th, 2017. The BHA report concluded that all 14 trees assessed were in fact Butternut Hybrids. As such, these trees are not protected under the Act and may be removed if required.

Refer to Appendix 2 for the details of the BHA report including the Data Sheet for Field Identification of Butternut Hybrids completed during the assessment.

Table 1
Infill Development Site
425 King St. E., Cobourg, ON
Tree Inventory & Assessment

Tree ID	Owner	Species	# of Stems	Min Dbh (cm)	Max Dbh (cm)	Avg Dbh (cm)	Age Range	Height (m)	Crown Radius (m)	Overall Condition	Comments/Management	Retention Rating	Conflict	Action	TPZ
Individual Significant trees															
1818	P	American Elm	1			35rf	Em	10	5	G		2	Yes	R	
1819	P	American Elm	1			28rf	Em	10	5	G		2	Yes	R	
1820	P	Black Walnut	1			37	Mm	14	6	G	Bifurcation at 4m	2	Yes	R	
1821	P	Norway Maple	1			31	Em	10	5	G		2	Yes	R	
1822	P	Norway Spruce	1			42	Mm	20	5	G		2	Yes	R	
1823	P	Norway Spruce	1			48	Mm	18	6	F-P	Significant die back at top of crown. Tree appears to be in decline.	0	Yes	Rx	
1824	P	White Spruce	1			43	M	16	4	G		2	Yes	R	
1825	P	Norway Spruce	2			50rf	Em	15	5	Mb	North stem is dead. Retention of south stem not feasible once North stem is removed.	0	Yes	Rx	
1826	P	Norway Maple	1			46	Mm	10	6	F	Tree leans to the south with a very heavy crown spread and weight to the north west. Tree lost codominant stem on east side of tree. Large 1m wound remaining with average reaction wood.	1	Yes	R	
1828	P	Norway Maple	1			35	Em	10	6	Mb	Tree is in drastic decline.	0	Yes	Rx	
1829	P	Black Walnut	1			30	Em	14	6	G		2	Yes	R	
1830	P	Norway Maple	1			19	Em	10	3	G	Suppressed by Black walnut.	1	Yes	R	
1831	P	Scots Pine	1			37	Em	9	6	F	Significant kink in stem starting at 2m.	1	Yes	R	
1832	P	Horsechestnut	4			50rf	Em	8	6	F	Four stems originating at base. Stems irregular in shape. Health is good but structurally a poor specimen.	1	Yes	R	
1833	P	Red Maple	1			58	M	19	8	F	Large open cavity at 3 m bulbous reaction wood.	1	Yes	R	

Tree ID	Owner	Species	# of Stems	Min Dbh (cm)	Max Dbh (cm)	Avg Dbh (cm)	Age Range	Height (m)	Crown Radius (m)	Overall Condition	Comments/Management	Retention Rating	Conflict	Action	TPZ
1834	P	Red Maple	1			75 (@.75m)	M	19	9	F	Mature tree bifurcating at 2.5 m with three significant threaded rod braces. North side of inclusion is quite bulbous reaction wood. Some dieback on several stems. Tree located on edge of "tree buffer" zone.	1	CP	P	4.8
1835	P	Austrian Pine	1			80rf	M	15	10	G	Crown weighted heavily to the east and south. Tree is just inside "tree buffer" zone	2	Yes	R	
1837	P	Black Walnut	1			20	Em	9	4	G	Tree is inside "tree buffer" zone	2	CP	R	
1838	P	Butternut Hybrid	1			35@1m	Em	11	6	F	Deadwood throughout crown. Significant butternut canker at base of stem. East side of crown is impeding on adjacent house. Tree is inside "tree buffer" zone	1	CP	R	
1839	P	Norway Maple	1			31	Em	9	5	G	Characteristics typical of Norway maple.	1	Yes	R	
1840	P	Norway Maple	3			27/15/25	Em	9	5	F-G	Primary inclusion of all three stems is at the base of the tree. Those routes on east side due to significant grade change. Significant girdeled roots.	1	Yes	R	
1841	P	Norway Spruce	1			72	M	23	6	G	Tree is inside "tree buffer" zone	2	Yes	R	
1842	P	European Larch	1			43	Mm	19	6	G	Tree located on edge of "tree buffer" zone.	2	Yes	R	
1843	P	Norway Spruce	1			63	M	20	4	G		2	Yes	R	
1844	P	Sugar Maple	1			74	M	25	7	F	Crown somewhat Finney	2	Yes	R	
1845	P	Sugar Maple	1			68	M	22	6	G	Bifurcates at 4 m with long tight inclusion that is ribbed and bulbous along the main stem	2	Yes	R	
1846	P	Sugar Maple	1			70	M	15	6	F	Somewhat thinning crown	2	Yes	R	
1847	P	Norway Spruce	1			44	M	18	5	G		2	Yes	R	
1848	P	Crab Apple	1			36	Mm	8	6	F-G	Characteristic of typical Crabapple. Significant deadwood throughout crown.	1	Yes	R	

Tree ID	Owner	Species	# of Stems	Min Dbh (cm)	Max Dbh (cm)	Avg Dbh (cm)	Age Range	Height (m)	Crown Radius (m)	Overall Condition	Comments/Management	Retention Rating	Conflict	Action	TPZ
1849	P	Butternut Hybrid	1			14rf	Em	6	2	G	Tree is inside tree buffer zone. No obvious signs of butternut canker.	2	Yes	R	
1850	P	Butternut Hybrid	2			7rf	Y	2.5	1	P	Tree sits just outside the tree buffer zone and it is infected with butternut canker	1	Yes	Rx	
1851	P	Butternut Hybrid	1			S	Y	1	0.5	F	Tree is in infected with butternut canker	1	Yes	Rx	
1852	P	Butternut Hybrid	2			10	Em	6	3	P	Tree is severely infected with butternut canker	1	Yes	Rx	
1853	P	Butternut Hybrid	1			Sapling	Y					2	Yes	R	
1854	P	Ash	2			109rf	M	22	6	F	Main inclusion right at the base of tree. Tree likely to succumb to EAB if not treated	1	Yes	Rx	
1855	P	Butternut Hybrid	4			130rf	Pm	20	9	F	Primary inclusion at base of tree. East, south and west stems lean in their respective directions. Some evidence of butternut canker upon initial VTA. More extensive inspection required to determine overall extent of canker infection.	1	Yes	R	
1856	P	Sugar Maple	1			46	Mm	18	7	G		2	Yes	R	
1857	P	Ash	1			34	Mm	18	6	F-P	Crown is thinning significantly and appears to be in a state of day back.	0	Yes	Rx	
1858	P	Ash	1			111	Pm	15	8	P	Tree is in significant decline. There is a smaller Ash growing adjacent this tree and is intertwined in the canopy.	0	Yes	Rx	
1859	P	Sugar Maple	1			54	M	18	5	G	Slight lean to south	2	Yes	R	
1860	P	Sugar Maple	1			70rf	M	18	6	G	Crown is heavy to the south	2	Yes	R	
1860-1	P	Hickory	1			46	M	22	7.5	G	Tree was originally identified as an Ash	2	Yes	R	

Tree ID	Owner	Species	# of Stems	Min Dbh (cm)	Max Dbh (cm)	Avg Dbh (cm)	Age Range	Height (m)	Crown Radius (m)	Overall Condition	Comments/Management	Retention Rating	Conflict	Action	TPZ
1861	P	Butternut Hybrid	1			55	M	12	8	F	Thin crown suppressed by trees to the east. Orientation and heavy lean to the west. Bifurcates at 4m. Inclusion appears to be bulbous. Stress fracture or old wound on west side from base to 2 m, reaction wood poor. VTA - no butternut canker.	1	Yes	R	
1863	P	European Larch	1			43	M	18	4	G		2	No	P	3.8
1864	P	White Pine	1			29	Mm	18	3	G		2	No	P	1.8
1865	P	White Spruce	1			41	M	18	4	G		2	No	P	3
1866	P	White Spruce	1			22	Em	15	3	G		2	No	P	1.8
1867	P	European Larch	1			38	Mm	15	4	G		2	No	P	2.4
1868	P	Maple	1			28	Em	12	5	G		2	No	P	1.8
1869	P	White Spruce	1			30	Mm	15	3	G		2	No	P	2.4
1870	P	Silver Maple	1			38	Em	12	6	G		2	Yes	R	
1871	P	Norway Spruce	2			113	M	18	8	G		2	Yes	R	
1872	P	Manitoba Maple	1			48	M	15	9	G	Significant lean to the north west	2	No	P	3
1873	P	Horsechestnut	1			13	Em	7	5	G		2	No	P	1.8
1877	P	Butternut Hybrid	1			26	Em	14	6	F-P	Significant deadwood in lower crown as well as significant butternut canker on main stem from base to 5m.	1	Yes	Rx	
1878	P	White Spruce	1			50	M	14	5	G	Tree is on outer edge of tree buffer zone. Tree protection fencing will have to extend beyond buffer zone.	2	Yes	R	
1879	P	Ash	1			58	M	18	9	F		0	Yes	Rx	
1880	P	Butternut Hybrid	1			30	Em	12	5	F	Sparse crown and deadwood throughout. Advanced inspection required to determine extent of decline. Tree may be a candidate for removal.	1	Yes	R	
1886	P	Ash	1			63	M	18	7	F		0	Yes	Rx	
1887	P	Norway Spruce	1			97rf	M	18	8	G	Tree is inside "tree buffer" zone	2	Yes	R	

Tree ID	Owner	Species	# of Stems	Min Dbh (cm)	Max Dbh (cm)	Avg Dbh (cm)	Age Range	Height (m)	Crown Radius (m)	Overall Condition	Comments/Management	Retention Rating	Conflict	Action	TPZ
1888	P	Sugar Maple	1			49	Mm	16	8	G	Cavity on north east side @ 2m with fungus growing in side	2	Yes	R	
1889	P	Sugar Maple	2			53rf	Mm	15	8	G		2	Yes	R	
1890	P	Norway Spruce	1			80	M	18	5	G	Tree is inside "tree buffer" zone	2	Yes	R	
1891	P	Sugar Maple	1			77	M	18	10	G	Tree leans and is crown heavy to the south west. Tree is inside "tree buffer" zone.	2	Yes	R	
Municipal / Neighbouring trees															
1	N	White Birch	2			35/32	M	15	7.5	F	Bifurcates at base, deadwood throughout crown. 10.5m centre line SB	3	CP	P	4.2
2	M	Colorado Spruce	1			25	MM	1	3	G	7.5m centre line SB	3	CP	P	1.8
3	N	Ornamental shrubs	3			varies	varies	3	3.5	G-F	7m centre line SB	3	CP	P	DL
4	N	Norway Maple	1			33	EM	10	5	F	Bifurcates at 1m with significant included bark 11m centre line SB	3	CP	P	2.4
5	N	Norway Maple	1			46	MM	14.5	5	G-F	10m centre line SB	3	CP	P	3
6	N	Norway Maple	1			50	MM	15	5.5	G-F	10m centre line SB	3	CP	P	3
7	N	Scots Pine	1			36	MM	8	3.5	G-F	9m centre line SB	3	CP	P	2.4
8	N	Scots Pine	1			45rf	MM	8	6	G-F	9m centre line SB	3	CP	P	3
9	N	Crab Apple	1			15rf	MM	4	3	G-F	9m centre line SB	3	CP	P	1.2
10	N	Scots Pine	1			30	MM	10	4	G-F	9m centre line SB	3	CP	P	2.4
11	N	Scots Pine	1			30	MM	8	5	G-F	9m centre line SB	3	CP	P	2.4
12	N	Scots Pine	1			44	M	9	5	G-F	9m centre line SB	3	CP	P	3
13	N	Scots Pine	1			23	MM	8	4.5	G-F	9m centre line SB	3	CP	P	1.8
68	M	European Larch	1			51	M	14	6	3	Hydro pruning	3	No	P	3.8
69	M	White Spruce	1			37	MM	16	3.5	4	Hydro pruning	3	No	P	2.4
70	M	White Spruce	1			55	M	19	6.5	4	Hydro pruning	3	No	P	3.8
71	M	Norway Maple	1			22	EM	15	5	5		3	No	P	1.8
72	M	White Spruce	1			44	M	18	4.5	5		3	No	P	3
73	M	White Spruce	1			28	MM	19	3	5		3	No	P	1.8
74	M	White Spruce	1			25	EM	16	3	5		3	No	P	1.8
75	M	Silver Maple	1			98rf	PM	17	6	3	Basal decay, lower north leaders cut off, heavy lean to south	3	No	P	6
76	M	Silver Maple	2			77	PM	18	4	3	Heavily pruned tree, not much foliage	3	No	P	4.8
77	M	Butternut Hybrid	1			33	MM	15	5	4	Heavily cankered, most likely hybrid	3	No	P	2.4

Tree ID	Owner	Species	# of Stems	Min Dbh (cm)	Max Dbh (cm)	Avg Dbh (cm)	Age Range	Height (m)	Crown Radius (m)	Overall Condition	Comments/Management	Retention Rating	Conflict	Action	TPZ
78	M	Silver Maple	2			88rr	PM	24	6	4		3	No	P	5.4
79	M	Silver Maple	2			119rf	PM	24	10	4		3	No	P	7
80	M	Silver Maple	2			95rf	PM	24	9	4	could be red maple or hybrid	3	No	P	6
81	M	White Spruce	1			32	MM	16	4	G-F	Grapevine intertwined throughout crown	3	No	P	2.4
82	M	White Spruce	1			28	MM	16	2.5	G-F		3	No	P	1.8
83	M	Black Cherry	1			68rf	M	17	8.5	G-F	Large over extended limb to the south at 1m Mainstem bifurcates at 2m. Cupped union with included bark appears sound.	3	No	P	4.2
84	M	Ash	2			43	EM	17	3	G-F	Stem Dbh 27/16. No outward signs of EAB	3	No	P	3
85	M	Silver Maple	1			83	PM	19	10	Fair	Mainstem knuckles into several primary branches at 4 meters. Large branch torn out at inclusion at base of tree east side exposing open cavity behind included bark	3	No	P	5.4
86	M	White Spruce	1			31	MM	18	3.5	G		3	No	P	2.4
87	M	White Spruce	1			29	MM	17	3.5	G		3	No	P	1.8
88	M	White Spruce	1			34	MM	17	3.5	G		3	No	P	2.4
89	M	White Spruce	1			38	MM	18	3.5	G		3	No	P	2.4
90	M	White Spruce	1			41	MM	21	5	G		3	No	P	3
91	M	White Spruce	1			29	MM	20	3.5	G		3	No	P	1.8
92	M	White Spruce	1			42	MM	22	4.5	G		3	No	P	3
93	M	Black Walnut	1			30	MM	18	6	G		3	No	P	2.4
94	M	White Spruce	1			29	EM	17	3.5	G-F	West side of crown suppressed by younger Maples	3	No	P	1.8
95	M	Maple	1			103	PM	25	10	Fair	Species unidentified. Tree bifurcates into 2 large primary stems at 1m with significant inclusion and included bark. North stem bifurcates at 2m, again, with significant included bark.	3	No	P	6.2
96	M	Norway Maple	1			38	MM	19	8	G-F	North side of crown suppressed by adjacent sugar maple	3	No	P	2.4

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1836	N	Blue Spruce	1			49	M	17	4.5	G	West side of stem is very close to property line	3	No	P	3
1862	M	Sugar Maple	1			66	M	15	5	P	Municipal tree. Significant cavity decay and cankers present. Tree is structurally unsound. Tree should be removed but requires municipal consent.	0	CP	R	
1874	?	Norway Maple	1			30	Em	15	6	G	Ownership unknown	2	No	P	2.4
1875	?	Norway Maple	1			23	Em	15	6	G	Ownership unknown	2	No	P	1.8
1876	M	European Larch	1			42	Mm	8	8	G	Ownership unknown. Tree has been cut for utility line clearance.	2	No	P	3
1881	?	Black Walnut	1			60	M	18	10	G	Ownership unknown	2	No	P	3.8
1882	?	Black Walnut	1			60	M	18	10	G	Ownership unknown	2	No	P	3.8
1883	?	Black Walnut	1			60	M	18	10	G	Ownership unknown	2	No	P	3.8
1884	?	Black Walnut	1			60	M	18	10	G	Ownership unknown	2	No	P	3.8
1885	?	Black Walnut	1			73	M	18	10	G	Ownership unknown, appears to be neighbours	2	No	P	4.8
N1	N	Blue Spruce	1			24	Em	10	2	G	East of tree #1849	3	No	P	1.5
N2	N	Sugar Maple	1			55	M	15	7	G	North of tree #96	3	No	P	3.8
N3	N	Sugar Maple	1			65	M	18	7	G	North of tree #96	3	No	P	4.2

Treed Compartments (CPT)

CPT1	P	Butternut Hybrid	4			<10	Y	varies	varies	G	Sapling clusters of Elm, Sugar Maple, Manitoba Maple, Spruce and Buckthorn in addition to the inventoried Butternut	2	varies	R	
CPT2	P	White Spruce	14	13	40	24	Y-Em	15	varies	G	Individual Dbh is as follows: 30,15,20,37,40,17,28,23,13,16,24, 22,35 and 39	2	varies	R	
	S	Manitoba Maple	2			45	MM			F-P	Trees are on the property line and grossly embeded in the chain link fence. Recommend removing trees so new privacy fence can be constructed.	3	Yes	R	
CPT3	P	Ash	5	15	56	30	Em-M	18	varies	F		3	Yes	Rx	

Tree ID	Owner	Species	# of Stems	Min Dbh (cm)	Max Dbh (cm)	Avg Dbh (cm)	Age Range	Height (m)	Crown Radius (m)	Overall Condition	Comments/Management	Retention Rating	Conflict	Action	TPZ
CPT4	P	Black Walnut	9	15	20	15	Y	varies	varies	G		2-3	Yes	R	
	P	Sugar Maple	100+	<10	20	<10	Y	varies	varies	G					
	P	Manitoba Maple	100+	<10	35	<10	Y	varies	varies	F	2 Manitoba Maple are 35cm				
	P	Crab Apple	2		45	45	Em	varies	varies	F	1 of the Crab Apple trees is dead				
	P	Eastern White Cedar	10			<20	Y	varies	varies	G	Buckthorn dispersed throughout compartment				
	P	American Elm	12			<15	Y	varies	varies	F					
	P	Ash	5			<10	Y	varies	varies	F					
	P	Scots Pine	1			35	Mm	varies	varies	F					
CPT5	P	Sugar Maple	Dense throughout compartment			<30	Y-Em	varies	varies	F-G		2-3	Yes	R	
	P	Manitoba Maple													
	P	White Birch													
	P	Black Walnut													
	P	Crab Apple													
	P	Siberian Elm													
	P	White Spruce													
CPT6	P	Black Walnut	7			10	Y	6	varies	G	Sapling clusterd of Manitoba Maple throughout compartment	2	Yes	R	
CPT7	P	Maple	9	<10	20	10	Y-Em	varies	varies	G	Noth portion has several neighbouring trees along the west property line which are thoroughly protected by the designated the south west. Tree is inside "tree buffer" zone	2-3	varies	varies	varies
	P	Ash	30+	<10	45	25	Y-Mm	varies	varies	F					
	P	Black Cherry	2			15	Em	8	3	G					
	P	Horsechestnut	1			10	Y	7	4	G					

Headings & Abbreviations

Tree ID	Reference number. Refer to plan or numbered tags where applicable
Owner Code	P = Private client owned tree, N = Neighbour (private) owned tree, M = municipal tree, S = Shared ownership with adjacent property (private or municipal), ? = ownership undetermined, more accurate survey information needed
Species	Common name
Age Range	Y = Young, EM = Early mature, MM = Middle mature, M = Mature, PM = Post mature
Height	Other than where the height of a tree is critical to the outcome of the risk assessment, approximately 1 in 10 trees are measured and the remainder estimated against the measured trees
Crown Spread	Measured or estimated radius of crown at the widest point
Stem Dbh	Stem diameter - measured at a height of approximately 1.4 metres above grade, rf = measurement at root flare
Overall Condition	A combined measurement of physiological and structural condition. Good (G) = Safe & free from defects with a healthy crown, Fair (F) = Safe but with some defects, generally healthy crown, Poor (P) = Significant structural defects, and/or poor health & vitality, or Moribund (MB) = Tree is in noticeable decline Dead (D) = Tree is standing dead
Retention Rating	3 = Trees that MUST be retained including; endangered species, heritage trees and private boundary trees 2 = Specimen trees and trees with good overall condition that warrant consideration of minor adjustments to development and/or grading plans in order to retain. 1 = Trees with fair to poor overall condition worthy of retention but only in the absence of development conflict. 0 = Poor quality specimens overall with short safe useful life expectancy. Readily expendable for the purpose of development.
Conflict	No = Limits of excavation and/or grading are ***NOT*** in direct conflict with assessed tree or compartment of trees Yes = Limits of excavation and/or grading are in direct conflict with assessed tree or compartment of trees. CP = Limits of excavation and/or grading are in close proximity with assessed tree or compartment of trees . Varies = Limits of excavation and/or grading are in direct conflict and/or close proximity with a ***portion*** of a treed compartment. Refer to *Development Conflicts* section of the report for details.
Action	P = Preserve & retain tree. Tree protection and/or minor adjustment to the development and/or grading plan may be required. R = Remove tree due to conflict(s) with development or grading plan that are not feasible or possible to alter. Rx = Remove tree; specimen is dead, dying or hazardous. Also includes Ash trees located within 25kms of known Emerald Ash Borer infestation and not scheduled for treatment. TBD = Decision deferred to detail design phase (requires reassessment against development conflicts with final site plan and grading plans). In the interim, the tree will be designated as "P". * = Permission from adjacent landowner required
TPZ	Recommended radius of tree protection zone relative to tree's Dbh. DL = Drip line of tree

EXT. 1.5 STOREY

ROAD ALLOWANCE BETWEEN LOTS 12 AND 13 (CLOSED BY UNREGISTERED BY-LAW 286, AS IN INSTRUMENT NC302925)

EXISTING RESIDENTIAL

84.77

1854
1855
1856
1857
85.55
1858
1860
1859
1862

2
4
6
3

Ex. 200mmØ WATERMAIN
FH
WV
84.71
300mmØ CPP
EDGE OF ASPHALT
EXISTING CENTRELINE
SS
OH
400mmØ CPP
250mmØ CPP
CO
Ex. 1.5m CONC. S/W
Ex. 300mmØ W/M

1 2 3 4 5 6 7 8 9 10 11 12 13

ORCHARD AVENUE

COVERDALE AVENUE

REVISIONS:

NO.	DMY	REVISIONS

993 Assessed individual or significant municipal tree along Molly Baker Trail

993 Assessed individual or significant tree

1820 Assessed individual or significant tree on adjacent neighbouring property

Assessed compartment of trees

Assessed compartment of trees on adjacent neighbouring property

ROOTED IN EXCELLENCE
treescape
CERTIFIED ARBORISTS

CLIENT
Mason Homes
6-30 Pennsylvania Avenue
Concord, ON

SHEET
Tree Inventory Plan

PROJECT
TC258 - 425 King Street, Cobourg

REVIEWED

DRAWN
AWS

DATE
April 9, 2020

SCALE
DO NOT SCALE

SHEET
TC258-01 (b)

KING STREET EAST (THE KING'S HIGHWAY NO. 2)

SIGNALIZED INTERSECTION

BROOK ROAD SOUTH

EXISTING RESIDENTIAL

EXISTING RESIDENTIAL

EXISTING RESIDENTIAL

ORCHARD AVENUE

ORCHARD AVENUE

1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891

N1 N2 N3

CPT 1 CPT 2 CPT 3 CPT 4 CPT 5 CPT 6 CPT 7

EXT. FRAME GARAGE

EXT. 2 STOREY

EXT. 2 STOREY

EXT. 1 STOREY

EXT. 1.5 STOREY

ROAD ALLOWANCE BETWEEN LOTS 12 AND 13 (CLOSED BY UNREGISTERED BY-LAW 286, AS IN INSTRUMENT NC302925)

84.77

85.55

2

300mmØ CPP

EXISTING CENTREL

EXISTING DITCH

BLOCK 1 1954.4m²

BLOCK 5 2386.6m²

BLOCK 4 [illegible]

84 83 82 81 80 79 78 77 76 75 74 73 72 71 70 69 68 96 95 94 93 92 91 90 89 88 87 86 85

REVISIONS:

NO.	DMY	REVISIONS

993 Assessed individual or significant municipal tree along Molly Baker Trail

993 Assessed individual or significant tree

1820 Assessed individual or significant tree on adjacent neighbouring property

Assessed compartment of trees

Assessed compartment of trees on adjacent neighbouring property

ROOTED IN EXCELLENCE

treescape CERTIFIED ARBORISTS

CLIENT

Mason Homes
6-30 Pennsylvania Avenue
Concord, ON

SHEET

Tree Inventory Plan

PROJECT

TC258 - 425 King Street, Cobourg

REVIEWED

DRAWN

AWS

DATE

April 9, 2020

SCALE

DO NOT SCALE

SHEET

TC258-01 (a)

Table 2
Infill Development Site
425 King St. E., Cobourg, ON
Tree Removal & Preservation Plan

Compartment (CPT) / Tree #	Development Impact	Recommendation
68-96 & 1876	These trees are municipal trees found along the Molly Baker Trail and are in proximity to various elements of the development footprint. Trees < 30cm Dbh were not assessed for development impact as suggested by Rory Quigley, Town Arborist.	Preserve trees - establish prescribed tree protection zone (TPZ) and install protective fencing as specified.
1-13 and Hedge 2	These are trees located on private lands along Orchard Avenue. The crown and/or root system of these trees are in close proximity to the construction of the storm sewer extension down Orchard Avenue. Note: Hedge was not inventoried	Preserve trees - establish prescribed tree protection zone (TPZ) and install protective fencing as specified. Trees 1,2, 8 and 10-13 may require varying amounts of pruning for clearance of equipment required for the construction. Tree 2 (municipal tree) may need to be considered for removal depending on the amount of pruning required for equipment clearance. Notice should be given to homeowners of these trees and all pruning should be performed by a certified arborist to ANSI A300 standards.
1836, 1872, 1873, 1874, 1875, 1881, 1882, 1883, 1884, 1885, N1, N2 and N3	These are neighbouring or shared trees that are within, or encroaching, the development footprint. The overall impact to these trees is deemed to be minimal to none.	Preserve trees - establish prescribed tree protection zone (TPZ) and install protective fencing as specified.
1863, 1864, 1865, 1866, 1867, 1868 and 1869	These trees are significant trees within CPT 5 worth retaining that are within, or encroaching, the development footprint. They also fall within an 8m offset area from the property line to be reviewed.	Preserve trees - establish prescribed tree protection zone (TPZ) and install protective fencing as specified.

Compartment (CPT) / Tree #	Development Impact	Recommendation
1834	This tree is in close proximity to the limits of grading. Engineers have confirmed that grading around the area of this tree will have a minimal effect on the long-term sustainability of this tree and can, therefore, be preserved.	Preserve tree - establish prescribed tree protection zone (TPZ) and install protective fencing as specified.
Hedge 1	This is a deciduous hedge that originates on private property and extends onto municipal lands. A portion of the norther section of the hedge is in conflict with the construction of the storm sewer extension down Orchard Avenue. Note: Hedge was not inventoried	Remove and/or prune hedge as necessary for development. Provide TPZ fencing along remaining portion of retained hedge adjacent to the construction. Notice should be given to homeowners of these trees and all pruning should be performed by a certified arborist to ANSI A300 standards.
CPT 5 and CPT6	Limits of excavation for the development footprint encroaches the northern portion of these compartments. Removal and/or pruning of some trees is required.	Remove and/or prune trees as necessary for development. Provide TPZ fencing along drip line of remaining retained trees adjacent to the construction (preferably to the edge of construction/grading limits). Any pruning should be performed by a certified arborist to ANSI A300 standards.
CPT 7	Limits of excavation for the development footprint encroaches the eastern portion of this compartment. Removal and/or pruning of some trees is required.	Remove and/or prune trees as necessary for development. Provide TPZ fencing along drip line of remaining retained trees adjacent to the construction (preferably to the edge of construction/grading limits). Any pruning should be performed by a certified arborist to ANSI A300 standards.
CPT 1	Overall development impact on trees in this compartment is deemed to be minimal to nil. With the exception of marked individual trees, this compartment consists of young, insignificant volunteer broadleaf trees, related saplings and Buckthorn.	Remove all trees and replant more suitable specimens to create a natural screen to adjacent neighbouring property. The Town has agreed to this recommendation during onsite consultations.

Compartment (CPT) / Tree #	Development Impact	Recommendation
CPT 2	Limits of excavation for the development footprint encroaches the western portion of this compartment. Removal of some, or all trees is required. There will be approximately 3 Spruce trees remaining all of which have been crown raised significantly (assuming by adjacent neighbour) and will no longer provide any significant screening or privacy. In addition, root disturbance due to required removal and grubbing of Buckthorn and scrub brush around tree will have a negative impact on these trees.	Remove trees and replant more suitable specimens to create a natural screen to adjacent neighbouring property. The Town has agreed to this recommendation during onsite consultations.
1870	This tree is currently growing out of the side of a berm approximately 1.5m higher than the grade around tree 1871. Engineers have confirmed that this berm is proposed to be remove and, therefore, this tree cannot be preserved.	Remove tree
1871	This tree is in direct conflict with the construction of an infiltration trench as well as proposed grading. Engineers have confirmed that neither of these design elements can be altered and, therefore, this tree cannot be preserved.	Remove tree

Compartment (CPT) / Tree #	Development Impact	Recommendation
1859, 1860, 1861 and 1862	The crown and/or root system of these trees are in direct conflict with the construction of the roadway where it meets Orchard Avenue. Engineers have confirmed that space limitations in this area does not allow for design changes to the roadway connection with the existing road. Preservation options in the way of tree wells were explored for these trees. It was concluded that the tree wells could not be constructed without conflicting with the roadway design.	Remove trees Note: tree 1862 is a municipal tree and the Town arborist is in agreement of its removal due to its poor overall condition.
1818-1826, 1828-1833, 1835, 1837-1858, 1877-1880, 1886-1891, CPT 3 & CPT 4	These trees are in direct conflict with various elements of design footprint. Modifications to the design and/or grading plan is neither practical nor feasible.	Remove trees Note: tree 1841 is included as a removal due its close proximity to rear catch basin construction and final grading as well as the imminent, and significant, root disturbance due to required removal and grubbing of Buckthorn and scrub brush around tree.

EXISTING RESIDENTIAL

EXT. 1.5 STOREY

ROAD ALLOWANCE BETWEEN LOTS 12 AND 13 (CLOSED BY UNREGISTERED BY-LAW 286, AS IN INSTRUMENT NC302925)

84.77

85.59

84.71

1854
1855
1856
1857
1858
1859
1860
1861
1862

2
4
6
3

Ex. 200mmØ WATERMAIN
300mmØ CPP
EDGE OF ASPHALT
EXISTING CENTRELINE
400mmØ CPP
250mmØ CRP
Ex. 1.5m CONC. S/W
Ex. 300mmØ W/M
FH
WV
CO
S.S.

Hedge 1
Hedge 2

ORCHARD AVENUE

COVERDALE AVENUE

REVISIONS:

	Crown spread
	Recommended Root Protection Zone
1972	Mason Homes tree to be removed to accommodate development
1972	Molly Baker Trail to be removed to accomodate development
1972	Tree to be removed due to poor overall condition
1972	Mason Homes tree to be preserved
1972	Molly Baker Trail tree to be preserved
	Tree compartment portion to be preserved
	Tree compartment portion to be removed
	Protective fencing

ROOTED IN EXCELLENCE
treescape
CERTIFIED ARBORISTS

CLIENT
Mason Homes
6-30 Pennsylvania Avenue
Concord, ON

SHEET
Tree Preservation & Removals Plan

PROJECT
TC258 - 425 King Street, Cobourg

REVIEWED

DRAWN
AWS

DATE
April 9, 2020

SCALE
DO NOT SCALE

SHEET
TC258-02 (b)

KING STREET EAST (THE KING'S HIGHWAY NO. 2)

SIGNALIZED INTERSECTION

BROOK ROAD SOUTH

EXISTING RESIDENTIAL

EXISTING RESIDENTIAL

EXISTING RESIDENTIAL

ORCHARD AVENUE

ROAD ALLOWANCE BETWEEN LOTS 12 AND 13 (CLOSED BY UNREGISTERED BY-LAW 286, AS IN INSTRUMENT NC302925)

EXT. FRAME GARAGE

EXT. 2 STOREY

EXT. 2 STOREY

EXT. 1 STOREY

EXT. 1.5 STOREY

2

1818 1819 1820 1821 1822 1823 1824 1825 1826 1827 1828 1829 1830 1831 1832 1833 1834 1835 1836 1837 1838 1839 1840 1841 1842 1843 1844 1845 1846 1847 1848 1849 1850 1851 1852 1853 1854 1855 1856 1857 1858 1859 1860 1861 1862 1863 1864 1865 1866 1867 1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891

N1 N2 N3

CPT 1 CPT 2 CPT 3 CPT 4 CPT 5 CPT 6 CPT 7

8m offset from south property line for town imposed tree protection buffer

EXISTING DITCH

300mmØ CPP

EXISTING CENTREL

OH

84.77

85.55

Molly Baker Trail Lands

REVISIONS:

Crown spread

Recommended Root Protection Zone

1972 Mason Homes tree to be removed to accommodate development

1972 Molly Baker Trail to be removed to accomodate development

1972 Tree to be removed due to poor overall condition

1972 Mason Homes tree to be preserved

1972 Molly Baker Trail tree to be preserved

Tree compartment portion to be preserved

Tree compartment portion to be removed

Protective fencing

ROOTED IN EXCELLENCE

treescape CERTIFIED ARBORISTS

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6-30 Pennsylvania Avenue
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SCALE
DO NOT SCALE

SHEET
TC258-02 (a)

Replacement Tree Compensation

Cobourg's municipal arborist set out the following parameters to calculate tree canopy compensation based on tree's Dbh and overall condition rating.

- Trees with a caliper of 300mm DBH at a compensation ratio of 1:1
- Trees with a caliper of 310mm to 400mm DBH at a compensation ratio of 2:1
- Trees with a caliper of 410mm to 500mm DBH at a compensation ratio of 3:1
- Trees with a caliper of 510mm to 740mm DBH or at a compensation ratio of 4:1
- Trees with a caliper of 750mm DBH or greater at a compensation ratio of 5:1

The compensation ratio is adjusted to compensate for the trees' Condition Rating as listed in Table 1 in the TIPP.

Good x1 / Good-Fair x.75 / Fair x .5 / Fair-Poor .25 & Poor x.25 / Mb/Dead x0

A subsequent site visit on March 20, 2020 was conducted to ascertain more accurately how many trees within the compartment areas require compensation.

The compensation ratio and depreciation factors were entered into the tree inventory spreadsheet and produced a Total (Gross) Tree Compensation of 101 trees at 50mm caliper. Refer to Table 3 below for detailed tree compensation data and computations.

The municipal arborist has allowed a tree compensation credit of 2.5 (rounding to 3) trees based on the proposed new tree plantings outlined in the first Landscape Plan submission. I have calculated the Final (Net) Tree Compensation at 98 trees at 50mm caliper X $350.

In addition to these required 50mm caliper re-plantings, the municipal arborist has requested compensation for the removal of trees 1859, 1860 & 1861 in the way five (5) 100mm caliper trees.

Table 3

Infill Development Site

425 King St. E., Cobourg, ON

Tree Canopy Compensation

(Table lists only trees recommended for removal)

Tree ID	Species	# of Stems	Avg Dbh (cm)	Overall Condition	Replant Ratio	Depreciation	Replant # (50mm caliper)	Comments/Management
1818	American Elm	1	35rf	G	2	1	2.0	
1820	Black Walnut	1	37	G	2	1	2.0	Bifurcation at 4m
1821	Norway Maple	1	31	G	2	1	2.0	
1822	Norway Spruce	1	42	G	3	1	3.0	
1823	Norway Spruce	1	48	F-P	3	.25	0.8	Significant die back at top of crown. Tree appears to be in decline.
1824	White Spruce	1	43	G	3	1	3.0	
1826	Norway Maple	1	46	F	3	.5	1.5	Tree leans to the south with a very heavy crown spread and weight to the north west. Tree lost codominant stem on east side of tree. Large 1m wound remaining with average reaction wood.
1829	Black Walnut	1	30	G	1	1	1.0	
1831	Scots Pine	1	37	F	2	.5	1.0	Significant kink in stem starting at 2m.
1832	Horsechestnut	4	50rf	F	3	.5	1.5	Four stems originating at base. Stems irregular in shape. Health is good but structurally a poor specimen.
1833	Red Maple	1	58	F	4	.5	2.0	Large open cavity at 3 m bulbous reaction wood.
1835	Austrian Pine	1	80rf	G	5	1	5.0	Crown weighted heavily to the east and south. Tree is just inside "tree buffer" zone
1839	Norway Maple	1	31	G	2	1	2.0	Characteristics typical of Norway maple.
1841	Norway Spruce	1	72	G	4	1	4.0	Tree is inside "tree buffer" zone
1842	European Larch	1	43	G	3	1	3.0	Tree located on edge of "tree buffer" zone.
1843	Norway Spruce	1	63	G	4	1	4.0	
1844	Sugar Maple	1	74	F	4	.5	2.0	Crown somewhat Finney
1845	Sugar Maple	1	68	G	4	1	4.0	Bifurcates at 4 m with long tight inclusion that is ribbed and bulbous along the main stem
1846	Sugar Maple	1	70	F	4	.5	2.0	Somewhat thinning crown
1847	Norway Spruce	1	44	G	3	1	3.0	
1848	Crab Apple	1	36	F-G	2	.75	1.5	Characteristic of typical Crabapple. Significant deadwood throughout crown.

Tree ID	Species	# of Stems	Avg Dbh (cm)	Overall Condition	Replant Ratio	Depreciation	Replant # (50mm caliper)	Comments/Management
1855	Butternut Hybrid	4	130rf	F	5	.5	2.5	Primary inclusion at base of tree. East, south and west stems lean in their respective directions. Some evidence of butternut canker upon initial VTA. More extensive inspection required to determine overall extent of canker infection.
1856	Sugar Maple	1	46	G	3	1	3.0	
1870	Silver Maple	1	38	G	2	1	2.0	
1871	Norway Spruce	2	113	G	5	1	5.0	
1878	White Spruce	1	50	G	3	1	3.0	Tree is on outer edge of tree buffer zone. Tree protection fencing will have to extend beyond buffer zone.
1880	Butternut Hybrid	1	30	F	1	.5	0.5	Sparse crown and deadwood throughout. Advanced inspection required to determine extent of decline. Tree may be a candidate for removal.
1887	Norway Spruce	1	97rf	G	5	1	5.0	Tree is inside "tree buffer" zone
1888	Sugar Maple	1	49	G	3	1	3.0	Cavity on north east side @ 2m with fungus growing in side
1889	Sugar Maple	2	53rf	G	4	1	4.0	
1890	Norway Spruce	1	80	G	5	1	5.0	Tree is inside "tree buffer" zone
1891	Sugar Maple	1	77	G	5	1	5.0	Tree leans and is crown heavy to the south west. Tree is inside "tree buffer" zone.
CPT2	White Spruce	14	24	G	7	1	7.0	Individual Dbh is as follows: ***30*** ,15,20,***37*** ,***40*** ,17,28,23,13,16,24, 22,***35*** and ***39***
	Manitoba Maple	2	45	F-P	6	0.25	1.5	Trees are on the property line and grossly embeded in the chain link fence. Recommend removing trees so new privacy fence can be constructed.
CPT4	Manitoba Maple	100+	<10	F	4	0.5	2.0	***2 Manitoba Maple are 35cm***
	Crab Apple	2	45	F	3	0.5	1.5	***1 of the Crab Apple trees is dead***
	Scots Pine	1	35	F	2	0.5	1.0	
						Total # of 50mm caliper replacement trees	**101**	

Tree Preservation

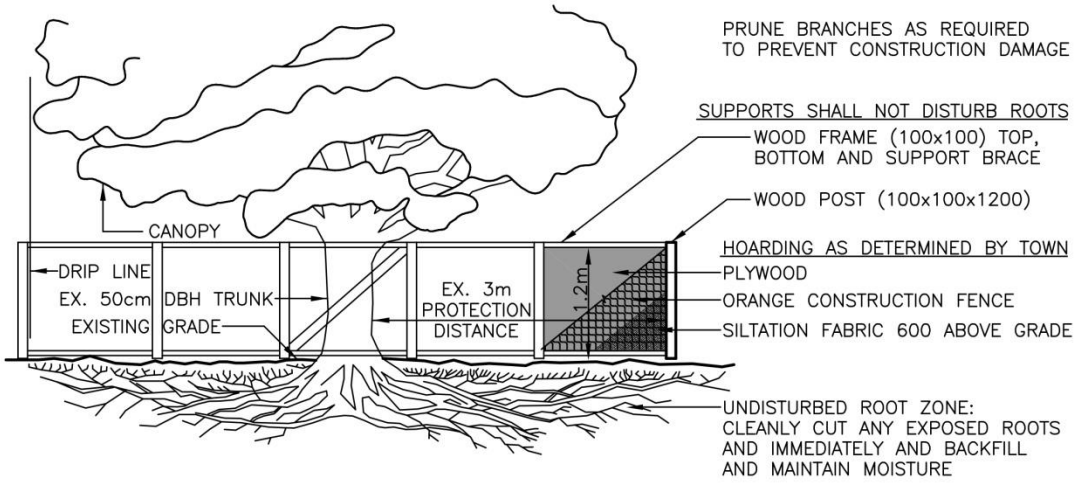
Pre-construction

Prior to any construction work, establishment of storage compounds, site offices, latrines, contractor parking or storage of any materials; all approved tree works shall be undertaken in accord with the recommendations detailed in both the tree inventory and development impact summary in accord with the current ISA Best Management Practice –Tree Pruning (companion publication to ANSI standard A300 Part 1 (2008) Tree, Shrub and other Woody Plant Management –Standard Practices, Pruning).

Following this, all trees identified for retention within the schedule (Table 1) shall be protected using appropriate tree protection methods such as barriers installed in the locations identified on the *Tree Preservation & Removals Plan* drawing to create tree protection zones (Subject to revision as required by final design). Where this is not possible, trunk/lower branch protection and/or soil and root protection within the TPZ shall be as detailed below. Other precautions such as tying back branches, modification of construction techniques, thrust boring and the use of special surfaces may be required as necessary.

Tree Protection Zone (TPZ) and Barriers & Signage

APPENDIX C



MINIMUM TREE PROTECTION DISTANCE FROM TRUNK:

< 10cm DBH	1.2m
10–29cm DBH	1.8m
30–40cm DBH	2.4m
41–50cm DBH	3.0m
51–60cm DBH	3.6m
61–70cm DBH	4.2m
71–80cm DBH	4.8m
81–90cm DBH	5.4m
91–100cm DBH	6.0m
> 100cm DBH	6cm/1cmø

(DIAMETER AT BREAST HEIGHT) DBH = TRUNK DIAMETER AT 1.4m HEIGHT

40cmx60cm SIGN MOUNTED ON ALL SIDES OF BARRIER

MARKHAM

TREE PROTECTION ZONE

NO WORK IS PERMITTED WITHIN THE TREE PROTECTION ZONE INCLUDING GRADING, CONSTRUCTION ACCESS AND MATERIAL STORAGE.

BREACH OF TREE PROTECTION ZONE IS SUBJECT TO A FINE OF $_____

CONTACT TOWN OF MARKHAM FOR MORE INFORMATION: 905–477–5530

TREE PROTECTION NOTES:

1. ALL TREE PROTECTION BARRIERS SHALL BE IN PLACE AND APPROVED BY THE TOWN PRIOR TO CONSTRUCTION ACCESS.

2. ALL SUPPORTS AND STAKES SHALL BE OUTSIDE THE TREE PROTECTION ZONE AND SHALL MINIMIZE ROOT DAMAGE.

3. TREE PROTECTION BARRIERS SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL ALL CONSTRUCTION IS COMPLETE AND APPROVED BY THE TOWN.

4. ALL ARBORICULTURE WORK SUCH AS PRUNING OF BRANCHES AND ROOTS, SHALL BE DONE BY A QUALIFIED TREE WORKER CERTIFIED WITH THE INTERNATIONAL SOCIETY OF ARBORICULTRE APPROVED BY THE TOWN.

Soil and Root Protection Within the TPZ

"If traffic cannot be kept outside of the TPZ for the entire duration of construction, actions can be taken to disperse the vehicular load and protect roots, minimizing soil compaction and mechanical root damage. These include:

- Applying 15-30cm (6-12") of wood chip mulch to the area
- Laying 2cm (¾") thick plywood or 10 x 10cm (4x4") wood beams over a 10+ cm (4+ ") thick layer of wood chip mulch
- Applying 10-15cm (4-6") of gravel over a taut, staked geotextile fabric; or
- Placing commercial logging or road mats on top of a mulch layer
- Stone, geotextile and mulch exceeding 10cm (4") thick will need to be removed from the TPZ once the threat of soil or root damage has passed."

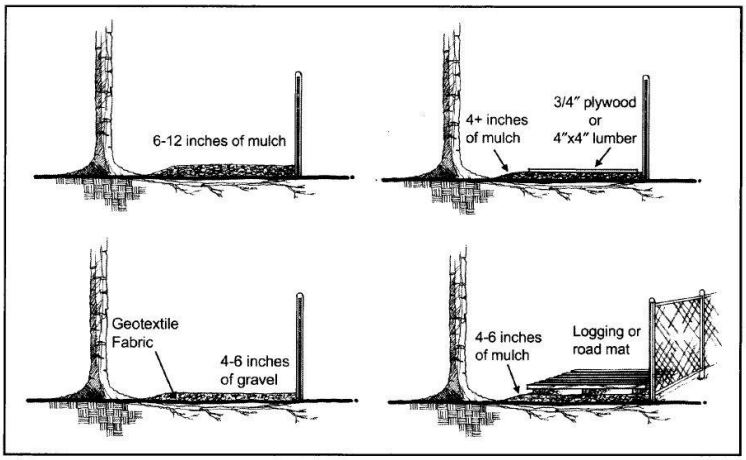


Figure 3. Soil and root protection options within the TPZ.

Trunk Protection

"When trees are so close to construction activities that the trunk or buttress roots may be mechanically damaged, those parts should be protected. This can be done by installing 5cm (2") thick wood planks, such as 5x10cm or 5x15cm (2x4"s or 2x6"s) around the trunk, preferably on a closed-cell foam pad. Straps or wire are used to bind the planks in place. No fasteners should be driven into the tree. Trunk protection should be adjusted to allow growth if it is in place during periods of trunk diameter growth."

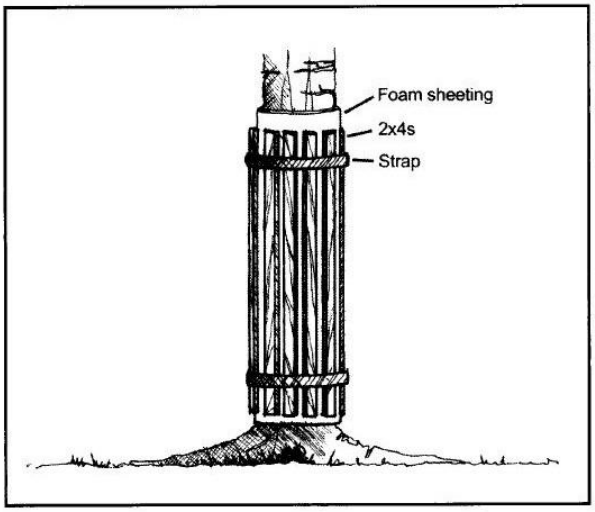


Figure 4. Trunk protection structure.

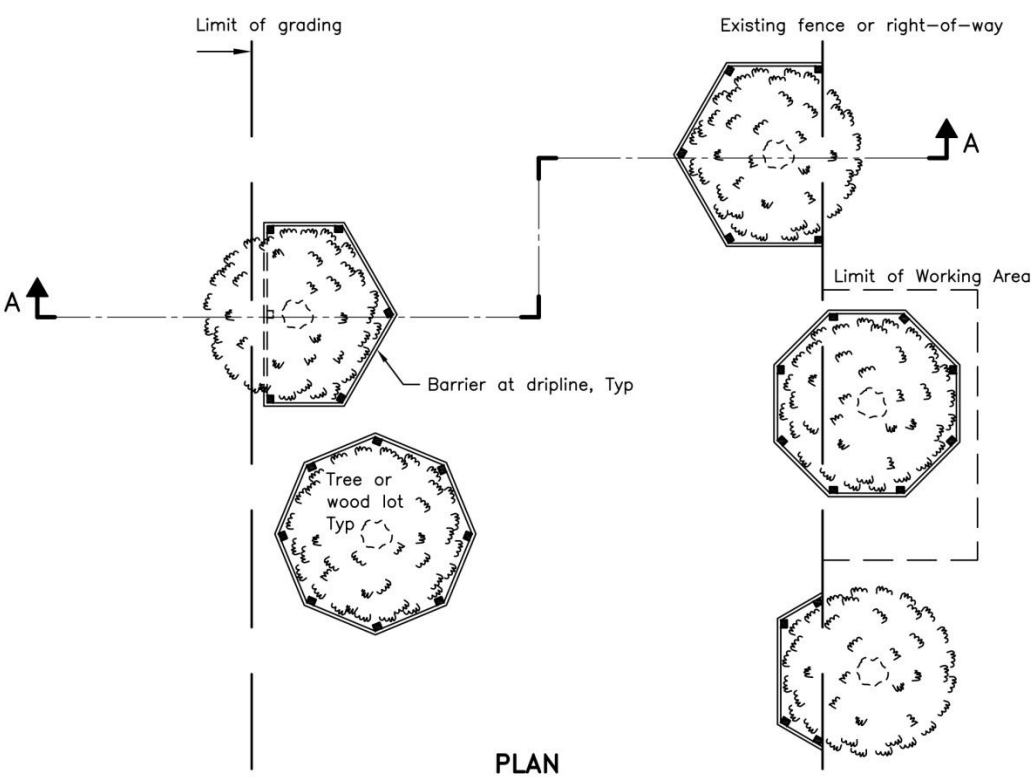
During construction

Throughout the construction an ISA Certified Arborist shall be retained for the following:

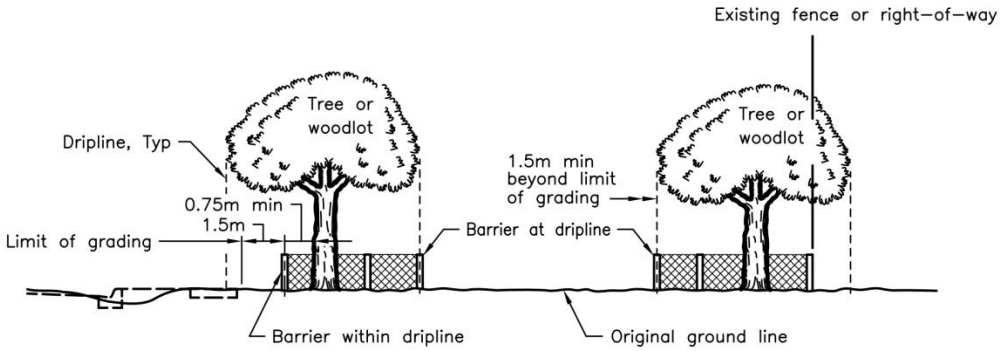
- Advise and oversee any site activities where construction impacts upon retained trees.
- Advise on root severance and pruning.
- Advise on tree damage caused by, or occurring during construction, including storm events, and specify and detail remediation methods.
- Advise on location of boring and excavation methods in the root zone of trees where appropriate.
- Advise on grade changes within the critical root zone of trees.
- Monitor tree health and advise on cultural requirement of trees during construction.
- Advise on any unforeseen changes to construction that are likely to be detrimental to retained trees.
- Monitor the Tree Protection Zone (TPZ) barriers and TPZ signage.
- Supervise the removal/dismantling of all the approved tree protection systems at the completion of construction.

Post-Construction Care

Following the completion of construction and the removal of all tree protection, the Arborist will re-inspect all retained trees and assess their current health and vitality. The Arborist will advise on the requirement for irrigation, deep-root fertilizing and de-compaction, as appropriate to ensure the continued health and sustainability of the retained trees.



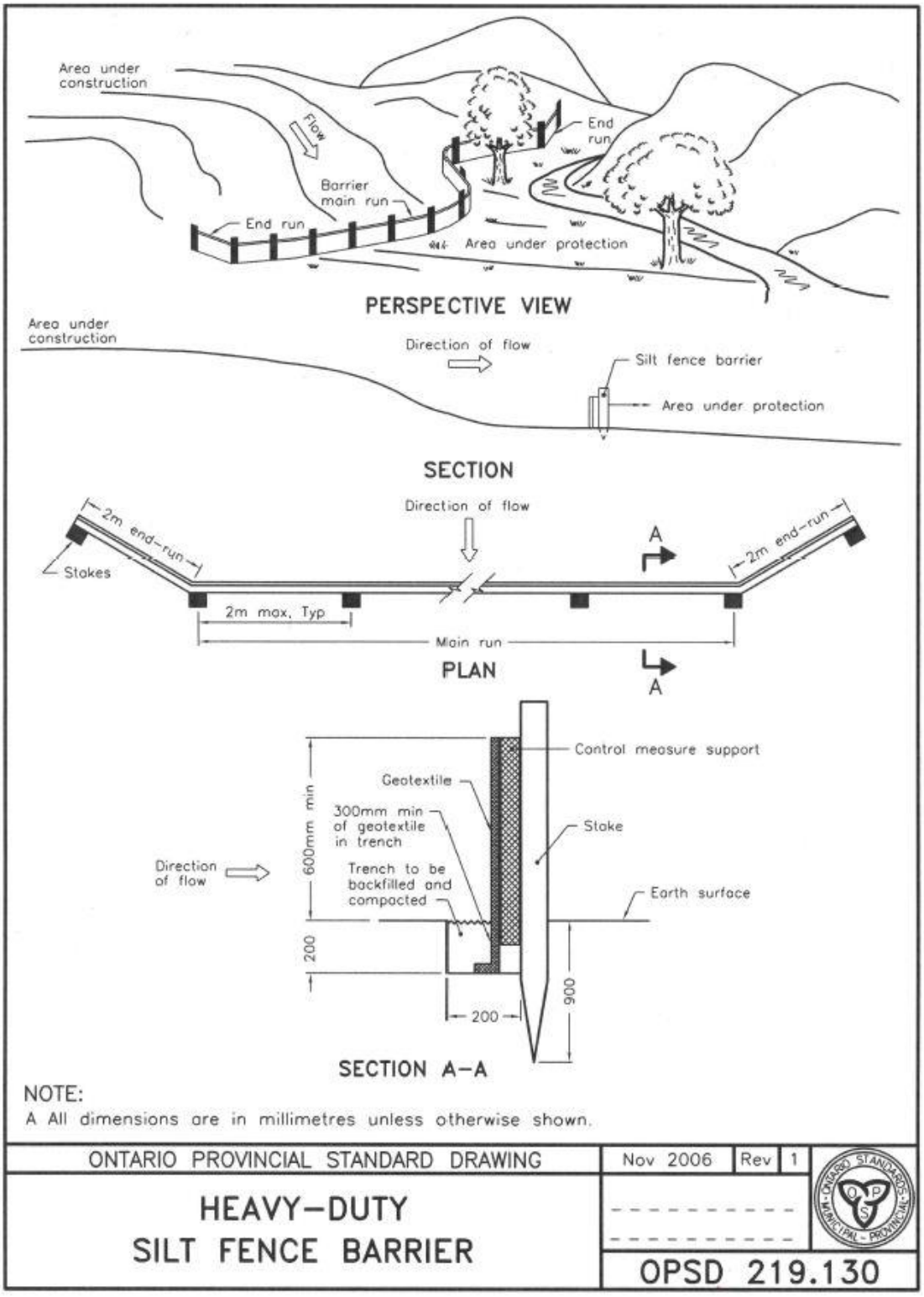
PLAN



SECTION A–A

ONTARIO PROVINCIAL STANDARD DRAWING	Nov 2007	Rev 0	
BARRIER FOR TREE PROTECTION			OPSD 220.010

Specification for tree protection barrier; *replacing geotextile with construction fencing*



Note: Barrier for tree protection utilises materials that will be used on site for development/grading purposes. Type and location of fence) provides protection equivalent to OPSD 220.010

Douglas Kennedy, BHA 202
121 Grassy Rd
Omemee, Ontario
K0L 2W0
289-892-2827

Mason Homes
6 – 30 Pennsylvania Ave
Concord, Ontario
L4K 4A5
905-761-2050

July 26, 2017

RE: 425 King St, Cobourg

Dear Jared Dykstra
,
This letter is in regard to my assessment of the Butternut trees on your property. Please read this letter/report carefully as it contains important information about the Endangered Species Act, 2007 (ESA).

Potential Butternut trees located and assessed at the above noted property during the site visit on July 12 & 26, 2017 were identified as hybrid. Hybrid trees are not protected under the Endangered Species Act, 2007 (ESA). Please be advised that other Butternut trees identified on the property must also be assessed by a BHA if a proposed activity may cause them to be killed, harmed or removed.

Please retain this letter and the following BHA Report for your records, along with any other documentation you may receive from the MNR should an audit of the assessment occur.

If you have any questions, please do not hesitate to contact me or the Species at Risk Biologist in the local MNRF district office.

Sincerely,

Douglas Kennedy
Environmental Technologist, MFPA, BHA
Green Side Up Environmental Services
289-892-2827
www.greenservices.ca

Enclosures:

1. Information from the Ministry of Natural Resources and Forestry about Butternut and the *Endangered Species Act, 2007*
2. Butternut Health Assessor's Report
3. Original data forms

Ministry of Natural Resources and Forestry

Species At Risk
P.O. Box 7000, 300 Water Street
Peterborough ON K9J 8M5

Ministère des Richesses naturelles et des Forêts

Espèces en péril
C.P. 7000, 300, rue Water
Peterborough ON K9J 8M5

The enclosed Butternut Health Assessor's Report documents the results of the Butternut health assessment that was conducted by the designated Butternut Health Assessor (BHA) identified in the top section of the report. If there are other Butternut trees (of any size or age) at the site that may be affected by the activity and they are not identified in the enclosed BHA Report, they too must be assessed by a designated BHA.

Butternut is listed as an endangered species on the Species at Risk in Ontario List, and as such, it is protected under the *Endangered Species Act, 2007* (ESA) from being killed, harmed, or removed. If you are planning to undertake an activity that may affect Butternut, you may be eligible to follow the requirements set out in section 23.7 of Ontario Regulation 242/08 under the ESA, or you may need to seek an authorization under the ESA (e.g., a permit).

Please visit e-laws at the link provided below for the legal requirements of eligible activities under section 23.7 of Ontario Regulation 242/08 and conditions that must be fulfilled. Information about Butternut is also available at: http://www.ontario.ca/environment-and-energy/butternut-trees-your-property.

If you are eligible to kill, harm or take Butternut under section 23.7 of the regulation, your first step is to submit the BHA Report and the original data forms enclosed in this package to the local Ministry of Natural Resources and Forestry (MNRF) District Manager. Note that MNRF cannot accept photocopies or scanned electronic copies of the data forms.

Note regarding changes:

If the enclosed BHA Report does not identify which Butternut tree(s) are proposed to be killed, harmed, or taken in Table 1 (i.e., if "unknown" is indicated in the second last column of Table 1), or, if the information in the last two columns of Table 1 has changed since the date this BHA Report was produced, **do not make any edits to the BHA Report**. Instead, please attach a cover letter that identifies which Butternut tree(s) are proposed to be killed, harmed, or taken (by referencing the tree identification numbers) when you submit the enclosed BHA Report to the local MNRF District Manager.

The BHA Report must be submitted at least 30 days prior to registering an eligible activity to kill, harm, or remove a Butternut tree. During this 30 day period, no Butternut trees (of any category) may be killed, harmed, or removed, and MNRF may contact you for an opportunity to examine the trees. If MNRF chooses to examine the trees, a representative of MNRF will contact you using the information you supplied when you submitted the BHA Report.

If you are eligible to follow the rules in regulation under section 23.7, you may register your activity using the “Notice of Butternut Impact” form on the MNRF Registry **after the 30 day period has elapsed**.

If you are **not** eligible to follow the rules in regulation under section 23.7, please contact the local MNRF district office to determine whether you will need to seek an authorization (e.g., a permit). A link to the directory of MNRF offices is provided below.

Note that municipal by-laws and legislation other than the ESA may also be applicable to the removal or harming of trees.

Please retain this information and a copy of the BHA Report (including copies of all data forms) for your records, along with any other documentation you may receive from MNRF should an examination of the trees occur. If you have any questions, please contact your local MNRF district office.

Links:

Endangered Species Act, 2007:
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm

Ontario Regulation 242/08 (refer to section 23.7):
http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_080242_e.htm

MNRF Office Locations:
https://www.ontario.ca/government/ministry-natural-resources-and-forestry-regional-and-district-offices

Butternut Health Assessor's Report Number: 221-001

Douglas Kennedy, BHA 202
121 Grassy Rd
Omemee, Ontario
K0L 2W0
289-892-2827

Mason Homes
6 – 30 Pennsylvania Ave
Concord, Ontario
L4K 4A5
905-761-2050
jdykstra@masonhomes.ca

Site location: 425 King St. Cobourg, Ontario

Date(s) of Butternut health assessment: July 12 & 26, 2017
Date BHA Report prepared: July 26, 2017

Map datum used: ☒ NAD83 ☐ WGS84

Total number of trees assessed in this BHA Report: 14

The assessed trees were numbered on site using white paint. The numbers at the site correspond to the tree numbers referenced in this report.

This BHA Report includes the following tables:

- Table 1: Trees Determined by BHA to be Butternut Hybrids
- Table 2: Summary of Assessment Results

Table 1: Trees Determined by BHA to be Butternut Hybrids

Tree #	Latitude	Longitude	Method used (genetic testing or field identification):
1	43.9634678	-78.1463407	Field Identification
2	43.9634972	-78.1462500	Field Identification
3	43.9634331	-78.1461583	Field Identification
4	43.9631782	-78.145583	Field Identification
5	43.9634958	-78.1454314	Field Identification
6	43.9631222	-78.1457389	Field Identification
7	43.9630112	-78.1468235	Field Identification
8	43.9629639	-78.1467524	Field Identification
9	43.9635972	-78.1464000	Field Identification
10	43.9636306	-78.1463528	Field Identification
11	43.9636306	-78.1463528	Field Identification
12	43.9636561	-78.1462602	Field Identification
13	43.9636821	-78.1462415	Field Identification

Tree #	Latitude	Longitude	Method used (genetic testing or field identification):
14	43.9638333	-78.1462556	Field Identification

Table 2: Summary of Assessment Results

Result:	Total #:	Important information for persons planning activities that may affect Butternut:
Hybrid	14	• Hybrid Butternut trees are not protected under the ESA, but their removal may be subject to municipal by-laws and other legislation.

Butternut Health Assessor's Comments:

Additional assessment may be made for hybrid trees in the fall as there are some characteristics that only appear or can be confirmed when dormant.

This concludes the summary of the BHA Report. A complete BHA Report must also include:

1. All original (hard copy) data forms (i.e., all completed sets of Form 1 and Form 2), and
2. Electronic and printed copies of the Excel data analysis spreadsheet. *Only for true Butternut trees.*

Table 4: Data Sheet for Field Identification of Butternut Hybrids

BHA name:	Doug Kennedy	Tree ID #:		Tree ID #:		Tree ID #:		Tree ID #:		Tree ID #:		Tree ID #:													
BHA ID #:	221	1	2	3	4	5	6	7	8	9	10	11	12	13	14										
BHA Report #:	2017-01																								
Assessment Date(s):	July 12 + 26 2017																								
Tree location (site address):	425 Kingst Cobourg																								
Client name:	Mason Homes																								
Traits (must evaluate at least five traits):		Score Assigned:		Score Assigned:		Score Assigned:		Score Assigned:		Score Assigned:		Score Assigned:													
Leaf Retention																									
Dormant Terminal Bud		1	1	1				1	1	1	1	1	1	1											
Dormant Twigs																									
Lenticel Shape on New Twigs		2	2	2	1	1	1	1	1	2	2	2	2	2	2										
Pith Color of 1-Year Twig				1		1	2	1	1	1	2		2	2	2										
Leaf Scar										1															
Leaf Length		1	1	1	1	1	1	1	1	1	1	1	1	1	1										
Color of Bark Fissures on Mature Trees					2	1				N/A															
Green Hull Characteristics										N/A															
Nut Shape						2																			
Catkin Length When Fully Extended and Shedding Pollen																									
How to interpret total score: *0 to 3 = Butternut;* *4 or greater = Hybrid*	**Total:**	4	4	5	4	6	4	4	4	6	6	4	6	6	5										