

ATTACHMENT 8

**Tree Inventory and Preservation Plan Report
10316 Keele Street
Vaughan, Ontario**

prepared for

**STUDIO tla
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prepared by



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KUNTZ FORESTRY CONSULTING INC Project P2275

Introduction

Kuntz Forestry Consulting Inc. was retained by STUDIO tla to complete a Tree Inventory and Preservation Plan in support of a development application for the property located at 10316 Keele Street in Vaughan. The property is located on the west side of Keele Street, north of Major Mackenzie Drive West, within the mixed-use area of the community of Maple.

The work plan for this tree preservation study included the following:

- Prepare inventory of the tree resources over 15cm DBH on and within six metres of the subject area, and trees of all sizes within the road right-of-way;
- Evaluate potential tree saving opportunities based on proposed development plans; and
- Document the findings in a Tree Inventory and Preservation Plan Report.

The results of the evaluation are provided below.

Methodology

The tree inventory was conducted on 4 December 2019. The topographic survey and estimations made in-field were used to locate tree resources. Trees along the northern property boundary were not on the survey and ownership may not be certain. Individual trees located on the subject property were tagged using numbers 1-36. Neighbouring trees were identified with the letters A-M. Tree polygons (groups of trees) were identified with the prefix "P". Tree locations are shown on Figure 1. Refer to Table 1 for the tree inventory.

Tree resources were assessed utilizing the following parameters:

Tree # - number assigned to tree that corresponds to Figure 1.

Species - common and botanical names provided in the inventory table.

DBH - diameter (centimetres) at breast height, measured at 1.4 m above the ground.

Condition - condition of tree considering trunk integrity, crown structure, and crown vigour. Condition ratings include poor (P), fair (F) and good (G).

Comments - additional relevant detail.

Existing Site Conditions

The subject property is currently a vacant lot formerly containing a detached dwelling. Tree resources exist in the form of landscape and naturally regenerating trees. Refer to Figure 1 for the existing conditions.

Individual Tree Resources

The inventory documented 49 trees and tree polygons on and within six metres of the subject property. Refer to Table 1 for the full tree inventory and Figure 1 for the locations of trees reported in the tree inventory. Refer to Appendix A for photographs of trees.

Tree resources were comprised of Siberian Elm (*Ulmus pumila*), Norway Spruce (*Picea abies*), Manitoba Maple (*Acer negundo*), Black Locust (*Robinia pseudoacacia*), and Silver Maple (*Acer saccharinum*).

Proposed Development

The proposed development includes the construction of a multi-block townhome development with associated grading and servicing. Access will be provided by a proposed lane connecting from Keele Street. Refer to Figure 1 for the existing conditions and proposed site plan.

Discussion

The following sections provide a discussion and analysis of development impacts, tree removal requirements, and tree preservation relative to the proposed development and existing conditions.

Development Impacts/Tree Removal

The removal of 46 trees and tree polygons will be required to accommodate the proposed development, including Trees 1-36, B, PD, and F-M. Trees 7, 8, 10-16, 18-25, 27-31, 33-35, B, and H are greater than 20cm DBH and protected by the City of Vaughan's tree protection by-law. Trees B, PD, F, G, and H-PL are located on the neighbouring property to the north. Trees 1-6 and M are located on within the proposed Region of York road right-of-way. Permission from the Region is required prior to its removal.

The western hedgerow is a feature comprised almost entirely of Norway Spruce, ranging in size from 13.5cm DBH to 48cm DBH and ranging in condition from poor-fair to good. This feature will require removal to accommodate the proposed grading and servicing on the property. The property naturally drains in the westerly direction, necessitating the use of inlets and storm outfalls in this area. In addition, grade increases are required to ensure storm sewer discharge will function with the existing channel to the north, and a retaining wall needs to be installed along the western boundary due to the location of the sanitary sewer on Keele. It is our understanding that the City considers this hedgerow feature to be "Culturally Significant", due to its associations with the property which previously contained a heritage designation. However, historic aerial imagery suggests this hedgerow feature was planted in roughly the 1970's (which is consistent with their size and apparent age). As such, this feature was not part of the original landscaping associated with the property or its house, which dates to the 19th century according to the Cultural Heritage Impact Assessment prepared by Su Murdock Historical Consulting (June 2016). According to the survey, this feature is located entirely on the subject property.

Further to comments and discussions with the Town and the project's engineer, a number of engineering solutions have been explored to fully determine whether the preservation of this western hedgerow would be feasible. However, all three of the alternative engineering solutions are not "currently considered feasible based on municipal standards, maintenance concerns, physical constraints, and feedback from City staff." Please refer to the memo prepared by Urbanworks Engineering Corporation (April 27, 2020) for details.

The removal of the hedgerow, and the other trees to be removed on site, will be compensated for by way of replacement plantings as discussed in the *Tree Compensation* section below.

Tree Preservation

The preservation of Trees A, C, and E will be possible with the use of appropriate tree protection measures as indicated on Figure 1. Refer to Figure 1 for the location of trees identified for preservation, the preservation fencing details, and further protection notes. Preservation specifications for Trees A and C must adhere to City of Vaughan standards. There are no trees identified for preservation in the regional right-of-way; as such, York Regional protection standards do not apply.

Tree Compensation

City of Vaughan

The City of Vaughan requires the following tree replacement ratios:

DBH of Tree to be Cut or Removed	Number of Replacement Trees Required
20cm to 30cm	1
31cm to 40cm	2
41cm to 50cm	3
51cm or greater	4

Fifty-one (51) replacement trees will be required (see Table 1). The Planting Plan prepared by STUDIO tla proposes to plant 43 trees on the subject property and 12 trees on the parkland to the west, for a total of 55 trees. This excludes the trees proposed to be planted in the Regional right-of-way. Along the western property boundary, consideration has been given to replace and enhance the functional benefits currently provided by the existing western hedgerow, which requires removal. The design through this area includes a double row of White Pine, Pyramidal English Oak, and Ponderosa Pine, all species which will replace the screening and windbreak benefits provided by the hedgerow. In addition, Silver Maple and Redmond Linden are proposed just to the west of that area within the park. These are large-growing shade trees which will further increase the canopy coverage through this area. Post-development, these plantings will provide for a robust buffer between the proposed development and the park and mimic the functions of the existing hedgerow.

Compensation valuations for trees identified for removal are as follows:

Tree #	# Compensation Trees	Compensation Valuation (\$550/compensation tree)
7	3	\$ 1,650.00
8	3	\$ 1,650.00
10	2	\$ 1,100.00
11	1	\$ 550.00
12	2	\$ 1,100.00
13	1	\$ 550.00
14	1	\$ 550.00
15	3	\$ 1,650.00
16	2	\$ 1,100.00
18	2	\$ 1,100.00
19	1	\$ 550.00
20	3	\$ 1,650.00
21	3	\$ 1,650.00
22	1	\$ 550.00
23	3	\$ 1,650.00
24	1	\$ 550.00
25	3	\$ 1,650.00
27	1	\$ 550.00
28	2	\$ 1,100.00
29	2	\$ 1,100.00
30	1	\$ 550.00
31	1	\$ 550.00
33	1	\$ 550.00
34	2	\$ 1,100.00
35	4	\$ 2,200.00
B	1	\$ 550.00
H	1	\$ 550.00
Total	51	\$ 28,050.00

The cost of tree protection is estimated to be \$2,480.

The cost of tree removals is estimated to be \$27,500.

York Region

For trees within the York Region right-of-way along Keele Street, the required replacement trees and associated compensation value was calculated in accordance with section 1.8 of York Region's "Street Tree and Forest Preservation Guidelines" document. For this exercise, the replacement tree caliper size was assumed to be 50mm.

The number of replacement trees is calculated as follows:

$$\text{Number of replacement trees} = (\text{DBH of tree to be removed/replacement tree caliper size}) * \text{Condition rating}$$

Compensation value is calculated as follows:

$$\text{Compensation Value (\$)} = \text{Number of replacement trees} * \text{Replacement Cost}$$

Refer to Table 2 below for the compensation calculations.

Table 2. Regional Right-of-way Tree Removal Compensation

Tree	DBH	Condition	Number of Replacement Trees	Compensation Value (assume \$870.44/tree)
1	74	0.6	9	\$ 7,833.96
2	53.5	0.6	6	\$ 5,222.64
3	27.5	0.4	2	\$ 1,740.88
4	40	0.6	5	\$ 4,352.20
5	33	0.6	4	\$ 3,481.76
6	47	0.2	2	\$ 1,740.88
M	11	1	2	\$ 1,740.88
Total			30	\$ 26,113.20
Replacement Plantings			7	\$ 6,093.08
TOTAL			23	\$ 20,020.12

Summary and Recommendations

Kuntz Forestry Consulting Inc. was retained by STUDIO tla to complete a Tree Inventory and Preservation Plan for 10316 Keele Street in Vaughan, Ontario. A tree inventory was conducted and reviewed in the context of the proposed site plan.

The findings of the study indicate a total of 49 trees and tree polygons on and within six metres of the subject property. The removal of 46 trees and tree polygons will be required to accommodate the proposed development. The remaining trees can be saved provided appropriate tree protection measures are installed prior to construction.

The following recommendations are suggested to minimize impact to trees identified for preservation. Refer to Figure 1 for the location of required tree preservation fencing, general Tree Protection Plan Notes, and the tree preservation fence detail.

- Tree protection barriers and fencing shall be erected at locations as prescribed on Figure 1. All tree protection measures shall follow the guidelines as set out in the tree preservation plan notes and the tree preservation fencing detail.
- No construction activity including surface treatments, excavations of any kind, storage of materials or vehicles, unless specifically outlined above, is permitted within the area identified on Figure 1 as a tree protection zone (TPZ) at any time during or after construction.
- Branches and roots that extend beyond prescribed tree protection zones that require pruning must be pruned by a qualified Arborist or other tree professional. All pruning of tree roots and branches must be in accordance with Good Arboricultural Standards.

- Site visits, pre, during, and post construction are recommended by either a certified consulting arborist (I.S.A.) or registered professional forester (R.P.F.) to ensure proper utilization of tree protection barriers. Trees should also be inspected for damage incurred during construction to ensure appropriate pruning or other measures are implemented.

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Limitations of Assessment

Only the tree(s) identified in this report were included in the inventory. The assessment of the trees presented in this report has been made using accepted arboricultural techniques. These may include a visual examination taken from the ground of all the above-ground parts of the tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of attack by insects, discoloured foliage, the condition of any visible root structures, the degree of lean (if any), the general condition of the trees and the identification of potentially hazardous trees or recommendations for removal (if applicable). Where trees could not be directly accessed (ie. due to obstructions, and/or on neighbouring properties), trees were assessed as accurately as possible from nearby vantage points.

Locations of trees provided in the report are determined as accurately as possible based on the best information available. If official survey information is not provided, tree location in the report may not be exact. In this case, if trees occur on or near property boundaries, an official site survey may be required to determine ownership utilizing specialized survey protocol to gain precise location.

Furthermore, recommendations made in this report are based on the site plans that have been provided at the time of reporting. These recommendations may no longer be applicable should changes be made to the site plan and/or grading, servicing, or landscaping plans following report submission.

Notwithstanding the recommendations and conclusions made in this report, it must be recognized that trees are living organisms, and their health and vigor constantly change over time. They are not immune to changes in site conditions or seasonal variations in the weather conditions. Any tree will fail if the forces applied to the tree exceed the strength of the tree or its parts.

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

Table 1. Tree Inventory

Location: 10316 Keele Street, Vaughan

Date: 4 December 2019

Surveyors: CB & CD

Tree #	Common Name	Scientific Name	DBH	TI	CS	CV	CDB	DL	mTPZ	Comments	Action	Comp.
1	Siberian Elm	<i>Ulmus pumila</i>	74	F	F	F		6	7.4	V-union at 2m, asymmetrical crown (L), epicormic branching (M), previously tagged 765, marked yellow, pruning wounds (L)	Remove	
2	Siberian Elm	<i>Ulmus pumila</i>	53.5	F	F	F		11	5.4	Asymmetrical crown (M), epicormic branching (M), marked yellow	Remove	
3	Siberian Elm	<i>Ulmus pumila</i>	26, 27.5, 23.5, 22.5, 22	F	P-F	F		7	2.8	Previously tagged 766, marked yellow, epicormic branching (M), pruning wounds (M), deadwood (M)	Remove	
4	Siberian Elm	<i>Ulmus pumila</i>	40	F	F	F		4	4.0	Marked yellow, pruning wounds (L), epicormic branching (M), asymmetrical crown (M)	Remove	
5	Siberian Elm	<i>Ulmus pumila</i>	33, ~32, 29	F	F	F		5.5	3.3	Previously tagged 1465, marked yellow, poor union at 1 and 1.4m, fused stems, pruning wounds (M), epicormic branching (M), asymmetrical crown (L)	Remove	
6	Siberian Elm	<i>Ulmus pumila</i>	47	P-F	P-F	P	40	7	4.7	Marked yellow, previously tagged 778, deadwood (H), v-union at 1.4m	Remove	
7	Norway Spruce	<i>Picea abies</i>	48	G	F-G	F-G			3.0	Deadwood (L), asymmetrical crown (L)	Remove	3
8	Norway Spruce	<i>Picea abies</i>	43	G	F-G	F-G			3.0	Deadwood (L), sparse crown (L), asymmetrical crown (L)	Remove	3
9	Norway Spruce	<i>Picea abies</i>	19.5	F-G	P-F	P-F			1.8	Lost leader	Remove	
10	Norway Spruce	<i>Picea abies</i>	34.5	G	F-G	F-G			2.4	Asymmetrical crown (L), sparse crown (L), deadwood (L)	Remove	2
11	Norway Spruce	<i>Picea abies</i>	28.5	G	F	F-G			1.8	Asymmetrical crown (M), sparse crown (L), deadwood (L), poor form (L)	Remove	1

12	Norway Spruce	<i>Picea abies</i>	33	G	F-G	F-G			2.4	Asymmetrical crown (L), sparse crown (L), deadwood (L)	Remove	2
13	Norway Spruce	<i>Picea abies</i>	30	G	F	F-G			2.4	Asymmetrical crown (M), sparse crown (L), deadwood (L)	Remove	1
14	Norway Spruce	<i>Picea abies</i>	29	G	F-G	F-G			1.8	Asymmetrical crown (L), sparse crown (L), deadwood (L)	Remove	1
15	Norway Spruce	<i>Picea abies</i>	44	G	F-G	F-G			3.0	Asymmetrical crown (M), deadwood (L), pruning wounds (L)	Remove	3
16	Norway Spruce	<i>Picea abies</i>	36.5	G	F-G	F-G			2.4	Asymmetrical crown (M), deadwood (L)	Remove	2
17	Norway Spruce	<i>Picea abies</i>	18	G	F-G	F			1.8	Asymmetrical crown (L), understory tree	Remove	
18	Norway Spruce	<i>Picea abies</i>	31.5	G	F-G	F-G			2.4	Asymmetrical crown (L), deadwood (L), sparse crown (L)	Remove	2
19	Norway Spruce	<i>Picea abies</i>	23	G	F-G	F-G			1.8	Asymmetrical crown (L), deadwood (L), pruning wounds (L)	Remove	1
20	Norway Spruce	<i>Picea abies</i>	44.5	G	F-G	F-G			3.0	Asymmetrical crown (L), deadwood (L)	Remove	3
21	Norway Spruce	<i>Picea abies</i>	43.5	G	F-G	F-G			3.0	Asymmetrical crown (L), deadwood (L)	Remove	3
22	Norway Spruce	<i>Picea abies</i>	28	G	F-G	F-G			1.8	Asymmetrical crown (L), deadwood (L)	Remove	1
23	Norway Spruce	<i>Picea abies</i>	44	G	F-G	F-G			3.0	Lean (VL), poor form (L), pruning wounds (L), asymmetrical crown (L)	Remove	3
24	Norway Spruce	<i>Picea abies</i>	29	F	P-F	F			1.8	Dead leader, lateral branch assuming dominant position, poor form (H)	Remove	1
25	Norway Spruce	<i>Picea abies</i>	45.5	G	F-G	G			3.0	Poor form (L), pruning wounds (L), asymmetrical crown (L)	Remove	3
26	Norway Spruce	<i>Picea abies</i>	13.5	F	P-F	P-F			1.8	Poor form (M), dead leader, sweep (L)	Remove	
27	Norway Spruce	<i>Picea abies</i>	26	G	G	G			1.8	Deadwood (L)	Remove	1
28	Norway Spruce	<i>Picea abies</i>	33	G	F	F-G			2.4	Asymmetrical crown (M), poor form (L)	Remove	2
29	Norway Spruce	<i>Picea abies</i>	35.5	G	F-G	F-G			2.4	Asymmetrical crown (L), pruning wounds (L), deadwood (L)	Remove	2
30	Norway Spruce	<i>Picea abies</i>	22	G	F-G	F-G			1.8	Asymmetrical crown (L), deadwood (L)	Remove	1

31	Norway Spruce	<i>Picea abies</i>	29.5	G	F-G	F-G			1.8	Asymmetrical crown (L)	Remove	1
32	Norway Spruce	<i>Picea abies</i>	19	G	F	F			1.8	Pruning wounds (L), asymmetrical crown (L)	Remove	
33	Norway Spruce	<i>Picea abies</i>	26.5	G	F-G	G			1.8	Asymmetrical crown (L)	Remove	1
34	Norway Spruce	<i>Picea abies</i>	38	G	F-G	F-G			2.4	Asymmetrical crown (L), deadwood (L)	Remove	2
35	Silver Maple	<i>Acer saccharinum</i>	~144	F	F	F	20		8.6	Dead leaders, broken branches (M), epicormic branching (M), poor form (M), union at 1.4 and 1.6m	Remove	4
36	Norway Maple	<i>Acer platanoides</i>	18.5	G	G	G			1.8		Remove	
A	Norway Maple	<i>Acer platanoides</i>	~20	G	G	G			1.8		Retain	
B	Black Locust	<i>Robinia pseudoacacia</i>	22	G	G	G			1.8	Asymmetrical crown (L)	Remove	1
C	Norway Maple	<i>Acer platanoides</i>	17	G	G	G			1.8	Sweep (L)	Retain	
PD	Manitoba Maple	<i>Acer negundo</i>	~5-12	F	F	F			1.8	53 trees, poor form (M)	Remove	
E	Black Locust	<i>Robinia pseudoacacia</i>	~24	G	G	G			1.8		Retain	
F	Black Locust	<i>Robinia pseudoacacia</i>	~15	G	F-G	G			1.8	Asymmetrical crown (L)	Remove	
G	Black Locust	<i>Robinia pseudoacacia</i>	~16	G	F-G	G			1.8	Asymmetrical crown (L)	Remove	
H	Silver Maple	<i>Acer saccharinum</i>	20	G	G	G			1.8		Remove	1
PI	Silver Maple	<i>Acer saccharinum</i>	~8-12	F	G	F			1.8	6 trees, stem wounds (M)	Remove	
J	Manitoba Maple	<i>Acer negundo</i>	~14	G	F	F-G			1.8		Remove	
PK	Silver Maple	<i>Acer saccharinum</i>	~8-13	G	G	G			1.8	4 trees	Remove	
PL	Black Locust	<i>Robinia pseudoacacia</i>	~8-15	G	G	G			1.8	7 trees	Remove	
M	Black Locust	<i>Robinia pseudoacacia</i>	11, 10, 8.5, 7	G	G	G		3	2.4	Union at base	Remove	

Codes		
DBH	Diameter at Breast Height	(cm)
TI	Trunk Integrity	(G, F, P)
CS	Crown Structure	(G, F, P)
CV	Crown Vigor	(G, F, P)
CDB	Crown Die Back	(%)
Comp.	Compensation Trees Required	(number of trees)
mTPZ	minimum Tree Protection Zone based on City of Toronto's standard	(m), radius from outside edge of tree base
DL	Dripline	(m)
~ = estimate; (VL) = very light; (L) = light; (M) = moderate; (H) = heavy; (VH) = very heavy		

Appendix A. Photos of Trees



Image 1. Photo of Tree 1



Image 2. Photo of Tree 2



Image 3. Photo of Tree 3



Image 4. Photo of Tree 4



Image 5. Photo of Tree 5



Image 6. Photo of Tree 6



Image 7. Photo of Trees 7-10



Image 8. Photo of Trees 10-14



Image 9. Photo of Trees 14-19



Image 10. Photo of Trees 19-23



Image 11. Photo of Trees 23-27



Image 12. Photo of Trees 25-34



Image 13. Photo of Tree 35



Image 14. Photo of Tree A



Image 15. Photo of Tree B



Image 16. Photo of Tree C



Image 17. Photo of Tree E



Image 18. Photo of Trees F and G



Image 19. Photo of Tree 36



Image 20. Photo of Tree H



Image 21. Photo of Tree M



Image 22. Trees along northern boundary