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Arborist Report

360 Lockhart Road, Barrie, ON

17 January 2020

Introduction

A Tree Inventory, Assessment and Preservation Plan was completed for 360 Lockhart Road in Barrie, Ontario. The subject property is located northeast of Lockhart Road and Huronia Road. The report and plan have been prepared based on guidelines outlined in the City of Barrie's 'Tree Protection Manual (Version 4, Revised January 2019)'. The City of Barrie's 'Public Tree By-law 2014-116' and 'Tree Preservation By-law 2014-115' are applicable to the subject property. The following supporting documents should be reviewed in conjunction with this report:

- Cambium Inc. 30 August 2019. Environmental Impact Study – 360 Lockhart Road, Barrie

Existing Conditions and Proposed Works

The subject property is a vacant lot consisting of woodlands and is 1.38 hectares in size. It is zoned as "Li" Light Industrial. It is located east of existing industrial development, south and west of environmental protection areas, including Lover's Creek, and north of existing golf courses. Tree resources consist of a cedar hedgerow along the north property line, conifer plantation, and mixed forest. Lover's Creek swamp, a provincially significant wetland (PSW) is located to the east. A query of Land Information Ontario (LIO) data reveals the soils in the area to be a combination of well-drained Tioga loamy sand and very poorly drained organic muck. Refer to the Tree Preservation Plan (Figure 1) for the existing conditions (topographic survey and aerial photo) and the proposed site plan.

Methodology

Field assessments to collect tree inventory data were conducted on 15 November 2019.

Tree/Vegetation Inventory

Trees greater than 10cm diameter at breast height (DBH) located within the Lockhart Road right-of-way (ROW) were inventoried using a 100% tally of trees and labelled PA. Survey markings and an existing wire fence was used to determine the location of the property line in the field. Trees greater than 10cm DBH located on the neighbouring property to the north, with driplines overhanging the subject property, were inventoried using a 100% tally of trees and labelled PB. An existing cedar rail fence was used to determine the approximate location of the property line in the field. Trees greater than 10cm DBH located on the neighbouring property to the east, with driplines overhanging the subject property, were inventoried using a 100% tally of trees and labelled PC. Survey flag markings and aerial photo interpretation were used to determine the approximately location of the property line in the field. Trees within these tree polygons were categorized by species, size class and condition (acceptable growing stock (AGS) or unacceptable growing stock (UGS)). No trees were identified within the Huronia Road ROW.

A general description of the plantation and mixed forest on the subject property was completed. The area was visually assessed for species composition, age, size range, structure, height, health. The vegetation communities and boundaries were determined by Cambium Inc. (2019) using 'Ecological Land Classification (ELC) system for Southern Ontario'. The ELC communities on the subject property, as determined by Cambium Inc. (2019) were Dry-Fresh White Cedar-Poplar Mixed Forest (FOM4-2) and Red Pine Coniferous Plantation (CUP3-1).

A general description of shrub and herbaceous vegetation within each group of trees was completed; however, was limited due to seasonal constraints. Refer to the EIS (Cambium Inc., 2019) for additional information regarding the shrub and herbaceous species found in each community. The woodlot area on the subject property was screened for rare and endangered tree species of any size, using transects spaced 5m apart. The EIS did not find record any rare or endangered tree species.

Tree Preservation

As the tree resources are currently growing in a natural environment, rather than a landscape setting, the driplines of trees approximated by aerial photo interpretation, were used to determine suitability of the trees for preservation. The City of Barrie's minimum Tree Protection Zones (mTPZs) for Trees On or Adjacent to a Municipal Right-of-Way, were not used. Trees were assigned a "high, "medium" or "low" preservation value and a Level 1, Level 2 or Level 3 preservation recommendation, as per the Tree Protection Manual guidelines.

Tree Appraisal

The appraised value of trees within tree polygon PA was calculated using the Functional Replacement Method Using the Trunk Formula Technique for a Superadequate Landscape as described in International Society of Arboriculture's 'Guide to Plant Appraisal, 10th Edition'. The average DBH and condition of trees within each polygon was interpolated using the tree tally data. The Landscape Plan (L1) (Popovich Associates, 2020) was used to determine the proposed replacement tree quantities

suitable for the proposed planting areas in order to provide appropriate functional replacement (screening). The landscape cost schedule was used to determine the functional replacement tree cost.

Results

The tree resources found on and adjacent the subject property consist of one contiguous woodlot. For the purposes of this report, the tree resources have been described as three polygons and two ELC units (see below). Refer to the Methodology section and the EIS (Cambium Inc., 2019) for more detailed information. Refer to Table 1 for a summary table of the tree resources and Appendix C for photos.

Lockhart Road ROW (Tree Polygon PA)

This tree polygon is part of the CUP3-1 community. The majority of the trees found within this polygon are Eastern White Cedar (*Thuja occidentalis*), with some Poplar species (*Populus* spp.), White Pine (*Pinus strobus*), and Black Cherry (*Prunus serotina*). The majority of the trees range in size from 10-24cm DBH and are in good condition. Refer to Figure 1 for the location of tree polygon PA and Appendix A for the tally tables.

Neighbouring Property to the north (Tree Polygon PB)

This tree polygon is part of the FOM4-2 community. The majority of the trees found within this polygon are part of an Eastern White Cedar hedgerow, with some Poplar species and White Pine. The majority of the Cedar range in size from 10-24cm DBH and are in fair condition. Refer to Figure 1 for the location of tree polygon P and Appendix A for the tally tables.

Neighbouring Property to the east (Tree Polygon PC)

This tree polygon is part of both the CUP3-1 and FOM4-2 communities. The majority of the trees found within this polygon are Red Pine (*Pinus resinosa*) and Poplar species, with some Green Ash (*Fraxinus pennsylvanica*), and White Spruce (*Picea glauca*). The majority of the Red Pine range in size from 10-24cm DBH and the majority of the Poplar range in size from 38 to 48cm DBH. Refer to Figure 1 for the location of tree polygon PC and Appendix A for the tally tables.

Dry-Fresh White Cedar-Poplar Mixed Forest (FOM4-2)

The FOM4-2 community is located within the north portion of the subject property and on adjacent property to the north and east. This community is dominated by Eastern White Cedar and Red Pine with associates of Trembling Aspen (*Populus tremuloides*), Sugar Maple (*Acer saccharum*), White Ash (*Fraxinus americana*), Eastern White Pine and Black Cherry (*Prunus serotina*). The herbaceous and shrub layer consists of Wild Red Raspberry (*Rubus idaeus* ssp. *strigosus*), Goldenrod species (*Solidago* sp.), and Red Elderberry (*Sambucus racemosa*). The majority of the trees are range from 10-24cm DBH, with many young, regenerating saplings. There are scattered, more mature Poplar trees present. There is a large amount of windfall and broken trees within this community, near the centre and rear portion of this subject property. Refer to Figure 1 for the location of the FOM4-2 community.

Red Pine Coniferous Plantation (CUP3-1)

The CUP3-1 community is located within the southern portion of the subject property. This community is dominated by Red Pine, with associates of Poplar, White Pine and Black Cherry. The understorey layer consists of tree regeneration, Red Elderberry and Choke cherry (*Prunus virginiana*). The herbaceous layer consists of Goldenrod species. The majority of the trees range from 10-24cm DBH, with tree regeneration including Poplar, Black Cherry, White Pine, and Eastern White Cedar. The aforementioned area of windfall and broken trees is found towards the northeast portion of this community. Refer to Figure 1 for the location of the CUP3-1 community.

Analysis and Discussion

Tree Preservation

The preservation of a portion of tree polygon PC, may be possible with the use of appropriate tree preservation measures, as described in this report and shown on the Tree Preservation Plan (Figure 1).

Tree polygon PC consists of trees located on the adjacent property to the east, with driplines extending onto the subject property. The majority of this tree polygon will be protected by the proposed tree preservation fencing as indicated on the Tree Preservation Plan (Figure 1). The proposed tree preservation fencing will consist of snow fence as per detail BSD-1236 and installed as per the Tree Preservation Plan (Figure 1). It is recommended that the property line be verified and the tree preservation fencing field fit to protect the driplines of any neighbouring trees within tree polygon PC to be preserved. A large portion of these trees are located within the 30m river/wetland setback and their preservation will help buffer the adjacent natural features from the proposed development. These trees will be become new edge trees and should be monitored during and following construction for changes in health, condition and structural stability to ensure they are safe to be retained.

Tree preservation fencing should be installed prior to construction and remain in place throughout the construction process, as specified in the Tree Preservation Plan (Figure 1). No grade changes, storage of materials or equipment is permitted within the tree protection zone (TPZ), unless specified above. The driplines, tree preservation fencing locations, details BSD-1230, BSD-1231, BSD-1232, BSD-1234, BSD-1235, BSD-1236 and tree preservation notes, are shown on the Tree Preservation Plan (Figure 1).

Tree Removal

The removal of all remaining tree resources included in this inventory will be required to accommodate the proposed development.

The removal of tree polygon PA is recommended as the removal of the CUP3-1 community on the subject property will result in a narrow strip of woodland trees along Lockhart Road that would be subject to increased windthrow. Eastern White Cedar of small stature within tree polygon PA may be preserved.

The removal of tree polygon PB (all neighbouring property trees to the north with driplines extending onto the subject property) is recommended to accommodate the proposed grading and retaining wall. The location of the property line and ownership of the trees should be confirmed in the field prior to the

start of construction. Written permission will be required from the neighbouring property owner prior to the removal of any neighbouring or shared trees.

The removal of a portion of tree polygon PC will be required to accommodate grading and servicing. A portion of the proposed grading and servicing proposed extends off the subject property and into the Lockhart Road ROW. Further assessment may be required to account for additional tree removals required in this area, not included in the initial tree inventory.

The removal of the FOM4-2 and CUP3-1 communities on the subject property will be required to accommodate the proposed development.

Tree Appraisal

The total value of trees located within tree polygon PA along Lockhart Road ROW is: $148,255.08. Refer to Appendix B for the tree valuation calculations.

Conclusion and Recommendations

The tree resources found on and adjacent the subject property consist of one contiguous woodlot. Tree resources have been described as three polygons and two ELC units located on and adjacent the subject property. Based on the proposed development, the removal of the majority of the trees on the subject property, within the Lockhart Road ROW, and a number of trees located on neighbouring property, will be required.

Tree preservation measures should be installed prior to any construction work, as discussed in this report. Tree preservation fencing should be implemented at driplines distances shown in the Tree Preservation Plan (Figure 1) and maintained throughout the construction process.

Respectfully Submitted,

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References

City of Barrie. January 2019. Tree Protection Manual, Version 4.

Council of Tree and Landscape Appraisers. 2018. Guide for Plant Appraisal, 10th edition. International Society of Arboriculture, Champaign, IL. 170pp.

The City of Barrie. Public Tree By-law 2014-116.

The City of Barrie. Tree Preservation By-law 2014-115.

Table 1. Detailed Tree Inventory

Location: 360 Lockhart Road, Barrie Date: 15 November 2019 Surveyors: AC

Location	Tree #	Common Name	Scientific Name	Diameter at Breast Height (DBH)	Trunk Integrity	Crown Structure	Crown Vigour	Crown Dieback	Dripline (radius)	minimum Tree Protection distance (radius)	Comments	Preservation Value - High, Medium or Low	Preservation Recommendation - Level	Proposed Action
				(cm)	*Good (G), Fair (F), Poor (P)*			*%*	*(m)*	*(m)*		*(H, M, L)*	*(1, 2, 3)*	
Lockhart Road ROW	PA	*Refer to Tally Sheet*										L	3	Remove
Neighbouring Property to the north	PB	*Refer to Tally Sheet*										M	3	Remove
Neighbouring property to the east	PC	*Refer to Tally Sheet*										M	3	Remove - portion
Subject/Neighbouring Property	FOM4-2	*Refer to Report for Description*										M	3	Remove - subject property
Subject/Neighbouring Property	CUP3-1	*Refer to Report for Description*										L	3	Remove - subject property
END														

Appendix A. Tally of Trees within Tree Polygons

Location: 360 Lockhart Road, Barrie Date: 15 November 2019 Surveyors: AC

Tally of Trees within Tree Polygon PA (Lockhart Road ROW)

Tree Size Class >>>>	Polewood 10-24 cm		Sawtimber Sizes						Total All Sizes by Condition	
			Small	26-36 cm	Medium	38-48 cm	Large	50 cm +		
Species	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*
Poplar species (*Populus* spp.)	6		1						**7**	**0**
White Pine (*Pinus strobus*)			2		3				**5**	**0**
Black Cherry (*Prunus serotina*)	1								**1**	**0**
Eastern White Cedar (*Thuja occidentalis*)	23								**23**	**0**
Total Number of Trees by Condition and Size Class	**30**	**0**	**3**	**0**	**3**	**0**	**0**	**0**	**36**	**0**
Total Number of Trees by Size Class	**30**		**3**		**3**		**0**		**36**	
Total Number of Trees	**36**									

Comments

Plant Associates

Tally of Trees within Tree Polygon PB (Neighbouring Property to the North)

Tree Size Class >>>>	Polewood 10-24 cm		Sawtimber Sizes						Total All Sizes by Condition	
			Small	26-36 cm	Medium	38-48 cm	Large	50 cm +		
Species	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*
Eastern White Cedar (*Thuja occidetnalis*)	40	30	43		8				**91**	**30**
Poplar species (*Populus* spp.)			1						**1**	**0**
White Pine (*Pinus strobus*)	1		1						**2**	**0**
Total Number of Trees by Condition and Size Class	**41**	**30**	**45**	**0**	**8**	**0**	**0**	**0**	**94**	**30**
Total Number of Trees by Size Class	**71**		**45**		**8**		**0**		**124**	
Total Number of Trees	**124**									

Comments

Plant Associates

Tally of Trees within Tree Polygon PC (Neighbouring Property to the East)

Tree Size Class >>>>	Polewood 10-24 cm		Sawtimber Sizes						Total All Sizes by Condition	
			Small	26-36 cm	Medium	38-48 cm	Large	50 cm +		
Species	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*	*AGS*	*UGS*
Red Pine (*Pinus resinosa*)	22								**22**	**0**
Poplar species (*Populus* spp.)	3		1		11				**15**	**0**
Green Ash (*Fraxinus pennsylvanica*)			1						**1**	**0**
White Spruce (*Picea glauca*)	1								**1**	**0**
Total Number of Trees by Condition and Size Class	**26**	**0**	**2**	**0**	**11**	**0**	**0**	**0**	**39**	**0**
Total Number of Trees by Size Class	**26**		**2**		**11**		**0**		**39**	
Total Number of Trees	**39**									

Comments

Plant Associates

Appendix B. Tree Valuation Calculations

SUBJECT TREES				
Polygon #			**PA**	**Notes**
Common Name			varies	
Scientific Name			*varies*	
Line 1	**Diameter at Breast Height (DBH)**	***cm***	25	Approx. average size of trees in polygons
Line 2 (Line 1^2 x 0.7854)	**Cross-sectional area**	***cm^2***	491	
Line 3	**Overall Condition Rating**	***Health, Structure, Form***	FG 0.7	Average condition of trees in polygons
Line 4	**Functional Limitations**	***%***	0.75	
Line 5	**External Limitations**	***%***	0.9	
FUNCTIONAL REPLACEMENT TREE				
Line 6	**Size (60mm caliper)**	***cm***	6	
Line 7: Line 6^2 x 0.7854	**Cross-sectional area**	***cm^2***	28	
Line 8	**Functional replacement tree cost**	***$***	583	Derived from Landscape Cost Schedule, average unit cost for proposed tree plantings along Lockhart Road
CALCULATIONS				
Line 9: Line 8 ÷ Line 7	**Unit tree cost**	***$/$cm^2$***	20.62	
Line 10 (line 2 x line 9)	**Basic functional replacement cost**	***$***	10121.53	
Line 11 (line 10 x line 3 x line 4 x line 5)	**Depreciated functional replacement cost**	***$***	**4782.42**	
Functional Replacement Trees Proposed			31	
Replacement Cost (Line 11 x Replacement Trees			**148255.08**	
TOTAL VALUE ($)			**148255.08**	

Appendix C. Photos

Photo 1. Huronia Road ROW, view looking north, no trees

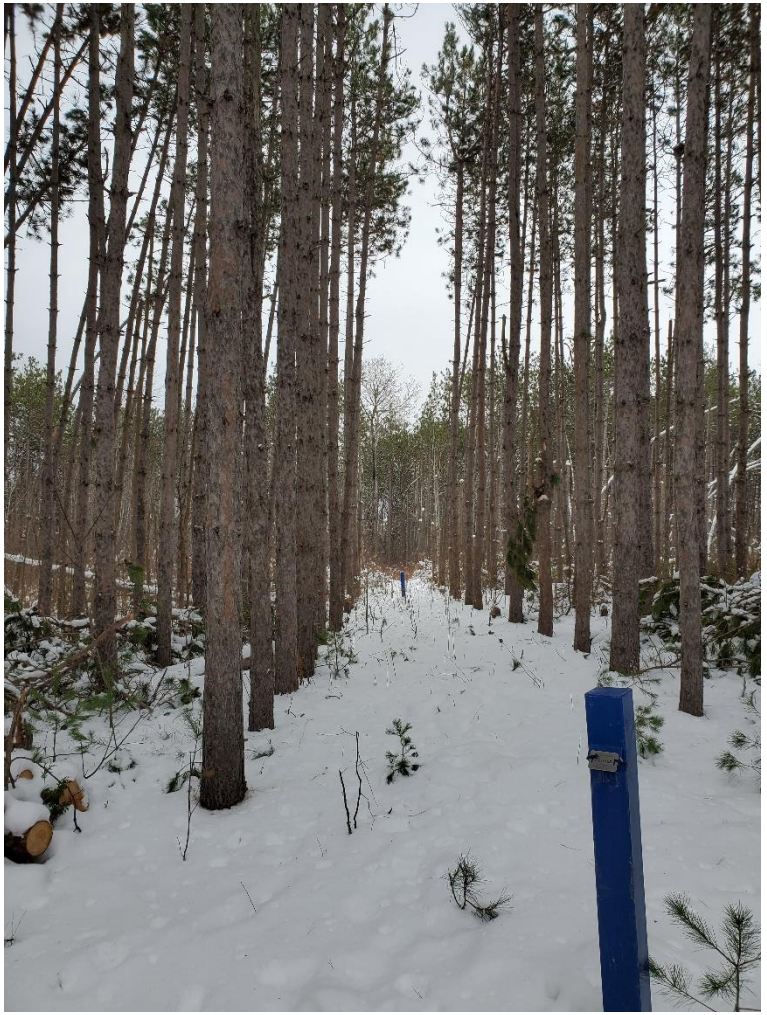

Photo 2. Access Route within CUP3-1 community, view looking east

Photo 3. Tree polygon PA, Lockhart Road ROW, view looking northeast

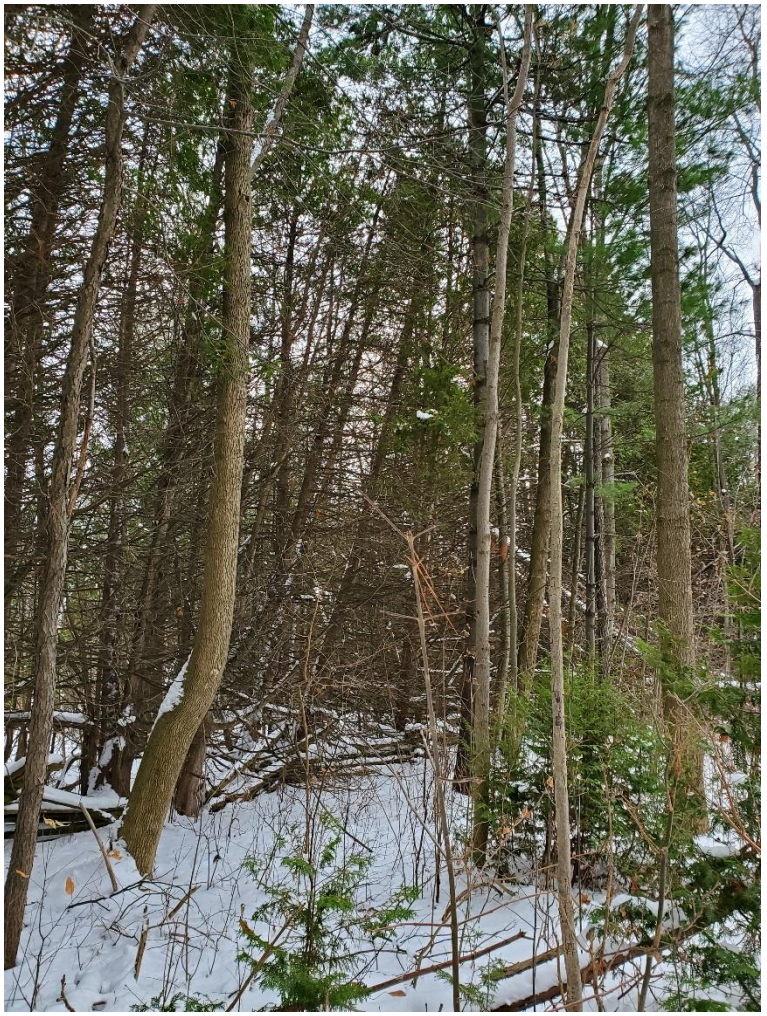

Photo 4. Tree polygon PB, neighbouring property to the north, view looking north

Photo 5. CUP3-1 community

Photo 6. FOM4-2 community, neighbouring property

Photo 7. Area of downed/broken trees near centre/east portion of subject property