



Tree Inventory & Preservation Plan
Penryn-Mason Homes - Port Hope Phase 5
Port Hope, ON

Prepared for:

Penryn-Mason Homes Limited
Ashley Mason
70 Innovator Avenue
Whitchurch-Stouffville, ON

Prepared by:

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October 10, 2019

Treescape Consulting Project TC293

Executive Summary

The tree preservation assessment at the Port Hope Phase 5 site was carried out on the tree resources located within and adjacent to all boundaries of the site.

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

- Have a safe useful life expectancy that justifies their retention as well as 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,
- Are compatible with, and sustainable within the context of new development.

Development impact highlights are as follows:

- There are several neighbouring trees (1-11, 108, 127-131, CPT N1, CPT N2, CPT N3 and CPT N4) on the southern perimeter of the development site that need to be preserved.
- CPT N5, N6 and N7 are compartments of neighbouring (municipal) trees located on the east side of the development property fronting Victoria Street S that will require permission to remove in order to accommodate development.
- All remaining trees, tree groupings and treed compartments are in direct conflict, or close proximity with, the development footprint and/or grading limits and are recommended for removal.

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.

Recommendations outlined in this report are based on the preliminary site plan provided by the client. As such, the tree resources within, and adjacent to, the development envelope may need to be reassessed should the site plan be revised.

Introduction

Treescape Certified Arborists was retained by Penryn-Mason Homes Limited of 70 Innovator Avenue, Whitchurch-Stouffville, ON to perform a tree inventory and tree preservation plan to meet the tree conservation requirements of the site plan agreement application for the proposed Phase 5 development site located along Victoria Street South, Port Hope, ON.

The work plan for this project included the following:

- Utilize site plans provided by the client.
- Map the existing canopy cover to an accuracy of +/-1m.
- Inventory all trees with a diameter at breast height $\geq 7.5\text{cm}$ and 4.5m in height found within the proposed development site and assess the physiological and structural condition of these trees.
- 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 trees on the supplied plan.
- Illustrate through CAD drawings the locations of assessed trees and treed compartments as well as recommended tree removal and preservation measures.
- Provide details of aftercare (management recommendations) for trees being preserved.
- Provide details of how retained trees will be successfully preserved during construction and post-construction.

The tree inventory and assessment took place in September 2018 and June 2019. Table 1 below includes the assessment of all trees identified within the proposed development area. The appended plan TC293-01 identifies the locations of the stature trees and outlines the true canopy area of the woodland portions and tree groupings on the property. Plan TC293-02 illustrates all recommended tree removals and tree protection to be read in conjunction with Table 2 below.

Supporting Documents

- 4-4898_TREES3 - Topographical Survey, IBW Surveyors, December 4, 2017. (DWG)
- 190607_PH5 Concept Plan- Draft Plan of Subdivision, WND Associates Planning & Urban Design, June 2019. (DWG)
- 11148863-L501 & 11148863-L502 – Functional Lot Grading Plan, GHD, August 1, 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 proposed development sits on a 19 hectare portion of land situated on former Port Hope Golf & Country Club lands located in the southwest section of Port Hope, ON.

The site is bound by the Phase 4 development to the north, residential properties to the east and west and the golf course to the south.

Tree resources within the proposed development area consist of:

1. Large woodland compartments situated in the eastern portion of the development consisting of a high quantity of mature trees in a state of decline, primarily Norway Maple, White Pine and Black Locust. This area also has a large amount of standing dead trees as well as fallen dead material on the ground. Although there is significant decline amongst the more mature trees, there is a high degree of natural regeneration occurring within these woodland areas. The north section of this area is predominantly Norway Maple, White Pine, Black Locust and Red Oak while the southern portion has a higher content of Ash, Black Walnut and Sugar Maple. Many of the Black Locusts have cankered stems and/or branches.
2. A small cluster of trees at the extreme southeast section of the development consisting primarily of young to early mature Black Locust and mature Ash trees (most likely in a state of decline most likely due to the Emerald Ash Borer). There is also a mature specimen native Red Maple in this section worthy of retention should grading & development constraints permit.
3. The southern property line of this site is bound by numerous mature hardwoods such as Black Walnut and Sugar Maple situated on adjacent lands.

Management of the tree resources on this development site has most likely been absent with the exception of the removal and/or pruning of problem trees on a reactive basis.

Proposed Development

The development of the Port Hope Phase 5 site will include an array of construction including, but not limited to;

- construction of roads and related right-of-way infrastructure
- construction of storm water systems
- extension of sanitary and other related services throughout the site
- development of individual residential lots

As part of the design process an inventory and assessment has been undertaken of all significant trees, hedgerows and larger shrub masses that have above and below ground parts likely to be affected by the proposed works.

The tree inventory detailed in Table 1 establishes a retention rating for each tree (based on species, overall condition and location), identifies whether a development conflict exists and recommends appropriate action including tree protection zones (TPZ) where necessary.

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. As the municipality of Port Hope have no guidelines for construction near to trees, no minimum root protection distances for trees, hedges and larger shrubs were available.

In order to determine acceptable minimum distances of protection required during construction, an approximate average of other municipality guidelines were used, these being distances prescribed by Richmond Hill, Toronto, Whitby, Oakville and Markham. 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 TC293-02

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

Results

Detailed assessment results for all individual stature trees, tree groupings and treed compartments are reproduced in Table 1 below. The data establishes:

- general area of tree location and owner
- species
- age range
- approximate numbers of significant **stems**
- diameter at breast height (1.4m) and upper and lower diameter range for CPT's
- height ($\geq 3\text{m}$)
- crown radius (where possible)
- overall condition (structural and physiological)
- retention rating for each tree (based on species, overall condition and location)
- development conflicts
- recommendations including tree protection zones (TPZ) where necessary.

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

Table 1
Penryn-Mason Homes - Port Hope Phase 5
Port Hope, ON
Tree Inventory and Preservation Data

Tree Inventory Data												Tree Preservation Data			
Tree ID	Area	Owner	Species	Age	# of Stems	Stem Dbh (cm)	Avg Dbh	Height (m)	Crown Radius (m)	Overall Condition	Comments	Retention Rating	Conflict	Action	TPZ
101	West PL	P	Black Locust	EM	1	21rf	0	7	3	F	Bifurcates at 1m with significant included bark.	2	Yes	R	
102	West PL	P	Black Locust	EM	2	13/12	0	7	3	F	Bifurcates at ground level.	2	Yes	R	
103	West PL	P	Black Locust	EM	1	19rf	0	7	3	G-F		2	Yes	R	
104	West PL	P	Black Locust	EM	1	22	0	11	4	G-F		2	Yes	R	
105	West PL	P	Black Locust	EM	2	12/19	0	10	4	F	Bifurcates at ground level.	2	Yes	R	
106	West PL	P	Black Locust	EM	1	21@1m	0	10	4	G-F		2	Yes	R	
107	West PL	P	Manitoba Maple	EM	2	13/14	0	7	3	F	Bifurcates at base of tree with significant included bark.	1	Yes	R	
108	West PL	P	Native Red Maple	MM	1	59	0	13	8	G-F	Bifurcates at 2m with cupped union seems solid.	3	No	P	3
109	South PL	P	Ash	M	3	53/42/39	0	20	7	F	Evidence of EAB infestation Broken branches and deadwood throughout crown.	0	Yes	R(x)	
110	South PL	P	Ash	MM	1	52	0	12	7	F	Minor evidence of EAB infestation	0	Yes	R(x)	
111	South PL	P	Ash	MM	2	33/47	0	13	7.5		Bifurcates at base of tree. Broken branches and deadwood throughout crown. Evidence of EAB infestation.	0	Yes	R(x)	
112	South PL	P	Ash	M	1	63	0	19	8	P	Significant canker at 6m where main stem bifurcates. Tree is in significant decline possibly in part to the EAB.	0	Yes	R(x)	
113	South PL	P	Ash	M	1	49	0	12	7.5	F-P	Significant to Deadwood in broken branches throughout crown. Quite possibly EAB infestation as well.	0	Yes	R(x)	
114	South PL	P	Ash	M	1	77	0	12	7.5	F-P	Tree in overall decline most likely due to EAB infestation.	0	Yes	R(x)	
115	South PL	P	Black Locust	EM	1	23	0	8	3	G-F			Yes	R	

Tree Inventory Data												Tree Preservation Data			
Tree ID	Area	Owner	Species	Age	# of Stems	Stem Dbh (cm)	Avg Dbh	Height (m)	Crown Radius (m)	Overall Condition	Comments	Retention Rating	Conflict	Action	TPZ

Treed Compartments

CPT 1	P	Norway Maple	Em-Pm	335	25-102	35	30	varies	G-F	Compartment contains a high quantity of mature trees in a state of decline, primarily Norway Maple, White Pine and Black Locust. Compartment also has a large amount of standing dead trees as well fallen dead material on the ground. Although CPT is experiencing some decline amongst the more mature trees, there is a high degree of natural regeneration occurring. North section of the CPT is predominantly Norway Maple, White Pine, Black Locust and Red Oak. Southern portion has a higher content of Ash, Black Walnut and Sugar Maple. Many of the Black Locust have cankered stems and/or branches.	1-2	Yes	R	
	P	Eastern White Pine	Y-PM	19	11-79	40	30	varies	G-P					
	P	Black Locust	Em-M	56	35-78	40	30	varies	F-P					
	P	Red Oak	Em-M	12	34-87	35	30	varies	G					
	P	Black Cherry	Y-M	33	10-52	25	22	varies	G					
	P	Sugar Maple	Y-Pm	134	10-80	45	30	varies	G-P					
	P	Black Walnut	Y-Mm	15	10-47	30	30	varies	G					
	P	Little Leaf Linden	Y	1	8		7	varies	G					
	P	Ash	Y-Mm	28	10-51	35	25	varies	F-P					
	P	Willow	Y	2	16		8	varies	F-P					
	P	Alternat Leaf Dogwood	Y	4	10		7	varies	G					
	P	Manitoba Maple	Y-Mm	11	10-32	25	15	varies	F-P					
	P	Eastern Cottonwood	Pm	1	125		30	varies	Mb					
	P	Speckled Alder	Y	2	13		8	varies	G					
	P	White Spruce	Y-M	8	10-70	20	28.5	varies	G					
P	White Birch	Em	1	26		10	varies	G						
P	American Basswood	Mm	1	46		27	varies	G-F						
CPT 2	P	Norway Maple	Y-M	24	10-85	30	30	varies	G-P	CPT has a diverse mix of tree species. The White Pine located in this area are quality mature specimens worth considering for retention. Many of the Black Locust have cankered stems and/or branches.	1-2	Yes	R	
	P	Eastern White Pine	Em-M	11	35-62	50	50	varies	G					
	P	Black Locust	Y-M	11	16-57	35	35	varies	F-P					
	P	White Birch	Y	5	10-22	15	15	varies	G					
	P	Black Cherry	Mm	1	67		22	varies	G					
	P	Sugar Maple	Y-Em	17	8-30	25	25	varies	G					
	P	Red Oak	Em-Mm	2	35-58	40	40	varies	G					
	P	Mulberry	Y-Em	4	15-20	18	10	varies	G					
	P	Eastern Cottonwood	Y-Em	3	10-25	18	12	varies	F-P					
	P	Black Walnut	Y	2	10-20	15	10	varies	G					
P	Manitoba Maple	Y	9	10-156	12	8	varies	F-P						
CPT 3	P	Black Locust	Em-M	20	30-127	40	30	varies	F-P	Diverse mix of tree species. Many of the Black Locust have cankered stems and/or branches.	1-2	Yes	R	
	P	Norway Maple	Y-M	24	10-75	40	25	varies	G-F					
	P	Manitoba Maple	Em	21		25	10	varies	F-P					
	P	Black Walnut	Em-Mm	2	20-55	25	30	varies	G					
	P	White Spruce	Em	1		25	18	varies	G					
	P	Black Cherry	Em	2	22-34	25	20	varies	G					
	P	American Elm	Y	1	12		8	varies	G					
P	Sugar Maple	Y	3	10-100	20	25	varies	G-F						

Tree Inventory Data												Tree Preservation Data			
Tree ID	Area	Owner	Species	Age	# of Stems	Stem Dbh (cm)	Avg Dbh	Height (m)	Crown Radius (m)	Overall Condition	Comments	Retention Rating	Conflict	Action	TPZ

Neighbouring trees

1	East PL	N	Eastern Hemlock	EM	1	19		6	3	G		3	No	P	1.8
2	East PL	N	Austrian Pine	EM	1	21		3	2.5	F	Suppressed by adjacent trees and heavy with tip blight.	3	No	P	1.8
3	East PL	N	Ash	MM	1	32		14	5			3	No	P	2.4
4	East PL	N	Norway Spruce	M	1	78			6	G		3	No	P	4.8
5	East PL	N	Norway Spruce	EM	1	30			2	G-F		3	No	P	2.4
6	East PL	N	Norway Spruce	EM	1	29			2	G-F		3	No	P	1.8
7	East PL	N	Norway Spruce	M	1	50			3			3	No	P	3
8	East PL	N	Norway Maple	MM	2	68			10	G-F	Stem Dbh 41cm/54cm	3	No	P	4.2
9	South PL	N	Ash	MM	1	35			4	F	Tree is in Decline most likely due to EAB infestation.	3	No	P	2.4
10	South PL	N	Norway Maple	MM	1	53			3	G-F		3	No	P	3.8
11	South PL	N	Sugar Maple	MM	1	52rf			4	G-F	Tree leans to the south	3	No	P	3.8
127	South PL	N	Sugar Maple	M	1	58		28	7	G-F	Tree bifurcates at 3m with significant included bark. Tree has a galvanized cabling system at 2/3 upper crown.	3	No	P	3.8
128	South PL	N	Sugar Maple	M	1	70		28	10	G-F	Bifurcates at 3m .	3	No	P	4.2
129	South PL	N	Sugar Maple	M	1	51		28	10	G-F		3	No	P	3.8
130	South PL	N	Sugar Maple	M	1	80		29	10	G-F	Bifurcates at 3m.	3	No	P	4.8
131	South PL	N	Sugar Maple	M	1	62		29	8	F-P	Bifurcates at 3m with significant included bark. Entire inclusion is centered and seam is starting to open.	3	No	P	4.2

Neighbouring Treed Compartments

CPT N1	N	Red Oak	M	1	94			19	varies	G		3	No	P	DL
	N	Black Walnut	Mm	1	34			15	varies	F		3	No	P	
	N	Ash	M	1	57			20	varies	G		3	No	P	
	N	White Oak	Em	1	13			10	varies	G		3	No	P	
	N	Red Oak	Em	1	14			10	varies	G		3	No	P	
116	CPT N2	N	Black Walnut	M	1	80			8	G	Previously tree 1774.	3	No	P	4.8
117		N	Black Walnut	M	1	60			11	G	Deadwood throughout tree. Previously tree 1775.	3	No	P	3.8
118		N	Black Walnut	Mm	1	48			4	G	Previously tree 1776.	3	No	P	3
119		N	Black Walnut	Em	1	31			1.5	F	Basal injury west side and eastside. Top of main leader has broken out and pruned back. Previously tree 1778. Oct 2019 - tree showing signs of decline	3	No	P	2.4
120	CPT N3	S	Black Walnut	M	1	77		26	16	G		3	No	P	4.8
121		S	Black Walnut	M	1	103		23	15	G		3	No	P	6

Tree Inventory Data												Tree Preservation Data			
Tree ID	Area	Owner	Species	Age	# of Stems	Stem Dbh (cm)	Avg Dbh	Height (m)	Crown Radius (m)	Overall Condition	Comments	Retention Rating	Conflict	Action	TPZ
122	CPT N4	S	Black Walnut	MM	1	35		16	8	G-F		3	No	P	2.4
123		N	Sugar Maple	M	1	90		23	11	G	Specimen tree	3	No	P	5.4
124		N	Basswood	PM	1	111		28	9	F-P	Full lush crown. Bifurcates at 4m with significant inclusion back to base of tree. Inclusion is open from 2m to 4m. Appears as though stems are pulling apart. Could pose a hazard to new development.	3	No	P	6.5
125		N	Sugar Maple	M	1	75		28	10	G	Specimen tree.	3	No	P	4.8
126		N	Norway Spruce	M	1	68		28	9	G		3	No	P	4.2
			M	Black Locust	M	1	60		30	varies	F-P		3	Yes	R*
		M	Norway Maple	Em-Mm	7	15-40	25	30	varies	G-F		3	Yes	R*	
	CPT N6	M	Norway Maple	Y-Mm	20	10-45	30	30	varies	G-F		3	Yes	R*	
		M	Black Locust	Mm-M	9	55-75	60	30	varies	F-P		3	Yes	R*	
	CPT N7	M	Norway Maple	Y-Mm	21	7.5-47	25	30	varies	G-F		3	Yes	R*	
		M	Eastern White Pine	Mm	2	45		30	varies	G		3	Yes	R*	

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 tree compartment. Refer to <i>Development Conflicts</i> 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 (adapted from City of Toronto tree protection model). DL = Drip line of tree



REVISIONS:

NO.	DMY	REVISIONS

NO. DMY REVISIONS

-  Assessed individual or significant tree
-  Assessed individual or significant tree on adjacent neighbouring property
-  Assessed compartment of trees
-  Assessed compartment of trees on adjacent neighbouring property



CLIENT
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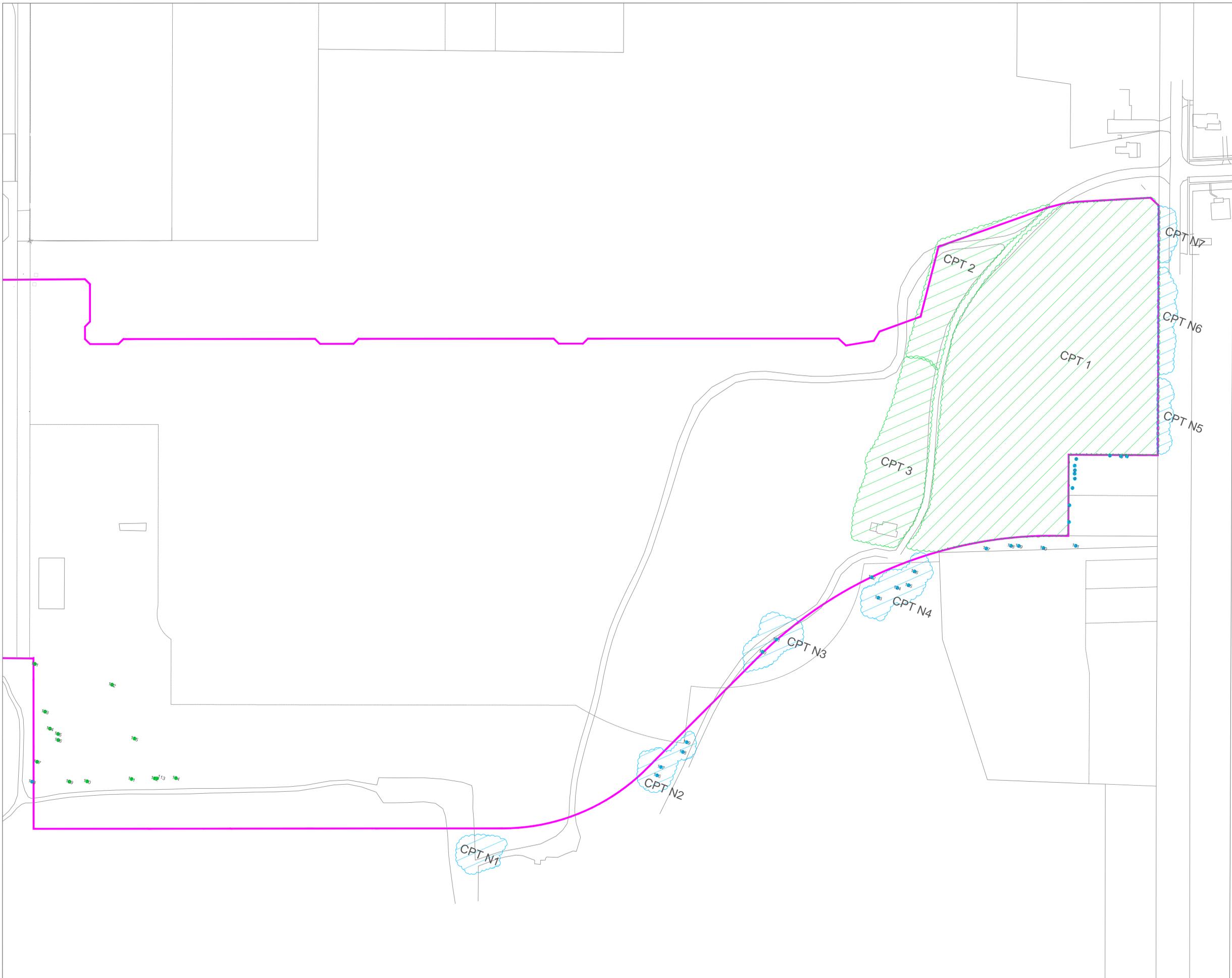
SHEET
Tree Inventory Plan

PROJECT
TC293 Port Hope Phase 5

DRAWN
AWS
DATE
June 11, 2019

SCALE
DO NOT SCALE

SHEET
TC293-01





REVISIONS:

NO.	DMY	REVISIONS

NO. DMY REVISIONS

-  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



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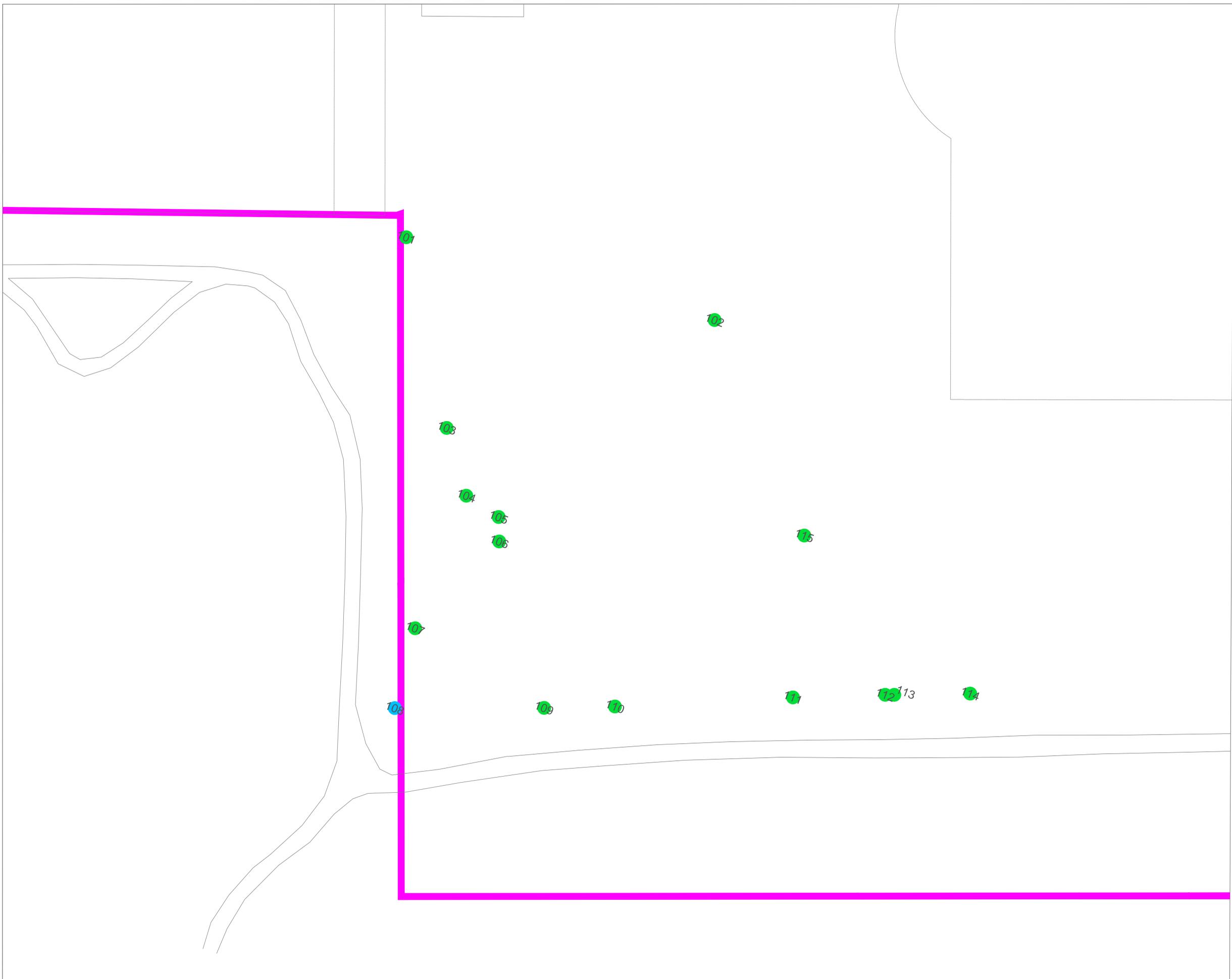
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Tree Inventory Plan

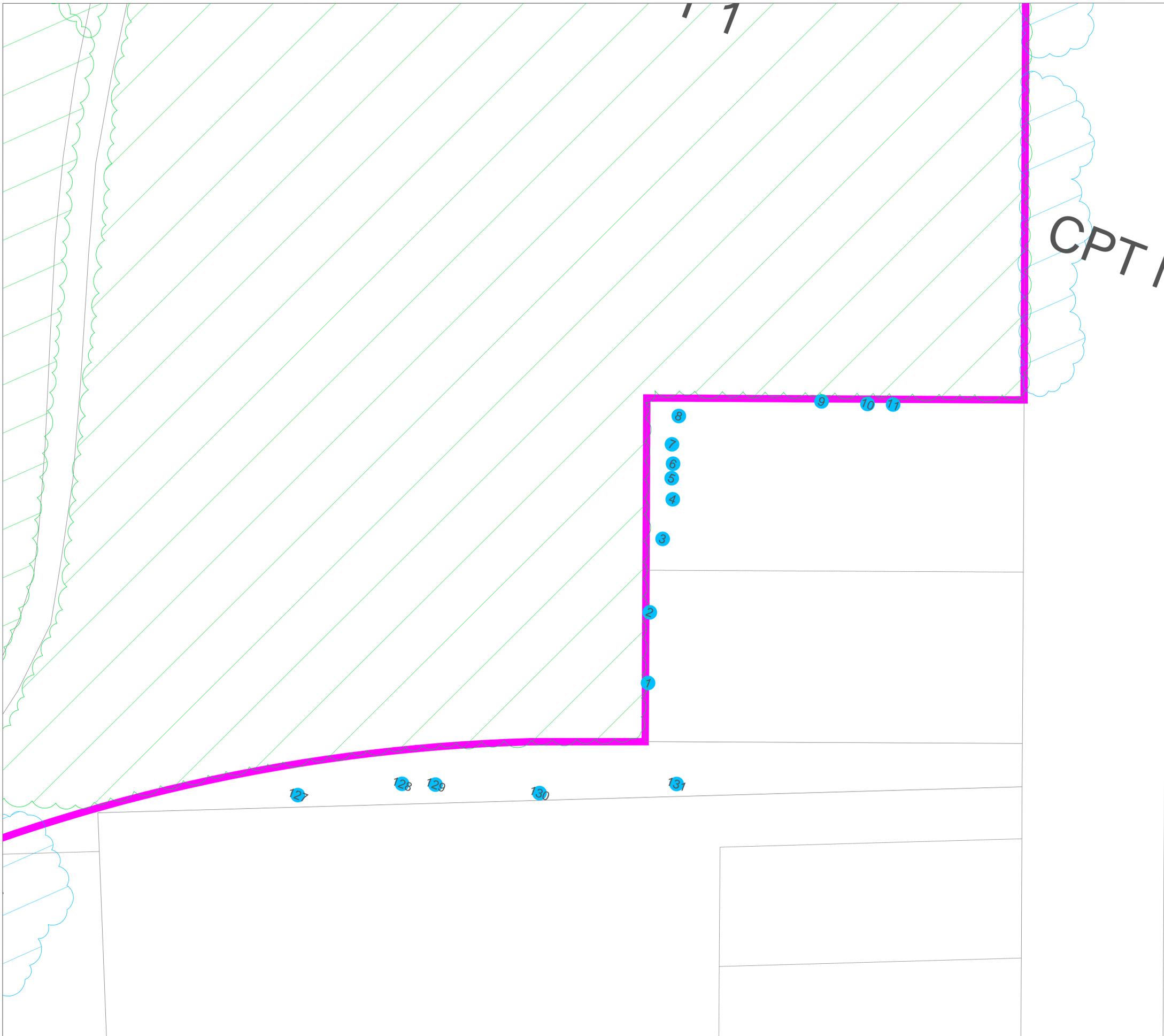
PROJECT
TC293 Port Hope Phase 5

DRAWN
AWS
DATE
June 11, 2019

SCALE
DO NOT SCALE

SHEET
TC293-01





REVISIONS:

NO. DMY REVISIONS

-  Assessed individual or significant tree
-  Assessed individual or significant tree on adjacent neighbouring property
-  Assessed compartment of trees
-  Assessed compartment of trees on adjacent neighbouring property



CLIENT
 Mason Homes Limited
 70 Innovator Ave
 Whitchurch-Stouville, ON

SHEET
 Tree Inventory Plan

PROJECT
 TC293 Port Hope Phase 5

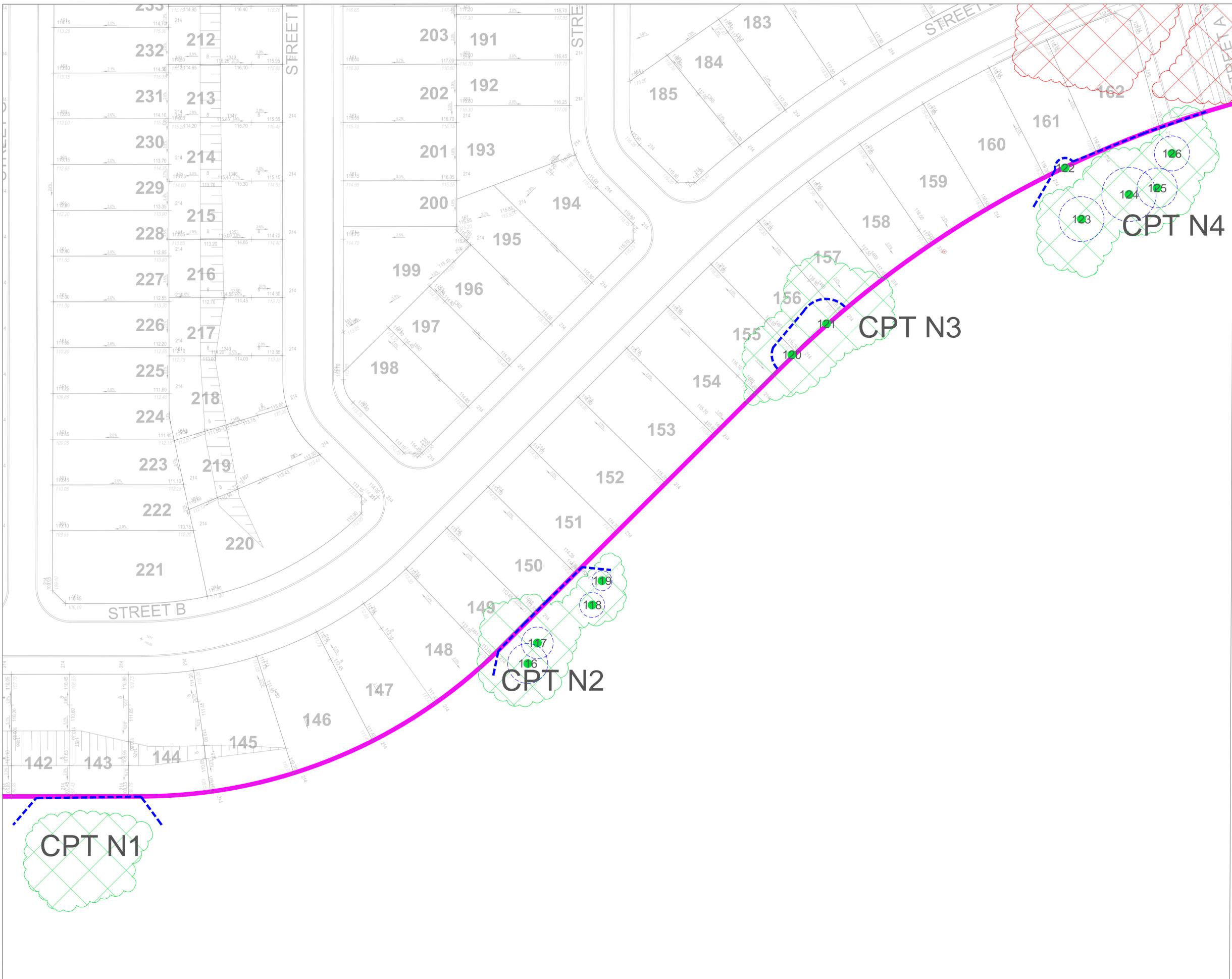
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 AWS
 DATE
 June 11, 2019

SCALE
 DO NOT SCALE

SHEET
 TC293-01

Table 2
Port Hope Phase 5
 Tree Removal & Preservation Plan

Compartment (CPT) / Tree #	Development Impact	Recommendation
Tree 1-11, 127-131, CPT N1, CPT N2, and CPT N4	These are shared or neighbouring trees located along the south edge of the development property and do NOT conflict with the proposed development.	<p>Preserve trees and install protective fencing as specified.</p> <p>Some pruning of the upper canopy of CPT N2 adjacent the development may be necessary to accommodate construction. This pruning should be executed or supervised by an ISA certified arborist.</p>
Tree 108, 122 and CPT N3	These trees are in close proximity to the grading limits and CPT N3 will approximate 0.2m of fill placed on the outer edges of the root zone. Impact to these trees is deemed to be minimal.	<p>Preserve trees and install protective fencing as specified.</p> <p>Some pruning of the upper canopy of tree 121 will be necessary to accommodate construction. This pruning should be executed or supervised by an ISA certified arborist.</p>
CPT N5, N6 & N7	These are neighbouring (municipal) trees located on the east side of the development property and are in close proximity to or in direct conflict with the proposed development.	Obtain permission from municipality to remove trees.
Tree 101-107, 109-115, CPT 1, CPT 2 and CPT 3	<p>These trees are in direct conflict or close proximity to limits of excavation and/or grading.</p> <p>Note that trees 109-115 are Ash and are also recommended for removal due to their inevitable demise from Emerald Ash Borer.</p>	Remove trees.



REVISIONS:

NO.	DMY	REVISIONS

-  Retained tree requiring protection
-  Crown spread
-  Tree Protection Zone
-  Tree compartment portion to be preserved
-  Tree or treed compartment portion to be removed.
-  Shared/Neighbouring tree or treed compartment requiring permission to remove
-  Tree protection area
-  Protective fencing



CLIENT
 Penryn-Mason Homes Inc.
 70 Innovator Ave, Unit #1
 Whitchurch-Stouffville, ON

SHEET
 Tree Preservation & Removals Plan

PROJECT
 TC293 Port Hope Phase 5

REVIEWED
 DRAWN
 AWS
 DATE
 June 11, 2019

SCALE
 DO NOT SCALE
 SHEET
 TC293-02

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

PRUNE BRANCHES AS REQUIRED TO PREVENT CONSTRUCTION DAMAGE

SUPPORTS SHALL NOT DISTURB ROOTS

WOOD FRAME (100x100) TOP, BOTTOM AND SUPPORT BRACE

WOOD POST (100x100x1200)

HOARDING AS DETERMINED BY TOWN PLYWOOD

ORANGE CONSTRUCTION FENCE

SILTATION FABRIC 600 ABOVE GRADE

UNDISTURBED ROOT ZONE: CLEANLY CUT ANY EXPOSED ROOTS AND IMMEDIATELY BACKFILL AND MAINTAIN MOISTURE

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/1cm ϕ

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

40cmx60cm SIGN MOUNTED ON ALL SIDES OF BARRIER

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:

- ALL TREE PROTECTION BARRIERS SHALL BE IN PLACE AND APPROVED BY THE TOWN PRIOR TO CONSTRUCTION ACCESS.
- ALL SUPPORTS AND STAKES SHALL BE OUTSIDE THE TREE PROTECTION ZONE AND SHALL MINIMIZE ROOT DAMAGE.
- TREE PROTECTION BARRIERS SHALL REMAIN IN PLACE AND IN GOOD CONDITION UNTIL ALL CONSTRUCTION IS COMPLETE AND APPROVED BY THE TOWN.
- ALL ARBORICULTURE WORK SUCH AS PRUNING OF BRANCHES AND ROOTS, SHALL BE DONE BY A QUALIFIED TREE WORKER CERTIFIED WITH THE INTERNATIONAL SOCIETY OF ARBORICULTURE 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."

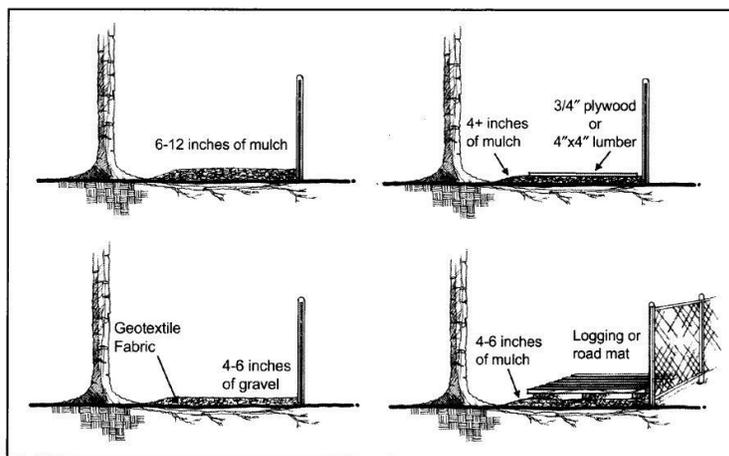


Figure 3. Soil and root protection options within the TPZ.

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."

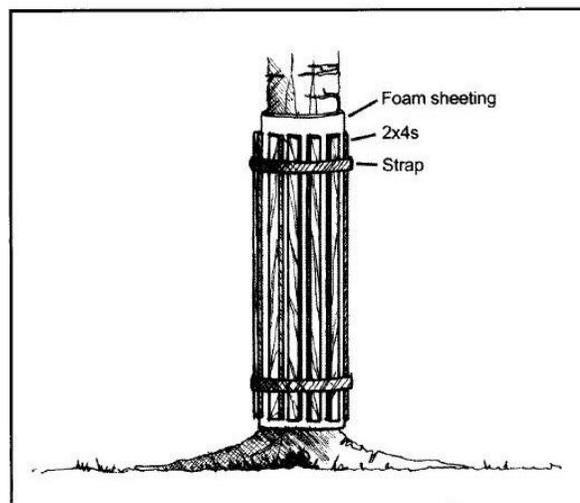


Figure 4. Trunk protection structure.

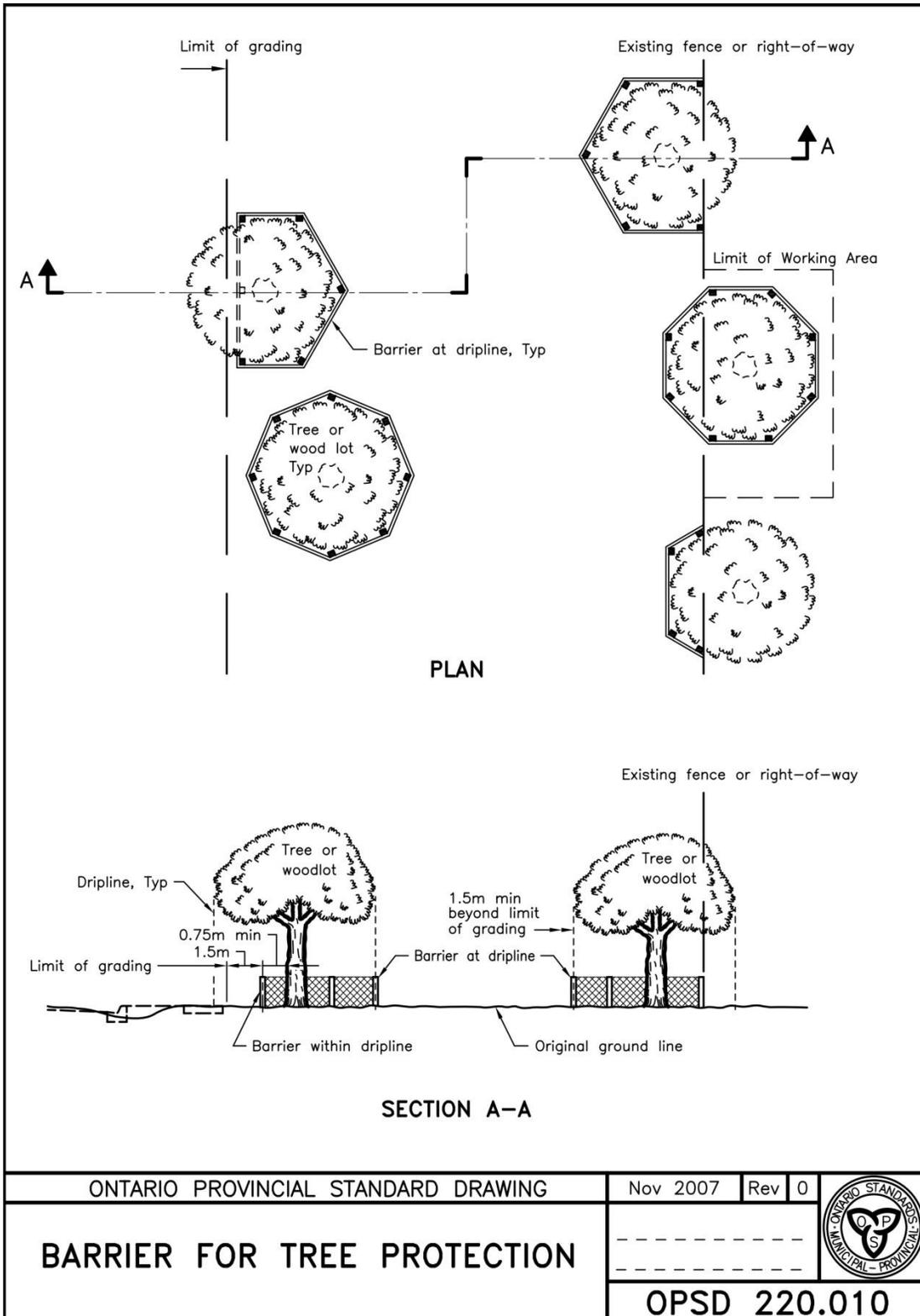
During construction

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.

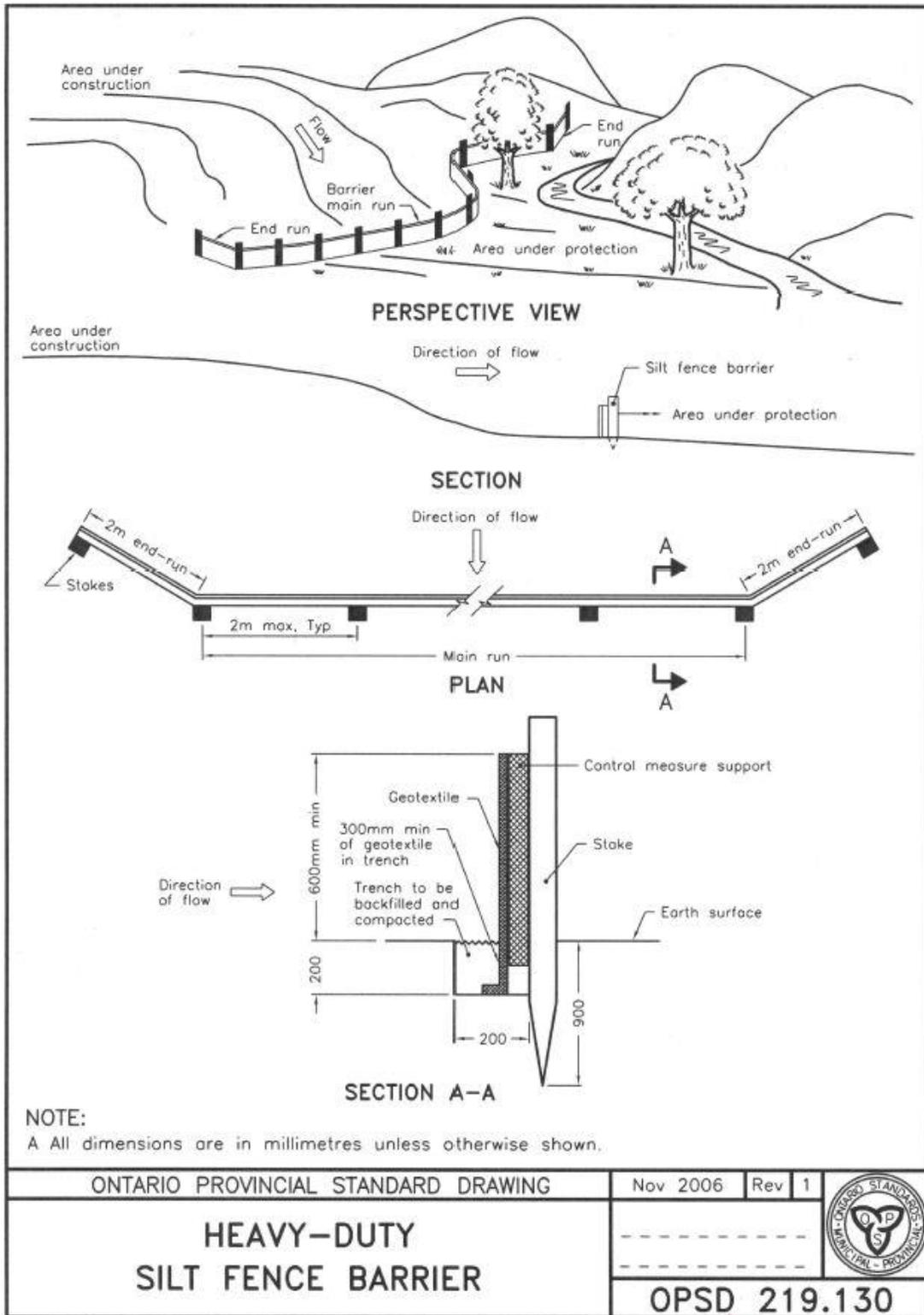
Post-Construction Care

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.



Appendix 1 (cont'd)

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