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FROM:	G. KOTSIFAS, P.ENG. MANAGING DIRECTOR, DEVELOPMENT & COMPLIANCE SERVICES & CHIEF BUILDING OFFICIAL
SUBJECT:	TREE PRESERVATION REPORT VAN HORIK PROPERTY 930 GAINSBOROUGH ROAD MEETING ON MARCH 25, 2014

RECOMMENDATION

That, on the recommendation of the Senior Planner, Development Services, the following report regarding Council’s direction to staff to report back to the Planning Committee during the early stages of the development process with respect to the tree preservation plan on the Van Horik property located at 930 Gainsborough Road **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER

- October 16, 2006 PC Agenda Item #5 – Information report on the Hyde Park Significant Woodlands OMB Hearing
- May 28, 2007 PC Agenda Item #16 – Application by Harry and Mary Van Horik relating to the property located at 930 Gainsborough Road
- September 22, 2008 PC Agenda Item #24- Information report summarizing previous application history on the Van Horik property located at 930 Gainsborough Road and lands in the immediate surrounding area.

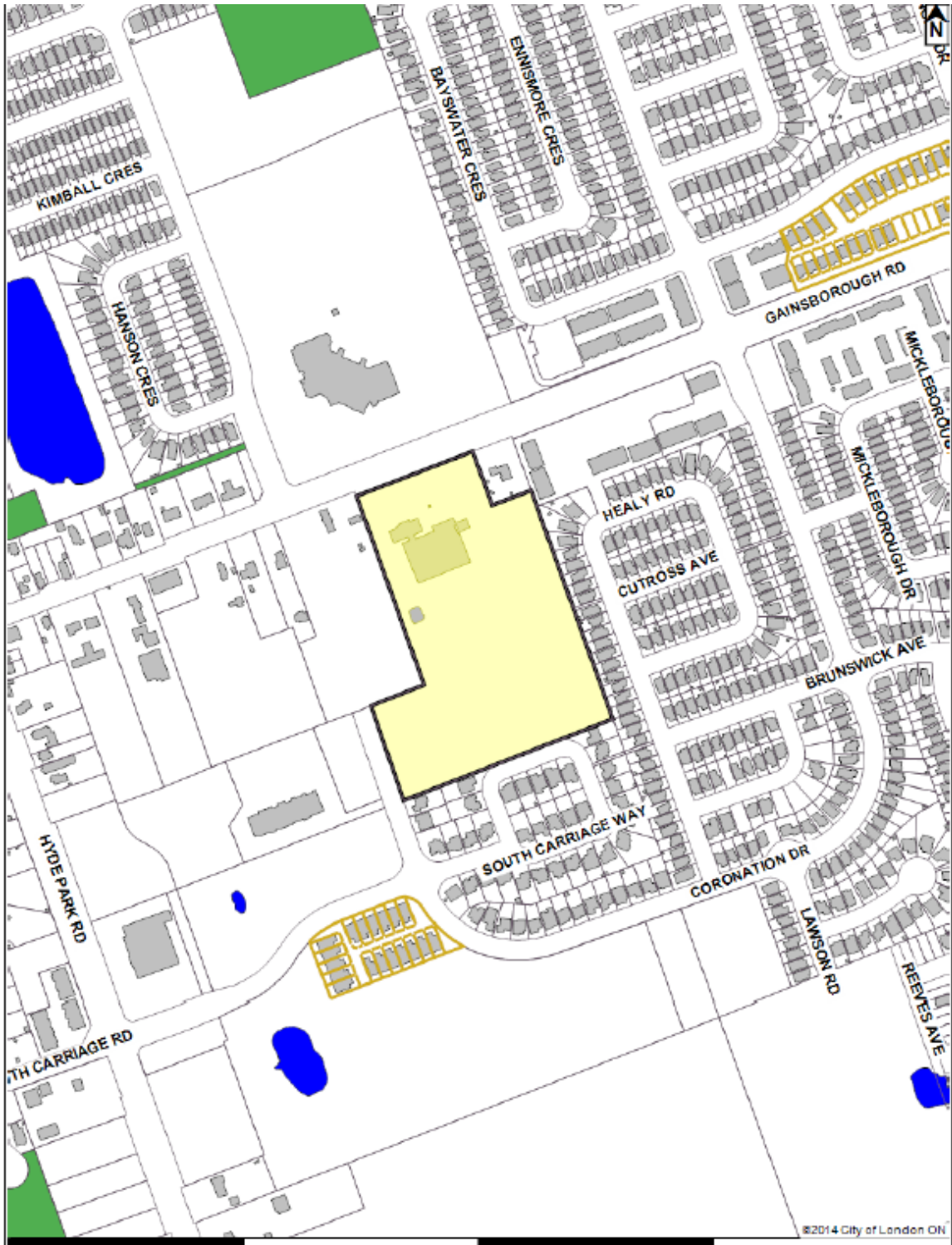
BACKGROUND
















The Van Horik property is located in Hyde Park on the south side of Gainsborough Road. On April 17, 2000, City Council adopted Official Plan Amendment No. 193 to implement land use designations and policies for the Hyde Park Community Plan. OPA 193 was appealed to the Ontario Municipal Board by the London Development Institute. At issue was the amendment to change the designation of three woodland patches within the Hyde Park Community Planning area from “Environmental Review” to “Open Space”. One of the three woodland patches (Patch #1006) is situated on the Van Horik property. Through OPA 193, the patch was proposed to be designated “Open Space” on Schedule ‘A’ of the Official Plan, and delineated as a “Woodland” on Schedule ‘B’.

The Ontario Municipal Board hearing was held November 28-30, 2005 and July 10-13, 2006, and a decision was issued August 15, 2006. The following excerpt taken from page 11 of the OMB decision summarizes the Board’s findings with respect to Patch #1006:

6. “The Board finds concurrence with the Agreement of the Parties as represented in Exhibit J-11 that there is insufficient evidence supporting the change of the designation of Vegetation Patch 1006 (Van Horik) to Open Space. Thus, the Board finds concurrence with the agreement and the documents placed in evidence that it is appropriate to amend OPA 193 in Schedule 1 to OPA 193 (page 166 Exhibit 1 Tab 30) for the Vegetation Patch 1006 from Open Space to Urban Reserve.”

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<p style="text-align: center;">LOCATION MAP</p> <p>Subject Site: 930 Gainsborough Road Applicant: Stephen Teske File Number: 39T-13505 Planner: Craig Smith Created By: Craig Smith Date: 2014-01-10 Scale: 1:5000</p> <p style="text-align: center;">Corporation of the City of London Prepared By: Planning and Development</p>	<p style="text-align: center;">LEGEND</p> <table border="0"><tr><td></td><td>Subject Site</td></tr><tr><td></td><td>Parks</td></tr><tr><td></td><td>Assessment Parcels</td></tr><tr><td></td><td>Buildings</td></tr><tr><td></td><td>Address Numbers</td></tr></table>		Subject Site		Parks		Assessment Parcels		Buildings		Address Numbers
	Subject Site										
	Parks										
	Assessment Parcels										
	Buildings										
	Address Numbers										

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Planning Committee received a report on the decision from the Planning & Development Department entitled Hyde Park Significant Woodlands OMB Hearing at its meeting on October 16, 2006.

On June 11, 2007, Municipal Council adopted Official Plan and Zoning By-law amendments with respect to an application by Harry and Mary Van Horik relating to the subject lands at 930 Gainsborough Road. The area affected by the amendments includes a remnant woodlot located to the rear of an existing nursery, greenhouse, and garden centre operated by the Van Horiks. The Official Plan was amended to change the land use designation on the rear portion from “Urban Reserve – Community Growth” to “Low Density Residential” and to delete the “Vegetation Patches Outside ESA’s and Wetlands” delineation on Schedule ‘B’ - Floodplain and Environmental Features Map. The zoning was amended from an Urban Reserve (UR3) Zone, a holding Urban Reserve (h-2•UR3) Zone, and an Open Space (OS5) Zone to a holding Residential R1 Special Provision (h-57•h-78•h-79•R1-3(5)) Zone to permit single detached dwellings on the rear portion of the property; and to a holding Residential R5/Residential R6/Residential R8 (h-34•h-57•h-78•R5-4/R6-4/R8-2) Zone to permit such uses as townhouses on the portion of the property fronting Gainsborough Road.

Holding provisions attached to the recommended zoning amendment included a requirement for preparation of a tree preservation plan by a qualified ecological consultant in accordance with the City’s Tree Preservation Policy to the satisfaction of the City.

Council’s June 11, 2007, resolution further noted that: staff will report back to the Planning Committee during the early stages of the development process with respect to the aforementioned tree preservation plan. Discussions with the applicant’s agent at the time indicated they were prepared to work with the City to achieve a subdivision design which incorporates a meaningful and sustainable component of the existing woodlot.

On September 22, 2008 staff submitted an information report to Council summarizing the previous reports on the Van Horik property and the lands in the immediate vicinity. Through the subdivision process on the lands to the south and during the development process of the Tricar lands to the east, grading and access issues regarding the Van Horik wooded area were considered. The existing zoning designation on the Van Horik property requires a Tree Preservation Report to be submitted at the time of the subdivision approval process. The intent of the Tree Preservation Report is to consider the potential for the retention the wooded area.

On October 21, 2013 the City accepted an application submitted by Monteith Brown Planning Consultants on behalf of the applicant Steve Teske to permit a Draft Plan of Subdivision with 61 single detached residential lots, 1 park block and two walkway blocks served by two new local street and on January 3, 2014 the City accepted an application to amend the Zoning By-law. The applicant has submitted a Tree Preservation Report; prepared by Ron Koudys Landscape Architect Inc. dated July 2013 (attached Appendix “1”).

On January 10th a combined notice of application for a Draft Plan of Subdivision and Zoning By-law Amendment was circulated to the public. The intent of the proposed zoning by-law amendment is to change the zoning on the property from a Holding Residential R5/R6/R8 (h-34•h-57•h-78•R5-4/R6-4/R8-2) Zone which permits cluster residential in the form of single, semi, duplex, townhouse, stacked townhouse, apartments, senior citizen apartments and continuum of care facilities at a maximum density of 50 units per hectare and 13m in height, and a Holding Residential R1 Special Provision (R1-3 (5)) Zone which permits single detached dwellings to an Open Space (OS4) zone which permits public or private parks and conservation lands, a Holding Residential R5/R6/R8 (h-34•h-57•R5-4/R6-4/R8-2) Zone which permits cluster residential in the form of single, semi, duplex, townhouse, stacked townhouse, apartments, senior citizen apartments and continuum of care facilities at a maximum density of 50 units per hectare and 13m in height, a Holding Residential R1 Special Provision (h-57•R1-3 (5) Zone which permits single detached dwellings. The applicant has also requested to remove the h-78 holding symbol that requires adequate sanitary, storm, water services and access is available is to the satisfaction of the City Engineer and the h-79 holding symbol that requires the owner undertakes a tree retention plan as part of any future subdivision development to the satisfaction of the City.

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The submitted Tree Preservation Report has been circulated to the City's Park Planning and Development Services Departments for review and comment. Through the Draft Plan of Subdivision and Zoning By-law Amendment which includes a future public participation meeting, Council may require that appropriate conditions be added in the draft subdivision plan and through the proposed amended zoning to implement tree retention.

PREPARED AND RECOMMENDED BY:	REVIEWED BY:
C. SMITH SENIOR PLANNER, DEVELOPMENT SERVICES	ALLISTER MACLEAN MANAGER, DEVELOPMENT PLANNING
REVIEWED BY:	SUBMITTED BY:
TERRY GRAWAY MANAGER, DEVELOPMENT SERVICES & PLANNING LIAISON	G. KOTSIFAS, P.ENG MANAGING DIRECTOR, DEVELOPMENT & COMPLIANCE SERVICES & CHIEF BUILDING OFFICIAL

JCS/
"Attach."

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(CS)\PECreportinfotreepreservationreport.docx

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Appendix "1"

**RON KOUDYS
LANDSCAPE
ARCHITECTS INC.**



TREE RETENTION REPORT

for

**Van Horik Greenhouses Ltd.
930 Gainsborough Road
London, Ontario**

Prepared by:

RON KOUDYS LANDSCAPE ARCHITECT INC.

368 Oxford St. E.
London, Ontario

July 2013

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INTRODUCTION

In March of 2011, our office undertook an initial assessment of the existing trees on the above noted project site with respect to tree retention. Our office has been monitoring the site and we have adjusted the report accordingly over the past 2 years. A subdivision with 61 detached residential homes and a medium density block is proposed for the 6.04 hectare property (refer to the Draft Plan of Subdivision). As a result of the future construction of new homes and associated site servicing, it will only be possible to retain trees around the southern perimeter and in a 1.07 hectare block to be designated municipal parkland.

The topography of the site can be characterised as generally flat, sloping gently from north to south. The existing vegetation is largely anthropogenic in nature with planted ornamental species, except for a mid-aged stand of trees on the south portion of the property. We did not identify any rare or endangered species on the site.

RKLA worked closely with the project design team to reduce the impact of construction on the trees by modifying the proposed plans and exploring a variety of servicing options. Impacts of the proposed development on the existing vegetation is reduced with the introduction of deep residential lots and a storm water drainage approach which will help to retain as much of the existing perimeter vegetation as possible.

Specific impact on the trees adjacent to the construction zones will not be understood until the various lots are sold and the new owners select a particular home design. As a result, it is our recommendation that, in addition to this report, individual Tree Retention Reports be undertaken on a lot-by-lot basis to establish a secondary retention zone where best efforts to preserve trees will be made. By undertaking these lot-by-lot assessments there will be more accuracy with respect to tree preservation with more refined site grading, house placement, and servicing requirements.

METHODOLOGY

Our office carried out a detailed site inspection in March of 2011 to develop a clear understanding of the quality and character of the existing vegetation. All trees in the secondary retention zone were tagged, identified, and measured. Trunk and canopy structure, evidence of disease or pests, and overall health were evaluated. Since, our office has visited and monitored the site a number of times. The report has been adjusted accordingly to reflect any changes during that time. These assessment techniques assist in characterizing the vigour of the trees at the time of the assessment and their ability to withstand potential construction impacts. This information will be relied upon when site-by-site assessments are undertaken. It was not necessary to locate all trees in the primary retention zone since they will be protected with a barrier set in place prior to any work commencing on site and will not be removed until all construction is complete. We worked closely with the project planning and civil engineering firms (Monteith

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Brown Planning Consultants and AGM Surveying & Engineering) to explore a variety of development options for the site. I also looked at soil types, water table, wind impacts, adjacent land uses and overland flows. As part of this process we explored a number of modifications to the proposed site grading and lotting plans in order to maximize tree retention on the site.

Two detailed conceptual draft plans were prepared and presented to the City of London's environmental ecologist. Based on our discussion regarding the impacts of the development on the existing natural systems, she made recommendations which were then incorporated into the final version of the site plan. These plans were presented to the city planning committee at a public participation meeting where a number of comments were noted and the plans were modified to reflect this input.

Our design team also examined the appropriateness of relying on a primary retention area and a secondary zone that would be reviewed at the building permit stage. It was determined that the approach would provide the best protection for the most desirable trees on site.

As part of the storm drainage strategy for the site, water from 100 year storm events will be discharged southward through the primary tree retention zone. In our opinion, the infrequent nature of this occurrence will not represent any negative impact to the health of the existing trees. Strategically placed catch basins may assist with the removal of excess standing water. Currently pools of water form on the surface due to the flat topography. Trees in this area are already acclimatized to seasonal short term flooding.

REMOVAL AND PROTECTION OF TREES TO BE RETAINED

Trees to be retained and trees to be removed were selected based upon tree vigour data, a detailed site examination, and the requirements of the development (i.e., lot layout, site services, the site plan supplied by Monteith Brown Planning Consultants).

However, because the layout of this development is currently at a conceptual stage and we lack specific architectural footprints and knowledge of individual homeowner requirements (e.g. pools, decks, etc.), it is difficult to determine the specific impact of construction on the existing trees in the secondary retention zone.

In response, we have developed a strategy that allows maximum tree retention with some flexibility in the interface between retention areas and individual homes.

A Primary Tree Retention Zone has been established (see the Tree Retention Plan T-1, enclosed):

1. Block 63, an area of approximately 1.07 hectares comprising the highest quality stand of trees on the site, which will be designated as municipal parkland;

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The Primary Zone establishes the area in which trees will be retained (with remedial pruning to enhance tree health) or removed (if they represent a hazardous condition). Protection for these trees is assured by the construction of a tree preservation barrier, which is to be maintained at the limit of the Secondary Zone (thus providing an added buffer) and around the perimeter of the zone until all site construction has been completed. Preservation in the Primary Zone will be definite and no construction or site alterations will be allowed. However, the consultants have worked closely together to determine the ideal location for pedestrian access points through the primary tree retention zone. These are somewhat influenced by desire lines and the protection of more sensitive habitat areas. The consultants agree that the location identified addresses these main concerns and some pruning or removing of trees adjacent to this pathway may be necessary for safety reasons.

In addition, Two Secondary Zones have been established, comprising those trees that will be retained and protected until more specific information is available with regards to building footprints and lot grading.

1. A rectangular 8m wide strip at the west end of Block 63, behind blocks 1 through 5 facing on Coronation Drive;
2. A rectangular block 4.5m to 7.5m wide, north of Block 63 and south of blocks 6 through 16. This secondary zone will provide an additional buffer to the primary tree retention zone as described above.
3. Although trees are shown on the plan along the east property boundary, no secondary zone was identified due to the likelihood of future drainage swales running through the root zones. Our experience with Black Walnuts is that they have responded well to significant site alterations in the past and may survive. Until specific house plans are established it is not possible to ascertain the full extent of impact.

These tree retention zones are designed to maximize the health of onsite trees as well as the safety in the surrounding areas. The following elements were taken into consideration when developing these retention zones;

1. Houses (along Street 'A' on the north side of the tree retention zone will provide wind protection to replace that provided by trees to be removed.
2. Clearly defining a pedestrian access point, (Block 65), will reduce the amount of random pedestrian movement through the retention zone, therefore reducing stress on the area.
3. Back yards adjacent to the retention zone will improve supervision – "eyes on the space" – as per basic CPTED (Crime Prevention Through Environmental Design) principal.

A tree-by-tree assessment of trees in the secondary zones will be undertaken at the time of issuance of building permit, and best efforts will be made to retain these existing trees. We highly recommend that individual lot owners be encouraged to plan and site their house in such a way as to accommodate the trees.

Prior to construction, protective fencing shall be erected between the Secondary

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Zones and the construction area. No construction, stockpiling or heavy equipment will be permitted beyond the construction limit. In this area, trees in poor condition that are to be removed should be felled carefully to minimize the impact to the trees to be retained (refer to Pre-Construction Recommendations).

The successful survival of the trees to be retained is largely dependent on adhering to the recommendations that follow.

RECOMMENDATIONS

The following practical recommendations are made to enhance the survival potential of the trees to be retained on site. These recommendations apply to all trees in the Primary Zone, as well as those trees in the Secondary Zone that are determined to be retained once more detailed information on individual lot layout and grading is available.

A. Pre Construction Recommendations

1. Prior to tree removal operations, the limit of the clear cut needed for the development will be fenced and clearly marked (i.e. all boundary trees designated for removal to be marked with spray paint).
2. Trees on the site that should be removed for silvicultural, safety and aesthetic reasons should also be marked for cutting. (I.e. spray paint) during the overall tree clearing operation.
3. Sanitation cutting is recommended for safety reasons. A light sanitation / improvement cut should be conducted where deemed necessary once the trail line has been determined in tree retention areas. If the City of London is comfortable with assuming the risk, we recommend to leave the dead interior trees to fall naturally. Any cutting should be encouraged to take place prior to the end of April or after September to avoid impacts to nesting birds. All cutting will be done by chain saw.
4. Care should be taken during the felling operation to avoid damaging the branches, stems and roots of the trees to be retained. Where possible all trees are to be felled towards construction to minimize impacts to adjacent vegetation.
5. Stem damage to trees from skidding operations during the removal process should be avoided. Trunks of trees to be retained near the construction zone should be wrapped with three layers of snow fencing to provide protection. Wrapped
6. Heavy equipment should not be allowed under the drip line (limit of branches) of the trees to be retained.
7. Broken branches on trees to be retained should be cleanly cut by a qualified arborist/horticulturalist as soon as possible after the damage has occurred.
8. Final site grading should ensure that surface water is discharged from the site and the existing soil moisture conditions are maintained.

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B. Recommendations Related to the Construction Process

1. Snow fencing is to be maintained until all heavy construction work is complete. No movement of equipment or dumping of solvents, gasoline, etc. may occur within this fence line. Tree protection barrier detail show snow fence with 2x4 top and bottom rails supported by steel t-bar posts. We have found this to be a suitable upgrade from unsupported snow
2. ~~Where~~ high-quality specimens occur adjacent to areas subjected to intensive construction activity, wooden cribbing (i.e. planks and or plywood construction) should be erected to protect their trunks from damage in the event that heavy equipment breaks down the snow fencing.
3. During the excavation process, roots that are severed and exposed should be hand pruned to leave a clean-cut surface. This will reduce the opportunity for pests or disease to enter through the wounds.
4. If grade changes are required in areas adjacent to trees to be retained, work should be done to minimize impacts to the trees. Tree wells, retaining walls or other site features should be used.
5. Avoid running above ground wires and underground services near trees to be retained.

C. Post Construction Recommendations

1. After all work is completed; snow fences and other barriers should be removed.
2. A final review must be undertaken by the project landscape architect to ensure that all mitigation measures as described above have been met.
3. It is recommended that the existing ground layer vegetation remain intact so as not to disturb the virgin soil around the base of the existing trees. The placement of the tree protection barrier will help to preserve the ground layer flora.
4. A homeowner brochure should be prepared and distributed to inform the community about the wooded area and how to ensure it is healthy.

SUMMARY

These recommendations are designed to enhance the survival of trees to be retained. While it is always positive to retain as many trees as possible on a site, some trees, because they are in poor condition, final grade elevation conflicts or an undesirable species, cannot be saved for safety, aesthetic, or silvicultural reasons.

There is no guarantee that the trees to be retained will not be affected by proposed site construction. Some subsequent tree management may be required to ensure the health of the trees.

Due to the conceptual layout of this development and current lack of architectural footprint layouts, it is our recommendation that, in addition to this report,

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Tree Retention Reports be undertaken on a lot-by-lot basis. By undertaking lot-by-lot assessments there will be more accuracy with respect to tree preservation with more refined site grading, house placement, and servicing requirements.

FIELD NOTES

TREE INVENTORY

ID NO.	TREE SPECIES	DBH	CRWN	CANOPY RAD. (m)
303	Maple	10	3	1.8
306	Black Cherry	18	3	2
307	Beech	4	3	0.5
309	Black Cherry	10	2	1.5
311	Maple	14	3	2
316	Maple	10	3	1.6
317	Black Cherry	12	3	1.8
318	Elm	7	3	0.8
330	Beech	9	4	1
331	Beech	10	3	1
332	Elm	5	3	0.5
333	Poplar	10	3	1.2
334	Elm	7	3	1
335	Ash	9	2	1.4
336	Elm	7	3	1
345	Beech	14	3	2.2
346	Beech	16	3	2.6
347	Elm	8	4	1
349	Maple	10	3	3
350	Beech	7	3	1.5
351	Ash	24	3	2.9
354	Maple	6	3	0.4
368	Beech	8	3	1
369	Maple	7	3	0.8
375	Black Cherry	10	3	1.8
382	Beech	32	4	4
383	Beech	9	3	1.6
384	Beech	9	3	1.6
628	Beech	20	4	2.3
629	Elm	6	3	0.8
630	Maple	10	3	1.6

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631	Maple	13	3	2.2
632	Maple	6	3	1.2
633	Maple	7	3	1.2
634	Maple	5	3	1
635	Maple	5	3	1
636	Black Cherry	8	3	1.5
637	Maple	6	3	1.2
638	Maple	6	3	1.2
642	Maple	6	3	1.2
644	Maple	11	3	1.8
646	Maple	9	3	1.6
652	Black Cherry	10	2	1.8
673	Balsam Fir	8	0	1.5
674	Hemlock	0	4	-
675	Japanese Maple	0	4	-
676	Walnut	35	4	4
677	Maple	15	4	2
678	Walnut	15	4	2.2
679	Walnut	34	4	4
680	Walnut	40	0	4.5
681	Walnut	35	4	4
682	Maple	18	3	2.6
683	Walnut	12	3	2.2
684	Walnut	22	3	3.2
685	Maple	20	3	2.5
686	Hawthorn	15	3	1.8
687	Hawthorn	35	3	2.2
688	Maple	28	4	2
689	Walnut	20	3	3
690	Maple	16	4	1.8
691	Ash	24	2	2.2
692	Ash	15	2	2.2
694	Hawthorn	16	3	1.8
695	Walnut	27	4	4
696	Walnut	35	4	4.5
697	Ash	16	2	2
699	Ash	16	2	2
700	Walnut	25	5	3.5
701	Ash	13	2	2
702	Ash	23	2	2.5
703	Ash	12	2	2

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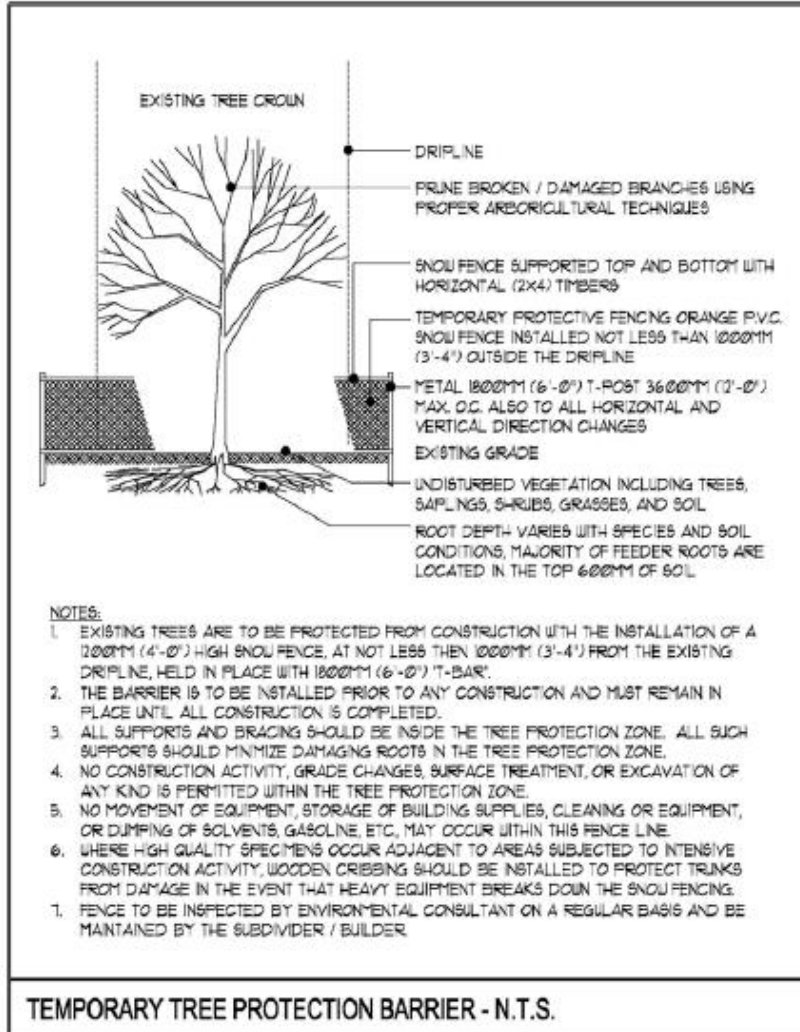
704	Walnut	32	4	4
705	Maple	16	3	2.5
706	Walnut	36	4	4.5
707	Maple	18	4	1.8
708	Maple	17	4	1.8
709	Walnut	20	3	2.5
710	Walnut	40	4	4
711	Maple	16	4	2
712	Hawthorn	20	3	2
713	Hawthorn	12	3	1.3
714	Maple	12	3	1.5
715	Maple	20	4	2.2
716	Hawthorn	15	3	2
717	Hawthorn	14	3	2
718	Maple	22	3	2.2
719	Maple	18	3	2
720	Maple	16	3	2
721	Maple	24	4	3
722	Maple	37	4	3.5
723	Maple	18	3	2.8
724	Maple	30	4	3
725	Maple	25	4	3
726	Maple	34	4	3.5
727	Maple	17	4	2.2
728	Maple	27	3	3
729	Maple	18	4	2.5
730	Maple	22	4	2.8
731	Maple	17	3	2
732	Black Cherry	14	3	2
733	Maple	13	3	2
734	Ash	24	2	2.5
735	Maple	13	3	1.8
736	Ash	30	2	3
737	Ash	17	3	2.2
738	Walnut	14	3	2.6
739	Maple	20	3	3
740	Maple	16	3	2.4
741	Maple	16	3	2.4
742	Maple	20	3	3
743	Maple	23	3	3
744	Ash	32	3	3

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745	Maple	25	3	3.2
746	Hawthorn	16	3	1.8
747	Maple	14	3	2
748	Maple	14	3	2.2
749	Maple	45	4	4.2
750	Maple	27	4	2.8
751	Walnut	48	4	4.8
752	Maple	27	3	3
753	Maple	30	4	3
754	Maple	28	4	3
755	Maple	18	3	2.5
756	Black Cherry	40	3	3.5
757	Black Cherry	45	0	3.5
758	Maple	24	3	3
759	Maple	6	3	0.8
760	Black Cherry	18	3	2
761	Elm	5	4	1
762	Black Cherry	12	3	1.8
763	ColoradoSpruce	25	5	1.5
764	Locust	30	5	2.2
765	Silver Maple	22	5	2.2
766	White Spruce	30	5	3
767	Austrian Pine	10	5	1.5
768	Cherry	10	5	1.2

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TREE INVENTORY CONSTRAINT CODE

SYMBOL TREE STRUCTURE

F Significant forking contributing to structural instability
 L Significant lean (>15%) contributing to structural instability

CROWN CONDITION

5 Healthy: less than 10% crown decline
 4 Slight decline: 11% - 30% crown decline
 3 Moderate decline: 31% - 60% crown decline
 2 Severe decline: 61% - 90% crown decline
 1 Dead

DECLINE SYMPTOMS

CANOPY

C1 Leaf discolouration
 C2 Leaf disfiguration
 C3 Leaf chlorosis
 C4 Abnormal leaf shape
 C5 Abnormal leaf shape
 C6 Insect infestation
 C7 Girdling vine
 C8 Epicormic shoots

STEM

S1 Extensive cavity
 S2 Visible basal rot
 S3 Entry point for insect infestation
 S4 Fungi/galls/cankers
 S5 Sun scald
 S6 Frost cracks
 S7 Lightning scar
 S8 Bark stripping
 S9 Bark girdling

ROOTS

R1 Exposed surface roots
 R2 Severed roots
 R3 Absence of buttress flare

ECO-SETTING

Og Open grown
 Hr Hedgerow
 Fe Forest edge
 Fi Forest interior

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