TREE ASSESSMENT AND PROTECTION

Doug Tarry Homes Ltd.
St. Thomas

June 2021

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Report Summary:

Doug Tarry Homes intends to begin Phase 2 development of the Eagle Ridge subdivision on the subject lands located on Southdale Road in the Township of Yarmouth, Municipality of Central Elgin. Proposed development includes 66 single, detached residential lots on the ±7.45 ha situated south of Southdale line.

The proposed development would require removal of the 23 trees/clusters on-site, 13 of which are considered hazard trees.

A boundary Tulip Tree (**Tree ID 23**) with moderate damage that occurred before Vroom + Leonard was retained requires further analysis and communication with the adjacent landowner concerning solutions to its health and its potential removal.

Tree protection involves installing tree protection fencing at the specified limits set by this report. A proper root pruning and installation of a root barrier should be installed at the northern foundation limits of Lot 60 to protect critical roots of the White Cedar hedgerow (**Tree ID 24**), and along the north side of White Tail Path (**Tree ID 5**).

The proposed Southdale Line secondary access in the northwest will require the removal of 28 trees that are in poor health. In our opinion, this access can be constructed.

Within the geotechnical setback at the north end of Lots 44 and 45, seven Black Walnut trees should be removed due to their hazard assessment.

Tree removal will not occur between March 31 to October 31 to avoid risk of habitat loss for SAR bats and migratory birds.

The proposed development will comply to federal, provincial, and municipal considerations regarding the disturbance to the environment.

1.0 INTRODUCTION

This report is being submitted to the Municipality of Central Elgin on behalf of:

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VROOM + LEONARD Biologists & Landscape Architects (VL) were retained to inventory the existing trees and to complete a Tree Assessment Report and Tree Protection Plan for Eagle Ridge Subdivision. The site is west of the City of St. Thomas in the Township of Yarmouth, Municipality of Central Elgin, County of Elgin. The subject lands are depicted in the attached figures.

An EIS with respect to the natural heritage on site was completed in 2017 examining the surrounding natural heritage features. All recommendations and mitigation measures provided in that document remain relevant. There has been one change to the 2017 concept plan, which includes direct impact for the construction of a secondary access within the northern ravine to connect to Southdale Line. This access was assessed as part of our work and is discussed in Section 3.2.1.

This current document presents an inventory of individual trees 10 cm diameter at breast height (DBH) and larger, as well as the ELC communities on-site and within 3 m of its legal boundary. As the part of the draft plan approval process, this Tree Assessment Report and Protection Plan has been produced to provide protection recommendations for trees within the subject lands and 3 m beyond, adjacent to the site.

1.1 SITE INFORMATION

The subdivision is to be constructed in multiple phases. Phase 1 has been approved, registered as 11M-242, and includes 65 single detached residential lots. The Phase 2 lands were specifically assessed in this report. Phase 2 development involves 66 single detached residential lots in part of Lot 1 and 2, Registered Plan 263, and part of Lots 2 and 3 at Concession 6 (Figure 2).

Phase 2 includes ±7.45 ha located south of Southdale Line. The lands are primarily agricultural. However, our focus is the forested ravine to the south and northwest, tableland plantation along the western boundary, and planted trees adjacent to existing residential rear yards to the north.

For the most part, the vegetation to the north and west is anthropogenic. The forested community to the south is a natural deciduous forest along valleylands.

The western forested community is classified as CUP – Cultural Plantation. The plantation is dominated by White Pine and Black Walnut.

The northern ravine is botanically poor quality, dominated by Black Walnut that have succeeded as regenerants from the adjoining plantation to the west. The understorey is dominated by non-native species, and the ground layer contains a mix of native and non-native species. From the 2017 EIS life science inventories, these areas contain common species with no species at risk, nor rare species.

The forested ravine to the south is classified as FOD5-Dry-Fresh Sugar Maple Deciduous Forest by the Ecological Land Classification system (ELC, 1998). The 2017 EIS noted that this community is botanically rich with few non-native species, and some regionally rare species.

2.0 METHODOLOGY

VROOM + LEONARD attended the property in February and March 2021 to collect data.

The topographic survey was prepared by CJDL and used as the basis for our field work. An inventory of all trees ≥10 cm DBH was completed for individual trees along the rear yards of the existing residential lots. Data collection included species (common and scientific names), location, DBH (cm), crown spread radius (m), height (m), and structural failure potential prior to construction.

Tree location is categorized as one of the following: on-site, beyond the legal parcel, or on the boundary. Boundary trees in Ontario are defined as trees whose trunk (from root collar to the first branch) cross a property line in any proportion. Boundary trees are co-owned with the adjacent landowner and any alterations or removals of boundary trees requires the co-owner's consent.

Using criteria developed by the ISA for hazard tree risk assessment, trees within the subject lands were described under the following constraints.

Structural failure potential prior to construction was ranked as:

a) Improbable — Under normal weather conditions, the tree or branch will not likely fail and may not fail within many severe weather conditions, or

b) Possible — A failure of the tree or branch could be expected during normal weather conditions, or

c) Probable/Imminent — Failure has begun or is likely to occur in the near future regardless of severe weather conditions or increased load.

The northwestern ravine, western boundary, and southern ravine were treated as communities rather than individual trees. Data collection in these areas included species (common and scientific names), DBH (cm) and crown radius (m). Additionally, root analysis via excavation was completed to assess the limit of the critical root zone (CRZ) to be protected.

The root assessment was completed using a mini excavator to excavate the upper 15-40 cm. Three to four test pits were dug at or outside of the dripline along the edge of the forested communities. Test pit locations are shown in Figure 2. Test pits were approximately 1 m wide by 2 m long. Pits were dug perpendicular to the forested edge. All roots encountered were pruned, and the pits were immediately backfilled to protect the tree roots. These pits allowed us to examine the quantity and quality of roots present adjacent to development and determine the limit of the CRZ to be protected.

Data for both individual trees and forested community edges are provided in Appendix 2.

3.0 DATA SUMMARY

3.1 INDIVIDUAL TREES

A total of 38 trees/groupings were inventoried: these are categorized as either clusters, hedgerows or individual trees.

No rare or endangered species were identified in the life science inventory for the 2017 EIS in the vicinity of the natural and cultural landscapes reviewed in this study.

Of the 38 trees, hedgerows or clusters;

_10 are on the subject lands, which are to be removed for the proposed land use.

_18 boundary trees were inventoried as part of this study. Six of the 18 boundary trees are recommended to be removed with adjacent landowner consent due to their current hazard status or likelihood to become hazardous to the proposed land use.

_10 trees, clusters or hedgerows were on adjacent lands within 3 m of the property boundary that will be retained.

_22 trees are proposed to be retained and general tree preservation best practices are provided in Section 4. Tree specific remedies will be detailed after the review and approval of this report by the municipality.

Four large (DBH >90 cm) Silver Maples (**Tree ID 1, 2, 12, 18**) were inventoried as boundary trees. Silver Maples are a fast growing, soft wooded tree that are highly susceptible to damage from wind, snow and ice. In our industry, they are considered hazard trees no matter what condition they are in, beyond the age of 30 years. Health and safety factors call for this tree to be removed given the species and size with the adjacent landowners consent.

Boundary trees **Tree ID 4,** a Norway Spruce, and **Tree ID 7,** a Red Pine, are also recommended for removal subject to adjacent landowner's consent given their suspected root rot (see specific details in Appendix 2) and henceforth, their likelihood to fail.

A coppice Manitoba Maple (**Tree ID 36**) and a cluster of five Manitoba Maples (**Tree ID 37**) exist within Lot 46. Manitoba Maples are an undesirable species and are likely to become hazard trees due to their weak wooded nature. It is recommended that they are removed.

3.2 NORTHERN RAVINE

3.2.1 WESTERN SOUTHDALE LINE ROAD ACCESS

The proposed road construction south of Southdale Line includes vegetation removal of seven trees on the tablelands north of the east west ravine. The trees to be removed consist of one mordant White Pine (20 cm DBH), one poor vigor Norway Spruce (45 cm DBH), and five poor-fair vigor Black Walnut (15-30 cm DBH).

Additionally, the 25 m wide road right of way will cross the east-west ravine and require vegetation removal and infill. Within the 25 m of ravine to be impacted, there are 21 trees to be removed. Species and size of the trees within this unit are provided in Table 1.

Table 1: Trees within the Western Southdale Road Access

	SPECIES				
DBH (cm)	**Black Walnut**	**Sugar Maple**	**Manitoba Maple**	**Black Cherry**	**Shagbark Hickory**
10-30	5	1	3	1	0
30-60	8	0	0	0	2
60-90	1	0	0	0	0

The ravine is dominated by Black Walnut trees (*Juglans nigra*). These are regenerants from the cultural plantation to the west and north. The trees are in fair to poor health exhibiting cankers, forked canopies, signs of internal rot, and deformed crowns. Due to these conditions, there is limited marketable timber.

Again, the northern ravine is botanically poor quality. The understorey is dominated by non-native species, and the ground layer contains a mix of native and non-native species. From the 2017 EIS life science inventories, these areas contain common species with no species at risk, nor rare species.

3.2.2 NORTHERN RAVINE REAR LOTS

Lots 44 and 45 back onto the southern side of the east-west ravine. Rear lot limits extend up to the dripline. The results of the root excavations recorded that critical roots extend over 3 m outside of the dripline. Given these results and the proposed land use, specific tree protection measures would be required for the protection of these trees, if they are to be retained. Species and size of the trees within this unit are provided in Table 2.

Table 2: Tree Data Regarding Northern Ravine Rear Lots

Station	Species	DBH (cm)	Mean DBH (cm)	Dripline Distance (m)	St. Thomas & London Recommended CRZ distance (Whichever is greater)	On-Site Root Investigation CRZ distance
N-1	Black Walnut	75.7	75.7	10.6	dripline or 9.6 m	Large woody roots at dripline and extend beyond 3 m past dripline
N-2	Black Walnut	67, 40.3	53.7	10.45	dripline or 7.2 m	Large woody roots at dripline and extend beyond 3 m past dripline
N-3	Black Walnut	65	65	10.75	dripline or 8.4 m	Large woody roots at dripline and extend beyond 3 m past dripline

Due to the initial results of the root excavations, Vroom + Leonard received an updated concept plan with development limits to determine the potential impact to rooting zones. The updated concept plan included rear yard setbacks and approximate foundation limits.

Four additional root excavations were conducted on April 23, 2021 at 6 m beyond the dripline, matching the maximum limit of foundations. In addition to the root excavations, the trees beyond the top of slope were assessed for hazard potential.

Ten Black Walnut trees were assessed that are within the geotechnical setback limits. Seven of the ten trees were determined to be hazard trees and are recommended to be removed. The three western most trees should be retained.

Test pits in the west determined the critical root zone does not extend beyond 3 m from the dripline. These three trees should be properly pruned, and protective fencing should be placed at 3 m beyond the dripline.

The summary of the hazard tree assessment is given in Appendix 5. The remaining rear yard boundaries require no need for tree protection practices.

3.3 WESTERN BOUNDARY

Lots 18-20 and 40-43 back onto the western property boundary. This boundary is bordered by a cultural plantation of White Pine and Black Walnut. No critical roots were discovered at the dripline during excavation of test pits. Investigation inside the dripline recorded critical roots were present, therefore, CRZ limits should match the limit of the dripline.

Given that the dripline extends past the property line 3.3-4.35 m, protective fencing should be placed at the dripline rather than the fence line until construction is complete along the western boundary. See Table 3 for tree species and size data.

Table 3: Tree Data Regarding the Western Boundary

Station	Species	DBH (cm)	Mean DBH (cm)	Dripline Distance (m)	St. Thomas & London Recommended CRZ distance (Whichever is greater)	On-Site Root Investigation CRZ distance
W-1	Black Walnut	32.8, 8	20.4	3.3	dripline or 3.6 m	At dripline
W-2	Black Walnut, White Pine	18, 14.6	16.3	4.3	dripline or 3.6 m	At dripline
W-3	White Pine	24.5, 17, 49	30.2	4.35	dripline or 4.8 m	At dripline
W-4	White Pine, non-native shrubs	37	37	3.9	dripline or 4.8 m	At dripline

3.4 SOUTHERN BOUNDARY

Lots 8-17 back onto the FOD5- Dry-Fresh Sugar Maple Deciduous Forest ravine.

No critical roots were discovered at the dripline during excavation of test pits 3 and 4 at rear Lots 13-16. Given the dripline does not extend onto the property, and remains within the geotechnical setback, no further setbacks are required for tree protection.

Test pits 1 and 2, at rear Lots 8-12, discovered fibrous roots that extend up to 3.1 m beyond the dripline. Therefore, protective fencing should be placed 3 m beyond the dripline. Based on the concept plan, this may conflict with the land use and grading plan. Given the roots at the dripline were fibrous rather than woody, the protective fencing could be placed at the dripline and proper root pruning up to the fencing must occur during the stripping stage. See Table 4 for tree species and size data.

Table 4: Tree Data at Southern Boundary

Station	Species	DBH (cm)	Mean DBH (cm)	Dripline Distance (m)	St. Thomas & London Recommended CRZ distance (Whichever is greater)	On-Site Root Investigation CRZ distance
S-1	Sugar Maple	24.5, 28, 14, 28	23.6	6.6	dripline or 3.6 m	Dripline + 3.1 m
S-2	Sugar Maple	10.5, 23.5, 26.5	20.2	6.6	dripline or 3.6 m	Dripline + 2.7 m

S-3	Bitternut Hickory	29.5, 14	21.8	4.2	dripline or 3.6 m	At dripline
S-4	Bitternut Hickory, Basswood, Sugar Maple	17.5, 13	15.3	4.3	dripline or 3.6 m	At dripline

See appendix 1: figures

See appendix 2: tree inventory data

See appendix 3: tree protection plan

See appendix 4: root excavation analysis

See appendix 5: hazard tree assessment of the northern ravine

4.0 TREE PROTECTION MEASURES

The municipality does not have a tree protection by-law. For this reason, the City of London guidelines are provided below as they are considered acceptable guidelines in our industry.

4.1 GENERAL TREE PROTECTION RECCOMENDATIONS

Pre-Construction
All tree removals must take place between September 1st and April 1st to avoid disturbing nesting migratory birds. If tree cutting timing windows cannot be avoided, and the woodlot is <1 ha, a qualified specialist is required to conduct nest searches within two days of the proposed construction. If nests are found tree cutting must not occur within a determined buffer zone until the nest cycle is complete. This requirement is in accordance with the Migratory Birds Convention Act, 1994.

Please see City of London Design Specifications & Requirements Manual updated August 2019 Section 12.1.2 Prior to Construction, 12.1.3 Tree Protection Zones, and 12.1.4 Tree Protection Barriers. All of these resources are available on the city's website.

Care should be taken during the tree felling process to avoid damaging the branches, stems, trunks, and roots of the trees to be protected. Where possible, fell trees toward the construction zone.

The Tree Protection Zone (TPZ) shall be installed according to the locations and detail indicated on the Tree Protection Plan. TPZ fencing shall be 1.2 m high with orange snow fencing attached to T-bar posts driven firmly into the ground at 2.4 m maximum spacing and with 2" x 4"s shall be used for top rails. signage must be waterproof and a minimum of 40 cm x 60 cm. The TPZ is to remain in place for the entire duration of construction. The consultant is to be contacted to

inspect and certify that the Tree Protection Zone fencing has been installed according to these details prior to any construction on site.

There will be no construction, no changes to grade with fill, excavation, or any kind of alteration within the TPZ except in those areas that will be affected by grading. There will be no storage of construction materials, fuels, soil, construction waste (i.e. concrete sleuth, gas, oil or paint), portable rooms and/or buildings, debris wash facilities or equipment within tree protection areas, nor will any material be allowed to flow into the TPZ. There is to be no movement of vehicles, equipment or pedestrians within the TPZ. If some excavated material or fill has to be located temporarily near the TPZ, plywood must be used to make sure no material enters the TPZ.

To protect the health and structure of the trees, low impact root excavation (hand-digging, low pressure hydro-vac or air spade) shall be used to uncover roots to a depth that will meet construction requirements. Severed or exposed roots should be hand-pruned by laborers, with oversight provided by the site superintendent, who has been instructed by Vroom + Leonard or their designate to a clean-cut surface. Exposed roots are to be kept moist by any means available; backfill with soil or cover with wet burlap. The roots are to be watered regularly to prevent them from drying out, especially during hot, dry weather. Watering is required until the topsoil and sod have been replaced or as directed.

Avoid running above-ground wires and underground services near trees to be preserved. Avoid open trenching in Critical Root Zone (CRZ).

If travel, excavation, or any disturbance must occur within the TPZ, the municipality will be notified through the File Handler.

During Construction
Please see City of London Design Specifications & Requirements Manual updated August 2019 Section 12.1.5 During Construction.

Care must be taken during tree removals to avoid damaging retained trees on site and adjacent properties.

If a tree is damaged in any way during construction other than that outlined by the approved Tree Protection Plan and arboricultural best practices, be that above ground by topping or removal of branches or below ground by cutting or tearing roots, the damage must be reported to the municipality immediately. Vroom + Leonard or their designates to provide an ameliorative prescription which is to be carried out as soon as possible to protect the tree's health.

If any temporary path for machinery or vehicles must pass over the root system of trees to remain, a 4 inch deep mulch path as wide as the widest piece of equipment that will be used on site will have plywood sheets laid on top to reduce compaction within the root zone. This mulch/plywood path is to remain in place for the duration of the construction in that area.

Trees are to be monitored weekly.

Post Construction

Please see City of London Design Specifications & Requirements Manual updated August 2019 Section 12.1.6 Post Construction.

For the first three years, Vroom + Leonard or their designate will monitor trees impacted in leaf and out of leaf for a total of six site visits if any of the trees are exhibiting mordancy. An ameliorative prescription will be provided by Vroom + Leonard or their designate; the cost of implementing such will be borne by the property owner at that time. The ameliorative prescription may include, but is not restricted to, pruning, deep root fertilization, irrigation, aeration, or tree planting either as a single activity or as a combination.

Avoid discharging water leaders to retained trees.

4.2 SPECIFIC TREE PROTECTION RECCOMENDATIONS

In the side yard of Lot 60, along the northern boundary of the legal parcel, impacts to rooting zones of the White Cedar (**Tree ID 24**) and White Spruce (**Tree ID 25**) hedgerows are anticipated. Given the foundation is located within 3 m of the bole of the trees, special protection measures are required for the retention of these trees.

The general contractor's site superintendent will oversee the following best practices:
_Expose the roots by using compressed air or hydro-vac system, depending on the time of year.
_Once exposed, prune roots up to a maximum of 50% of the fleshy roots using properly instructed personnel.
_Redirect roots and place them in a trench parallel to the foundation.
_Lay root zone directing geotextile along the foundation to protect the roots as well as the foundation.
_Carry out subsequent monitoring to assess the need for watering, deep root fertilization, and branch pruning requirements.

Tree ID 5, a Spruce and Pine hedgerow on the adjacent property should be provided the same root barrier protection as **Tree ID 24 and 25** given the anticipated impacts of road construction on the rooting zone.

Along the main road entrance to the subdivision, there are several boundary trees and trees within 3 m of the subject lands (**Tree ID 13-22**). Before Vroom + Leonard were retained to work on this file, let alone attend the site on December 17, 2020, clearing and grubbing had occurred within the entrance. Excavation within the critical root zone occurred, which sheared the roots, which were left exposed. Sheared and exposed roots are highly susceptible to bacteria and disease. These roots should be pruned, following best practices, as soon as possible to prevent further damage. There are no further tree protection measures to be applied at this point.

Tree ID 23, a 90 cm DBH Tulip tree has also been extensively damaged by the work done before we were retained. This tree is a boundary tree as well and therefore, requires communication with the adjacent landowner. There are also several other defects that are unrelated to the excavation, which may result in the hazard status classification. Communication

with the adjacent landowner is required to determine solutions regarding these impacts and the tree's potential removal.

5.0 CONCLUSION

The landscape will be cleared of 23-24 trees/clusters/hedgerows to accommodate the proposed residential subdivision. 13 of those trees/clusters/hedgerows are considered hazard trees.

A root barrier should be installed with respect to the Cedar and Spruce hedgerow (**Tree ID 24 & 25**) on Lot 60, and the Pine and Spruce Hedgerow (**Tree ID 5**) north of White Tail Path to protect critical roots of the boundary and adjacent trees.

Discussions relating to tree removal of **Tree ID 1, 2, 4, 7, 12, and 18** should be held with the adjacent landowners. This communication could be undertaken by either the client, members of the consulting team such as ourselves, or a third party. This communication would address the matter of consent of noted boundary trees. Discussions relating to **Tree ID 23**, would require communication regarding the fate of the tree, whether it should and/or can be retained. We can produce a separate letter of opinion regarding these matters for use in the communication.

The conclusion of this report is that no negative nor adverse, unalterable impacts on the natural heritage features of the subject land and its surrounding landscape will occur as long as the best management practices outlined in Section 4 are implemented during the construction process.

Shae-Lynn Dehens, Paige Vroom MSc., and Mike Leonard O.A.L.A. C.S.L.A.

APPENDIX 1: FIGURES

VROOM · LEONARD
Biologists & Landscape Architect

Figure 1: Specific Site Location

VROOM · LEONARD
Biologists & Landscape Architect

Figure 2: Root Analysis Station Locations

APPENDIX 2: TREE DATA

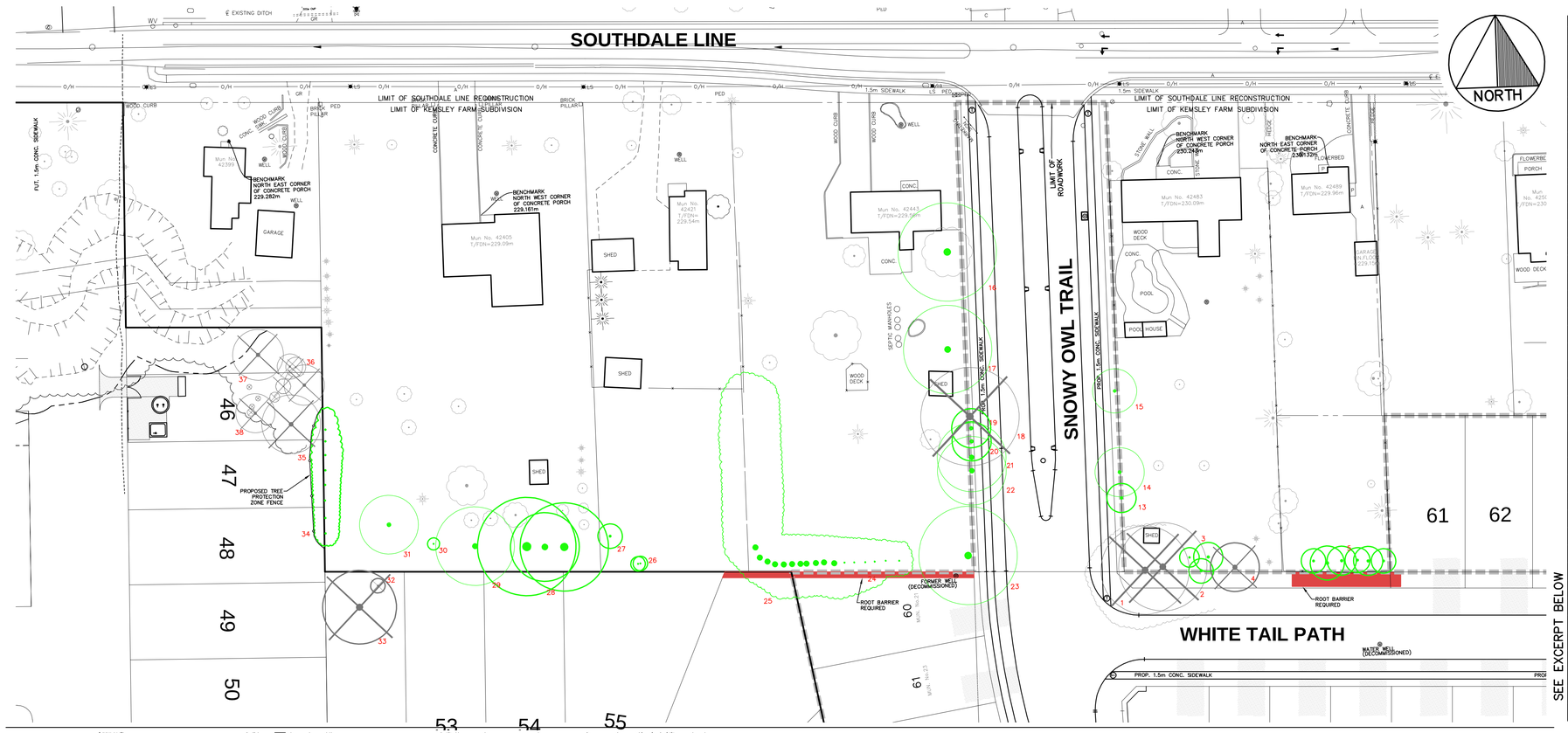
	GENERAL INFORMATION			SIZE			HEALTH			RECOMMENDATION	
TREEID	**COMMON NAME**	**SCIENTIFIC NAME**	**LOCATION (BLANK= PROJECT SITE)**	**DBH (CM)**	**CROWN RADIUS (M)**	**HEIGHT (M)**	**HAZARD RATING**	**HEALTH RATING**	**COMMENTS**	**PROPOSED ACTION**	**RATIONALE**
1	Silver Maple	Acer saccharinum	Boundary	150	9	20	Possible	Fair	Species and age dispose tree to future failure	Remove with cooperation of co owner	Future hazard
2	Silver Maple	Acer saccharinum	Boundary	101	9	20	Possible	Fair	Species and age dispose tree to future failure	Remove with cooperation of co owner	Future hazard
3	Colorado Spruce	Picea pungens	Boundary and Beyond	10	2 to 4	5	Improbable	Good	cluster of three trees	Retain	
4	Norway Spruce	Picea abies	Boundary	45	4 to 6	12	Possible	Poor	Trunk lean and variation in butress roots. Suspect root rot. Needle discolouration and pruning history	Remove with cooperation of co owner	Hazard
5	Red Pine, Norway Spruce, Black Walnut	Pinus resinosa, Picea abies, Juglans nigra	Beyond site	30 to 40	2 to 4	10 to 12	Improbable	Fair	Hedgerow of 8 trees. 5 Pine, 2 Spruce, and 1 Walnut	Retain	
6	Grey Birch	Betula populifolia	Boundary	20	1 to 3	10	Improbable		asymetrical crown, swelling at the base. Suspect trying to	Retain	

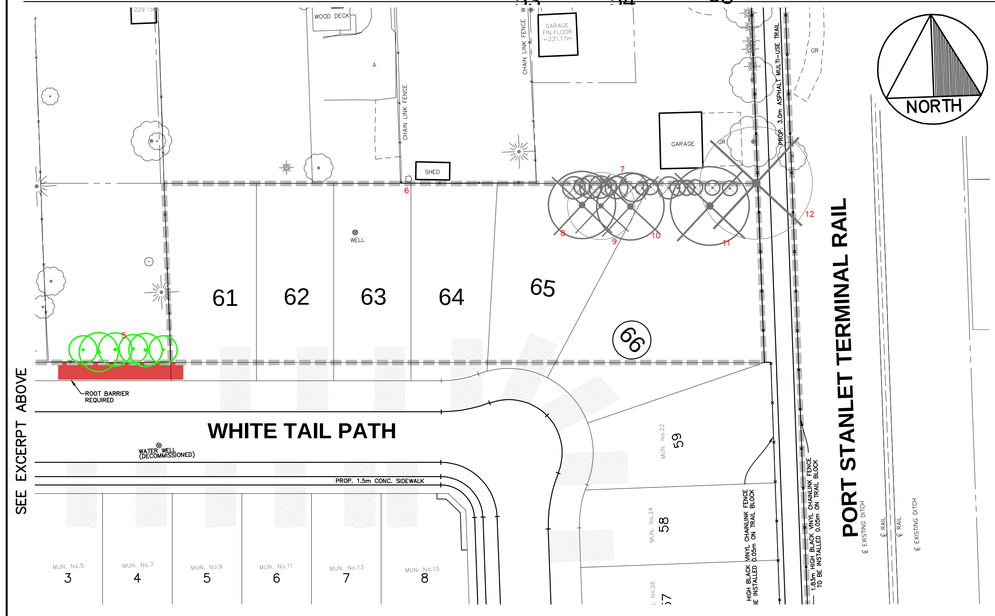
									escape a high water table		
7	Red Pine	Pinus resinosa	Boundary	10 to 25	1 to 4	8 to 10	Probable	Poor	Hedgerow of 17 trees. Lean to the north. Some dead. Suspected root rot	Remove with cooperation of co owner	Hazard
8	White Pine	Pinus strobus	On-site	33	6	10	Improbable	Good		Remove	Land Use
9	Prunus Spp.	Prunus Spp.	On-site	multi-stem	6	8	Improbable	Good		Remove	Land Use
10	White Pine	Pinus strobus	On-site	45	6	10	Improbable	Good		Remove	Land Use
11	White Pine	Pinus strobus	On-site	30	7	10	Improbable	Good		Remove	Land Use
12	Silver Maple	Acer saccharinum	Boundary	150	12	25	Possible	Fair	Species and age dispose tree to future failure	Remove with cooperation of co owner	Future hazard
13	White Spruce	Picea glauca	Boundary	30	1 to 5	10	Improbable	Fair	asymetrical crown to southwest, some canopy decline which should be properly pruned, root damage on west	Retain	

14	Sugar Maple Cultivar	Acer saccharum cultivar	Boundary	25	3 to 7	10	Improbable	Fair	asymetrical crown to southwest, root damage on west	Retain	
15	Red Maple	Acer rubrum	Boundary	30	3 to 6	10	Improbable	Fair	asymetrical crown to east, some deadwood in canopy which should be properly pruned	Retain	
16	Silver Maple	Acer saccharinum	Beyond Site	100	10	15	Improbable	Fair		Retain	
17	Silver Maple	Acer saccharinum	Beyond Site	100	9	15	Improbable	Fair		Retain	
18	Silver Maple	Acer saccharinum	Boundary	100	10	15	Possible	Fair	Species and age dispose tree to future failure	Remove with cooperation of co owner	Future hazard
19	White Pine	Pinus strobus	Boundary	31.5	4	10	Improbable	Good		Retain	
20	White Pine	Pinus strobus	Boundary	37.5	4	15	Improbable	Good		Retain	
21	Sugar Maple	Acer saccharum	Boundary	37	7	15	Improbable	Good		Retain	

22	Sugar Maple	Acer saccharum	Boundary	40	7	15	Improbable	Good		Retain	
23	Tulip Tree	Liriodendron tulipifera	Boundary	90.5	10	25	Possible	Good	Pruning history, healed frost crack, exfoliating bark, root damage	Reassess after communication with adjacent landowner	
24	White Cedar	Thuja occidentalis	Boundary	10 to 20	1 to 2	8	Improbable	Good	Hedgerow	Retain	
25	White Pine	Pinus strobus	Boundary	10 to 45	7	10	Improbable	Good	Hedgerow	Retain	
26	White Spruce	Picea glauca	Beyond site	15	1.5	6	Improbable	Good		Retain	
27	White Spruce	Picea glauca	Beyond site	25	2.5	8	Improbable	Good		Retain	
28	White Pine	Pinus strobus	Beyond site	45	7 to 10	10	Improbable	Good	cluster of three trees	Retain	
29	Silver Maple	Acer saccharinum	Beyond site	45	8	10	Improbable	Good		Retain	
30	Eastern Red Cedar	Juniperus virginiana	Beyond site	20	1	8	Improbable	Good		Retain	

31	Sugar Maple	Acer saccharum	Beyond site	30	6	9	Improbable	Good		Retain	
32	White Cedar	Thuja occidentalis	On-site	28.5	1.5	10	Improbable	Good		Remove	Land Use
33	White Pine	Pinus strobus	On-site	45.7	7.5	12	Possible	Fair	Significant lean and asymetrical lean to south	Remove	Land Use
34	White Cedar	Thuja occidentalis	Boundary	8 to 20	1.5		Improbable	Good	Hedgerow	Retain	
35	Black Walnut	Juglans nigra	On-site	47	6	12	Improbable	Good	Woody debris stacked on roots	Remove	Land Use
36	Manitoba Maple	Acer negundo	On-site	17+26+29			Possible	Poor	coppiced at base, significant lean, deadwood present	Remove	Future Hazard
37	Manitoba Maple	Acer negundo	On-site	15, 12, 13.5, 8, 10.5	1	6	Possible	Poor	Cluster of young trees. Significant lean to north, deadwood in leader	Remove	Future Hazard
38	Black Walnut	Juglans nigra	On-site	20	4	10	Improbable	Good		Remove	Land Use





SEE EXCERPT BELOW

TREE ID	COMMON NAME	SCIENTIFIC NAME	LOCATION (BLANK= PROJECT SITE)	DBH (CM)	CROWN RADIUS	HEIGHT (M)	HAZARD RATING	COMMENTS	PROPOSED ACTION	RATIONALE
1	Silver Maple	Acer saccharinum	Boundary	150	9	20	Possible	Species and age dispose tree to future failure	Remove with cooperation of co owner	Future hazard
2	Silver Maple	Acer saccharinum	Boundary	101	9	20	Possible	Species and age dispose tree to future failure	Remove with cooperation of co owner	Future hazard
3	Colorado Spruce	Picea pungens	Boundary and Beyond	10	2 to 4	5	Improbable	cluster of three trees	Retain	
4	Norway Spruce	Picea abies	Boundary	45	4 to 6	12	Possible	Trunk lean and variation in butress roots. Suspect root rot. Needle discolouration and	Remove with cooperation of co owner	Hazard
5	Red Pine, Norway Spruce, Black	Pinus resinosa, Picea abies,	Beyond site	30 to 40	2 to 4	10 to 12	Improbable	Hedgerow of 8 trees. 5 Pine, 2 Spruce, and 1 Walnut	Retain	
6	Grey Birch	Betula populifolia	Boundary	20	1 to 3	10	Improbable	asymetrical crown, swelling at the base. Suspect trying to escape a high water table	Retain	
7	Red Pine	Pinus resinosa	Boundary	10 to 25	1 to 4	8 to 10	Probable	Hedgerow of 17 trees. Lean to the north. Some dead. Suspected root rot	Remove with cooperation of co owner	Hazard
8	White Pine	Pinus strobus	On-site	33	6	10	Improbable		Remove	Land Use
9	Prunus Spp.	Prunus Spp.	On-site	multi-stem	6	8	Improbable		Remove	Land Use
10	White Pine	Pinus strobus	On-site	45	6	10	Improbable		Remove	Land Use
11	White Pine	Pinus strobus	On-site	30	7	10	Improbable		Remove	Land Use
12	Silver Maple	Acer saccharinum	Boundary	150	12	25	Possible	Species and age dispose tree to future failure	Remove with cooperation of co owner	Future hazard
13	White Spruce	Picea glauca	Boundary	30	1 to 5	10	Improbable	asymetrical crown to southwest, some canopy decline, root damage on west	Retain	
14	Sugar Maple Cultivar	Acer saccharum cultivar	Boundary	25	3 to 7	10	Improbable	asymetrical crown to southwest, root damage on west	Retain	
15	Red Maple	Acer rubrum	Boundary	30	3 to 6	10	Improbable	asymetrical crown to east, some deadwood in canopy	Retain	
16	Silver Maple	Acer saccharinum	Beyond Site	100	10	15	Improbable		Retain	
17	Silver Maple	Acer saccharinum	Beyond Site	100	9	15	Improbable		Retain	
18	Silver Maple	Acer saccharinum	Boundary	100	10	15	Possible	Species and age dispose tree to future failure	Remove with cooperation of co owner	Future hazard
19	White Pine	Pinus strobus	Boundary	31.5	4	10	Improbable		Retain	
20	White Pine	Pinus strobus	Boundary	37.5	4	15	Improbable		Retain	
21	Sugar Maple	Acer saccharum	Boundary	37	7	15	Improbable		Retain	
22	Sugar Maple	Acer saccharum	Boundary	40	7	15	Improbable		Retain	
23	Tulip Tree	Liriodendron tulipifera	Boundary	90.5	10	25	Possible	Pruning history, healed frost crack, exfoliating bark, root damage	Reassess after communication with adjacent landowner	
24	White Cedar	Thuja occidentalis	Boundary	10 to 20	1 to 2	8	Improbable	Hedgerow	Retain	
25	White Pine	Pinus strobus	Boundary	10 to 45	7	10	Improbable	Hedgerow	Retain	
26	White Spruce	Picea glauca	Beyond site	15	1.5	6	Improbable		Retain	
27	White Spruce	Picea glauca	Beyond site	25	2.5	8	Improbable		Retain	
28	White Pine	Pinus strobus	Beyond site	45	7 to 10	10	Improbable	cluster of three trees	Retain	
29	Silver Maple	Acer saccharinum	Beyond site	45	8	10	Improbable		Retain	
30	Eastern Red Cedar	Juniperus virginiana	Beyond site	20	1	8	Improbable		Retain	
31	Sugar Maple	Acer saccharum	Beyond site	30	6	9	Improbable		Retain	
32	White Cedar	Thuja occidentalis	On-site	28.5	1.5	10	Improbable		Remove	Land Use
33	White Pine	Pinus strobus	On-site	45.7	7.5	12	Possible	Significant lean and asymetrical lean to south	Remove	Land Use
34	White Cedar	Thuja occidentalis	Boundary	8 to 20	1.5		Improbable	Hedgerow	Retain	
35	Black Walnut	Juglans nigra	On-site	47	6	12	Improbable	Woody debris stacked on roots	Remove	Land Use
36	Manitoba Maple	Acer negundo	On-site	17+26+29			Possible	coppiced at base, significant lean, deadwood present	Remove	Future Hazard
37	Manitoba Maple	Acer negundo	On-site	15, 12, 13.5, 8,	1	6	Possible	Cluster of young trees. Significant lean to north, deadwood in leader	Remove	Future Hazard
38	Black Walnut	Juglans nigra	On-site	20	4	10	Improbable		Remove	Land Use

TREE PROTECTION MEASURES

THE MUNICIPALITY OF CENTRAL ELGIN DOES NOT HAVE A PRIVATE TREE PROTECTION BY-LAW. FOR THIS REASON, THE CITY OF LONDON GUIDELINES ARE PROVIDED BELOW AS THEY ARE CONSIDERED ACCEPTABLE GUIDELINES IN OUR INDUSTRY.

GENERAL TREE PROTECTION RECCOMENDATIONS

PRE-CONSTRUCTION
ALL TREE REMOVALS MUST TAKE PLACE BETWEEN SEPTEMBER 1st AND APRIL 1st TO AVOID DISTURBING NESTING MIGRATORY BIRDS. IF TREE CUTTING TIMING WINDOWS CANNOT BE AVOIDED, AND THE WOODLOT IS <1 HA, A QUALIFIED SPECIALIST IS REQUIRED TO CONDUCT NEST SEARCHES WITHIN TWO DAYS OF THE PROPOSED CONSTRUCTION. IF NESTS ARE FOUND TREE CUTTING MUST NOT OCCUR WITHIN A DETERMINED BUFFER ZONE UNTIL THE NEST CYCLE IS COMPLETE. THIS REQUIREMENT IS IN ACCORDANCE WITH THE MIGRATORY BIRDS CONVENTION ACT, 1994.

PLEASE SEE CITY OF LONDON DESIGN SPECIFICATIONS & REQUIREMENTS MANUAL UPDATED AUGUST 2019 SECTION 12.1.2 PRIOR TO CONSTRUCTION, 12.1.3 TREE PROTECTION ZONES, AND 12.1.4 TREE PROTECTION BARRIERS. ALL OF THESE RESOURCES ARE AVAILABLE ON THE CITY'S WEBSITE.

CARE SHOULD BE TAKEN DURING THE TREE FELLING PROCESS TO AVOID DAMAGING THE BRANCHES, STEMS, TRUNKS, AND ROOTS OF THE TREES TO BE PROTECTED. WHERE POSSIBLE, FELL TREES TOWARD THE CONSTRUCTION ZONE.

THE TREE PROTECTION ZONE (TPZ) SHALL BE INSTALLED ACCORDING TO THE LOCATIONS AND DETAIL INDICATED ON THE TREE PROTECTION PLAN. TPZ FENCING SHALL BE 1.2m HIGH WITH ORANGE SNOW FENCING ATTACHED TO T-BAR POSTS DRIVEN FIRMLY INTO THE GROUND AT 2.4m MAXIMUM SPACING AND WITH 2" X 4"S SHALL BE USED FOR TOP RAILS. THE SIGNAGE MUST BE WATERPROOF AND A MINIMUM OF 40CM X 60CM. THE TPZ IS TO REMAIN IN PLACE FOR THE ENTIRE DURATION OF THE CONSTRUCTION. THE CONSULTANT IS TO BE CONTACTED TO INSPECT AND CERTIFY THAT THE TREE PROTECTION ZONE FENCING HAS BEEN INSTALLED ACCORDING TO THE DETAIL PRIOR TO ANY CONSTRUCTION ON SITE.

THERE WILL BE NO CONSTRUCTION, NO CHANGES TO GRADE WITH FILL, EXCAVATION, OR ANY KIND OF ALTERATION WITHIN THE TPZ EXCEPT IN THOSE AREAS THAT WILL BE AFFECTED BY GRADING. THERE WILL BE NO STORAGE OF CONSTRUCTION MATERIALS, FUELS, SOIL, CONSTRUCTION WASTE (IE CONCRETE SLEUTH, GAS, OIL OR PAINT), PORTABLE ROOMS AND/OR BUILDINGS, DEBRIS WASH FACILITIES OR EQUIPMENT WITHIN TREE PROTECTION AREAS, NOR WILL ANY MATERIAL BE ALLOWED TO FLOW INTO THE TPZ. THERE IS TO BE NO MOVEMENT OF VEHICLES, EQUIPMENT OR PEDESTRIANS WITHIN THE TPZ. IF SOME EXCAVATED MATERIAL OR FILL HAS TO BE LOCATED TEMPORARILY NEAR THE TPZ, PLYWOOD MUST BE USED TO MAKE SURE NO MATERIAL ENTERS THE TPZ.

TO PROTECT THE HEALTH AND STRUCTURE OF THE TREES, LOW IMPACT ROOT EXCAVATION (HAND-DIGGING, LOW PRESSURE HYDRO-VAC OR AIR SPADE) SHALL BE USED TO UNCOVER ROOTS TO A DEPTH THAT WILL MEET CONSTRUCTION REQUIREMENTS. SEVERED OR EXPOSED ROOTS SHOULD BE HAND-PRUNED BY LABOURERS, WITH OVERSIGHT PROVIDED BY THE SITE SUPERINTENDENT, WHO HAS BEEN INSTRUCTED BY VROOM + LEONARD OR THEIR DESIGNATE TO A CLEAN-CUT SURFACE. EXPOSED ROOTS ARE TO BE KEPT MOIST BY ANY MEANS AVAILABLE; BACKFILL WITH SOIL OR COVER WITH WET BURLAP. THE ROOTS ARE TO BE WATERED REGULARLY TO PREVENT THEM FROM DRYING OUT, ESPECIALLY DURING HOT, DRY WEATHER. WATERING IS REQUIRED UNTIL THE TOPSOIL AND SOD HAVE BEEN REPLACED OR AS DIRECTED.

AVOID RUNNING ABOVE-GROUND WIRES AND UNDERGROUND SERVICES NEAR TREES TO BE PRESERVED. AVOID OPEN TRENCHING IN CRITICAL ROOT ZONES.

IF TRAVEL, EXCAVATION, OR ANY DISTURBANCE MUST OCCUR WITHIN THE TPZ, THE MUNICIPALITY WILL BE NOTIFIED THROUGH THE FILE HANDLER.

DURING CONSTRUCTION
PLEASE SEE CITY OF LONDON DESIGN SPECIFICATIONS & REQUIREMENTS MANUAL UPDATED AUGUST 2019 SECTION 12.1.5 DURING CONSTRUCTION.

CARE MUST BE TAKEN DURING TREE REMOVALS TO AVOID DAMAGING RETAINED TREES ON SITE AND ADJACENT PROPERTIES.

IF A TREE IS DAMAGED IN ANY WAY DURING CONSTRUCTION OTHER THAN THAT OUTLINED BY THE APPROVED TREE PROTECTION PLAN AND ARBORICULTURAL BEST PRACTICES, BE THAT ABOVE GROUND BY TOPPING OR REMOVAL OF BRANCHES OR BELOW GROUND BY CUTTING OR TEARING ROOTS, THE DAMAGE MUST BE REPORTED TO THE MUNICIPALITY IMMEDIATELY. VROOM + LEONARD OR THEIR DESIGNATE IS TO PROVIDE AN AMELIORATIVE PRESCRIPTION WHICH IS TO BE CARRIED OUT AS SOON AS POSSIBLE TO PROTECT THE TREE'S HEALTH.

IF ANY TEMPORARY PATH FOR MACHINERY OR VEHICLES MUST PASS OVER THE ROOT SYSTEM OF TREES TO REMAIN, A 4 INCH DEEP MULCH PATH AS WIDE AS THE WIDEST PIECE OF EQUIPMENT THAT WILL BE USED ON SITE WILL HAVE PLYWOOD SHEETS LAID ON TOP TO REDUCE COMPACTION WITHIN THE ROOT ZONE. THIS MULCH / PLYWOOD PATH IS TO REMAIN IN PLACE FOR THE DURATION OF THE CONSTRUCTION IN THAT AREA.

TREES ARE TO BE MONITORED WEEKLY..

POST CONSTRUCTION
PLEASE SEE CITY OF LONDON DESIGN SPECIFICATIONS & REQUIREMENTS MANUAL UPDATED AUGUST 2019 SECTION 12.1.6 POST CONSTRUCTION. FOR THE FIRST THREE YEARS, VROOM + LEONARD OR THEIR DESIGNATE WILL MONITOR TREES IMPACTED IN LEAF AND OUT OF LEAF FOR A TOTAL OF 6 SITE VISITS IF ANY OF THE TREES ARE EXHIBITING MORDANCY. AN AMELIORATIVE PRESCRIPTION WILL BE PROVIDED BY VROOM + LEONARD OR THEIR DESIGNATE; THE COST OF IMPLEMENTING SUCH WILL BE BORNE BY THE PROPERTY OWNER AT THAT TIME. THE AMELIORATIVE PRESCRIPTION MAY INCLUDE, BUT IS NOT RESTRICTED TO, PRUNING, DEEP ROOT FERTILIZATION, IRRIGATION, AERATION, OR TREE PLANTING EITHER AS A SINGLE ACTIVITY OR AS A COMBINATION.

AVOID DISCHARGING WATER LEADERS TO RETAINED TREES.

SPECIFIC TREE PROTECTION RECCOMENDATIONS

TREE SPECIFIC REMEDIES BOUNDARY TREES TO BE RETAINED THE NORTH WILL BE DETAILED AFTER FURTHER ON-SITE INVESTIGATIONS OF ROOT EXTENSION.

VROOM + LEONARD
Biologists & Landscape Architects

LEGEND

- EXISTING DECIDUOUS TREES, CONIFEROUS TO RETAIN
- EXISTING DECIDUOUS TREES, CONIFEROUS TO BE REMOVED
- EXISTING DECIDUOUS TREES, CONIFEROUS OUTSIDE SCOPE OF WORK
- EXISTING DRIPLINE
- EXISTING DRIPLINE (TO REMAIN)
- PROPOSED DRIVEWAYS
- PHASE LIMITS

ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS — MICHAEL LEONARD — OALA — MEMBER

LICENSED PROFESSIONAL ENGINEER — D.J. LYLE — 100174772 — PROVINCE OF ONTARIO

METRIC SCALE 1:500

No.	REVISION	DATE	BY

MUNICIPALITY OF CENTRAL ELGIN

CJDL Consulting Engineers
Cyril J. Demeyere Limited
P.O. Box 460, 261 Broadway
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Tel: 519-688-1000
866-302-9886
Fax: 519-842-3235
cjdl@cjdleng.com

EAGLE RIDGE SUBDIVISION
PHASE 1 - RP 11M-???
DOUG TARRY LIMITED
TREE PRESERVATION PLAN

DESIGN BY: DJL	DRAWN BY: NED	CHECKED BY: DJL
PROJECT NO. 1312	SURVEY BY: TPM	DATE: 14 APR 2021

DRAWING No. **A**

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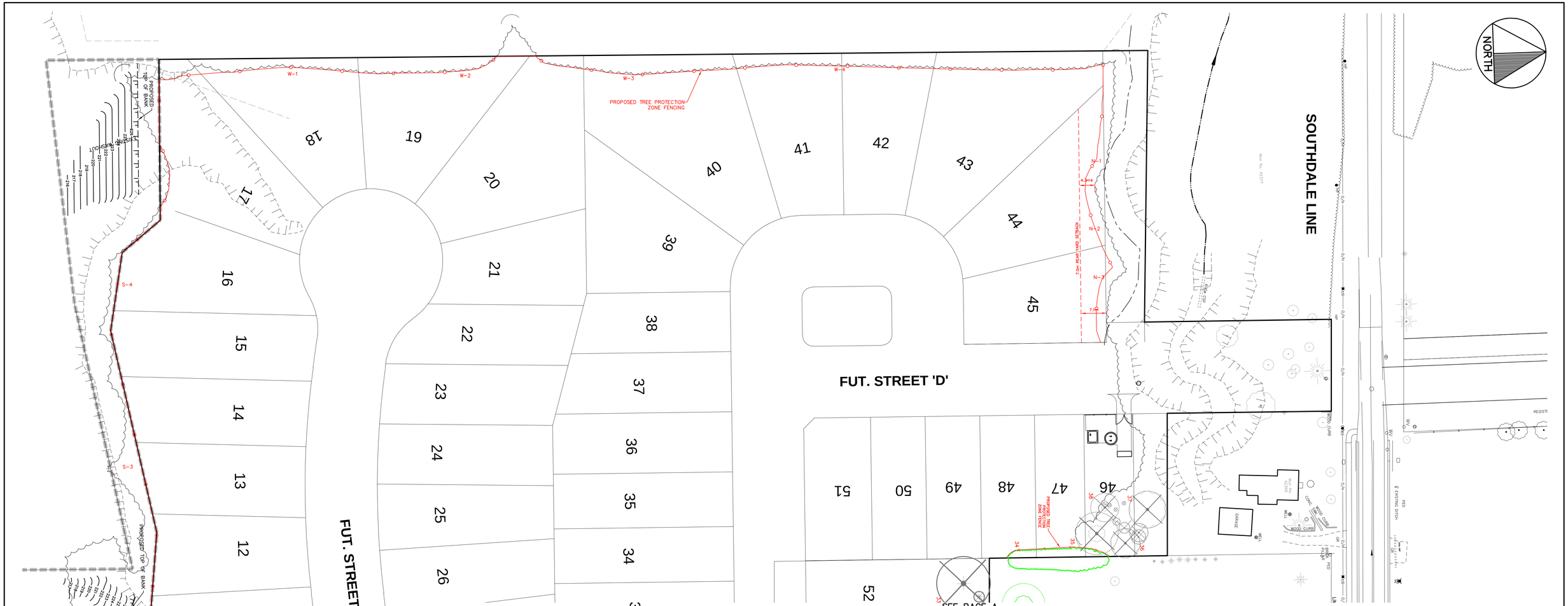
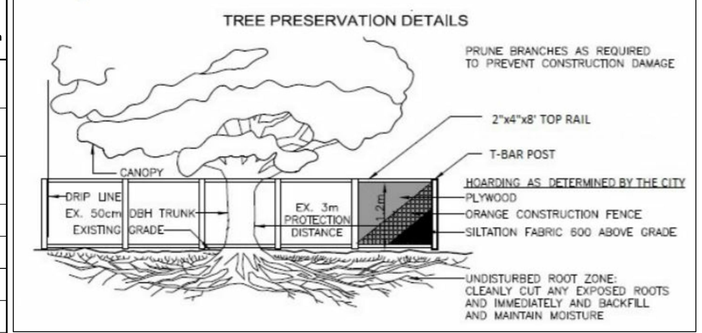


Tree Protection Plan - Critical Root Zone						
Station	Species	DBH (cm)	Mean DBH (cm)	Dripline Distance (m)	St Thomas & London Recommended CRZ distance	On-Site Root Investigation CRZ distance
N-1	Black Walnut	75.7	75.7	10.6	dripline or 9.6 m	Large woody roots at dripline and extend beyond 3 m past dripline
N-2	Black Walnut	67, 40.3	53.7	10.45	dripline or 7.2 m	Large woody roots at dripline and extend beyond 3 m past dripline
N-3	Black Walnut	65	65	10.75	dripline or 8.4 m	Large woody roots at dripline and extend beyond 3 m past dripline
W-1	Black Walnut	32.8, 8	20.4	3.3	dripline or 3.6 m	At dripline
W-2	Black Walnut, White Pine	18, 14.6	16.3	4.3	dripline or 3.6 m	At dripline
W-3	White Pine	24.5, 17, 49	30.2	4.35	dripline or 4.8 m	At dripline
W-4	White Pine, non-native shrubs	37	37	3.9	dripline or 4.8 m	At dripline
S-1	Sugar Maple	24.5, 28, 14, 28	23.6	6.6	dripline or 3.6 m	Dripline + 3.1 m
S-2	Sugar Maple	10.5, 23.5, 26.5	20.2	6.6	dripline or 3.6 m	Dripline + 2.7 m
S-3	Bitternut Hickory	29.5, 14	21.8	4.2	dripline or 3.6 m	At dripline
S-4	Bitternut Hickory, Basswood, Sugar Maple	17.5, 13	15.3	4.3	dripline or 3.6 m	At dripline

Figure 1 Tree Preservation Details



N.T.S.

VROOM + LEONARD

Biologists & Landscape Architects

LEGEND

- EXISTING DECIDUOUS TREES, CONIFEROUS TO RETAIN
- EXISTING DECIDUOUS TREES, CONIFEROUS TO BE REMOVED
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ONTARIO ASSOCIATION OF LANDSCAPE ARCHITECTS — MICHAEL LEONARD — OALA — MEMBER

LICENSED PROFESSIONAL ENGINEER — D.J. LYLE 100174772 — PROVINCE OF ONTARIO

METRIC SCALE 1:500

No.	REVISION	DATE	BY

MUNICIPALITY OF CENTRAL ELGIN

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DESIGN BY: DJL | DRAWN BY: NED | CHECKED BY: DJL

PROJECT NO. 1312 | SURVEY BY: TPM | DATE: 14 APR 2021

EAGLE RIDGE SUBDIVISION
PHASE 1 – RP 11M–???
DOUG TARRY LIMITED

TREE PRESERVATION PLAN

DRAWING No. **B**

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APPENDIX 4: ROOT EXCAVATION ANALYSIS

February 19 2021 Investigations:

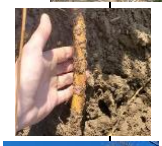
AREA	Station	Species	dbh (cm)	mean dbh (cm)	CRZ Calculated (m)	Dripline Distance from Silt Fence (m)	TPZ St Thomas& London	On-Site Root Investigation TPZ
E-W Ravine	1	Sugar Maple	24.5, 28, 14, 28	23.6		6.6	dripline or 3.6 m	Dripline + 3.1 m
	2	Sugar Maple	10.5, 23.5, 26.5	20.2		6.6	dripline or 3.6 m	Dripline + 2.7 m
	3	Bitternut Hickory	29.5, 14	21.8		4.2	dripline or 3.6 m	At dripline
	4	Bitternut Hickory, Basswood, Sugar Maple	17.5, 13	15.3		4.3	dripline or 3.6 m	At dripline
						Dripline Distance from Fence (m)		
Western Boundary	1	Black Walnut	32.8, 8	20.4		3.3	dripline or 3.6 m	At dripline
	2	Black Walnut, White Pine	18, 14.6	16.3		4.3	dripline or 3.6 m	At dripline
	3	White Pine	24.5, 17, 49	30.2		4.35	dripline or 4.8 m	At dripline
	4	White Pine, non-native shrubs	37	37		3.9	dripline or 4.8 m	At dripline
						Dripline Distance from Trunk		

Northern Boundary	1	Black Walnut	75.7	75.7		10.6	dripline or 9.6 m	Large woody roots at dripline and extend beyond 3 m past dripline
	2	Black Walnut	67, 40.3	53.7		10.45	dripline or 7.2 m	Large woody roots at dripline and extend beyond 3 m past dripline
	3	Black Walnut	65	65		10.75	dripline or 8.4 m	Large woody roots at dripline and extend beyond 3 m past dripline

April 23 2021 Investigations:

ID	Species	Location	Test Pit Distance from Property line (m)	Test Pit Distance from dripline/ base (m)	Root Diameter	Root Quantity	Comments	Critical Root Zone Distance (m)	Site Photos
5	Red Pine (*Pinus resinosa*), Norway Spruce *(Picea abies*)	Beyond site	3	At dripline	a,b,c	A	Pine hedge on adjacent property. Critical roots within disturbed area, irregular dripline, dug from silt fence out. Started in the east, 3 m from property line still seen roots.	Beyond dripline into development envelope	    
	Red Pine (*Pinus resinosa*), Norway Spruce *(Picea abies*)	Beyond site	3	At dripline	a,b	A	west side: pines had smaller crown radius with only minimal (1 pencil width root) at dripline (2.9 m from property)	at dripline	 

13	White Spruce (*Piceau glauca*)	Boundary	N/A	N/A	a,b	A	No new shoots, roots exposed 1 m from bole (fewer than Maple to the S). Crown decline, requires proper pruning	at dripline	  
14	Sugar Maple Cultivar (*Acer saccharum*)	Boundary	N/A	N/A	a,b,c	B	Large thumb-sized roots, exposed. Buds good.	At dripline	
15	Red Maple (*Acer rubrum*)	Boundary	N/A	N/A	a,b	A	Many roots at previous stripping, up to 1.54. No new growth, some branches not budding.		 
19-22	19 & 20: White Pine (*Pinus strobus*). 21 & 22: Sugar Maple	Boundary	N/A	N/A	a,b,c	A,B	few Thumb thick roots at previous stripping limit /dripline	At dripline	

	(*Acer saccharum*).								
23	Tulip Tree	Boundary	N/A	N/A	a,b,c	A,B	tons of large roots 2 inch thick dug up in previous earth work.. Tree may be a hazard..	beyond dripline	  
24	White Cedar (*Thuja occidentalis*) hedgerow of 17 (4-8 " dbh)	Boundary	3.78	4.35 from base	a,b,c	A	Lots of 2cm to 1 inch roots up to 3.78 m from silt fence/4.35 m from bole	beyond dripline	      

	White Spruce (*Piceau glauca*) hedgerow of 17	Beyond site	3.78, 3.02	4.78 from base, at dripline, 2.42 m into dripline	a,b	A	pit 1: at dripline on East, start to see clay, no roots. Pit 2: moved in 1.5 m and West, nothing but fibrous. Pit 3: into dripline, pencil width roots. Limit 3 m from property.	3 m from property line (less than dripline)	   

28	White Pine (Pinus strobus)	Beyond site	0	at dripline	a	A	Pit at dripline/property line. Minor roots, all good.	property line	
29	Silver Maple (*Acer saccharinum*)	Beyond site	0	at dripline	c	A	Don't see more than pencil roots at dripline from previous stripping. Pit at property line, 1 root, all good.	property line	

34	White Cedar (Thuja occidentalis) hedgerow	boundary	N/A	3.45 from base, at dripline	a,b,c	A	Cedar hedge row. Pit at dripline, few thumb+ roots.	at dripline	   

APPENDIX 5: Tree Hazard Assessment for Northern Ravine

Tree ID 1: Trunk
Tree ID 1&2: Black Walnut (*Juglans nigra*). Retain. 3 m from dripline CRZ.

Tree ID 1&2: Canopy
DBH: 1: 50.8 cm 2: 50.8 cm
Comments: Canker on trunk which is compartmentalized. Dead branches in lower canopy. Potentially hazardous dead limbs that should be removed.

Tree ID 3: Trunk

Tree ID 3: Black Walnut (*Juglans nigra*). Retain. CRZ 3 m from dripline.

Tree ID 3: Canopy

DBH: 30.48 cm

Comments: N/A. Trimming of lower branches in the clearing and grubbing phase.

Tree ID 4: Trunk

Tree ID 4: Black Walnut (*Juglans nigra*). Remove.

Tree ID 4: Canopy
DBH: 50.8 cm
Comments: Hazardous. Linear canker up trunk 6 m in length.

Tree ID 5: Trunk

Tree ID 5: Black Walnut (*Juglans nigra*). Remove.

Tree ID 5: Canopy
DBH: 76.2 cm
Comments: Pruning of large (25cm diameter) limb, codominant stems at 3 m, codominant branches, epicormic branches on lateral lower limbs.

Tree ID 6: Trunk

Tree ID 6: Canopy

Tree ID 6:

Tree ID 6: Black Walnut (*Juglans nigra*). Remove.

DBH: 76.2 cm

Comments: Bark peeling, dead wood, structural aberrations, codominant stems, mid trunk and woodpecker holes.

Tree ID 7: Trunk
Tree ID 7: Black Walnut (*Juglans nigra*). Remove.

Tree ID 7: Canopy
DBH: 40.3 cm
Comments: Sheared lateral limbs suggesting the tree is internally structural compromise.

Tree ID 8: Trunk

Tree ID 8: Black Walnut (*Juglans nigra*). Remove.

Tree ID 8: Canopy

DBH: 60.6 cm

Comments: Irregular growth above the angle of attachment. Other lateral limb exhibits rotting.

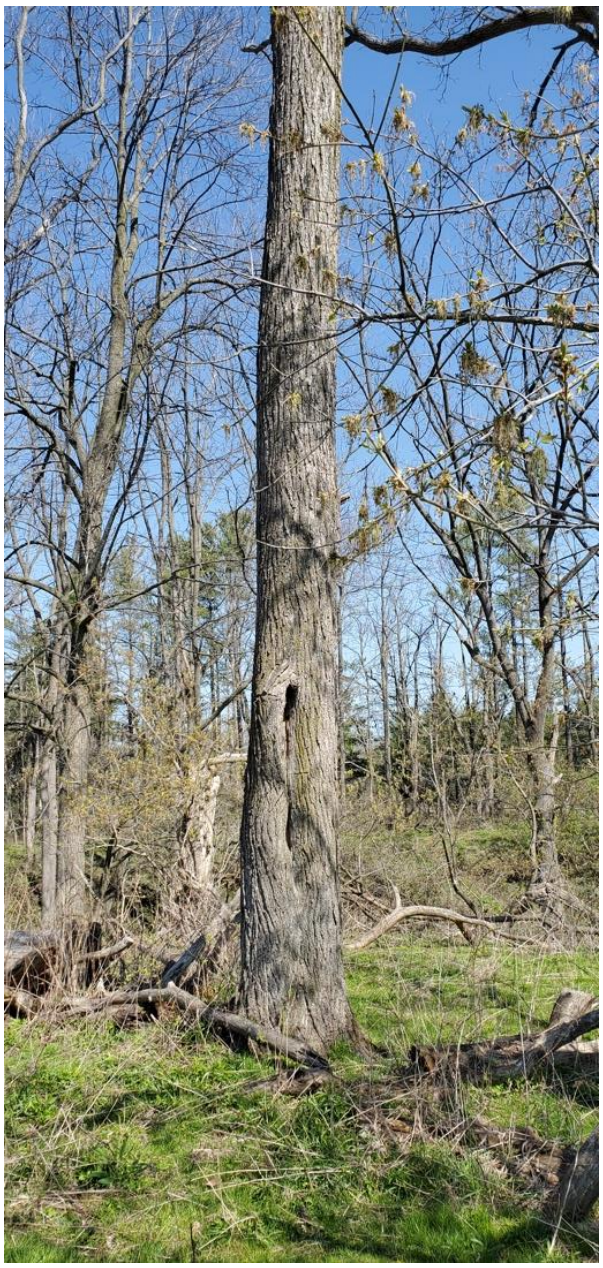
Tree ID 9: Trunk

Tree ID 9: Black Walnut (*Juglans nigra*). Remove.

Tree ID 9: Canopy

DBH: 52.3 cm

Comments: Reduced canopy and lots of dead lower limbs.



Tree ID 10: Trunk

Tree ID 10: Black Walnut (*Juglans nigra*). Remove.

Tree ID 10: Canker

DBH: 63.2 cm

Comments: Large (1 m long x 30 cm wide) canker on trunk improperly healed, Codominant stems at 8 m.