



September 9 2011

Attn.: Ron Rule

Ron Rule Consultants Ltd
2221 Gordon Avenue
West Vancouver V7W 1W2

cc:

ACL File: **11255**

Project Ref: **Home and Landscape Renovation
Graw Residence – 4710 South Piccadilly Road West Vancouver**

Re: **Tree Retention Assessment Report**

Dear Mr. Rule,

Arbortech Consulting Ltd has been retained to undertake a detailed study of the existing trees located on or within close proximity to the above noted site to determine their current condition and to make preservation and protection recommendations in context to the proposed home and landscape renovations. Staff from this office visited the site on August 24 2011 to inspect the trees. The tree location and topographic plan as well as the design plans for the proposed development project have been provided for our use in completing this report. The tree condition data and tree retention recommendations are compiled herein and on the enclosures.

TREE ASSESSMENT METHODOLOGY AND RATINGS

All significant trees located on or within close proximity to the development site have been assessed using Visual Tree Assessment (VTA) procedures. On-site trees have also been tagged with a serial number as referenced in this report, on the attached tree retention plan, and for future reference within the design, approval and construction phases of the project. Photos were taken and are used herein and/or kept on file.

Within the enclosed tree inventory list, we present tree specific data and observations. In addition, we have rated the condition of the trees based on both health and structure factors determined from our VTA that guide us in determining the value and viability of retaining the trees. Condition ratings used in our assessment are:

<i>High Risk</i>	a <u>Non-Viable</u> tree deemed hazardous using Certified Tree Risk Assessor (CTRA) methods.
<i>Very Poor</i>	a <u>Non-Viable</u> tree found to have severe structural defects, advanced decline, or dead.
<i>Poor</i>	a <u>Marginal Value</u> tree with low vigour and decline, pest issues, or restorable defects.



<i>Normal</i>	a <u>Fully Viable</u> tree in fair to good condition.
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PROPOSED LAND USE

On this site, the proposed development and construction consists of renovating the existing house and the landscape. The new landscape improvements include the installation of a pool, spa, deck, and the addition of new trees and plants throughout the site as specified by Ron Rule Consultants Ltd.

TREE RETENTION ASSESSMENT FINDINGS

In general the subject site is moderately treed with mature coniferous trees that are predominantly Western redcedars. These cedar trees have been previously topped at heights between 6m and 8m (approximate). The historic topping of these trees has resulted in the formation of replacement leaders from below the historic topping site. These replacement leaders comprise the majority if not the entire crown of the trees. These topping sites are now colonized with decay that spreads downward drastically reducing the structural integrity of the replacement leader unions, and predisposing these trees to failure via replacement leader union failure.

CERTIFIED TREE RISK ASSESSMENT

Based on methods prescribed by the Certified Tree Risk Assessor (CTRA) Program, the subject trees have been assessed to determine the presence and severity of defect in order to determine the risk to the site should the trees fail. Trees deemed to be high risk or worse are detailed as follows:

The following trees (excluding 219) all share the common structural defects due to the historic topping as described above and in the enclosed Tree Inventory List. These trees are within striking distance of active use areas and high valued permanent targets such as houses, city roads and power/utility lines. Tree #'s 209 and 219 are located on District of West Vancouver land and the District will need to authorize the removal of these 2 trees.

Tree #	DBH	Species:	Probability of Failure (1 to 5 pts):	Size of Part (1 to 3 pts) ¹ :	Target Rating (1 to 4 pts):	Total Rating (3 to 12 pts):	Risk Rating ² :
207	81	Western redcedar	3	2	4	9	High
208	82+71	Western redcedar	3	2	4	9	High

¹ Size of Defective Part: Up to 10 cm dia = 1 point, 10 to 50 cm dia = 2 points, larger than 50 cm dia = 3 points

² Risk Rating: 9 to 11 points is rated High Risk, 12 points is rated Extreme Risk



209 District Tree	98	Western redcedar	4	2	4	10	High
210	101	Western redcedar	3	2	4	9	High
211	100	Western redcedar	3	2	4	9	High
212	86	Western redcedar	3	2	4	9	High
214	106	Western redcedar	3	2	4	9	High
215	90	Western redcedar	3	2	4	9	High
216	98	Western redcedar	3	2	4	9	High
217	91	Western redcedar	3	2	4	9	High
219 District Tree	27	Western redcedar	3	2	4	9	High
223	94	Western redcedar	3	2	4	9	High
225	73	Western redcedar	3	2	4	9	High
226	40	Western redcedar	3	2	4	9	High

RECOMMENDATIONS

The subject trees are recommended to be treated as follows:

- **Retain and Protect Tree # 218 and Off-site Tree A**

In order to prevent these trees from being mortally damaged or destabilized, tree protection measures should be implemented as shown on the attached tree retention drawing and in compliance with the restrictions noted herein.

- **Remove 12 High Risk On-site trees**

Tag #'s: 207, 208, 210, 211, 212, 214, 215, 216, 217, 223, 225, and 226.

The client should note that regardless of whether this project proceeds or not, the high risk trees should be treated for risk mitigation. The owner should undertake the removals at their earliest convenience.

Note: I have deemed the replacement leaders on the subject trees as High Risk for failure potential, and strongly recommend that these trees are removed to mitigate safety risk to the subject site and the surrounding public areas. The trees main structural defects (replacement leader stem union located at the historic and decayed topping sites) are too severe to be secured by cable or steel brace reinforcement. Re-topping of these trees to mitigate failure risk is not appropriate because the replacement leaders carry the majority, or the entire tree's crown and removal of this large volume of live crown (replacement leaders) would kill the trees.



- **Remove 4 Non-viable Trees**

Tag #'s: 213, 220, 222, and 224.

These trees were to have with Nil retention value due to their pre-existing structural defects and other condition factors that make them very low value and/or otherwise not worthy for protection in this project.

Note: tree # 213 will increase in failure risk when the adjacent trees are removed, tree #'s 220 and 224 have been topped resulting in permanently impaired crowns that will increase in failure risk as they mature, and tree # 222 is infected with anthracnose and mostly dead.

- **Remove 2 High Risk City owned trees**

Tag #'s: 209 and 219.

The owner must seek authorization from the District of West Vancouver to have these trees removed.

- **Tree Protection Fencing During Construction.**

Tree protection fences must be erected as shown on the tree retention plan and restriction implemented as per the guidelines below. It is recognized that certain unpredictable construction conflicts may arise that could interfere with the safe retention of the selected trees. Note that if any changes to the tree retention scheme, or if any encroachments into the protection areas are deemed to be necessary for construction purposes, that they are subject to approvals in advance by the city and/or the project arborist.

- **Construction Restrictions and Arborist Supervision in Tree Protection Areas (TPA):**

a) The perimeter drainage and overburden removal for site preparation purposes must not encroach within the TPA. Any re-grading within the TPA will require coordination with the project arborist.

b) Final grading within the protection areas must be designed to match existing grades. Also see the finished landscape restrictions in the guidelines below.

c) Underground services and utilities trenches are to avoid the tree protection areas, however if it is necessary to make connections through the TPA, then low impact methods of excavation must be used (see guidelines below).

- **Tree Replacement.**

City requirements will dictate the required quantity of replacement trees for this project. Among other factors, the size and land use of the property as well as the presence of retained trees must be considered in determining the available space for planting. Those determinations will be subject to direction and/or approval by the city. Specifications for replacement trees will be provided by the project landscape consultant.

- **Permitting.**

The removal of trees may require a permit is issued by the District. Application is made concurrently with the re-zoning and/or building permit application.



TREE PROTECTION GUIDELINES

1. Tree Protection:

- a) All retained trees must be protected to meet Municipal and/or Arbortech specifications. The minimum standard for fence type that is required is detailed above.
- b) The tree protection fencing should be inspected and approved by the municipality and/or the project arborist prior to any demolition, site preparation or construction work commencing.
- c) Activities within and access to the tree protection zones are restricted so that no soil, spoil, aggregate, construction supplies/materials and/or waste materials etc. are placed within the protection areas, and no vehicles and equipment may pass within these zones.
- d) The trunks or limbs of retained trees may not be used to affix signs, lights, cables or any other device.
- e) Signs stating "TREE PROTECTION AREA – NO ENTRY" should be placed on the tree protection fence at a suitable frequency.
- e) If encroachment into the tree protection zone is required for any other reason, it should be authorized in advance by the project arborist. Special measures may need to be implemented to allow access, and some activities will not be allowed.
- f) Removal of the tree protection fence and/or encroachment into the tree protection areas may constitute an offence under city bylaw provisions, and also may be subject to fines, penalties and/or delays in the project.

2. Design: New Buildings and Infrastructure:

The location of building foundations or underground pipes etc must consider whatever over-excavation needs are required to construct/install those items. The design consultant should make sure that the siting of those features will not result in an over-excavation encroaching into the tree protection areas.

- a) Where necessary, a geo-technical consultant may be required to make provision for the use of shoring systems/devices.
- b) Underground servicing and utilities, overland drainage, and finished grading should not cause any grade changes (any excavation or fill) within the tree protection zones, or grade changes of surrounding lands that would result in storm water accumulation or significant depletion of soil water within the tree protection areas.

3. Design: New Landscape and Finished Grading:

The developed portions of the site that abut tree protection areas should have new/final grades designed to 'meet' the existing grades within the tree protection areas.

- a) If the new or final grades are not able to match the existing grades at those locations, grade transitions such as retaining walls may be required. Those retaining walls should be designed and constructed to avoid any over-excavation or fill deposits that would result in encroachment into the tree protection areas.
- b) The site grading should not cause overland storm water flow to accumulate



excessively in the tree protection areas. Some drainage devices or measures may be required to mitigate pooling or slow drainage, but those devices or measures will be subject to project arborist approval if they require any encroachment into the tree protection areas.

c) Where the installation of the hard surface or grade transitions cannot avoid encroachment into the tree protection areas, there may be methods and materials that could accommodate their construction while minimizing impacts to the trees/roots. Those special measures can be considered and specified by the project arborist in consultation with the design consultant.

CONCLUSIONS

A total of 18 on-site trees, 1 off-site neighbouring tree and 2 trees District trees were considered in this assessment. Twelve on-site trees and 2 District owned trees have been determined to be High Risk trees and proposed to be remove to mitigate safety risk to the subject site and surrounding public and private owned areas. Four on-site trees were found to be non-viable for retention and recommended for removal. One of the on-site trees and one off-site tree are deemed to be viable for retention and are proposed to be retained and protected. Tree replacement specifications will be provided by the Ron Rule Consultants.

Thank you for choosing Arbortech for your tree assessment needs. If you require any further information, please call me directly at 604 275 3484 to discuss.

Regards,

Max Rathburn,
Consulting Arborist
ISA Certified Arborist #PN-0599, Certified Tree Risk Assessor #0159

Enclosures;

Tree Retention Drawing

TREE INVENTORY LIST

NOTE:

Trees are tagged in the field for identification

Tree numbers refer to the tree assessment plan prepared by Arbortech. Tree locations provided by surveyor.

Dbh denotes the diameter of the trunk, measured in cm at 1.4 m above grade.

Condition Rating scale: HIGH RISK, Non-Viable, Marginal , Viable

Treatment	Tree Tag	Dbh	Species	Condition	Notes
Remove	207	81	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and pruned to the trunk on the west for hydro line clearance. This topping has resulted in the formation of "L shaped" replacement leaders.
Remove	208	82+71	Western redcedar	High Risk	This twin leader tree joins at the basal union. This tree was previously topped at approximately 6m above grade and pruned to the trunk on the west for hydro line clearance. This topping has resulted in the formation of "L shaped" replacement leaders.
Remove District owned	209	98	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and pruned to the trunk on the west for hydro line clearance. This topping has resulted in the formation of "L shaped" replacement leaders.. The southwest replacement leader sweeps over the neighbors driveway is prone to failure. This tree is located within the Hydro line's encroachment limits.
Remove	210	101	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and, this topping has resulted in the formation of "L shaped" formed replacement leaders. Note decay is visible at the historic topping site, although the extent is unknown.
Remove	211	100	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and, this topping has resulted in the formation of "L shaped" formed replacement leaders. Note decay is visible at the historic topping site, although the extent is unknown.
Remove	212	86	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and, this topping has resulted in the formation of "L shaped" formed replacement leaders. Note decay is visible at the historic topping site, although the extent is unknown.
Remove	213	42	Hemlock	Very poor	This is a tall tree with no trunk taper growing on a nurse log, this tree is prone to failure once the other trees are removed.

TREE INVENTORY LIST

Remove	214	106	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and, this topping has resulted in the formation of "L shaped" formed replacement leaders. Note decay is visible at the historic topping site, although the extent is unknown.
Remove	215	90	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and, this topping has resulted in the formation of "L shaped" formed replacement leaders. Note decay is visible at the historic topping site, and the replacement leaders sweep towards the road.
Remove	216	98	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and, this topping has resulted in the formation of "L shaped" formed replacement leaders. Note decay is visible at the historic topping site, and the replacement leaders sweep towards the road.
Remove	217	91	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and, this topping has resulted in the formation of "L shaped" formed replacement leaders. Note decay is visible at the historic topping site, and the replacement leaders sweep towards the road.
Retain	218	92	Douglas-fir	Fair	This is large dominant tree, the crown is slightly sparse.
Remove	219	27	Western redcedar	High Risk	This small suppressed tree appears to be supported by a cable tied to the larger adjacent fir, and it appears that the tree will fall over if the cable is removed.
District owned					
Remove	220	62	Western redcedar	Very poor	This tree's crown is asymmetric to the west and it has been previously topped.
Remove	221	36	Western redcedar	Poor	This is a small suppressed tree that is infested with ivy.
Remove	222	27	Pacific dogwood	Very poor	This tree is infected with anthracnose and is mostly dead.
Remove	223	94	Western redcedar	High Risk	This tree was previously topped at approximately 6m above grade and pruned to the trunk on the west for hydro line clearance. This topping has resulted in the formation of "L shaped" replacement leaders.
Remove	224	30	Western redcedar	Very poor	This tree has been previous topped to form a hedge type form.
Remove	225	73	Western redcedar	High Risk	This tree was previously topped at approximately 4m and at 6m above grade and pruned to the trunk on the west for hydro line clearance. This topping has resulted in the formation of "L shaped" replacement leaders and decay is visible at the historic topping sites.

TREE INVENTORY LIST

Remove	226	40	Western redcedar	High Risk	This tree was previously topped at approximately 4m and at 6m above grade and pruned to the trunk on the west for hydro line clearance. This topping has resulted in the formation of "L shaped" replacement leaders and decay is visible at the historic topping sites.
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