

# Diamond Head Consulting Ltd. Arborist Report

For:

4719 Pilot House Road  
West Vancouver, BC

March 24, 2014

To be submitted with Tree Protection Plan

Dated: April 2, 2014

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Submitted to:

Rimrock Developments Ltd.  
#212 2438 Marine Drive  
West Vancouver  
V7V 1L2

Submitted by:



**DIAMOND HEAD  
CONSULTING LTD.**

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The following Diamond Head Consulting staff performed the site visit and prepared the report. All general and professional liability insurance and individual accreditations have been provided below for reference.



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ISA Certified Arborist (PN0599A)  
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This report summarizes the planned management of trees on the site. If there are any questions or concerns as to the contents of this report, please contact us at any time.

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#### Insurance Information

WCB: # 657906 AQ (003)  
General Liability: Northbridge General Insurance Corporation - Policy #CBC1935506,  
\$5,000,000 (Mar 2014 to Mar 2015)  
Errors & Omissions: Lloyds Underwriters – Policy #1010346D, \$1,000,000 (June 2011 to June 2015)



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## 1.0 Introduction

Diamond Head Consulting Ltd. (DHC) was asked to complete an assessment of the trees on and adjacent to the following proposed development:

Civic address:	<b>4719 Pilot House Road, West Vancouver BC</b>
Project No.:	unknown
Client name:	Rimrock Developments
Date of site visit:	March 27 2014
Weather during visit:	Clear with average seasonal temperatures

The trees at the site were assessed, including: species, diameter at breast height (dbh) measured to the nearest 1 cm at 1.4 m above tree base, estimated height and general health and defects. Critical root zones were calculated for each of the trees with the potential for development impacts. Tree hazards were assessed according to International Society of Arboriculture and WCB standards. Suitability for tree retention was evaluated based on the health of the trees and their location in relation to the proposed building envelopes and infrastructure. This report outlines the existing condition of the trees on and adjacent to the property, summarizes the proposed tree removals and retention trees as well as suggested guidelines for protecting the remaining trees during the construction process.

### 1.1 Limits of Assignment

- Our investigation is based solely on our visual inspection of the trees on March 27<sup>th</sup> 2014. Our inspection was conducted from ground level. We did not conduct soil tests or root examination to assess the condition of the root system of the trees.
- This report does not provide any estimates to implement the proposed recommendations provided in this report.
- This report is valid for six months from the date of submission. Additional site visits and report revisions are required after this point to ensure accuracy of the report for the District's development permit application process.

### 1.2 Purpose and Use of Report

- Provide documentation pertaining to on and off site trees to supplement the proposed development permit application.



Figure 1. Location of site – 4719 Pilot House Road West Vancouver

## 2.0 Observations

### 2.1 Site Overview

The site consists of lot that contains the existing house and carport. The yard is heavily tree, and these trees have all been previously topped several times throughout their history. The on-site trees consist of a mix of mature coniferous and deciduous trees that include Western Redcedar (*Thuja plicata*), Douglas-fir (*Pseudotsuga menziesii*), Sawara Cypress (*Chamaecyparis pisifera*), Western hemlock (*Tsuga heterophylla*), and Pacific dogwood (*Cornus nuttallii*).

The on-site trees were tagged and recorded within the inventory and report. In the context of the proposed development the majority of the trees will not be suitable for retention based on their pre-existing conditions, species composition, patterns of failure and the changes to site hydrology. Tree attributes, critical root zones and recommendations for the trees are listed below in **Table 1**.

### 2.2 Tree Inventory

The following is an inventory of assessed trees, each of which was marked with a numbered tag. Tree species, characteristics, comments, recommendations and required root protection zones have been suggested (Table 1). Their locations are illustrated on the accompanying map.

#### Overall Health and Structure Rating

**Excellent** = Tree of possible specimen quality, unique species or size with no discernible defects. Or a heritage tree.



**Normal** = These trees are in fair to good condition, considering its growing environment and species.

**Poor** = These trees have low vigour, with noted health and/or structural defects. This tree is starting to decline from its typical species growth habits.

**Very poor** = These trees are in serious decline from its typical growth habits, with multiple very definable health and/or structural defects.

**Dead/Dying** = These trees were found to be dead, and/or have severe defects and are in severe decline.

**High Risk** = These trees have been deemed hazardous by a Certified Tree Risk Assessor utilizing CTRA methods. They have a probability of failure of 3 or higher with a total overall risk rating of 8 (Moderate 3) or above.

### **Tree Retention Suitability Ratings**

**Unsuitable** = Not suitable for retention in context of the proposed project design and land use changes. These trees have pre-existing health and structural defects. There is a significant chance that these trees will not survive or may become a hazard given the proposed future land use.

**Moderate** = These trees have moderate structural defects or health issues. The retention of this class of trees is not always successful or viable due to their pre-existing structural defects or health issues; however these trees may be viable for retention with the use of special measures.

**Suitable** = These trees have no obvious structural defects or health issues, and are worthy of consideration for retention in the proposed development.

**Suitable as group** = These trees have grown up in groups (groves) of other trees, and have not developed the type of trunk and root structure that will allow them to be safely retained on their own. These trees should only be retained in groups.



### 2.3 Photographs

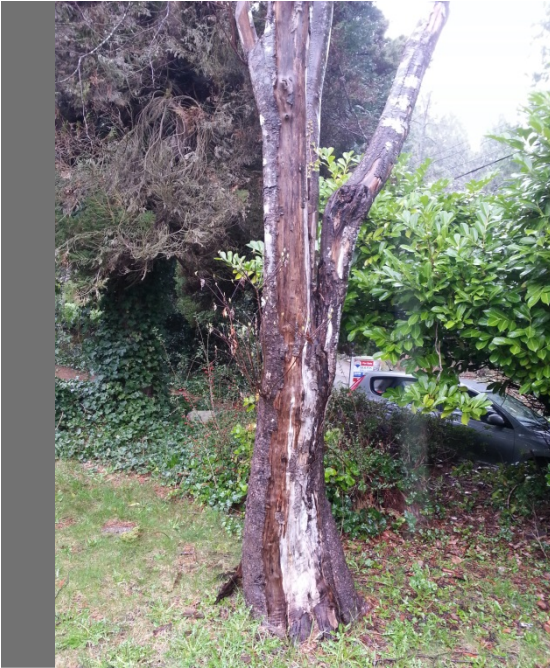


Photo 1. Tree # 7058, this dogwood tree is severe health and structural decline.



Photo 2. Tree # 7059, previously topped, displaying large patches of crown dieback.



Photo 3. Tree # 7056, previously topped with decay visible at the stem union.



Photo 4. Tree # 5988 previously topped that resulted in the large replacement leaders.



Photo 5. Tree # 5985 is growing through the existing carport roof.



Photo 6. Tree # 5984, is growing in close proximity to the existing carport.



Photo 7. Showing topped tree # 5982.



Photo 8. Showing the decay conk growing on Tree # 5983.



## Tree Inventory Table

Table 1. Tree Inventory.

Tag #	Common Name	Botanical Name	DBH (cm)	Ht (m)	Overall Condition	Retention Suitability	Comments	Retain/Remove	Tree Retention Comments
5982	Western redcedar	<i>Thuja plicata</i>	54	7	Very poor	Unsuitable	This tree has been previously topped to the height of 7m for overhead Hydro line clearance. Decay is visible at the historic topping wounds. The tree is growing in an above grade rock walled planter.	Remove	Due to pre-existing very poor health and structural condition.
5983	Western hemlock	<i>Tsuga heterophylla</i>	93	10	Very poor	Unsuitable	This tree has been previously topped and there is decay visible at the historic topping site. There is a fruiting body of decay (conk - <i>Ganoderma applanatum</i> ) located approximately 1.5m above grade. This conk is an indicator of severe internal decay.	Remove	Due to pre-existing very poor health and structural condition.
5984	Purpleleaf plum	<i>Prunus cerasifera</i>	Multi	5	Very poor	Unsuitable	This tree has been previously topped with the limbs having been headed. The crown is comprised mostly of shoot growth. There are significant decay cavities throughout the main stems. This tree is growing adjacent a retaining wall for the adjacent carport.	Remove	Due to pre-existing very poor health and structural condition.
5985	English Holly	<i>Ilex aquifolium</i>	28	5	Very poor	Unsuitable	This tree is growing through the existing carport roof, and there several boards embedded in the tree's trunk. In addition the tree has been topped to approximately 5m above grade.	Remove	Due to pre-existing very poor health and structural condition. This tree will not survive demolition of the adjacent carport.
5986	Western redcedar	<i>Thuja plicata</i>	80	8	Very poor	Unsuitable	This tree has been previously topped at approximately 5m above grade, resulting in the formation of several replacement leaders. These replacement leaders have been topped as well. This tree is growing adjacent the concrete deck and the deck is embedded into the trunk. The tree's crown is infested with ivy.	Remove	Due to pre-existing very poor health and structural condition. This tree will not survive demolition of the adjacent wood and concrete deck.

Tag #	Common Name	Botanical Name	DBH (cm)	Ht (m)	Overall Condition	Retention Suitability	Comments	Retain/Remove	Tree Retention Comments
5987	Black locust	<i>Robinia pseudoacacia</i>	20	7	Poor	Moderate	This is a cluster of small diameter volunteer trees growing close proximity to each other. These tree sweep to the south and have spindly trunks.	Remove	Due to pre-existing poor structural condition. In conflict with proposed project design.
5988	Douglas-fir	<i>Pseudotsuga menziesii</i>	110	18	Very poor	Unsuitable	This has been previously topped at 3m above grade, which has resulted in the formation of 7 replacement leaders. The replacement leaders sweeps in different direction, and these leaders have all been topped at different heights. The main stem union is covered in Ivy.	Remove	Due to pre-existing very poor health and structural condition.
7056	Sawara cypress	<i>Chamaecyparis pisifera</i>	52	7	Very poor	Unsuitable	This tree has been previously topped at 2m above grade, and there is significant decay visible at the historic topping site. The replacement leaders have been topped at approximately 6m above grade.	Remove	Due to pre-existing very poor health and structural condition.
7057	Lawson cypress	<i>Chamaecyparis lawsoniana</i>	44	16	Very poor	Unsuitable	This tree has been previously topped at several different heights. The large scaffold limbs sweep outward and are growing vertical. There are large patches of crown die-back.	Remove	Due to pre-existing very poor health and structural condition.
7058	Pacific dogwood	<i>Cornus nuttallii</i>	40+ 20	8	Very poor	Unsuitable	The largest trunk (40cm) is hollow with a cavity that spans from the base to 3m above grade. This tree is infected with Dogwood anthracnose that has resulted in the majority dieback of the crown.	Remove	Due to pre-existing very poor health and structural condition.
7059	Western redcedar	<i>Thuja plicata</i>	71+ 69	16	Very poor	Unsuitable	This tree has been previously topped at approximately 4m and 6m above grade to accommodate the overhead Hydro power line. There are significant decay cavities from what appears to be historic vehicle damage. In addition it appears that the replacement leader has failed from the north stem, leaving a cavity.	Remove	<b>Note this tree will require the Districts authorization to be removed.</b>

### 3.0 Summary

The site inventory identified and assessed ten on-site trees and one off-site district owned tree, for retention suitability in context to the proposed project design. The majority of the trees were found to be in very poor health and structural condition mostly due to historic topping. The historic topping has left the trees with impaired crowns with replacement leaders that are very prone to fail due to the presence of decay.

All of the tagged trees have been found to be unsuitable for retention and recommended to be removed. There is one District owned tree that is recommended for removal and will require the approval from the District. The locations of subject trees, to be removed have been shown on the accompanying Tree Protection and Removal Plan.

### 4.0 Trees on Adjacent Properties

There is a 5m high stump located on the adjacent north property; the neighbours should be consulted about removing this stump prior to construction on the subject site. There are no other off-site trees that are within the zone of influence to the subject site.



Photo 1. Off-site 5m tall (approximate) ivy covered stump located on north adjacent property.

## 5.0 Limitations

1. Except as expressly set out in this report and in these Assumptions and Limiting Conditions, Diamond Head Consulting Ltd. ("**Diamond Head**") makes no guarantee, representation or warranty (express or implied) with regard to: this report; the findings, conclusions and recommendations contained herein; or the work referred to herein.
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3. The findings, conclusions and recommendations made in this report reflect Diamond Head's best professional judgment in light of the information available at the time of preparation. This report has been prepared in a manner consistent with the level of care and skill normally exercised by arborists currently practicing under similar conditions in a similar geographic area and for specific application to the trees subject to this report as at the date of this report. Except as expressly stated in this report, the findings, conclusions and recommendations set out in this report are valid for the day on which the assessment leading to such findings, conclusions and recommendations was conducted. If generally accepted assessment techniques or prevailing professional standards and best practices change at a future date, modifications to the findings, conclusions, and recommendations in this report may be necessary. Diamond Head expressly excludes any duty to provide any such modification if generally accepted assessment techniques and prevailing professional standards and best practices change.
4. Conditions affecting the trees subject to this report (the "**Conditions**", including without limitation structural defects, scars, decay, fungal fruiting bodies, evidence of insect attack, discoloured foliage, condition of root structures, the degree and

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8. Sketches, diagrams, graphs, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
9. Loss or alteration of any part of this report invalidates the entire report.

## 7.0 Appendix 1 – Overall risk rating and action thresholds

**The Overall Risk Rating and Action Thresholds**

<b>Risk Rating</b>	<b>Risk Category</b>	<b>Interpretation and Implications</b>
3	Low 1	Insignificant - no concern at all.
4	Low 2	Insignificant - very minor issues.
5	Low 3	Insignificant - minor issues not of concern for many years yet.
6	Moderate 1	Some issues but nothing that is likely to cause any problems for another 10 years or more.
7	Moderate 2	Well defined issues - retain and monitor. Not expected to be a problem for at least another 5 - 10 years.
8	Moderate 3	Well defined issues - retain and monitor. Not expected to be a problem for at least another 1 - 5 years.
9	High 1	The assessed issues have now become very clear. The tree can still reasonably be retained as it is not likely to fall apart right away, but it must now be monitored annually. At this stage it may be reasonable for the risk manager/owner to hold public education sessions to inform people of the issues and prepare them for the reality that part or the entire tree has to be removed.
10	High 2	The assessed issues have now become very clear. The probability of failure is now getting serious, or the target rating and/or site context have changed such that mitigation measures should now be on a schedule with a clearly defined timeline for action. There may still be time to inform the public of the work being planned, but there is not enough time to protracted discussion about whether or not there are alternative options available.
11	High 3	The tree, or a part of it has reached a stage where it could fail at any time. <b>Action to mitigate the risk is required within weeks rather than months.</b> By this stage there is not time to hold public meetings to discuss the issue. Risk reduction is a clearly defined issue and although the owner may wish to inform the public of the planned work, he/she should get on with it to avoid clearly foreseeable liabilities.
12	Extreme	This tree, or a part of it, is in the process of failing. <b>Immediate action is required.</b> All other, less significant tree work should be suspended, and roads or work areas should be closed off, until the risk issues have been mitigated. This might be as simple as removing the critical part, drastically reducing overall tree height, or taking the tree down and cordoning off the area until final clean up, or complete removal can be accomplished. The immediate action required is to ensure that the clearly identified risk of harm is eliminated. For areas hit by severe storms, where many extreme risk trees can occur, drastic pruning and/or partial tree removals, followed by barriers to contain traffic, would be an acceptable first stage of risk reduction. There is no time to inform people or worry about public concerns. Clearly defined safety issues preclude further discussion.

The Table shown above outlines the interpretation and implications of the risk ratings and associated risk categories. This table is provided to inform the reader about these risk categories so that they can better understand any risk abatement recommendations made in the risk assessment report.