# Arborist Report

For:
University of British Columbia Properties Trust

Site Location:
Wesbrook Community Centre
December 18, 2018

Submitted to:
Tom Beeby
UBC Properties Trust
University of British Columbia
2210 West Mall
Vancouver, BC, V6T 1Z4

Date: December 17, 2018

Submitted by:

DIAMOND HEAD
3559 Commercial Street
Vancouver, BC 604.733.4886

SAFE CERTIFIED

The following Diamond Head Consulting staff conducted the on-site tree inventory and prepared or reviewed the report.

All general and professional liability insurance and staff accreditations are provided below for reference.

Trevor Cox, RPP, MCIP
ISA Certified Arborist (PN-1920A)
ISA Tree Risk Assessment Qualified (TRAQ)
BC Parks Wildlife and Danger Tree Assessor

Please contact us if there are any questions or concerns about the contents of this report.

**Contact Information:**

Phone: 604-733-4886
Fax: 604-733-4879
Email: trevor@diamondheadconsulting.com
Website: www.diamondheadconsulting.com

**Insurance Information:**

| | |
|---|---|
| WCB: | # 657906 AQ (003) |
| General Liability: | Northbridge General Insurance Corporation - Policy #CBC1935506, $10,000,000 |
| Errors and Omissions: | Lloyds Underwriters – Policy #1010615D, $1,000,000 |

**Scope of Assignment**:

Diamond Head Consulting Ltd. (DHC) was retained to complete an arboricultural assessment to supplement the proposed development application for the Wesbrook Community Centre addition. This report contains an inventory of protected trees and summarizes management recommendations with respect to future development plans and construction activities. Off-site trees are included because pursuant to municipal bylaws, site owners must include the management of off-site trees that are within the scope of the development. This report is produced with the following primary limitations, detailed limitations specified in Appendix 7:

1) Our investigation is based solely on visual inspection of the trees during our last site visit. This inspection is conducted from ground level. We do not conduct aerial inspections, soil tests or below grade root examinations to assess the condition of tree root systems unless specifically contracted to do so.

2) Unless otherwise stated, tree risk assessments in this report are limited to trees with a *high* or *extreme* risk rating in their current condition, and in context of their surrounding land use at the time of assessment.

3) The scope of work is primarily determined by site boundaries and local tree-related bylaws. Only trees specified in the scope of work were assessed.

4) Beyond six months from the date of this report, the client must contact DHC to confirm its validity because site base plans and tree conditions may change beyond the original report's scope. Additional site visits and report revisions may be required after this point to ensure report accuracy for the municipality's development permit application process. Site visits and reporting required after the first submission are not included within the original proposal fee and will be charged to the client at an additional cost.

**The client is responsible for:**

- Reviewing this report to understand and implement all tree **risk**, removal and protection requirements related to the project.
- Understanding that we did not assess trees off the subject property and therefore cannot be held liable for actions you or your contractors may undertake in developing this property which may affect the trees on neighboring properties.
- Obtaining a tree removal permit from the relevant authority prior to any tree cutting.
- Obtaining relevant permission from adjacent property owners before removing off-site trees and vegetation.
- Obtaining a timber mark if logs are being transported offsite.
- Ensuring the project is compliant with the tree permit conditions.
- Constructing and maintaining tree protection fencing.
- Ensuring an arborist is present onsite to supervise any works in or near tree protection zones.

# Table of Contents



# List of Photographs

# 1.0 Introduction

## 1.1 Site Overview

The subject site is a large turf lawn surrounded by landscaping and planted ornamental trees. There is one group of trees that were retained from the original landscape that consists of two large Douglas-fir trees and several smaller intermediate western redcedar and one Douglas-fir trees. There is a high school located to the north, the turf fields to the west, the existing community centre to the east and a landscape with paved pathways and concrete benches to the south. The existing stand of trees had been identified for retention for the construction of the existing community centre and the surrounding landscape but there was little tree protection at that time. Some of the trees to be retained in this stand have since declined so much from the construction impacts that they are dead or almost dead.

## 1.2 Proposed Land Use Changes

The proposed development consists of a building with underground parking, with proposed landscape works and a children's playground amongst the trees.

## 1.3 Report Objective

The objective of this report is to ensure the proposed development follows the development permit application rules for tree inventories at the University of British Columbia (UBC). Trees over 15cm in diameter at breast height were assessed, including: species, diameter at breast height (dbh) measured to the nearest 1 cm at 1.4 m above natural grade (tree's 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 for the time of assessment. 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.

Trees on adjacent properties with a tree protection zone that extends into the subject site have also been captured in the arborist report.

This report outlines the existing condition of protected trees on and adjacent to the property, summarizes the proposed tree retention and removal, and suggests guidelines for protecting retained trees during the construction process.

# 2.0 Process and Methods

Trevor Cox of DHC visited the site on December 11, 2018. The following methods and standards are used throughout this report.

## 2.1 Tree Inventory

Trees on site and trees shared with adjacent properties were marked with a numbered tag and assessed for attributes including: species; height measured to the nearest meter; and, diameter at breast height (DBH) measured to the nearest centimeter at 1.4 m above grade. The general health and structural integrity of each tree was assessed visually and assigned to one of five categories: *excellent; good; moderate; poor; or dying/dead*. Descriptions of the health and structure rating criteria are given in Appendix 3.

Tree retention value, categorized as *high, medium, low, or nil,* was assigned to each tree or group of trees based on their health and structure rating, and potential longevity in a developed environment. Descriptions of the retention value ratings are given in Appendix 4.

## 2.2 Tree Risk Assessment

Tree risk assessments were completed following methods of the ISA Tree Risk Assessment Manual[1] published in 2013 by the International Society of Arboriculture, which is the current industry standard for assessing tree risk. This methodology assigns risk based on the likelihood of failure, the likelihood of impact and the severity of consequence if a failure occurs. Only on-site hazard trees that had *high* or *extreme* risk ratings in their current condition and in context of their surrounding land use were identified and reported in section 3.2. Appendix 5 gives the likelihood and risk rating matrices used to categorize tree risk. DHC recommends that on-site trees be re-assessed for risk after the site conditions change (e.g. after damaging weather events, site disturbance from construction, creation of new targets during construction or in the final developed landscape).

# 3.0 Findings: Tree Inventory and Risk Assessment

## 3.1 Tree Inventory

The tree inventory is summarized in Table 1 and the complete tree inventory is given in Appendix 1.

12 trees were identified in the site visit, 8 with good to moderate health and structure ratings and 4 that are dead or almost dead.

[1] Dunster, J.A., Smiley, E.T., Matheny, N. and Lilly, S. (2013). Tree Risk Assessment Manual. *International Society of Arboriculture*. Champaign, Illinois.

One tree 6319 has a defect in its stem and is leaning to the south. This tree has a high height to diameter ratio and the combination of its lean, the kink in the stem makes it prone to failure. Tree Risk Assessment

There were no trees on this site that posed a *high* or *extreme* risk at the time of assessment. One tree (6319) has a defect in its stem and is leaning to the south. The combination of its high height to diameter ratio its lean and the kink in the stem makes it prone to failure. Tree 6681 has a codominant stem in the upper canopy which will become a larger risk in the future but at this time the parts are less than 15cm in diameter and may get hung up in the tree.

# 4.0 Discussion and Summary

## 4.1 Tree Retention

Trees 8893, 6316, 8867, 6313, T1, 6322, 8862 are all proposed for retention. Care will be required in determining the extent of work to be conducted within the tree protection zone of these trees with the proposed child play area. Team meetings with the project landscape architect and playground specialist have occurred to discuss methods. Another tree protection plan will be prepared for this work once the design moves further into its detailed design stage.

**The trees identified for retention are to be protected as shown with fencing in the Tree Protection and Removal Plan. These barriers are to be up throughout construction, and no encroachment into Tree Protection Zones is to occur without arborist supervision. Tree 8867 will require arborist supervision for the excavation work that is to occur for the foundation that slightly encroaches within its root protection zone.**

## 4.2 Tree Removal

Trees 8879, 8883,8880, 6681 and 6319 are proposed for removal. It is understood that all these trees may have large stumps left in place, so they can be used for play structures.

# Appendix 1 Complete Tree Inventory Table

| Tag # | Species | DBH (cm) | Height (m) | Health and Structure Rating | Comments | Retention Value Rating | Retain/ Remove | Retention/TPZ Comments | *TPZ |
|---|---|---|---|---|---|---|---|---|---|
| 6313 | Western redcedar | 40 | 23 | Moderate | Intermediate tree growing under tree 8867. Lighter foliage density but suspect it is from low light conditions under the fir. | High | Retain | Protect as required | 3.2 |
| 6316 | Western redcedar | 38 | 18 | Good | Intermediate tree growing under tree 8867. Lighter foliage density but suspect it is from low light conditions under the fir. | High | Retain | Protect as required. | 3.0 |
| 6319 | Western redcedar | 76 | 27 | Dead/Dying | Dead top and little live crown left. | Nil | Remove | | 6.1 |
| 6322 | Western redcedar | 44 | 26 | Moderate | Slightly thinning top from previous development impacts. Requires enhancement in root protection zone. | Medium | Retain | Protect as required | 3.5 |
| 6681 | Western redcedar | 72 | 28 | Moderate to Poor | Thinning crown throughout. Tree is suffering from development impacts from the past. Unlikely to recover is anything is programmed within its root zone other than enhancements. There is a codominant stem that starts at about 19m. The two stems wind around one another. | Low | Remove | Protect as required. Tree protection fence is to follow existing edge of payment. | 5.8 |
| 8862 | Western redcedar | 66 | 28 | Moderate | Slightly thinning top from previous development impacts. Requires enhancement in root protection zone. | Medium | Retain | Protect as required | 5.3 |
| 8867 | Douglas-fir | 103 | 33 | Good | Large single stem with a full crown. A few larger dead limbs up in canopy. Requires pruning of dead and diseased. | High | Retain | Protect as required. Pruning in crown required. Spur less climbing required. Root protection zone was previously excavated at or near the proposed line for excavation. Will have no impact on the structural roots of the tree. Arborist | 8.5 |

| Tag # | Species | DBH (cm) | Height (m) | Health and Structure Rating | Comments | Retention Value Rating | Retain/ Remove | Retention/TPZ Comments | *TPZ |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | supervision of excavation required within one meter of tree protection zone. | |
| 8879 | Western redcedar | 43 | 21 | Dead/Dying | Dead top with little live crown below. Can be used as timbers for play structure if desired. | Nil | Remove | | 3.4 |
| 8880 | Douglas-fir | 43 | 30 | Moderate | High height to diameter ration. Kink at about 18m where there was likely a previously broken top. Heavy lean to south. With exposure due to the removals of the dead cedars, tree is prone to failure. | Nil | Remove | | 3.4 |
| 8883 | Western redcedar | 62 | 25 | Dead/Dying | Dead top. Many large woodpecker cavities in stem from 1m-18m in height. Can be used for timber for play structure if desired. | Nil | Remove | | 5.0 |
| 8893 | Douglas-fir | 98 | 32 | Moderate | Large single stem with several larger dead branches in the upper crown. Requires pruning of dead and diseased. Appears to have had root impacts from the past in which the tree has recuperated from. | High | Retain | Protect as required. Pruning in crown required. Spur less climbing required. | 7.8 |
| T1 | Western redcedar | 33 | 25 | Moderate | Intermediate to suppressed tree. Has relatively good vigor. | Medium | Retain | Protect as required. | 2.6 |

# Appendix 2 Site Photographs

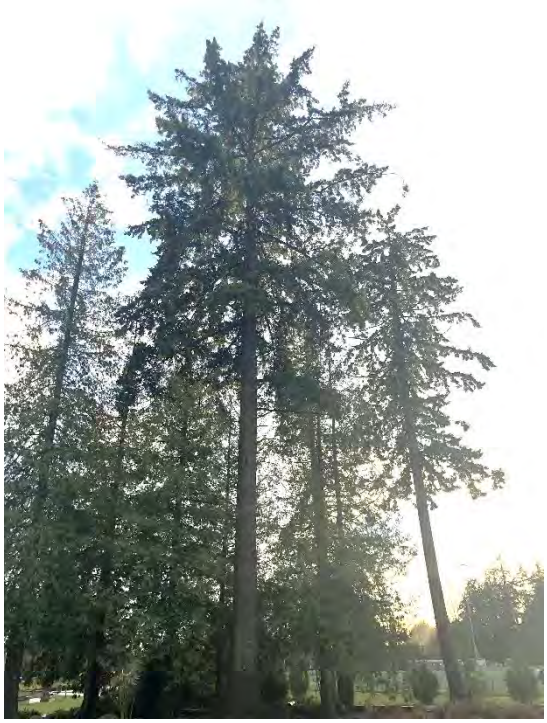


Photo 1. Looking southwest. Tree 8867 in the center with tree 6681 (western redcedar with a thinning crown) to the left and 8893 to the right of it (another large Douglas-fir. The smaller trees are amongst these three larger trees.

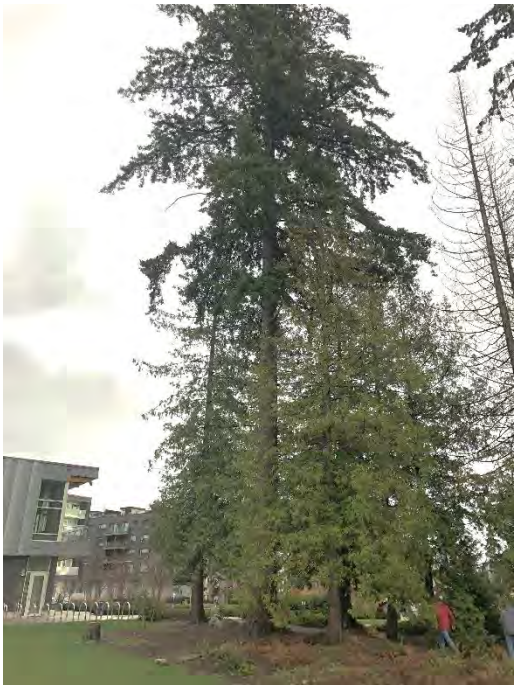


Photo 2. Looking northeast at tree 8893 with some of the dying cedars to the right (8879, 8883)

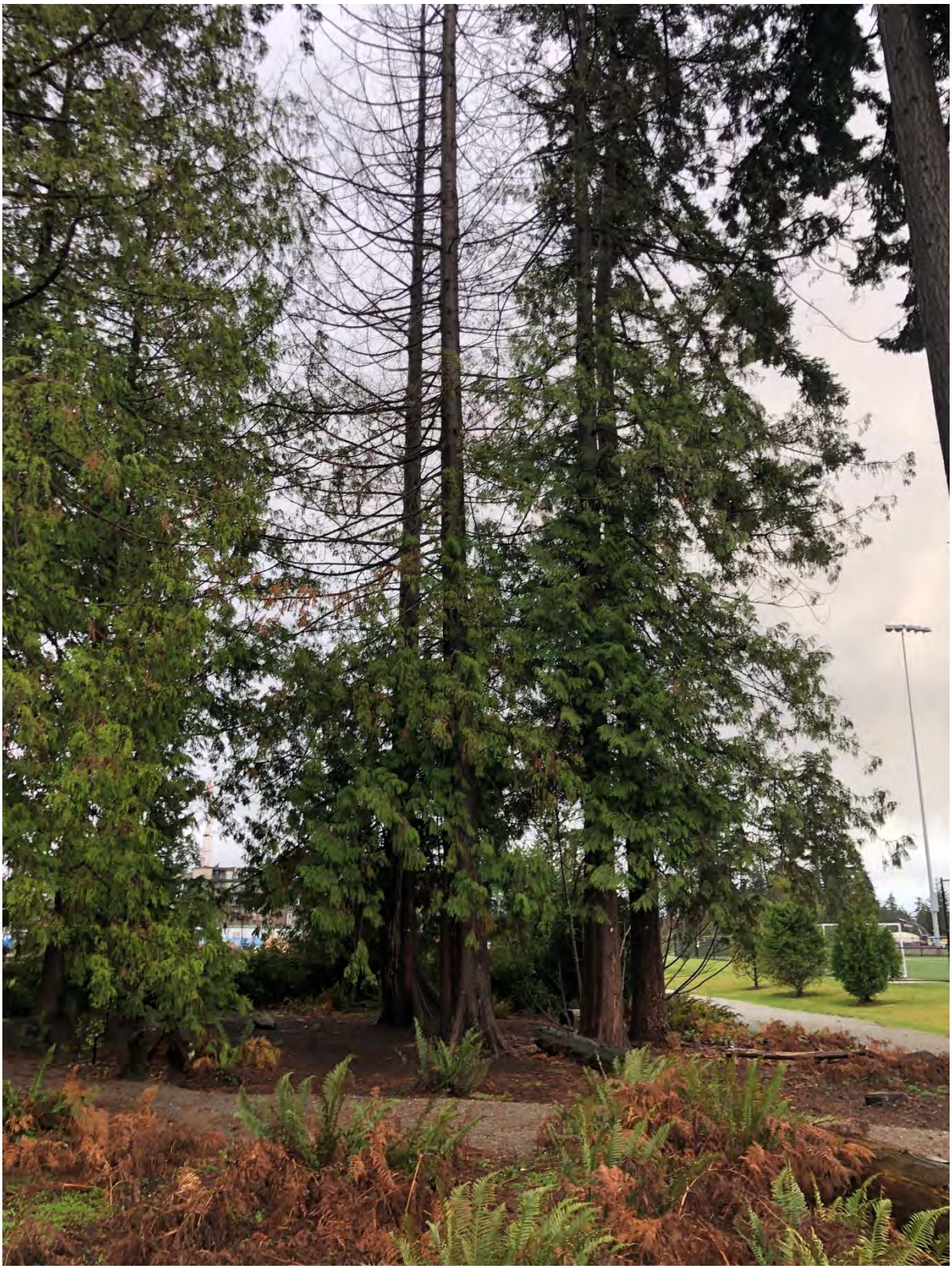


Photo 3. Looking south at trees 6319 (from the center left) with a dead top and tree 8883 and 8879 to its right with dead tops as well. Tree 8880 is to the far right and its kink and lean is somewhat noticeable from this angle.

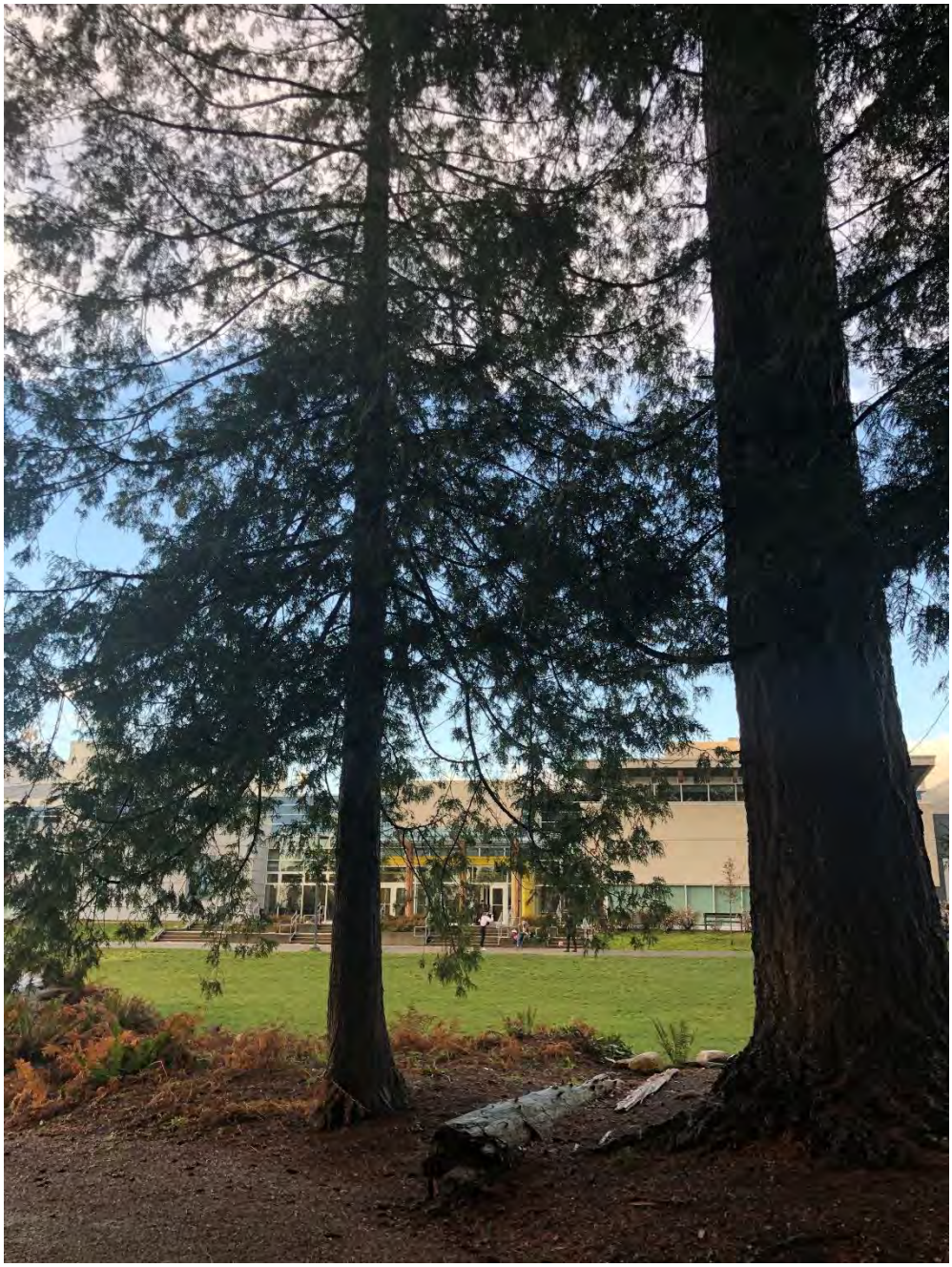


Photo 4. Looking north at tree 6316 with tree 8867 to its right.

# Appendix 3 Tree Health and Structure Rating Criteria

The tree health and structure ratings used by Diamond Head Consulting summarize each tree based on both positive and negative attributes using five stratified categories. These ratings indicate health and structural conditions that influence a tree's ability to withstand local site disturbance during the construction process (assuming appropriate tree protection) and benefit a future urban landscape.

**Excellent:** Tree of possible specimen quality, unique species or size with no discernible defects.

**Good:** Tree has no significant structural defects or health concerns, considering its growing environment and species.

**Moderate:** Tree has noted health and/or minor to moderate structural defects. This tree can be retained, but may need mitigation (e.g., pruning or bracing) and monitoring post-development. A moderate tree may be suitable for retention within a stand or group, but not suitable on its own.

**Poor:** Tree is in serious decline from previous growth habit or stature, has multiple defined health or structural weaknesses. It is unlikely to acclimate to future site use change. This tree is not suitable for retention within striking distance of most targets.

**Dying/Dead:** Tree is in severe decline, has severe defects or was found to be dead.

# Appendix 4 Tree Retention Value Rating Criteria

The tree retention value ratings used by Diamond Head Consulting provide guidance for tree retention planning. Each tree in an inventory is assigned to one of four stratified categories that reflect its value as a future amenity and environmental asset in a developed landscape. Tree retention value ratings take in to account the health and structure rating, species profile*, growing conditions and potential longevity assuming a tree's growing environment is not compromised from its current state.

**High:** Tree suitable for retention. Has a good or excellent health and structure rating. Tree is open grown, an anchor tree on the edge of a stand or dominant within a stand or group. Species of *Populus, Alnus* and *Betula* are excluded from this category.

**Medium:** Tree suitable for retention with some caveats or suitable within a group**. Tree has moderate health and structure rating, but is likely to require remedial work to mitigate minor health or structural defects. Includes trees that are recently exposed, but wind firm, and trees grown on sites with poor rooting environments that may be ameliorated.

**Low:** Tree has marginal suitability for retention. Health and structure rating is moderate or poor; remedial work is unlikely to be viable. Trees within striking distance of a future site developments should be removed.

**Nil:** Tree is unsuitable for retention. It has a dying/dead or poor health and structure rating. It is likely that the tree will not survive, or it poses and unacceptable hazard in the context of future site developments.

* The species profile is based upon mature age and height/spread of the species, adaptability to land use changes and tree species susceptibility to diseases, pathogen and insect infestation.

** Trees that are 'suitable as a group' have grown in groups or stands that have a single, closed canopy. They have not developed the necessary trunk taper, branch and root structure that would allow then to be retained individually. These trees should only be retained in groups.

# Appendix 5 Risk Rating Matrices

Trees with a *probable* or *imminent* likelihood of failure, a *medium* or *high* likelihood of impacting a specified target, and a *significant* or *severe* consequence of failure have been assessed for risk and included in this report (Section 3.2). These two risk rating matrices showing the categories used to assign risk are taken without modification to their content from the International Society of Arboriculture Tree Risk Assessment Qualification Manual.

**Matrix 1: Likelihood**

| Likelihood of Failure | Likelihood of Impacting Target | | | |
|---|---|---|---|---|
| | **Very Low** | **Low** | **Medium** | **High** |
| **Imminent** | Unlikely | Somewhat Likely | Likely | Very Likely |
| **Probable** | Unlikely | Unlikely | Somewhat Likely | Likely |
| **Possible** | Unlikely | Unlikely | Unlikely | Somewhat Likely |
| **Improbable** | Unlikely | Unlikely | Unlikely | Unlikely |

**Matrix 2: Risk Rating**

| Likelihood of Failure and Impact | Consequences of Failure | | | |
|---|---|---|---|---|
| | **Negligible** | **Minor** | **Significant** | **Severe** |
| **Very Likely** | Low | Moderate | High | Extreme |
| **Likely** | Low | Moderate | High | High |
| **Somewhat Likely** | Low | Low | Moderate | Moderate |
| **Unlikely** | Low | Low | Low | Low |

# Appendix 6 Construction Guidelines

Tree management recommendations in this report are made under the expectation that the following guidelines for risk mitigation and proper tree protection will be adhered to during construction.

Respecting these guidelines will prevent changes to the soil and rooting conditions, contamination due to spills and waste, or physical wounding of the trees. Any plans for construction work and activities that deviate from or contradict these guidelines should be discussed with the project arborist so that mitigation measures can be implemented.

**Tree Protection Zones**

A Tree protection zone (TPZ) is determined using either dripline or a DBH multiplier to define a radius measured in all directions from the outside of a tree's trunk. It is typically determined according to local municipal bylaw specifications and may be modified based on professional judgement of the project arborist to accommodate species specific tolerances and site specific growing conditions. For retained trees, the TPZ and fencing indicated in this report are proposed as suitable in relation to the level of disturbance proposed on the site plan provided to the project arborist. Arborist consultation is required if any additional work beyond the scope of the plans provided is proposed near the tree. Work done in addition to the proposed impacts discussed in this report may cause the tree to decline and die.

Tree Protection Fencing: Tree protection zones (TPZs) will be protected by Tree Protection Fencing except where site features constrict roots (e.g., retaining walls or roads), where continual access is required (e.g., sidewalks), or when an acceptable encroachment into the TPZ is proposed, in which case the fencing will be modified. Tree Protection Fencing is shown on the Tree Protection Plan and, where it varies from the TPZ, the rationale is described in the inventory table in Section 3.1.

Within a TPZ, no construction activity, including materials storage, grading or landscaping, may occur without project arborist approval. Within the TPZ, the following are tree preservation guidelines based on industry standards for best practice and local municipal requirements:

- No soil disturbance or stripping.
- Maintain the natural grade.
- No storage, dumping of materials, parking, underground utilities or fires within TPZs or tree driplines.
- Any planned construction and landscaping activities affecting trees should be reviewed and approved by a consulting arborist.
- Install specially designed foundations and paving when these structures are required within TPZs.
- Route utilities around TPZs.
- Excavation within the TPZs should be supervised by a consultant arborist.
- Surface drainage should not be altered in such a way that water is directed in or out of the TPZ.

- Site drainage improvements should be designed to maintain the natural water table levels within the TPZ.

Prior to any construction activity, Tree Protection Fencing must be constructed as shown on the Tree Protection Plan. The protection barrier or temporary fencing must be at least 1.2 m in height and constructed of 2" by 4" lumber with orange plastic mesh screening. Tree Protection Fencing must be constructed prior to tree removal, excavation or construction and remain intact for the entire duration of construction.

**Tree Crown Protection and Pruning**

All heavy machinery (excavators, cranes, dump trucks, etc.) working within five meters of a tree's crown should be made aware of their proximity to the tree. If there is to be a sustained period of machinery working within five meters of a tree's crown, a of line of colored flags should be suspended at eye-level of the machinery operator for the length of the protected tree area. Any concerns regarding the clearance required for machinery and workers within or immediately outside tree protection zones should be referred to the project arborist so that a zone surrounding the crowns can be established or pruning measures undertaken. Any wounds incurred to protected trees during construction should be reported to the project arborist immediately.

**Unsurveyed Trees**

Unsurveyed trees identified by DHC in the Tree Retention Plan have been hand plotted for approximate location only using GPS coordinates and field observations. The location and ownership of unsurveyed trees cannot be confirmed without a legal surveyed. The property owner or project developer must ensure that all relevant on- and off-site trees are surveyed by a legally registered surveyor, whether they are identified by DHC or not.

**Removal of logs from sites**

Private timber marks are required to transport logs from privately-owned land in BC. It is property owner's responsibility to apply for a timber mark prior to removing any merchantable timber from the site. Additional information can be found at: http://www.for.gov.bc.ca/hth/private-timber-marks.htm

**Regulation of Soil Moisture and Drainage**

Excavation and construction activities adjacent to TPZs can influence the availability of moisture to protected trees. This is due to a reduction in the total root mass, changes in local drainage conditions, and changes in exposure including reflected heat from adjacent hard surfaces. To mitigate these concerns the following guidelines should be followed:

- Soil moisture conditions within the tree root protection zones should be monitored during hot and dry weather. When soil moisture is inadequate, supplemental irrigation should be provided that penetrates soil to the depth of the root system or a minimum of 30 cm.
- Any planned changes to surface grades within the TPZs, including the placement of mulch, should be designed so that any water will flow away from tree trunks.

- Excavations adjacent to trees can alter local soil hydrology by draining water more rapidly from TPZs more rapidly than it would prior to site changes. It is recommended that when excavating within 6 m of any tree, the site be irrigated more frequently to account for this.

**Root Zone Enhancements and Fertilization**

Root zone enhancements such as mulch, and fertilizer treatments may be recommended by the project arborist during any phase of the project if they deem it necessary to maintain tree health and future survival.

**Paving Within and Adjacent to TPZs**

If development plans propose the construction of paved areas and/or retaining walls close to TPZs, measures should be taken to minimize impacts. Construction of these features would raise concerns for proper soil aeration, drainage, irrigation and the available soil volume for adequate root growth. The following design and construction guidelines for paving and retaining walls are recommended to minimize the long-term impacts of construction on protected trees:

- Any excavation activities near or within the TPZ should be monitored by a certified arborist. Structures should be designed, and excavation activities undertaken to remove and disturb as little of the rooting zone as possible. All roots greater than 2 cm in diameter should be hand pruned by a Certified Arborist.
- The natural grade of a TPZ should be maintained. Any retaining walls should be designed at heights that maintain the existing grade within 20 cm of its current level. If the grade is altered, it should be raised not reduced in height.
- Compaction of sub grade materials can cause trees to develop shallow rooting systems. This can contribute to long-term pavement damage as roots grow. Minimizing the compaction of subgrade materials by using structural soils or other engineered solutions and increasing the strength of the pavement reduces reliance on the sub-grade for strength.
- If it is not possible to minimize the compaction of sub-grade materials, subsurface barriers should be considered to help direct roots downward into the soil and prevent them from growing directly under the paved surfaces.

**Plantings within TPZs**

Any plans to landscape the ground within the TPZ should implement measures to minimize negative impacts on the above or below ground parts of a tree. Existing grass layer in TPZs should not be stripped because this will damage surface tree roots. Grass layer should be covered with mulch at the start of the project, which will gradually kill the grass while moderating soil moisture and temperatures. Topsoil should be mixed with the mulch prior to planting of shrubs, but new topsoil layer should not be greater than 20 cm deep on top of the original grade. Planting should take place within the newly placed topsoil mixture and should not disturb the original rooting zone of the trees. A two-meter radius around the base of each tree should be left unplanted and covered in mulch; a tree's root collar should remain free from any amendments that raise the surface grade.

**Monitoring during construction**

Ongoing monitoring by a consultant arborist should occur for the duration of a development project. Site visits should be more frequent during activities that are higher risk, including the first stages of construction when excavation occurs adjacent to the trees. Site visits will ensure contractors are respecting the recommended tree protection measures and will allow the arborist to identify any new concerns that may arise.

During each site visit the following measures will be assessed and reported on by a consulting arborist:

- Health and condition of protected trees, including damage to branches, trunks and roots that may have resulted from construction activities, as will the health of. Recommendations for remediation will follow.
- Integrity of the TPZ and fencing.
- Changes to TPZ conditions including overall maintenance, parking on roots, and storing or dumping of materials within TPZ. If failures to maintain and respect the TPZ are observed, suggestions will be made to ensure tree protection measures are remediated and upheld.
- Review and confirmation of recommended tree maintenance including root pruning, irrigation, mulching and branch pruning.
- Changes to soil moisture levels and drainage patterns; and
- Factors that may be detrimentally impact the trees.

# Appendix 7 Report Assumptions and Limiting Conditions

1) Unless expressly set out in this report or these Assumptions and Limiting Conditions, Diamond Head Consulting Ltd. ("Diamond Head") makes no guarantee, representation or warranty (express or implied) regarding this report, its findings, conclusions or recommendations contained herein, or the work referred to herein.

2) The work undertaken in connection with this report and preparation of this report have been conducted by Diamond Head for the "Client" as stated in the report above. It is intended for the sole and exclusive use by the Client for the purpose(s) set out in this report. Any use of, reliance on or decisions made based on this report by any person other than the Client, or by the Client for any purpose other than the purpose(s) set out in this report, is the sole responsibility of, and at the sole risk of, such other person or the Client, as the case may be. Diamond Head accepts no liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm (including without limitation financial or consequential effects on transactions or property values, and economic loss) that may be suffered or incurred by any person as a result of the use of or reliance on this report or the work referred to herein. The copying, distribution or publication of this report (except for the internal use of the Client) without the express written permission of Diamond Head (which consent may be withheld in Diamond Head's sole discretion) is prohibited. Diamond Head retains ownership of this report and all documents related thereto both generally and as instruments of professional service.

3) The findings, conclusions and recommendations made in this report reflect Diamond Head's best professional judgment given 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 on the date of this report. Except as expressly stated in this report, the findings, conclusions and recommendations it sets out 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", include without limitation, structural defects, scars, decay, fungal fruiting bodies, evidence of insect attack, discolored foliage, condition of root structures, the degree and direction of lean, the general condition of the tree(s) and the surrounding site, and the proximity of property and people) other than those expressly addressed in this report may exist. Unless otherwise stated information contained in this report covers only those Conditions and trees at the time of inspection. The inspection is limited to visual examination of such Conditions and trees without dissection, excavation, probing or coring. While

every effort has been made to ensure that any trees recommended for retention are both healthy and safe, no guarantees, representations or warranties are made (express or implied) that those trees will not be subject to structural failure or decline. The Client acknowledges that it is both professionally and practically impossible to predict with absolute certainty the behavior of any single tree, or groups of trees, in all given circumstances. Inevitably, a standing tree will always pose some risk. Most trees have the potential for failure and this risk can only be eliminated if the risk is removed. If Conditions change or if additional information becomes available 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 of Conditions change or additional information becomes available.

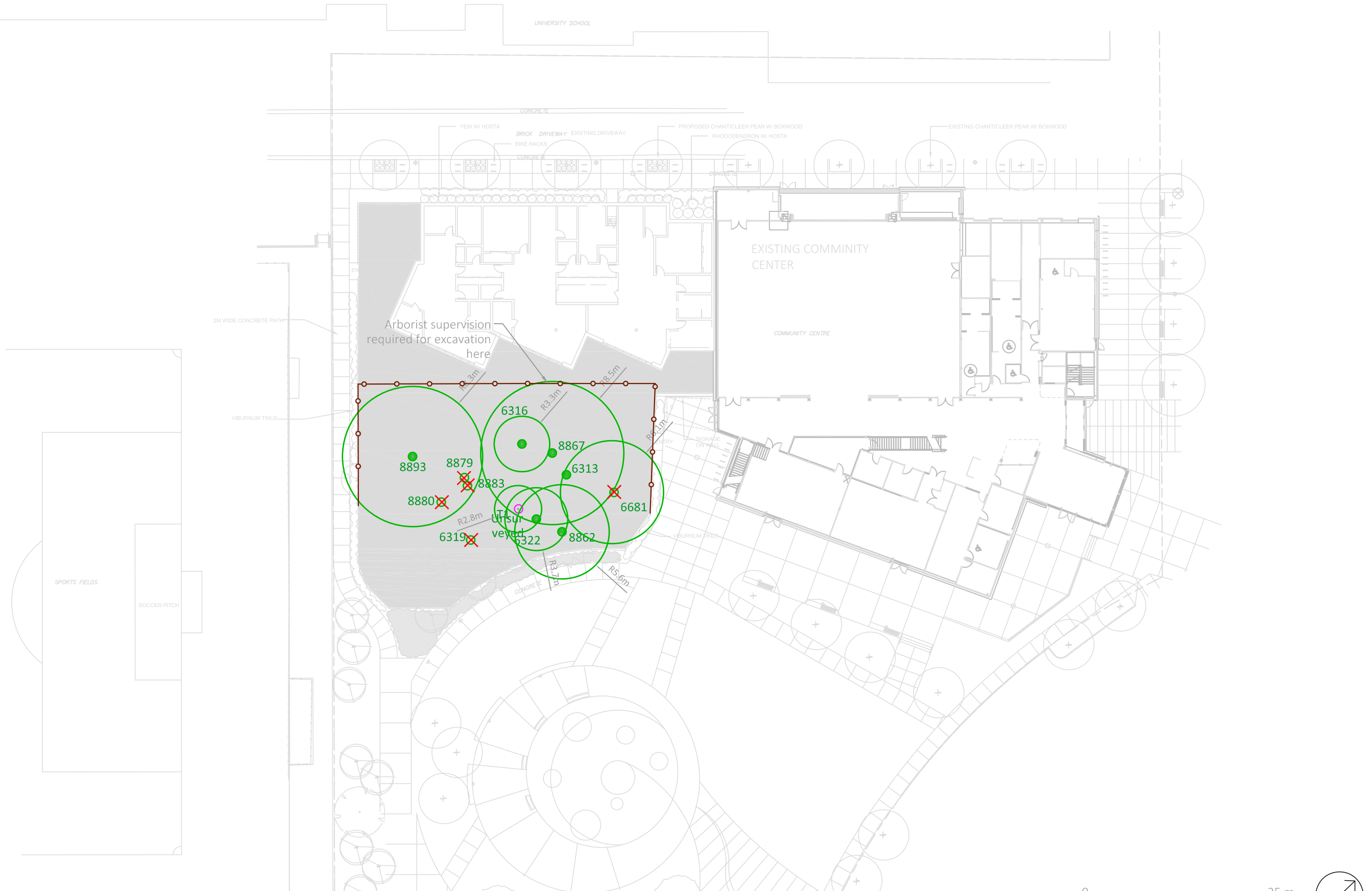
5) Nothing in this report is intended to constitute or provide a legal opinion and Diamond Head expressly disclaims any responsibility for matters legal in nature (including, without limitation, matters relating to title and ownership of real or personal property and matters relating to cultural and heritage values). Diamond Head makes no guarantee, representation or warranty (express or implied) as to the requirements of or compliance with applicable laws, rules, regulations, or policies established by federal, provincial, local government or First Nations bodies (collectively, "Government Bodies") or as to the availability of licenses, permits or authorizations of any Government Body. Revisions to any regulatory standards (including bylaws, policies, guidelines an any similar directions of a Government Bodies in effect from time to time) referred to in this report may be expected over time. As a result, 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 any such regulatory standard is revised.

6) Diamond Head shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.

7) In preparing this report, Diamond Head has relied in good faith on information provided by certain persons, Government Bodies, government registries and agents and representatives of each of the foregoing, and Diamond Head assumes that such information is true, correct and accurate in all material respects. Diamond Head accepts no responsibility for any deficiency, misinterpretations or fraudulent acts of or information provided by such persons, bodies, registries, agents and representatives.

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.




## LEGEND

- CRITICAL ROOT ZONE
- TREE PROTECTION ZONE AND FENCING
- SURVEYED TREE TO BE RETAINED
- UN-SURVEYED TREE TO BE RETAINED
- TREE TO BE REMOVED

## NOTES

1. The location of un-surveyed trees on this plan is approximate. Their location and ownership cannot be confirmed without being surveyed by a Registered BC Land Surveyor.
2. All tree protection fencing must be built to the relevant municipal bylaw specifications.The dimensions shown are from the outer edge of the stem of the tree.
3. The tree protection zone shown is a graphical representation of the critical root zone, measured from the outer edge of the stem of the tree. ($\frac{1}{2}$ the trees diameter was added to the graphical tree protection circles to accommodate the survey point being in the center of the tree)
4. Any construction activities or grade changes within the Root Protection Zone must be approved by the project arborist.
5. This plan is based on a topographic and tree location survey provided by the owners' Registered British Columbia Land Surveyor (BCLS) and layout drawings provide by the owners' Engineer (P Eng).
6. This plan is provided for context only, and is not certified as to the accuracy of the location of features or dimensions that are shown on this plan. Please refer to the original survey plan and engineering plans.

## REFERENCE DRAWINGS

1. Site Plan by Richard Findlay Landscape Architects Inc.

DIAMOND HEAD
3559 COMMERCIAL STREET
VANCOUVER BC | V5N 4E8
T 604.733.4886 | F 604.733.4879

Drawing title: Wesbrook Community Centre Tree Management Plan
Project address: 5998 Berton Avenue, Vancouver, BC
Client: UBCPT

Drawing No: 001
Date: 2018/12/17
Drawn by: DB
Page Size: TABLOID 11"x17"