

Diamond Head Consulting Ltd. Tree Management Recommendations for 1266 UEL Block 6 (Updated)

August 20th 2013

Submitted to:

Musqueam Indian Band
c/o Gordon Easton at Colliers International
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Submitted by:




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Insurance Information

WCB: # 657906 AQ (003)
General Liability: The Dominion - Policy #CCP8442492, \$5,000,000 (Mar 2012 to Mar 2013)
Errors & Omissions: Lloyds Underwriters – Policy #1010346D, \$1,000,000 (June 2011 to June 2013)



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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:	1266 UEL Block F
Project No.:	N/A
Client name:	Colliers International
Date of site visit:	Nov 21, Dec 6, 2012, and March 14, April 5, 2013

The following report outlines tree management assessment, impacts and strategies related to the proposed development at 1266 UEL Block F. This report follows up on a stand overview assessment that was completed in late 2012. Stands of trees were stratified into similar groups. Those that are suitable for retention in relation to the planned development concept were identified. Trees growing around the outer perimeter of all suitable stands were tagged and surveyed. Individual trees that have the potential to be retained safely on their own were also identified. Tagged trees 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. Tree hazards were assessed according to International Society of Arboriculture and WCB standards. This report outlines the existing condition of the stands of trees on the property, summarizes the proposed tree removals and trees that should be considered for retention.

1.1 Limits of Assignment

- Our investigation is based solely on our visual inspection of the trees on November 21st, Dec 6th, 2012, March 14th, and April 5th 2013. 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.

1.2 Purpose and Use of Report

- Provide documentation pertaining to on site trees to supplement the proposed development planning process.



Figure 1. Location of site -1266 UEL Block F

2.0 Observations

2.1 Site Overview

The proposed development area is roughly 21.4 acres or 8.66 hectares in size and is forested. The topography of the site is generally flat. There was a significant amount of standing water along the eastern edge of the property adjacent to University Boulevard. The site has been divided into five distinct stands (See previous Tree Management Recommendation report dated Dec 9th 2012). In the middle of the site along the western edge, adjacent to Acadia Road, there is a mature conifer stand (Stand 1) that provides the best opportunity for safe tree retention. This stand also has a well-developed looped trail system throughout that provides an area of high recreational value.

The remainder of the site consists of mostly young to intermediate aged deciduous trees growing on sites with high moisture regimes. With the exception of a number of scattered conifer trees, these other stands provide poor opportunities for safe tree retention.



2.2 Tree Retention Potential

After consulting the proposed development plan DHC returned to the site to perform a more detailed tree survey which focused on the identification of a windfirm boundary around Stand 1 (See previous tree recommendation report dated Dec 9th 2012). This tree survey was carried out with the intention of preserving a large component of this stand. Figure 2 provides an approximate outline of this tree retention zone. During the secondary survey DHC also identified significant trees outside of this core retention zone for possible retention. Trees were assigned a retention potential value (Good, Moderate, Poor) based on the health and structural stability of the tree, and its ability to adapt to changes in growing conditions such as hydrology and removal of neighboring trees.

Good Retention Potential

The trees in this category have a low risk of windthrow during unusually high wind events after being exposed. The failure potential of some of the exposed trees is unlikely during wind events that reach speeds of greater than 40 km/hr. These trees are considered significant trees in the stand and all efforts to retain them is recommended.

Many of the edge trees for the retention area of Stand 1 were given a good retention potential. A windfirm boundary was laid out in consultation with the proposed development plan (See Figure 3). Large dominant Douglas-fir trees were given a retention potential of Good as they are well rooted and have the ability to adapt well to disturbance. There were some significant trees, away from Stand 1 on the west edge of the site, that are recommended to be considered for retention. In particular there are large windfirm Douglas-fir growing north west of Stand 1 that should be considered for individual retention. Particular attention should be paid to the mature Douglas firs with tag numbers **1014**, **1016**, and **0458**.

Moderate Retention Potential

Trees in this category have a risk of windthrow during unusually high wind events in the first 5 years of being exposed. The failure potential of some of the exposed trees is possible during wind events that reach speeds of greater than 40 km/hr. Many of these trees are co-dominant or intermediate trees that can be retained within a stand environment. Most of the identified Western Redcedar trees that can be individually retained also fall into this category. This is partly due to their sensitivities to changes in the ground water table. Many of the trees placed in this category are not considered to be significant trees on the site.

Poor Retention Potential

Trees in this category have a higher risk of windthrow within the first 5 years after being exposed. The failure potential of some of the exposed trees is likely during wind events that reach speeds of greater than 40km/hr. These trees should not be considered for retention. Many of these trees are in poor health or have a particular defect that makes them unsafe in the context of a development site.

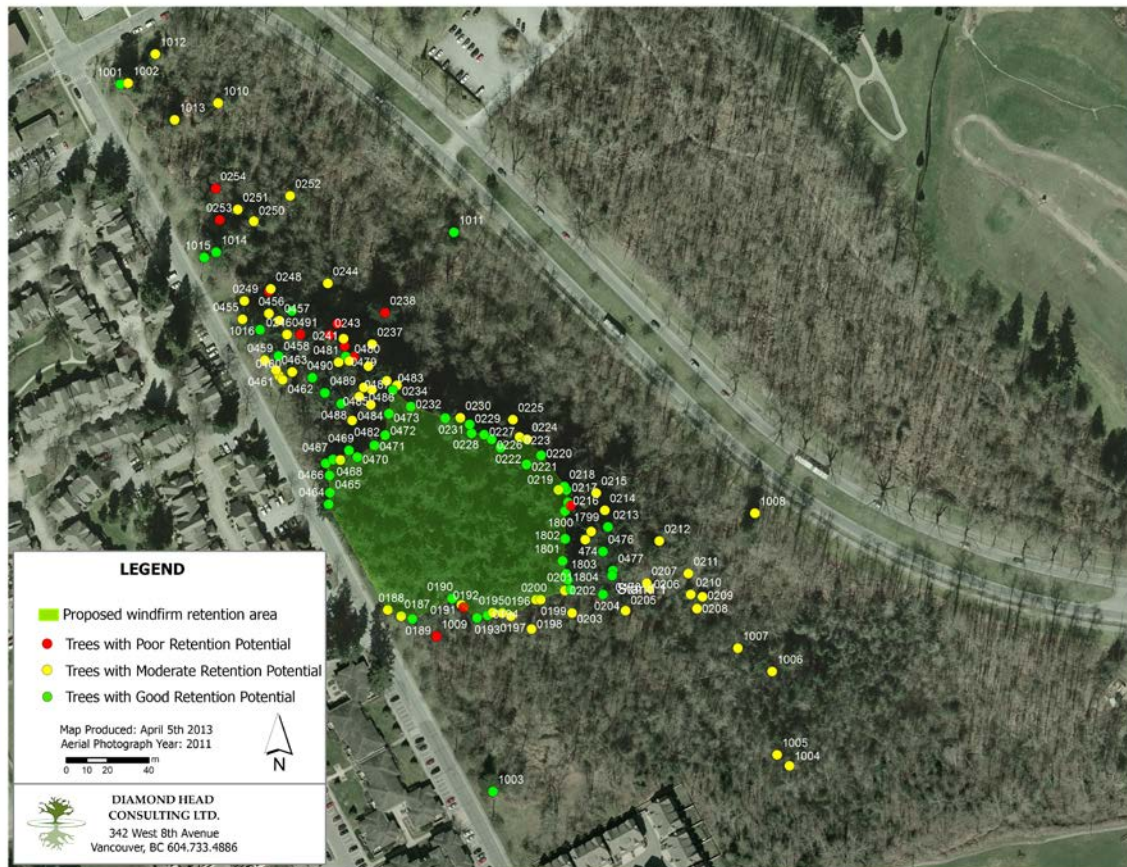


Figure 2. Tree retention potential overview map

2.3 Establishing a Windfirm Boundary

The majority of forested stand growing in Stand 1 is dominated by mature Douglas-fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga heterophylla*), and Western redcedar (*Thuja plicata*). Stands of this nature grow together, competing for resources and put most of their energy into vertical growth to compete for available sunlight. Trees in these stands often have high height to diameter ratios and rely upon the stand as a whole to withstand oncoming winds. These trees have not grown the type of wood structure or rooting system to withstand oncoming winds individually.

Identifying a wind firm boundary through this type of stand poses significant challenges. A somewhat linear and even edge must be chosen so that no distinct tree edges or single trees are exposed on the outside. The most dominant trees that have their crowns exposed and have adapted to winds are chosen as well as natural groupings of conifers that have established together.

In these areas, the best available boundary has been chosen along the assessment area however in many cases, there are no obvious options and hazardous trees will be exposed. These hazardous trees must be removed and the edge trees must be feathered to reduce the chance



of failure in the edge tree to be retained. This feathering prescription includes pruning techniques to remove hazardous parts, reducing the height of the crown in deciduous trees and spiral pruning of conifers. Spiral pruning involves the removal of branches throughout the crown such that the form of the original crown has the same shape, but is more open to allow wind to pass through. This treatment should aim to reduce crown density by 20%-40% evenly distributed throughout the crown.

It should be made clear that the windfirm boundaries that have been identified are the best possible options found within the assessment area that do not conflict with the proposed development. Once exposed, the edge trees will need to adapt to their new role in the stand. While they adapt (4-5 years) there will be a risk of failure during unusually high wind events.

In conjunction with tree inventory information, site visits and consultation with the proposed development plan, DHC has recommended the best possible windfirm boundary. The proposed boundary has been mapped in Figure 3. It should be noted that the tree locations on this map are approximate and a survey of the tagged trees should be done so that a map including the root protection zone (RPZ) can be produced.

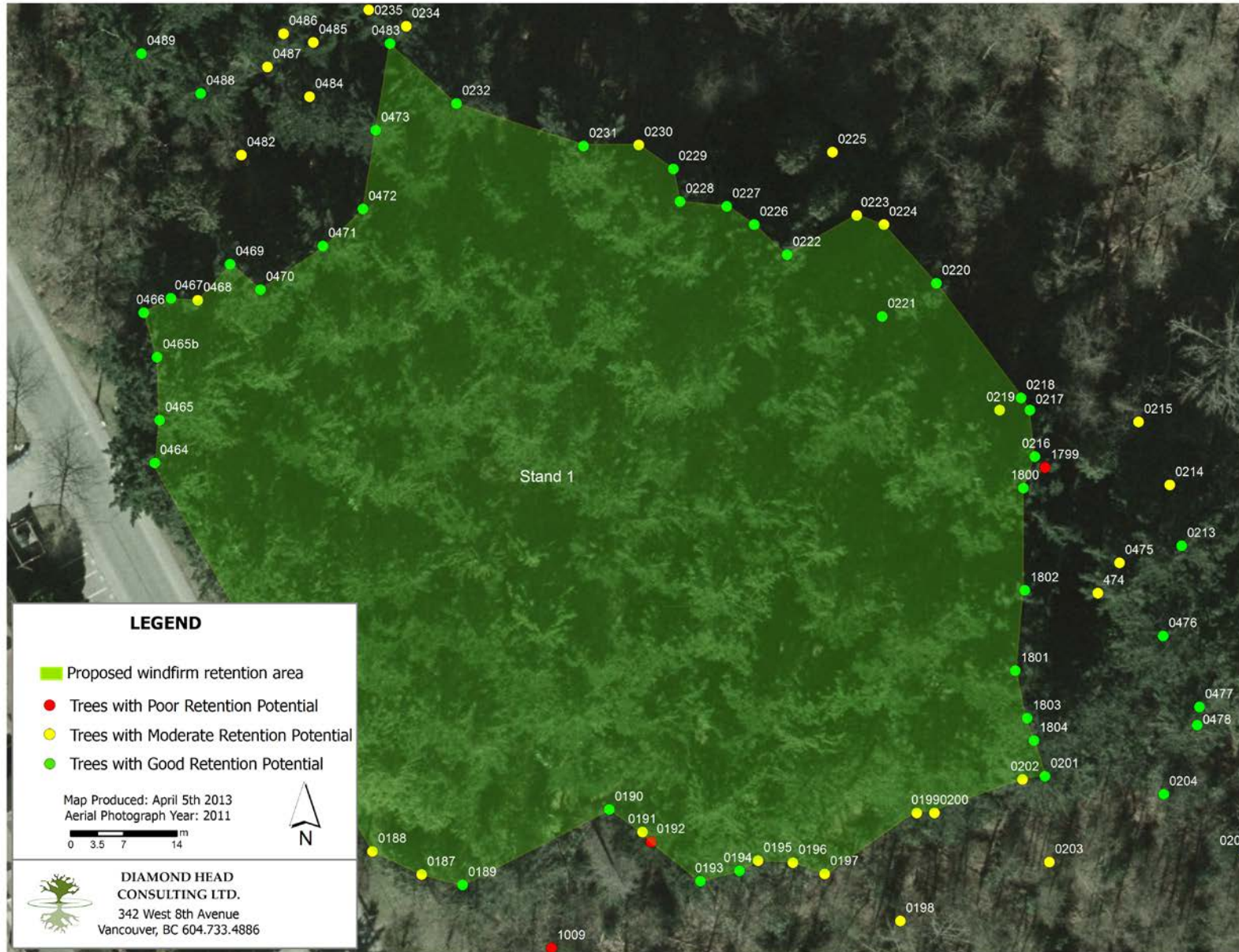


Figure 3. Detailed tree retention map (tree locations are approximate and a survey will be required before actual boundary is established)

2.4 Tree Inventory

The following is an inventory of assessed trees. Each tree is marked with a numbered tag. Only the edge trees on the perimeter of stand #1 or individual trees on the rest of the site that are suitable for retention were inventoried. Hazard trees associated with recommended tree retention areas were also identified. Tree species, characteristics, comments, recommendations and critical root protection zones (RPZ) have been suggested (Table 1). Their locations are illustrated on the accompanying map.

Table 1: Tree Inventory

Tag	Species	DBH (cm)	Height (m)	Overall Condition	Comments	Retention Potential	Root Protection Zone (RPZ m)
0187	<i>Tsuga heterophylla</i>	50	37	Good	Retain with rest of stand, branches primarily found on one side	Moderate	4.5
0188	<i>Thuja plicata</i>	60	28	Good	Slightly leaning towards road, branches primarily found on one side of tree	Moderate	5.4
0189	<i>Pseudotsuga menziesii</i>	90	42	Good	Healthy dominant well tapered fir on edge on mature stand	Good	8.1
0190	<i>Pseudotsuga menziesii</i>	80	35	Good	Healthy tree on edge of stand, small secondary dead stem at base	Good	7.2
0191	<i>Thuja plicata</i>	30	20	Good	Healthy young tree	Moderate	2.7
0192	<i>Tsuga heterophylla</i>	65	32	Fair	Dead top but rest of tree is healthy, remove if values are situated close by	Poor	5.8
0193	<i>Pseudotsuga menziesii</i>	90	43	Good	Healthy dominant tree, branches primarily found on south side	Good	8.1
0194	<i>Pseudotsuga menziesii</i>	55	35	Good	Healthy tree, slight lean towards potential development site, top heavy retain with stand	Good	4.9
0195	<i>Thuja plicata</i>	60	28	Good	Healthy well tapered tree, could be retained as single tree	Moderate	5.4
0196	<i>Pseudotsuga menziesii</i>	70	42	Good	Healthy tree, top heavy	Moderate	6.3
0197	<i>Thuja plicata</i>	70	23	Good	Branches to base but only on one side, healthy tree	Moderate	6.3
0198	<i>Thuja plicata</i>	33	12	Good	Healthy young tree in open can retain by itself	Moderate	2.9
0199	<i>Pseudotsuga menziesii</i>	95	42	Good	Healthy tree side by side with similar aged fir	Moderate	8.5
0200	<i>Pseudotsuga menziesii</i>	95	41	Good	Healthy tree side by side with similar aged fir	Moderate	8.5

Tag	Species	DBH (cm)	Height (m)	Overall Condition	Comments	Retention Potential	Root Protection Zone (RPZ m)
0201	<i>Pseudotsuga menziesii</i>	75	37	Good	Slight leaning towards stand	Good	6.7
0202	<i>Thuja plicata</i>	40	22	Good	Healthy young tree	Moderate	3.6
0203	<i>Thuja plicata</i>	30	19	Good	Healthy young tree	Moderate	2.7
0204	<i>Pseudotsuga menziesii</i>	75	35	Good	Healthy tree, on edge and windfirm, no significant trees to the south east	Good	6.7
0205	<i>Thuja plicata</i>	30	16	Good	Healthy young tree surrounded by group of small cedars	Moderate	2.7
0206	<i>Thuja plicata</i>	45	19	Good	Healthy tree in stand with smaller cedars	Moderate	4.0
0207	<i>Thuja plicata</i>	55	23	Good	Healthy tree	Moderate	4.9
0208	<i>Thuja plicata</i>	45	19	Good	Healthy tree on edge of stand	Moderate	4.0
0209	<i>Thuja plicata</i>	40	17	Good	Healthy tree	Moderate	3.6
0210	<i>Thuja plicata</i>	35	17	Good	Healthy young tree in stand with similar aged cedars	Moderate	3.1
0211	<i>Thuja plicata</i>	40	15	Good	Healthy young tree	Moderate	3.6
0212	<i>Thuja plicata</i>	55	20	Good	Healthy tree with slight lean away from stand, not a significant tree	Moderate	4.9
0213	<i>Pseudotsuga menziesii</i>	121	43	Excellent	Healthy dominant tree, top branches evenly distributed around stem	Good	9.0
0214	<i>Thuja plicata</i>	70	26	Good	Healthy tree	Moderate	6.3
0215	<i>Thuja plicata</i>	50	23	Good	Healthy tree	Moderate	4.5
0216	<i>Pseudotsuga menziesii</i>	90	33	Good	Healthy tree on path with slight swoop. Good edge tree	Good	8.1
0217	<i>Pseudotsuga menziesii</i>	65	34	Good	Healthy tree	Good	5.8
0218	<i>Pseudotsuga menziesii</i>	90	37	Good	Healthy tree	Good	8.1
0219	<i>Tsuga heterophylla</i>	55	34	Good	Healthy tree, branches primarily found on one side	Moderate	4.9
0220	<i>Pseudotsuga menziesii</i>	45	42	Good	Healthy tree somewhat by itself	Good	4.0
0221	<i>Pseudotsuga menziesii</i>	95	41	Good	Healthy dominant tree	Good	8.5

Tag	Species	DBH (cm)	Height (m)	Overall Condition	Comments	Retention Potential	Root Protection Zone (RPZ m)
0222	<i>Pseudotsuga menziesii</i>	75	37	Good	Healthy tree	Good	6.7
0223	<i>Thuja plicata</i>	90	28	Fair	Healthy tree with small secondary stem at base, slightly away from main stand	Moderate	8.1
0224	<i>Thuja plicata</i>	65	25	Good	Healthy tree, slightly away from main stand	Moderate	5.8
0225	<i>Thuja plicata</i>	95	27	Good	Healthy well tapered tree, could be retained by itself	Moderate	8.5
0226	<i>Pseudotsuga menziesii</i>	65	32	Good	Healthy tree with a slight kink halfway up trunk	Good	5.8
0227	<i>Pseudotsuga menziesii</i>	55	33	Good	Healthy tree	Good	4.9
0228	<i>Pseudotsuga menziesii</i>	65	27	Good	Healthy tree leaning into stand	Good	5.8
0229	<i>Pseudotsuga menziesii</i>	95	42	Good	Pronounced swoop in trunk	Good	8.5
0230	<i>Pseudotsuga menziesii</i>	75	34	Good	Healthy tree with branches primarily found on one side	Moderate	6.7
0231	<i>Pseudotsuga menziesii</i>	105	43	Excellent	Healthy dominant tree with well-proportioned stem and branches	Good	9.0
0232	<i>Pseudotsuga menziesii</i>	100	43	Good	Healthy tree with slight swoop	Good	9
0234	<i>Thuja plicata</i>	95	35	Good	Healthy tree	Moderate	8.5
0235	<i>Pseudotsuga menziesii</i>	70	40	Good	Healthy tree slight swoop	Moderate	6.3
0236	<i>Thuja plicata</i>	65	25	Good	Healthy tree	Moderate	5.8
0237	<i>Thuja plicata</i>	50	25	Good	Healthy tree growing away from main stand	Moderate	4.5
0238	<i>Pseudotsuga menziesii</i>	90	38	Fair	2 co dominant stems at 4m. Healthy tree but would need to be removed if values are situated close by	Poor	8.1
0239	<i>Thuja plicata</i>	45	19	Fair	3 co dominant stems at 2m. Would need to be removed if values are situated close by	Poor	4.0
0240	<i>Pseudotsuga menziesii</i>	80	43	Fair	Significant kink 20m up would need to remove if values are situated close by	Poor	7.2
0241	<i>Thuja plicata</i>	80	20	Good	Healthy tree on path	Moderate	7.2

Tag	Species	DBH (cm)	Height (m)	Overall Condition	Comments	Retention Potential	Root Protection Zone (RPZ m)
0242	<i>Tsuga heterophylla</i>	40	17	Good	Healthy tree on path	Poor	3.6
0243	<i>Thuja plicata</i>	30	15	Good	Healthy tree with swoop at base	Poor	2.7
0244	<i>Thuja plicata</i>	65	22	Good	Healthy tree out by itself, can be retained by itself	Moderate	5.8
0245	<i>Pseudotsuga menziesii</i>	70	36	Fair	Kink halfway up main stem, will need to be removed if values are situated close by	Poor	6.3
0246	<i>Pseudotsuga menziesii</i>	105	44	Excellent	Beauty tree, dominant tree in stand	Good	9.0
0247	<i>Pseudotsuga menziesii</i>	95	42	Fair	2 co dominant stems at 10 m, remove removed if values are situated close by	Poor	8.5
0248	<i>Pseudotsuga menziesii</i>	60	37	Good	Healthy tree somewhat top heavy	Moderate	5.4
0249	<i>Thuja plicata</i>	40	15	Good	Healthy tree on path, smaller fir growing right beside	Moderate	3.6
0250	<i>Thuja plicata</i>	45	20	Good	Healthy tree out by itself, could be retained by itself	Moderate	4.0
0251	<i>Thuja plicata</i>	70	21	Good	Growing by itself and could be retained by itself	Moderate	6.3
0252	<i>Thuja plicata</i>	80	23	Good	Healthy tree growing out by itself, two small co dominant stems at very top	Moderate	7.2
0253	<i>Thuja plicata</i>	40	17	Fair	Largest tree in a stand of small cedars; cavity at base	Poor	3.6
0254	<i>Thuja plicata</i>	100	22	Fair	Two co dominant stems split at base with a diameter of 45cm and 55cm respectively	Poor	9.0
0455	<i>Thuja plicata</i>	46	42	Good	Healthy edge tree at edge of stand. Could be retained by itself	Moderate	2.8
0456	<i>Pseudotsuga menziesii</i>	54	36	Good	Healthy tree with a high crown, grew up in stand, may need to be spiral pruned if retained alone	Moderate	3.2
0457	<i>Thuja plicata</i>	66	28	Good	Healthy tree with a nice taper, possible it retain alone	Moderate	4
0458	<i>Pseudotsuga menziesii</i>	122	42	Excellent	Great edge tree, can be retained alone	Good	7.3
0459	<i>Alnus rubra</i>	63	28	Good	Healthy tree, structurally sound. Possible to be retained alone. Nice aesthetic alder	Moderate	3.8
0460	<i>Alnus rubra</i>	68	28	Good	Healthy tree, structurally sound, nest in branches. Possible to be retained alone. One branch would need to be pruned to retain.	Moderate	4.1
0461	<i>Alnus rubra</i>	68	28	Fair	Healthy tree, structurally sound. Only retain if surrounding alders are	Moderate	4.1

Tag	Species	DBH (cm)	Height (m)	Overall Condition	Comments	Retention Potential	Root Protection Zone (RPZ m)
					retained.		
0462	<i>Alnus rubra</i>	59	28	Good	Healthy tree, structurally sound. Only retain if surrounding alders are retained.	Moderate	3.5
0463	<i>Tsuga heterophylla</i>	57	28	Fair	Healthy subdominant tree. Good taper and could be retain alone,	Moderate	3.4
0464	<i>Pseudotsuga menziesii</i>	98	34	Good	Dominant healthy potential new edge tree.	Good	5.9
0465	<i>Pseudotsuga menziesii</i>	75	34	Good	Dominant healthy potential new edge tree. Slight kink at base.	Good	4.5
0465 b	<i>Pseudotsuga menziesii</i>	133	45	Excellent	Dominant healthy potential new edge tree. B written on tag.	Good	8
0466	<i>Pseudotsuga menziesii</i>	61	33	Good	Co dominant healthy potential new edge tree. Retain as edge	Good	3.7
0467	<i>Pseudotsuga menziesii</i>	65	35	Good	Dominant healthy potential new edge tree.	Good	3.9
0468	<i>Pseudotsuga menziesii</i>	49	35	Fair	Co dominant healthy potential new edge tree. Very high crown, only retain with edge	Moderate	2.9
0469	<i>Pseudotsuga menziesii</i>	101	42	Good	Dominant healthy potential new edge tree.	Good	6.1
0470	<i>Pseudotsuga menziesii</i>	72	42	Good	Swoop at base. Dominant healthy potential new edge tree.	Good	4.3
0471	<i>Pseudotsuga menziesii</i>	97	45	Good	Dominant healthy potential new edge tree.	Good	5.8
0472	<i>Pseudotsuga menziesii</i>	81	45	Good	Dominant healthy potential new edge tree.	Good	4.9
0473	<i>Pseudotsuga menziesii</i>	97	45	Good	Dominant healthy potential new edge tree.	Good	5.8
474	<i>Pseudotsuga menziesii</i>	58	25	Good	Dominant healthy potential new edge tree. Has a new top, and needs an aerial inspection if values are near	Moderate	3.5
0476	<i>Pseudotsuga menziesii</i>	92	44	Good	Healthy dominant tree with branches evenly disrupted around stem. Good potential edge tree	Good	5.5
0477	<i>Pseudotsuga menziesii</i>	99	44	Good	Healthy dominant tree with branches evenly disrupted around stem. Good potential edge tree	Good	5.9

Tag	Species	DBH (cm)	Height (m)	Overall Condition	Comments	Retention Potential	Root Protection Zone (RPZ m)
0478	<i>Thuja plicata</i>	66	27	Good	Growing beside 477, could be retained as an edge tree. No conifers of significant to the NE.	Good	4
0479	<i>Pseudotsuga menziesii</i>	94	45	Good	Healthy dominant tree with branches evenly disrupted around stem. Good potential edge tree	Good	5.6
0480	<i>Pseudotsuga menziesii</i>	78	43	Good	Co dominant tree in stand. Can be retained alone if spiral pruned	Moderate	4.7
0481	<i>Pseudotsuga menziesii</i>	77	43	Good	Co dominant tree in stand. Can be retained alone if spiral pruned. could be incorporated into new edge	Moderate	4.6
0482	<i>Pseudotsuga menziesii</i>	87	44	Good	Co dominant tree in stand. Can be retained alone if spiral pruned. could be incorporated into new edge	Moderate	5.2
0483	<i>Pseudotsuga menziesii</i>	101	45	Good	Healthy dominant tree with branches evenly disrupted around stem. Good potential edge tree	Good	6.1
0484	<i>Pseudotsuga menziesii</i>	78	43	Good	Co dominant tree in stand. Can be retained alone if spiral pruned. could be incorporated into new edge	Moderate	4.7
0485	<i>Pseudotsuga menziesii</i>	64	43	Good	Co dominant tree with a high crown .Can be retained with stand	Moderate	3.8
0486	<i>Pseudotsuga menziesii</i>	55	39	Good	Co dominant tree with a high crown .Can be retained with stand	Moderate	3.3
0487	<i>Pseudotsuga menziesii</i>	77	42	Good	Co dominant tree with a high crown .Can be retained with stand	Moderate	4.6
0488	<i>Pseudotsuga menziesii</i>	84	42	Good	Co dominant well balanced tree. Can be retained alone	Good	5
0489	<i>Pseudotsuga menziesii</i>	97	45	Good	Healthy dominant tree with branches evenly disrupted around stem. Good potential edge tree	Good	5.8
0490	<i>Pseudotsuga menziesii</i>	98	45	Good	Healthy dominant tree with branches evenly disrupted around stem. Good potential edge tree	Good	5.9
0491	<i>Pseudotsuga menziesii</i>	69	37	Good	Co dominant tree in stand. Can be retained alone if spiral pruned. could be incorporated into new edge	Moderate	4.1
1001	<i>Thuja plicata</i>	95	20	Good	Healthy windfirm tree. Can be retained alone	Good	
1002	<i>Thuja plicata</i>	53	15	Good	Healthy tree growing out by itself, can be retained by itself	Moderate	4.7
1003	<i>Pseudotsuga menziesii</i>	55	17	Good	Healthy tree with swoop, can be retained by itself	Good	4.9
1004	<i>Thuja plicata</i>	55	17	Good	Well tapered healthy tree. Situated in a wetter area. Could be retained	Moderate	4.9

Tag	Species	DBH (cm)	Height (m)	Overall Condition	Comments	Retention Potential	Root Protection Zone (RPZ m)
					by itself		
1005	<i>Thuja plicata</i>	56	17	Good	Well tapered healthy tree. Surrounded by patches of hemlock not worth retaining	Moderate	5.0
1006	<i>Thuja plicata</i>	53	17	Good	Well tapered healthy tree out by itself surrounded by group of small cedars	Moderate	4.7
1007	<i>Pseudotsuga menziesii</i>	56	23	Good	Healthy tree with swoop and slight kink halfway up. Can be retained by itself	Moderate	5.0
1008	<i>Thuja plicata</i>	95	24	Good	Healthy tree with two co dominant stems (>20cms) at very top. Could be retained by itself but top may become an issue. If one of the small codominant stems is removed there should be no problem.	Moderate	8.5
1009	<i>Tsuga heterophylla</i>	53	27	Dead/Dying	Stem decay throughout, should be removed before crews work in the area	Poor	4.7
1010	<i>Thuja plicata</i>	62	18	Good	Well tapered healthy tree out by itself, can be retained by itself	Moderate	5.5
1011	<i>Thuja plicata</i>	80	19	Good	Well tapered healthy on edge of small seasonal wetland, can be retained by itself	Good	7.2
1012	<i>Thuja plicata</i>	54	11	Good	Healthy tree with multiple small co dominant stems at very base. The small stems are situated away from development and do not pose a hazard. They can be removed with little ill effect to the tree.	Moderate	4.8
1013	<i>Thuja plicata</i>	83	22	Good	Well tapered healthy tree out by itself, could be retained by itself	Moderate	7.4
1014	<i>Pseudotsuga menziesii</i>	107	32	Excellent	Slight kink 1/4 way up, tree is otherwise healthy and is windfirm; can be retained by itself	Good	9.0
1015	<i>Thuja plicata</i>	61	15	Excellent	Healthy tree by large fir, keep together if possible, both are on edge of development	Good	5.4
1016	<i>Pseudotsuga menziesii</i>	129	33	Excellent	Healthy dominant tree on edge of stand, could be retained by itself	Good	9.0
1799	<i>Thuja plicata</i>	77	22	Fair	Suppressed tree with crook and decay in stem. On the western edge of the path. Could be retained if no targets are located within striking distance.	Poor	4.6
1800	<i>Pseudotsuga menziesii</i>	77	45	Good	Healthy dominant tree that will make good edge. May need spiral pruning.	Good	4.6
1801	<i>Pseudotsuga menziesii</i>	91	45	Good	Healthy dominant tree that will make good edge. May need spiral pruning.	Good	5.5
1802	<i>Pseudotsuga</i>	106	45	Good	Healthy dominant tree that will make an excellent edge. May need spiral	Moderate	6.4

Tag	Species	DBH (cm)	Height (m)	Overall Condition	Comments	Retention Potential	Root Protection Zone (RPZ m)
	<i>menziesii</i>				pruning.		
1803	<i>Thuja plicata</i>	68	32	Good	Intermediate tree in the stand. Not a critical windfirm tree but can be incorporated into the edge.	Good	4.1
1804	<i>Pseudotsuga menziesii</i>	100	45	Good	Healthy dominant tree that will make an excellent edge. May need spiral pruning.	Good	6

Summary of Recommendations:

The most significant stand on the site and the most stable group of trees is the distinct mature conifer stand (#1). This stand includes large healthy and structurally sound Douglas-fir trees that are considered trees of significance in the region. A proposed windfirm boundary has been laid out to retain part of this stand. All trees on the perimeter of this stand have been inventoried. The required root protection zones have been recommended for these trees to retain them safely. As the new stand edge is opened up through the northern and eastern sections, it will require careful tree falling and some windfirming treatments to the retained trees in the stand. These treatments would be thinning and spiral pruning to maintain the stand stability. The exact location of the parameter trees has not been established and a survey will be required before the windfirm boundary can be established.

In addition to Stand 1, there are a few regionally significant trees on the site that are recommended to be considered for retention. Particular attention should be paid to the mature Douglas firs with tag numbers 1014, 1016, and 0458 on the north west edge of the site. These trees are windfirm and offer the opportunity to leave large legacy trees for the future.

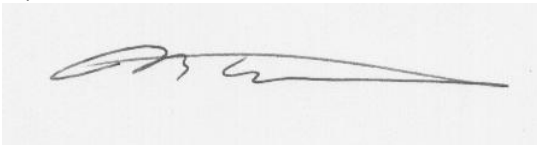
It is also worth noting that there are many trees scattered throughout the site with a moderate retention potential that have the potential to be worked into the proposed development plan.

During our survey, we did find a few potential hazard trees that would need to be pruned or removed before development can take place. These trees have been noted on the tree inventory and located on the tree inventory map.

This report summarizes recommendations for tree retention potential on the site. These should be considered during the planning stages of this development. Once site planning is complete, a detailed tree retention and removal plan should be completed outlining tree specific treatments and requirements for tree protection during construction. If there are any questions or concerns about any of the material presented in this report, please feel free to contact us at any time.

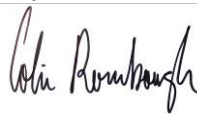
Sincerely,

Supervisor:

A handwritten signature in black ink, appearing to read 'Mike Coulthard', written over a light gray rectangular background.

Mike Coulthard, R.P.Bio., R.P.F.
Senior Forester, Biologist
Certified Tree Risk Assessor (46)
BC Parks Wildlife and Danger Tree Assessor

Project Staff:

A handwritten signature in black ink, appearing to read 'Colin Rombough', written over a light gray rectangular background.

Colin Rombough B.Sc.
ISA Certified Arborist (PN7552A)
Certified Tree Risk Assessor (1871)
BC Wildfire Wildlife and Danger Tree Assessor



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