

KLIMO & ASSOCIATES

CERTIFIED ARBORIST REPORT

PROJECT LOCATION:

2090 SW Marine Dr, Vancouver

PREPARED FOR:

Shiandra Wu

PREPARED BY:

Klimo & Associates Ltd.
5565 15B Ave
Delta BC, V4M 2H2

Metro West IMBL #20020981
Fraser Valley IMBL #20020982

August 9, 2021

1st revision done on January 25, 2022

2nd revision done on April 11, 2022

Francis Klimo

ISA Certified Arborist

ISA Certified Tree Risk Assessor

BC Wildlife Danger Tree Assessor

1.0 SCOPE OF WORK

Klimo & Associates Ltd. was contracted by Shiandra Wu to prepare an Arborist report along with a Tree assessment, and Tree management plan in order to support a re zoning application for the proposed development project located at 2090 SW Marine Dr, Vancouver.

The objective of this assessment and report is to identify all on/off-site trees that could be impacted by the construction project and to ensure that the management of trees are in compliance with the “*City of Vancouver Protection of Trees By-Law No. 9958*” and “*Best Management Practices*”. We conducted our field inspections on August 9, 2021 at around 12:30pm. Our scope of work was to identify all key trees located within the proposed working limits and off-site areas of the construction project, assess & document their condition, and recommend measures to either protect the retained trees or to prescribe their removals.

1.1 Limits of assignment

- Our investigation is based solely on visual inspection of the trees on August 9, 2021 and the analysis of photos taken and tree diagnosis gathered during the inspection.
- Our inspection was conducted from ground level. We did not conduct soil tests or below grade root examination to assess the condition of the root system of the trees.
- We conducted a level 2 assessment.
- Overcast with sunny breaks, no adverse weather conditions.

1.2 Purpose and use of the report

- Meet municipal criteria for Arborist report submissions and to provide documentation pertaining to the management of on/off-site trees in order to supplement the proposed re zoning application in regards to a proposed development project located at 2090 SW Marine Dr, Vancouver.

2.0 SITE ANALYSIS / PROPOSAL

Currently, the subject property has an existing dwelling situated 35,000 (*Approx.*) square feet lot and a proposal has been set forward to submit a re zoning application to the City of Vancouver as part of a development project. Observing the overall property and of its site boundary lines, the lot was examined to be bounded by an unconstructed road (*Arbutus St*) spanning along the entire length of its northern & western P/L, along with residential properties spanning along its southern site boundary line, and with SW Marine Dr observed to be fronting the lot.

The majority of the identified trees were examined to be populating within the limits of the site and was observed to have consisted of mature species dominating the frontage (*northern section*) of the lot. Encompassing within the remaining areas of the property, several sections of mature plantings/bushes along with an existing hedge spanning along the length of the southern site boundary line had been observed. Moving towards the rear section of the property, a significant decline of its topography beginning from the edge of the existing pool had been observed along with the area restricting access due to the growth of vegetation.

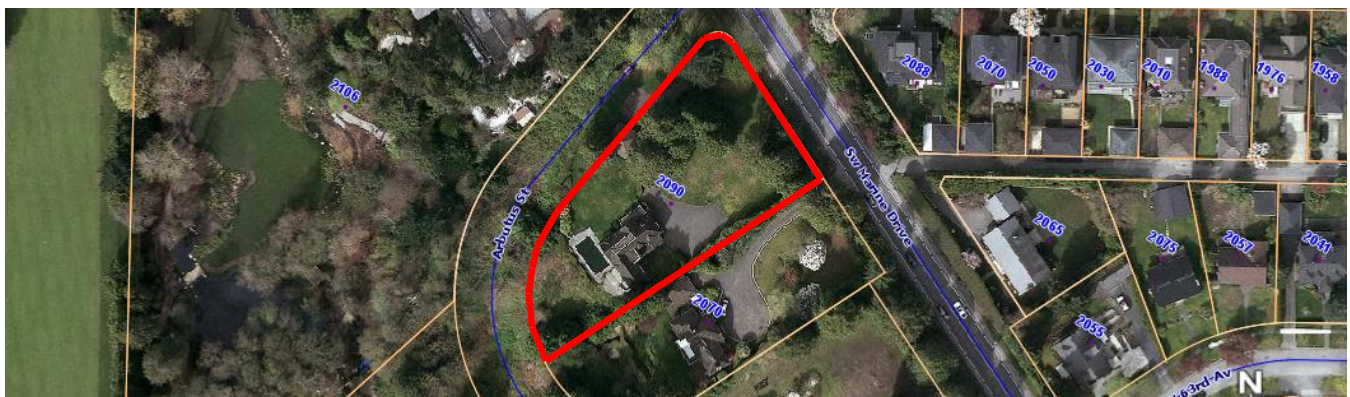


Figure 1 - Location of subject site - 2090 SW Marine Dr, Vancouver

3.0 TREE ASSESSMENT PROCESS

Our tree inspection process is a systematic procedure for accurately identifying and cataloging trees. Using the site survey as a reference to their locations and the proposed site plans provided by the project planners detailing the proposed development, the specifications to our Tree Protection Requirements were able to be accurately completed. In using the information of the proposed construction requirements, we have produced accurate findings to our recommendations to ensure the use of proper tree protection during the construction phase and as applicable, prescribing tree removal recommendations.

Our assessment of the on-site and off-site trees consists of gathering and documenting sizes (*DBH, Height, and Crown spread*), condition, species, location, growth form, and other site factors. The data collected has been documented into the inventory in order to convey the identified trees into a simple format. In addition, accurate tree preservation measures could be implemented for the optimal retention and protection of trees throughout the duration and up to the completion of the construction project.

3.1 Health and structure rating

Basic definitions of the general tree health in regards to the documented trees within the report has been separated based upon the total amount of trees broken up into five (5) defined categories as outlined in the table below:

Rating	Retention Suitability	Definition	Total Trees
Good	Suitable	A healthy, vigorous tree, reasonably free of disease, with good structure and form typical of the species.	19
Fair / Good	Suitable	Tree is growing well for its species. No overt or identifiable significant defects, and is well suited for retention.	
Fair	Marginal	Subject tree that has an average vigour for its species. Small amount of twig dieback, minor structural defects that could be corrected.	13
Fair / Poor	Marginal/ Unsuitable	A tree with moderate to poor vigor, moderate twig and small branch dieback, thinning of crown, poor leaf color, moderate structural defects that may affect its survival considering construction impacts.	
Poor	Unsuitable	A tree in decline, epicormics growth, extensive dieback of medium to large branches, significant structural defects that cannot be abated. And a tree in severe decline, dieback of scaffold branches and or trunk, mostly epicormic growth; extensive structural defects that cannot be abated.	

4.0 SUMMARY OF FINDINGS

On August 9, 2021, Klimo & Associates Ltd. had conducted a site visit & visual inspection of all trees located on and off-site. A total of thirty-two (32) trees and four (4) hedges were identified and had consisted of eight (8) different types of species (*a total of five (5) unidentified trees had been observed*). The identified trees were measured to have an average DBH of 30cm to 132cm and overall, the subject trees had ranged from being in poor, fair, to good in condition.

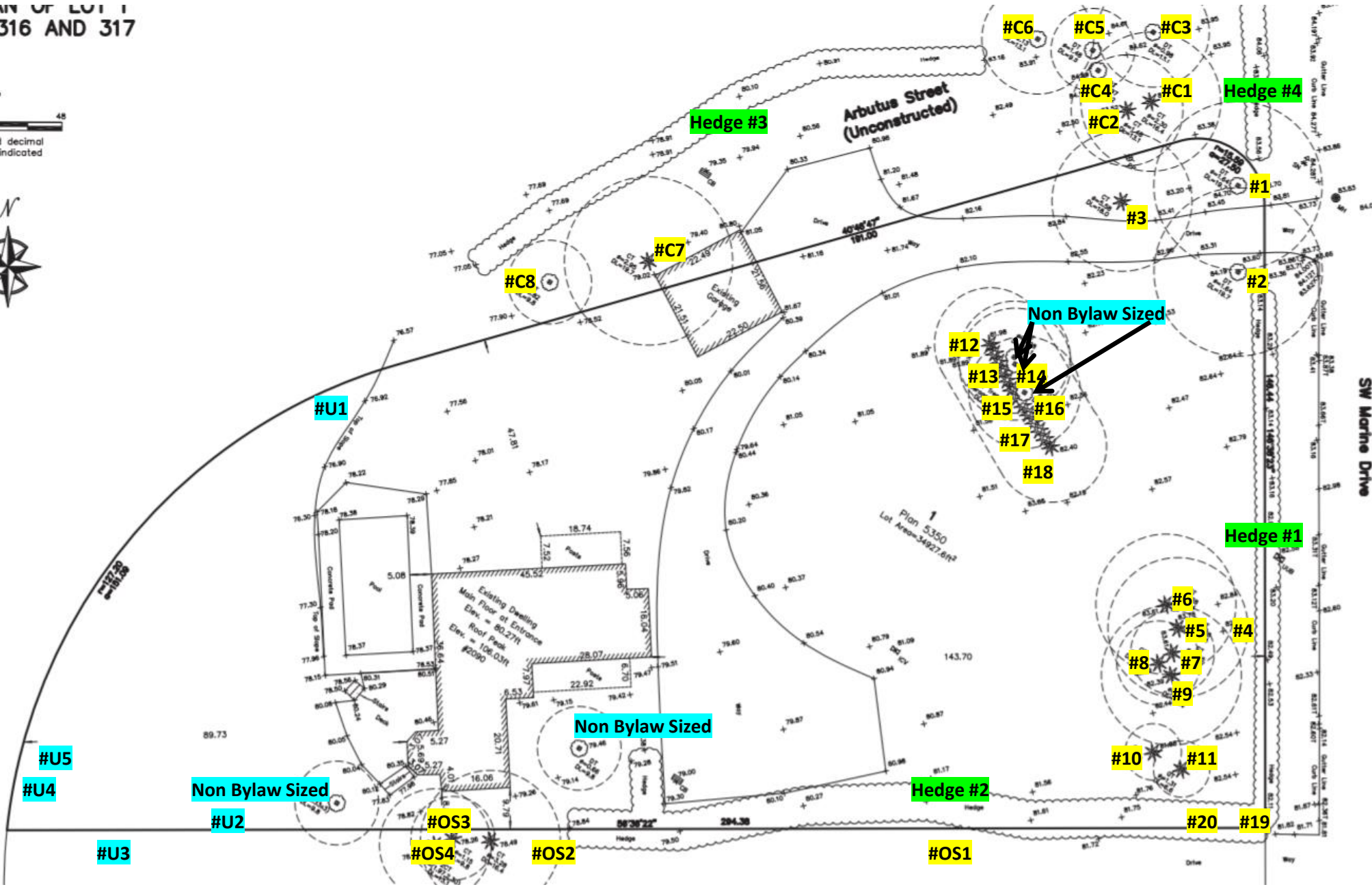
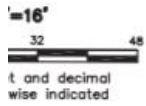
The majority of the identified on-site trees were examined to be situated within the limits of the building envelopes and as such, the subject trees were examined to be in conflict with the overall construction project as they had all fallen within its high disturbance requirement areas.

On-site (Development site)	City (Trees on City lot)	Off-site (Privately owned trees)	Total Tree(s)	Total Hedge(s)	
20	8	4	32	4	
15			15		Remove
5	8	4	17	4	Retain

Deciduous Tree(s)				Coniferous Tree(s)				Hedge(s)	
Horse chestnut	2	Rhododendron	1	Western red cedar	20	Douglas fir	1	Emerald cedar	2
Bigleaf maple	6	Golden chain	1	Leyland cypress	1			Western redcedar	2
Total		10		Total		22		Total	4

5.0 SITE MAP

PLAN OF LOT 1
S 316 AND 317



6.0 ON-SITE TREE INVENTORY

Table 1 - On-site Tree Inventory												
Klimo & Associates Ltd.												
August 9, 2021												
2090 SW Marine Dr, Vancouver												
ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site city (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
1	Yes	On-site	Horse chestnut	<i>Aesculus hippocastanum</i>	57	20	9	Single stem medium co-dominant mature deciduous tree. Enlarged base. Pruning marks along the trunk. Crown development as dominant touching neighbor tree. Burls formation along the trunk. Broken limb eastwards. Decay process at the trunk, Hollowing process from former limb junction. Subject tree is in fair/poor condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during removal of the existing driveway, of the site clearing work, placement of the walkway, and construction of a new perimeter fence.	Suitable	Retain	3.5
2	Yes	On-site	Horse chestnut	<i>Aesculus hippocastanum</i>	52	20	9	Single stem medium co-dominant mature deciduous tree. Enlarged base. Crown development as dominant touching neighbor tree. Burls formation along the trunk. No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during removal of the existing driveway, of the site clearing work, placement of the walkway, and construction of a new perimeter fence.	Suitable	Retain	3.2
3	Yes	On-site	Douglas fir	<i>Pseudotsuga menziesii</i>	132	30	3	Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2 m. Height. Crown touching neighbor tree. Ivy growth along the trunk. No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during removal of the existing driveway, of the site clearing work, excavation process, placement of the walkway, and construction of a new perimeter fence.	Suitable	Retain	8.0
4	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	62	70	7	Developing as part of a group. Single stem large co-dominant mature conifer tree. Buttressed roots. Pruning marks at first quarter of trunk. Limb attachments at 2 m. Height. Crown development Eastwards. No signs of decay. Subject tree is in fair condition.	Subject tree will be in direct conflict with the proposed site servicing requirements and will be within the zone of the heaviest construction & site servicing related activities.	Suitable / Marginal	Remove	3.8

ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site city (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
5	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	60	30	3	Developing as part of a group. Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2 m. Height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Subject tree will be in direct conflict with the proposed site servicing requirements and will be within the zone of the heaviest construction & site servicing related activities.	Suitable / Marginal	Remove	3.6
6	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	62	70	7	Developing as part of a group. Single stem large co-dominant mature conifer tree. Buttressed roots. Pruning marks at first quarter of trunk. Limb attachments at 2 m. Height. Crown development Eastwards. No signs of decay. Subject tree is in fair condition.	Subject tree will be in direct conflict with the proposed site servicing requirements and will be within the zone of the heaviest construction & site servicing related activities.	Suitable / Marginal	Remove	3.8
7	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	60	30	3	Developing as part of a group. Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2 m. Height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Subject tree will be in direct conflict with the proposed site servicing requirements and will be within the zone of the heaviest construction & site servicing related activities.	Suitable / Marginal	Remove	3.6
8	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	60	30	3	Developing as part of a group. Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2 m. Height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Subject tree will be in direct conflict with the proposed site servicing requirements and will be within the zone of the heaviest construction & site servicing related activities.	Suitable / Marginal	Remove	3.6
9	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	62	70	7	Developing as part of a group. Single stem large co-dominant mature conifer tree. Buttressed roots. Pruning marks at first quarter of trunk. Limb attachments at 2 m. Height. Crown development Eastwards. No signs of decay. Subject tree is in fair condition.	Subject tree will be in direct conflict with the proposed site servicing requirements and will be within the zone of the heaviest construction & site servicing related activities.	Suitable / Marginal	Remove	3.8
10	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	60	30	3	Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2m. Height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Subject tree will be in direct conflict with the proposed driveway and will be within the zone of the heaviest construction & grading related activities.	Suitable / Marginal	Remove	3.6
11	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	60	30	3	Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2 m. Height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Subject tree will be in direct conflict with the proposed driveway and will be within the zone of the heaviest construction & grading related activities.	Suitable	Remove	3.6

ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site city (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
12	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	39	70	7	Developing as part of a ROW. Single stem large co-dominant mature conifer tree. Buttressed roots. Pruning marks at first quarter of trunk. Limb attachments at 2m height. Crown development Eastwards. No signs of decay. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed building footprint and will be within the zone of the heaviest construction & excavation related activities.	Suitable / Marginal	Remove	2.4
13	Yes	On-site	Rhododendron	<i>Rhododendron sp.</i>	10/13 17	30	5	Developing as part of a ROW. Multi stemmed small juvenile deciduous leaned tree. Limb attachments at from the base. Crown shaped for landscaping. No signs of decay. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed building footprint and will be within the zone of the heaviest construction & excavation related activities.	Suitable / Marginal	Remove	2.4
14	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	39	30	3	Developing as part of a ROW. Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2m height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed building footprint and will be within the zone of the heaviest construction & excavation related activities.	Suitable / Marginal	Remove	2.4
15	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	34	70	7	Developing as part of a ROW. Single stem large co-dominant mature conifer tree. Buttressed roots. Pruning marks at first quarter of trunk. Limb attachments at 2 m. Height. Crown development Eastwards. No signs of decay. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed building footprint and will be within the zone of the heaviest construction & excavation related activities.	Suitable / Marginal	Remove	2.1
16	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	30	30	3	Developing as part of a ROW. Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2 m. Height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed building footprint and will be within the zone of the heaviest construction & excavation related activities.	Suitable / Marginal	Remove	1.8
17	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	66	40	3	Developing as part of a ROW. Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2 m. Height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed building footprint and will be within the zone of the heaviest construction & excavation related activities.	Suitable / Marginal	Remove	4.0

ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site city (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia. M)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
18	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	35	70	7	Developing as part of a ROW. Single stem large co-dominant mature conifer tree. Buttressed roots. Pruning marks at first quarter of trunk. Limb attachments at 2 m. Height. Crown development Eastwards. No signs of decay. Subject tree is in fair condition.	Subject tree falls towards the edge of the proposed building footprint and will be within the zone of the heaviest construction & excavation related activities.	Suitable / Marginal	Remove	2.1
19	Yes	Shared	Western redcedar	<i>Thuja plicata</i>	35	80	5	Subject tree was examined to be developing as part of the hedge. Main stem was observed to have been previously topped. Overall crown was examined to have been shaped as part of the hedge. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the excavation process, and construction of the driveway.	Marginal	Retain	2.1
20	Yes	Shared	Western redcedar	<i>Thuja plicata</i>	36	80	5	Subject tree was examined to be developing as part of the hedge. Main stem was observed to have been previously topped. Overall crown was examined to have been shaped as part of the hedge. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the excavation process, and construction of the driveway.	Marginal	Retain	2.2
U1	Yes	On-site	N/A	N/A	N/A	N/A	N/A	N/A	Subject tree is located outside of the development area and would not require the placement of Tree Protection Barriers.	N/A	Retain	N/A
U2	Yes	On-site	N/A	N/A	N/A	N/A	N/A	N/A	Subject tree is located outside of the development area and would not require the placement of Tree Protection Barriers.	N/A	Retain	N/A
U3	Yes	Off-site	N/A	N/A	N/A	N/A	N/A	N/A	Subject tree is located outside of the development area and would not require the placement of Tree Protection Barriers.	N/A	Retain	N/A
U4	Yes	On-site	N/A	N/A	N/A	N/A	N/A	N/A	Subject tree is located outside of the development area and would not require the placement of Tree Protection Barriers.	N/A	Retain	N/A
U5	Yes	On-site	N/A	N/A	N/A	N/A	N/A	N/A	Subject tree is located outside of the development area and would not require the placement of Tree Protection Barriers.	N/A	Retain	N/A

6.1 OFF-SITE TREE INVENTORY

Table 2 - Off-site Tree Inventory												
2090 SW Marine Dr, Vancouver												
ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site city (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia M.)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
OS1	Yes	Off-site	Bigleaf maple	<i>Acer macrophyllum</i>	45	60	9	Single stem medium co-dominant mature deciduous tree. Enlarged base. Limb attachments at 3.2 m. Height. Crown development as dominant No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the site clearing work.	Suitable / Marginal	Retain	2.7
OS2	Yes	Off-site	Western redcedar	<i>Thuja plicata</i>	80	35	5	Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 3.2 m. Height. Crown development as dominant No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the site clearing & demolition work, excavation process, and construction of a new perimeter fence.	Marginal	Retain	4.8
OS3	Yes	Off-site	Western redcedar	<i>Thuja plicata</i>	30	35	5	Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 3.2 m. Height. Crown development as dominant No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the site clearing & demolition work, excavation process, and construction of a new perimeter fence.	Marginal	Retain	1.8
OS4	Yes	Off-site	Leyland cypress	<i>Chamaecyparis XCupressus</i>	70	70	6	Single stem medium dominant mature conifer tree. Enlarged base. Limb attachments at 1 m. Height. Crown development touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the site clearing & demolition work, excavation process, and construction of a new perimeter fence.	Marginal	Retain	4.2

6.2 CITY TREE INVENTORY

Table 3 - City Tree Inventory												
2090 SW Marine Dr, Vancouver												
ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site City (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia M.)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
C1	Yes	City	Bigleaf maple	<i>Acer macrophyllum</i>	50	30	10	Single stem large co-dominant mature deciduous tree. Enlarged base. Limb attachments at 6 m. Height. Crown development intermingled with neighbor tree. Decay process along the trunk. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the site clearing work and construction of a new perimeter fence.	Marginal	Retain	3.0
C2	Yes	City	Bigleaf maple	<i>Acer macrophyllum</i>	78	30	10	Single stem large co-dominant mature deciduous tree. Enlarged base. Limb attachments at 5 m. Height. Crown development intermingled with neighbor tree. Decay process at the first quarter of trunk. Subject tree is in fair/poor condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the site clearing work and construction of a new perimeter fence.	Marginal	Retain	4.7
C3	Yes	City	Bigleaf maple	<i>Acer macrophyllum</i>	70	30	10	Single stem large co-dominant mature deciduous tree. Enlarged base. Limb attachments at 4 m. Height. Crown development intermingled with neighbor tree. Decay process at the first quarter of trunk. Subject tree is in fair/poor condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	4.2
C4	Yes	City	Bigleaf maple	<i>Acer macrophyllum</i>	90	30	10	Single stem large co-dominant mature deciduous tree. Enlarged base. Limb attachments at 4 m. Height. Crown development intermingled with neighbor tree. Ivy growth along the trunk. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	5.4
C5	Yes	City	Bigleaf maple	<i>Acer macrophyllum</i>	60	30	10	Single stem large co-dominant mature deciduous tree. Enlarged base. Limb attachments at 2.5 m. Height. Crown development intermingled with neighbor tree. Ivy growth along the trunk. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	3.6
C6	Yes	City	Western redcedar	<i>Thuja plicata</i>	65	35	5	Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 2.2 m. Height. Crown touching neighbor tree. No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure.	Marginal	Retain	3.9

ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site city (C)	Common name	Botanical name	DBH (cm)	LCR (%)	Canopy (Dia M.)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
C7	Yes	City	Western redcedar	<i>Thuja plicata</i>	90	35	5	Single stem medium co-dominant mature conifer tree. Enlarged base. Limb attachments at 3.2 m. Height. Crown development as dominant No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the site clearing work, demolition of the existing garage, excavation process, and construction of a new perimeter fence.	Marginal	Retain	5.4
C8	Yes	City	Golden chain	<i>LaburnumX waterei</i>	15/109	95	4	Multi stemmed small mature deciduous tree. Enlarged base. Limb attachments from the base. Crown development as dominant. No signs of decay. Subject tree is in fair condition.	Place Tree Protection barriers to protect its trunk, roots, and structure. Arborist supervision will be required during the site clearing work, demolition of the existing garage, excavation process, and construction of a new perimeter fence.	Marginal	Retain	7.5

6.3 HEDGE INVENTORY

Table 4 - Hedge Inventory												
2090 SW Marine Dr, Vancouver												
ID#	Surveyed Y/N	On-site (ON) Off-site (OF) Off-site city (C)	Common name	Botanical name	DBH (cm)	Total Length (m)	Total Height (m)	Condition	Comments	Retention Suitability	Retain / Remove	TPZ (m)
HG1	Yes	On-site	Emerald cedar	<i>Thuja occidentalis</i> 'Smaragd'	N/A	30	3	Subject hedge was observed to be spanning along the northern length of the lot. A multi stemmed clustered growth form was observed and its overall structure was examined to have been maintained while a few sections was examined to be suppressed. Subject hedge is in fair condition.	Subject hedge has been recommended to be retained and respected throughout the construction process. Sections of the hedging are required to be removed due to construction conflicts.	Marginal	Retain	N/A
HG2	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	N/A	40	7	Subject hedge was observed to be bounding along the eastern length of the lot. A multi stemmed clustered growth form was observed and its overall structure was examined to have been maintained for its overall growth form and shape Subject hedge is in fair to good condition.	Subject hedge has been recommended to be retained and respected throughout the construction process. Sections of the hedging are required to be cut back due to construction conflicts and property clearance.	Suitable	Retain	N/A
HG3	Yes	On-site	Western redcedar	<i>Thuja plicata</i>	N/A	35	4	Subject hedge was observed to be bounding along the eastern length of the lot. A multi stemmed clustered growth form was observed and its overall structure was examined to have been maintained for its overall growth form and shape Subject hedge is in fair to good condition.	Subject hedge has been recommended to be retained and respected throughout the construction process.	Suitable	Retain	N/A
HG4	Yes	On-site	Emerald cedar	<i>Thuja occidentalis</i> 'Smaragd'	N/A	20	2	Subject hedge was observed to be spanning along the northern length of the lot. A multi stemmed clustered growth form was observed and its overall structure was examined to have been maintained while a few sections was examined to be suppressed. Subject hedge is in fair condition.	Subject hedge has been recommended to be retained and respected throughout the construction process.	Marginal	Retain	N/A

7.0 TREE RETENTION / REMOVAL RECOMMENDATIONS

A total of **thirty-two (32) trees** and **four (4) hedges** have been found within the limits of the construction project (*a total of five (5) unidentified trees had been observed*). Based on the factors that include the pre-existing condition of the subject trees as detailed in the Tree inventory, and of the proposed building footprints, the subject trees are proposed to be treated as follows.

TREE RETENTION

Pursuant to the “*City of Vancouver Protection of Trees By-Law No. 9958*”, the following tree(s) are recommended for Retention as detailed in the Tree Inventory and recommendations as noted below. Information regarding specific recommendations can be found below each of the categorized point and further referenced within the attached Tree Management Plan and within the body of the Arborist report.

On-site, Off-site, & City Tree(s) Selected For Retention,

- For the duration of the construction project, **city trees #C1, #C2, #C3, #C4, #C5, #C6, #C7, #C8, on-site trees #1, #2, #3, shared trees #19, #20, and off-site trees #OS1, #OS2, #OS3, and #OS4** has been recommended to be retained throughout the construction process. As the protected trees were examined to be situated near the limits of the proposed construction, the subject trees will require the placement of Tree Protection Barriers in order to protect their trunks, roots, and structures.

The placement of Tree Protection Barriers would be required to be placed along their drip lines or to their specified measurements as outlined within the Tree Inventory (*TPZ Column*) or as per the attached Tree Management Plan and left throughout the duration of the construction project.

- **Off/On-site Hedge & other off-site plantings (Non Bylaw Sized)**

The existing hedging’s (*#1, #2, #3, & #4*) had been examined to be populating along the lengths of the site boundary lines and were all measured to be of non-by-law sized. For the duration of the construction project, it is the builder/homeowner’s responsibility to ensure that the construction does not adversely affect any of the retained hedging or any other off-site plantings. In order to avoid a future civil matter, the retained hedging along with other off-site plantings has been recommended to be respected and have measures to protect them throughout the construction process.

- **Removal / Maintenance of hedge(s)**

- A portion of **hedge #1** will be in direct conflict with the proposed development as sections of the hedging would fall towards the edge or would be in direct conflict with the proposed site access and would fall within an area requiring high disturbances related to the construction works occurring along the northern length of the site.
- On-site **hedge #2** may be required to be either cut back in order to allow for the construction process, building, & contractors general working clearance to take place. Only the portion of the hedging encroaching past the site boundary line and into the subject site would be required to be removed.

Arborist Supervision Requirements - Driveway Removal Requirements

- **Removal of the existing driveway,**

As part of the demolition process, the existing asphalt driveway encompassing within the **TPZ(s) of trees #1, #2, and #3** has been proposed to be removed. In order to limit the amount of disturbance occurring within the TPZ(s) of the subject trees, the existing driveway located within their protective areas would have to be removed under Arborist supervision and no excavation machinery will be allowed to encroach into their TPZ(s) throughout the removal process.

- **Post asphalt driveway removal general remedial measures,**

Post removal of the hardscapes, the existing subgrade (*if present*) will have to be removed (*by hand*) and within the exposed areas and depending upon whether roots have developed underneath the hardscapes, **2 - 3 inches (depth to be adjusted at the time of the works) of friable growing medium** in order to promote moisture content for any of the exposed roots is recommended to be implemented.

Arborist Supervision Requirements - Site clearing process

- **Removal of trees, bushes, & overgrowth vegetation within the TPZ(s) of the retained tree(s)**
Several sections of the existing vegetation, trees, and shrubs have been proposed to be removed due to conflicts with the proposed construction and of its site clearing requirements. As the site clearing work would encroach into the **TPZ(s) of trees #OS1, #OS2, #OS3, #OS4, #1, #2, #3, #C1, #C2, #C3, #C4, #C5, #C6, #C7, and #C8** all work occurring within its protected area would be required to be completed under Arborist supervision.
 - **General site clearing methodology,**
When removing vegetation or other surrounding shrubs within the TPZ(s) of retained trees, the removal & site clearing work is required to be performed by hand and no excavation machinery or any other heavy equipment would be allowed to encroach into its TPZ(s) throughout the site clearing process. The larger stumps of the removed vegetation are recommended to be either left in situ or grinded out. *(Please note: the remaining stump cannot be pulled out by heavy machinery in order to ensure the protection of the retained tree)*

Arborist Supervision Requirements - Demolition Process

- **Demolition of the garage, Dwelling, & any other surrounding features.**
As part of the demolition process, the existing shed, dwelling, and including its surrounding structures & landscaping features *(includes the removal of hardscapes & other surrounding features)* encompassing within the **TPZ(s) of trees #OSS, #OS3, #OS4, #C7, and #C8**, has been proposed to be removed. In order to limit the amount of disturbance occurring within the TPZ(s) of the subject trees, the existing structures along with its surrounding features located within their protective areas would have to be removed under Arborist supervision and no excavation machinery will be allowed to encroach into their TPZ(s) throughout the demolition process.

Arborist Supervision Requirements - Foundation Excavation

- **Building excavation process,**
Minor encroachment of the excavation process for the buildings along with its foundation line *(taking into account of the exterior features such as window wells, stair wells, etc.)* is expected to encroach into the **TPZ(s) of trees #3, #C7, #C8, #OS2, #OS3, and #OS4**. Due to the encroachment, Arborist supervision will be required during the excavation process.
In order to limit the amount of disturbance occurring within the TPZ(s) of the subject trees, the line of excavation along the dwellings foundation line will be required to be remediated *(by placing burlap or root curtain along the interface)* in order to avoid the desiccation of roots *(If roots are to be exposed)*.
 - **Root Pruning methodology (During excavation),**
If roots are exposed during excavation within the TPZ(s), Root pruning may be performed by the project Arborist while using sharp, appropriate tools, namely bypass pruners (loppers) or a saw and pruning cuts must be made at 90 degrees to the direction of the root. This minimizes the surface area exposed to pathogens and encourages healthy new root growth from the end of the cut root. ***(Further remedial measures may be required depending upon the post completion of the excavation works)***
- **Construction of the outdoor patio space(s),**
The proposed outdoor patio spaces have been proposed to be installed along the rear of the new buildings. As the works would encroach into the **TPZ(s) of trees #C7, #C8, OS2, #OS3, and #OS4**, Arborist supervision will be required during the grade preparation as well as the installation of the new hardscape surface.
The hardscapes installation would require to be constructed on undisturbed grade along with a geogrid textile installed as its base. In order to limit the amount potential disturbance occurring within the TPZ(s) of the subject trees, no major excavation/grading would be allowed when encroaching into the TPZ(s) or near the TPB enclosures of the protected trees.

Arborist Supervision Requirements - Perimeter fencing & Front Gate

➤ **Existing front gate & wall (Length of the northern P/L)**

The existing front wall and gate columns located along the north western corner of the lot were examined to be situated within the **TPZ(s) of trees #1 and #2**. As the existing front wall & fence was examined to be in good condition, the existing structure has been proposed to be left intact

➤ **Construction of a new front fence & gate (Along the front facing site boundary line)**

As part of the landscaping process, a new front wall (*consisting of 2 x 2 pillars and a wall*) has been proposed to be constructed along the length of the front facing site boundary line (*fronting S/W marine drive*). As the installation process would encroach into the **TPZ(s) of trees #1 and #2**, Arborist supervision will be required during the construction of the new front fencing along with the use of discontinuous footings when within the TPZ(s) of the retained trees.

- **Pillar & wall construction methodology**

The construction of the new 2 x 2 pillar and the excavation for their main post holes will have to be prepared by hand when within the TPZ(s) of the city trees. If any major roots are encountered during the preparation process, alternative footing designs or shifting the posts would be required.

The new wall from post to post is required to be installed without the use of continuous footings and is recommended to be either suspended on top of the existing grade or constructed with a floating beam when constructing through the TPZ(s) of the protected trees.

➤ **Construction of a new wooden perimeter fence,**

As part of the landscaping process, a new wooden perimeter fence has been proposed to be constructed along the lengths of the site boundary lines. As the installation process would encroach into the **TPZ(s) of trees #1, #3, #C7, #C8, and #OS1, #OS2, #OS3, and #OS4**, Arborist supervision will be required during the construction of the new perimeter fencing.

- **Perimeter Fence construction methodology,**

The installation of the new wooden fence would have to commence with the manual removal of the existing chain link fencing situated within the **TPZ(s) of trees #OS2, #OS3, and #OS4**. The construction of the new perimeter fencing and the excavation for their main post holes will have to be either prepared by hand or have their new post holes shifted in order to clear roots. The new perimeter fencing is required to be installed without the use of continuous footings when constructing through the TPZ(s) of the protected trees.

Arborist Supervision Requirements - Perimeter Retaining wall construction

➤ **Construction of a new retaining wall**

A new retaining wall has been proposed to be constructed along the length of the proposed driveway. As the installation process would encroach into the **TPZ(s) of trees #19 and #20**, Arborist supervision will be required during the construction of the new retaining wall while remediating the exposed interface within the CRZ(s) of the subject trees.

TREE REMOVAL

Pursuant to the “*City of Vancouver Protection of Trees By-Law No. 9958*”, the following tree(s) are recommended for removal as per the following sections or as detailed in the report.

On-site Tree(s) Selected For Removal,

- **Conflicts with the proposed building footprint,**
On-site trees #12, #13, #14, #15, #16, #17, and #18 will be in direct conflict with the proposed development as the subject trees would fall towards the edge of the proposed building footprint and would be located within an area requiring the heaviest excavation & grading related requirements. The subject trees would be impacted and become structurally destabilized during the works as the trees would fall within an area requiring the heaviest grade disturbances related to the dwellings and of its perimeter excavation requirements.
- **Conflicts with the proposed site servicing works,**
On-site trees #4, #5, #6, #7, #8, and #9 will be in direct conflict with the proposed development as the subject trees would fall towards the edge of the proposed service connections and would be located within an area requiring the heaviest excavation & servicing related requirements relating to the construction project. The subject trees would fall within an area requiring the heaviest grade disturbances related to the service connections and of its perimeter construction related requirements.
- **Proposed Driveway Conflicts**
On-site trees #10 and #11 will be in direct conflict with the proposed development as the subject trees would fall within the footprint of the proposed driveway and would be in direct conflict with its construction & grading related requirements. The subject trees would fall within an area of high disturbance requirements related to the development project and of the driveway’s construction requirements that would result in root loss & stability impacts.
- **Removal of Non Bylaw Sized Tree(s)**
 - Other on-site trees were measured to have a DBH of less than 30cm. The subject trees were identified to be of non-bylaw sized and were not examined to be “Protected” as categorized in the City of Vancouver Tree Bylaw. The subject trees were also examined to be in conflict with the proposed construction as the subject trees would fall towards the edge of the extensive grading works related to the construction process.

8.0 SITE PHOTOS



Photo 1 - Facing towards the frontage of the lot and of trees #1 and #2



Photo 2 - Facing towards the frontage of the lot and of trees #4 - #8



Photo 3 - Facing towards city trees #C1 - #C6



Photo 4 - Facing towards city trees #C1 - #C6

Trees populating towards the N/W corner of the Lot - Photos

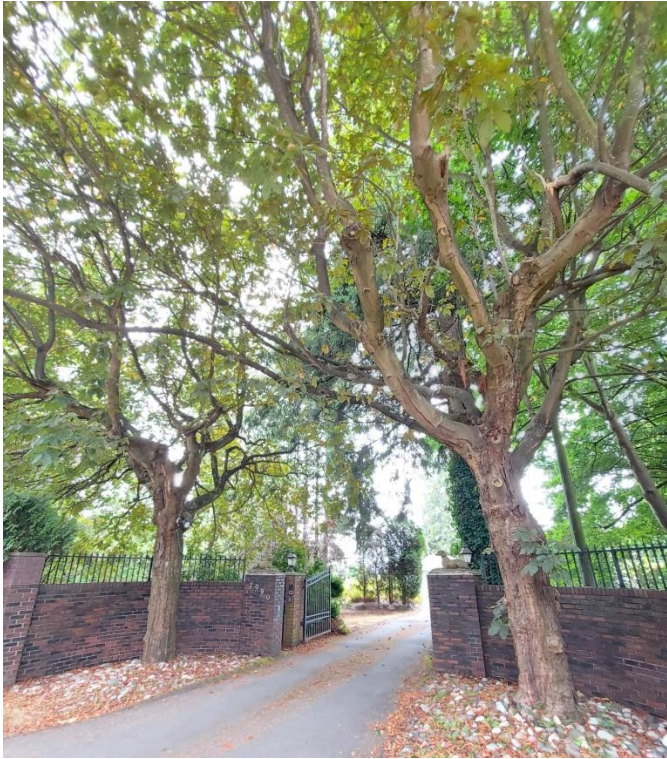


Photo 5 - Facing towards on-site trees #1 and #2



Photo 6 - Facing towards trees #1, #2, and #3



Photo 7 - Facing towards city trees #C1 - #C6



Photo 8 - Facing towards city trees #C1 - #C6

Trees populating along the Northern section of the Lot - Photos



Photo 9 - Facing towards the trees spanning along the northern length of the lot



Photo 10 - Facing towards on-site trees #12 - #18

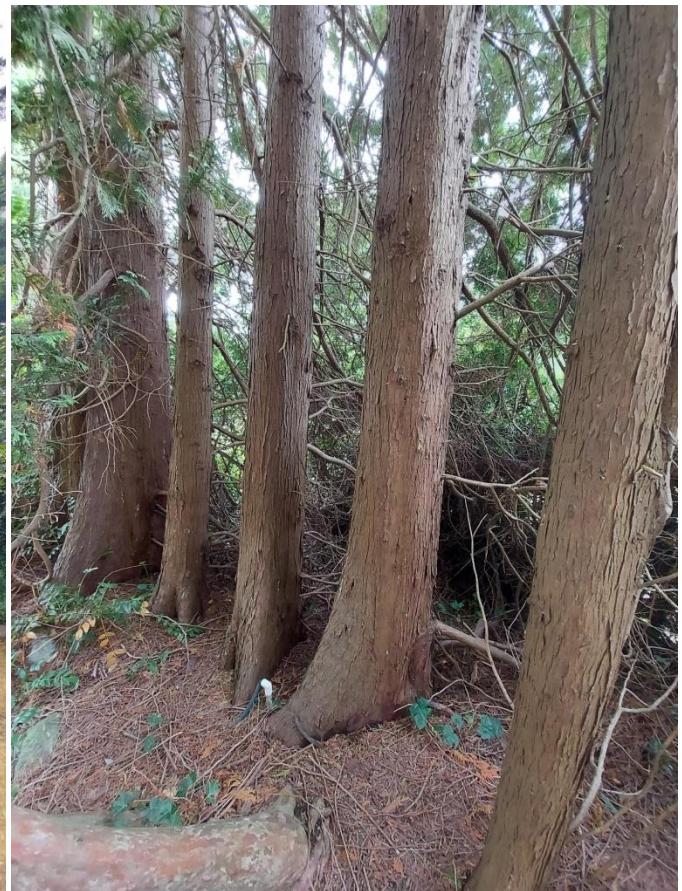


Photo 11 - Facing towards the lower trunk of on-site trees #12 - #18

Trees populating towards the N/E corner of the Lot - Photos



Photo 12 - Facing towards on-site trees #4 - #11

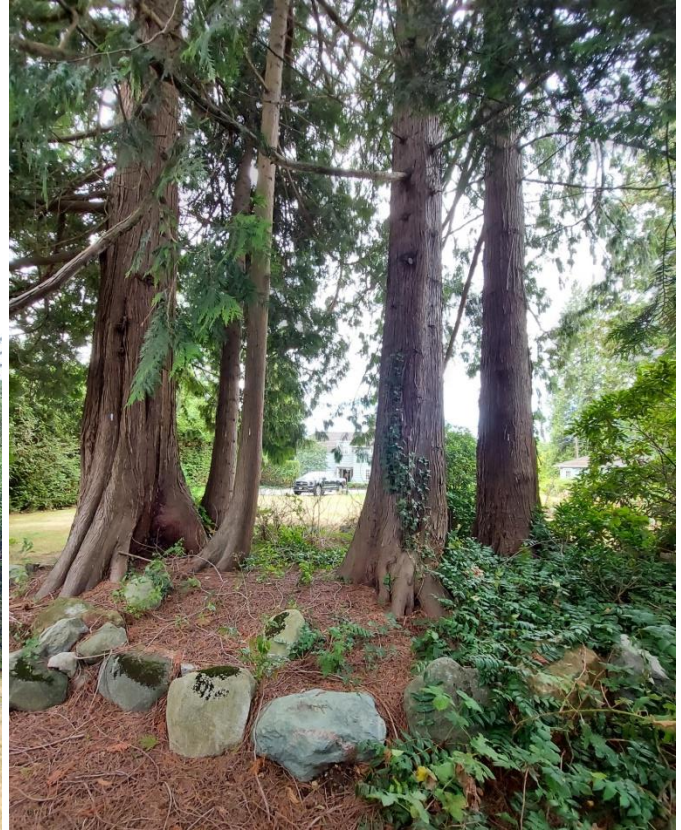


Photo 13 - Facing towards the lower trunk of trees #4 - #11



Photo 14 - Facing towards trees #4 - #7

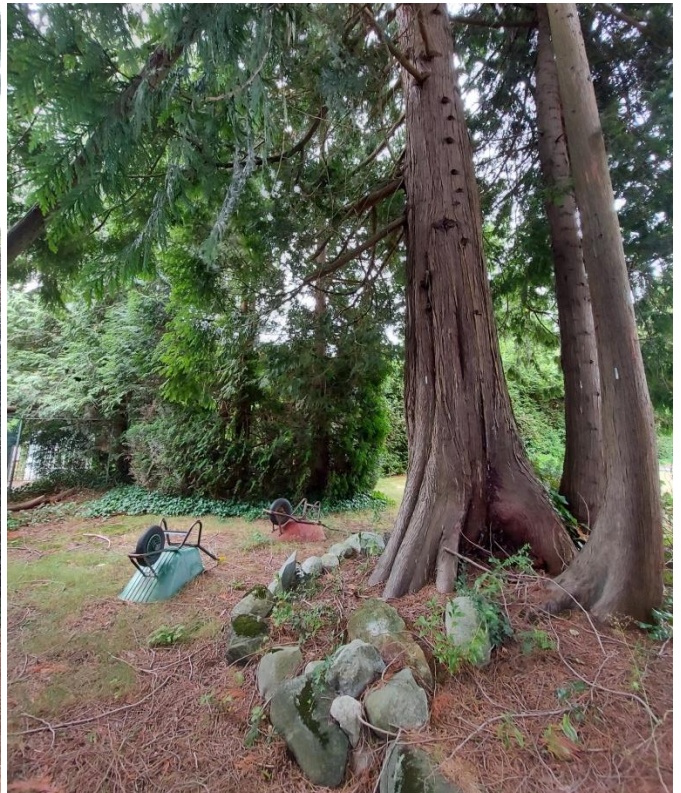


Photo 15 - Facing towards the lower trunk of trees #6, #5, and #7

Trees populating around the Existing dwelling - Photos



Photo 16 - Facing towards hedge #1 and of off-site tree #OS1



Photo 17 - Facing towards on-site tree #OS2 - #OS4



Photo 18 - Facing towards off-site trees #OS2 - #OS4



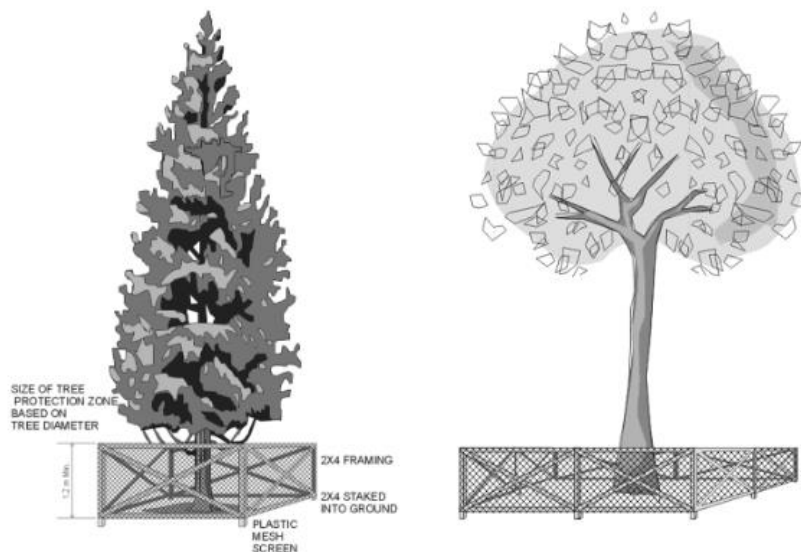
Photo 19 - Facing towards city tree #C7

9.0 TREE PROTECTION BARRIER

Tree Protection Barrier Summary		
Tree number (species)	DBH(cm)	Minimum tree protection barrier Radial span TPZ (m)
1	57	3.5
2	52	3.2
3	132	8.0
19	35	2.1
20	36	2.2
OS1	45	2.7
OS2	80	4.8
OS3	30	1.8
OS4	70	4.2
C1	50	3.0
C2	78	4.7
C3	70	4.2
C4	90	5.4
C5	60	3.6
C6	65	3.9
C7	90	5.4
C8	15/109	7.5

All trees identified above will require tree protection barriers to protect and prevent the tree trunk, branches and roots being damaged by any construction activities/operations. Prior to any construction activity on site, tree protection fences must be constructed at the specified distance from the tree trunks. 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. Structure must be sturdy with vertical posts driven firmly into the ground. This must be constructed prior to excavation or construction and remain intact throughout the entire period of construction. Further standards for fencing construction can be found at: “City of Vancouver Protection of Trees By-Law No. 9958”

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10.0 CONCLUSIONS

Based on our findings, a total of thirty-two (32) trees and four (4) hedges have been identified within the limits of the property (*a total of five (5) unidentified trees had been observed*). A total of fifteen (15) on-site trees have been recommended for removal due to conflicts with the proposed development and as the subject trees had fallen within the high disturbance requirement areas relating to the construction process.

A total of seventeen (17) off/on-site trees and four (4) hedges have been recommended for retention along with them having the requirement of erecting Tree Protection Barriers due to their close proximity towards the proposed construction working limits. Also, in order to ensure the retained trees and of their protection, Trigger points have been identified on the Tree Management Plan requiring Arborist supervision when working inside of their TPZ(s) during a few of the construction milestones.

Thank you for choosing Klimo & Associates Ltd. Any further questions can be forwarded to Francis Klimo at (604)358-5562 or by email at klimofrancis@gmail.com

Regards,



Francis Klimo

ISA Certified Arborist #PN-8149A

ISA Certified Tree Risk Assessor (TRAQ)

BC Wildlife Danger Tree Assessor #7193