SouthShore Forest Consultants

Arborist Report

For

419 Stannard Ave
City of Victoria, BC

September 8, 2020 – **Revision #3 November, 2022**

Prepared for:
Villamar Design

Prepared by:

SouthShore Forest Consultants

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Executive Summary/Scope of Work

SouthShore Forest Consultants (SSFC) was contacted by Villamar Design (the Client) a residential building contractor in regard to a project located at 419 Stannard Ave (the Site). in the City of Victoria. The Client explained that the Site required an Arborist Report and Tree Protection Plan (TPP) prior to a planned application for rezoning to allow for a detached **garden suite and walkway** to be constructed within the rear yard of the site.

Our assessment of the site has determined that the impacts to Bylaw Protected Trees within the site will be subjected to minor and/or insignificant impacts during the development process. Within the proposal the client is requesting that one (1) Bylaw Protected Tree be removed to accommodate access to the rear of the site. In this case the specimen Lawson cypress #621 is positioned within the access route to the rear yard. Bylaw Protected the removal of tree #621 will require tree replacement mitigation at a ratio of 1:2.

Root impacts to trees identified for retention will occur. In this case specific sections of tree Protected Root Zones (PRZ) will occur under the existing proposal. The client has modified the design for the site to reduce negative impacts to tree root zones. Our assessment of the site has indicated that root impacts will be minor to insignificant when tree protection and root mitigation are implemented.

The Client has requested that SSFC provide a Basic Visual Tree Assessment (BVTA) and Tree Preservation Plan (TPP) for the Site located at 419 Stannard in the City of Victoria

SSFC agreed to complete the field assessment and provide the findings in an Arborist Report form with Table 1 - Tree Inventory and 'Appendix 'A' - Site Photos and Plan.

Methodology

On September 4, 2020 & October 2021, the site was entered and assessed by SSFC. Michael Butcher a Consulting Arborists with SouthShore Forest Consultants, provided site inspection and visual tree assessment. The weather that day was sunny and clear 20 degrees and a 3-5 km/hr breeze. The October 2022 assessment was performed on a mild/rainy overcast day. The grade was assessed to be saturated.

The Site was assessed from grade. No form of diagnostic tools or invasive techniques were employed during the assessment. A 'Basic Visual Tree Assessment' (BVTA) was performed while on site. All tree measurements were made with the use of a standard metal forestry tape and Clinometer (height measurements). Measurements and observations were recorded with the intent to provide a static representation of the area. A tree inventory is included as Table 1 of this report. Photographs of the Site and a Site Plan are included as Appendix 'A' of this report.

During the second assessment we observed, assessed and inventoried a total of eleven (11) trees which are positioned within and off site. During the assessment we tagged trees with metal tree tags numbered #260-267. One (1) Public tree, a white birch (*Betula papyrifera*) has been assessed and inventoried but is not tagged. One (1) big leaf maple (*Acer macrophyllum*) and one (1) Western cedar (*Thuja plicata*) are positioned off site on neighbouring lots.

A total of nine (9) Bylaw Protected Trees are positioned within and/or near portions of the sites impacts zones.

Observations/Discussion

Garden Suite – Proposed Location

During our site assessment we observed a well-established wide and deep residential lot located in a fully developed urban neighborhood. The site was observed to have a number of large trees present and surrounding the existing house. The back yard is fairly open towards the back of the lot. The proposed garden suite is positioned within the Protected Root Zone (PRZ) of tree # 267 Douglas-fir (*Pseudotsuga menziesii*). In this case we have estimated that no more than 15% of the fir trees Protected Root Zone (PRZ) would be impacted due to excavation and constructive requirements.

We suggest that the suites foundation be designed to reduce excavation and/ or impacts to tree roots and resulting compaction.

The client has suggested that a "**Grade Beam**" design be utilized in this case. Requiring excavation depths of 60cm in specific areas (corners) of the footprint we believe root impacts to the fir will be minimized. Furthermore, existing root composition and/or formations within the proposed footprint of the suite have yet to be determined. An exploratory excavation along at 3.5m out from the base of the tree will help identify root size ad quantity. In this case we recommend that hand digging be performed for when providing the exploratory excavation.

Sidewalk/Pathway – Proposed Location

The new pathway has been proposed to be aligned along the north side of the existing dwelling and rear of the lot. During the assessment we have identified possible root impacts to Bylaw and Non-Bylaw Protected Trees. In this case we have assessed the impacts to be minimal and/or insignificant. During or assessment it appeared that the proposed alignment of the path would be positioned through several PRZ's of bylaw protected trees.

In this case we suggest that the client construct the path to "**float**" over the existing grade to reduce impacts through tree PRZ's. A common design the use of a "geo-grid", elevated pavers and/or the use of materials (decomposed granite) which can float over the existing grade in areas of anticipated high root levels.

Trees identified to be within the impact zone of the proposed pathway:

- NT-Bl maple – Possible root impacts – minimal to insignificant, positioned above existing grade.
- **#261 – L cypress – Proposed for removal – Significant Protection Impacts- excavator access will be significantly obstructed if this tree is retained.**
- #262 – L cypress – provide "radial bend" in path & floating design. Minimal root impacts.
- #263 – L cypress – provide "radial bend" in path & floating design. Minimal root impacts.
- #264 – L cypress – provide "radial bend" in path & floating design. Minimal root impacts.
- #264 – H chestnut – Proposed for retention – proposed to aligned less than 1m (0.8m) from the base of the stem at grade. Provide a floating design – <10% root impacts are expected – minimal when path is floated over root zone.

Table 1 – Tree Inventory

Tag #	Spec.	DBH (cm)	Ht (M)	PRZ (M)	CRZ (M)	Cond P/F/G	Impact L/M/H	Retain	Remove	Comments
NT – M	W birch	48	15	6	3	F/F	L	X		Minimal impacts – outside constrictive area – Protect & Preserve
260 -O/S	Ww pine	88	20	11	6	F/F-P	L	X		No impacts expected – outside constrictive area – Protect & Preserve
261 On/S	L cypress	43	19	6	3	F/P	H		X	Remove & mitigate – aligned in access rout to rear yard. Mitigate tree replacement on site. (2 small to medium sized canopy trees)
262 On/S	L cypress	25	14	4	2	F/P	L/M	X		Retain and provide floating path design to reduce impacts to CRZ/PRZ
263 On/S	L cypress	39	15	5	3	F/P	L/M	X		Retain and provide floating path design to reduce impacts to CRZ/PRZ
264 On/S	chestnut	83	20	10	5	F/P	L/M	X		Retain and provide floating path design to reduce impacts to CRZ/PRZ
265 On/S	W cedar	58	26	7	4	F/P	L	X		Outside constructive area.
266 On/S	W cedar	106	26	13	7	F/P	L	X		Outside constructive area.
267 On/S	D-fir	49	16	6	3	F/P	L	X		Provide remedial foundation design to reduce impacts with CRZ/PRZ
NT – O/S	W cedar	70	22	9	5	F/P	L	X		Outside constructive area.
NT -O/S	Bl maple	10	6	12	6	F/P	L	X		Insignificant to minor root impacts expected for path alignment.

DBH - Diameter Breast Height – Calculated at 1.41 m above grade on tree stem
PRZ – Protected Root Zone, (calculated at a ratio of 1:12) 50cm DBH = 6m PRZ
CRZ – Critical Root Zone, (calculated at a ratio of 1:6) 60cm DBH = 3m CRZ
50cm DBH = 3m CRZ
Condition – P= Poor, F=Fair, G=Good
Footprint = Excavation edge along the outside of building envelope on grade.
Impact Zone – L = Low, M = Moderate, H, High. Constructive area, estimated at 0-1.5m outside the proposed building footprint.
M- Municipal tree, O/S – Off Site Tree, ON/S – On Site Tree

- During our inspection of the site, it was determined that tree condition could not be assessed to be Good. Most of the trees were determined to have structural issues such as multi-stemmed and branch formations. Furthermore, tree positioning and hardscape impacts were observed to negatively affect several of the subject trees. Within this property there are no "ideal or premiere" conditioned type trees.
- A cedar/abortive hedging is positioned in the front yard along the north property line. The client has indicated that they have approval removal of the hedge. The client requires a signed permission letter from the neighbour approving the front hedge removal. The letter must be submitted to the City of Victoria.

Tree Species Common and Latin Names

White birch – *Betula papyrifera*
Western white pine – *Pinus monticola*
Lawson cypress – *Chamaecyparis lawsoniana*
Horse chestnut – *Aesculus hippocastanum*
Western red cedar – *Thuja plicata*
Douglas fir – *Pseudotsuga menziesii*
Big leaf maple – *Acer macrophyllum*

Tree Assessment Condition Rating

Good - A tree specimen which is exempt defects, branch dieback, moderate insect and fungal identification. This tree has evenly distributed branching, trunk development and flare. The root zone is undisturbed, leaf, bud and flower production and elongation are normal for its distribution.

Fair - A tree specimen which has minor defects, branch dieback, previous limb failure, identification of cavities and insect, or fungal identification. This tree has multiple (2-3) primary stem attachments; previous utility pruning, callus growth and poor wound wood development. Minor root girdling, soil heave and identifiable mechanical damage to the root flare or root zone.

Poor- A tree specimen where 30-40% of the canopy is identifiably dead, large dead primary branching, limited leaf production, bud development and stem elongation. Limb loss or failure, and heavy storm damage leading to uneven weight distribution. Large pockets of decay, multiple cavities, heavy insect and fungal infection. Root crown damage or mechanical severing of roots. Root plate shifting, heavy lean and movement of soil.

Dead- Tree has been observed to be dead with no leaf, foliar and bud development. No stump sprouts and root suckers are present.

Tree Protection Plan (TPP) – Site Specific

Tree Protection Zones and locations of fencing are indicated on the site plan, Figure #1 & #2.

- Public Boulevard to be entirely fenced and protected – NT white birch
- Front yard to be partially fenced and protected - #260 white pine
- Side yard – O/S tree – no fencing required – NT bl maple
- Rear Yard - #261 L cypress proposed for removal – NO TPF required
- Rear yard - #262 & #263 L cypress to be fenced and protected
- Rear yard - #264 H chestnut to be fenced and protected
- Rear yard (southside) #265 & #266 to be fenced and protected
- Rear yard - #267 D-fir to be fenced and protected.

All of the TPF must be erected and installed in the proper locations. SSFC will provide marking paint on grade to identify approximate protection fencing locations. SSFC staff must provide inspection and verification of fencing detail for City of Victoria Parks Division approval.

Each tree protection zone must be vacated of all construction materials and/or equipment. At no time can the fence be taken down unless the Project Arborist is contacted and approval is given. In such cases the Project Arborist must assess and assist fence removal and combined impacts which are require for construction completion. Michael Butcher 250.893.9056 – 72 hours notice required.

Landing/Storage Area

- Materials are to be staged/ stored in the location indicated on the site plan Figure #2. At no time can materials and/or equipment be staged or stored outside of the "Staging Area".

Compaction Reduction

- Utilize 'hog-fuel' (or similar – wood chips etc.) throughout the path of travel into and out of the site. The path of travel has been proposed to cross through tree PRZ's, #262, #263, #264 & #266. This will reduce compaction impacts within tree Critical Root Zone (CRZ). Hog-fuel or wood chips to be placed at a depth of no less than 20cm above grade and at a width 2m to 4m pending distances between sections of TPF.
  The client has the option to provide rubber matting and/or wooden sheeting.

Root Assessment and Observation

- Provide Project Arborist for excavation observation and assessment when working in the Protected Root Zones of any protected tree.
- Provide Project Arborist to assess and monitor the hand excavation required for the eastern edge of the suite's foundation. In tis case we expect that there will be a 0.5m of over excavation required. In this case the client has indicated that a "Grade Beam" design will be utilized for the suite's foundation. Our assessment of the site has determined that < 10% of the fir #267 will be impacted. Well within Tree Care Industry Standards we have assessed impacts to this tree as low with a moderate possibility of exposing structural root formations.
- Project Arborist to assess and monitor excavation required for the proposed path. The utilization of a floating constructive design would reduce impacts within the CRZ of trees #262, #263 #264. Hand digging and/or the use of a air-spade devise within sections of tree CRZ would certainly help with the identification and preservation of tree roots. In this case we expect there to be relatively shallow excavation requirements when the floating design is executed.
- Public Tree NT W birch will be assessed during front yard improvements, <5% of PRZ may be impacted.

Utility Corridor

- The proposed utility corridor is aligned through the middle of the rear yard from the proposed suite to the existing dwelling. Our assessment of the site indicated that the path of travel into the rear yard will be directly over the proposed utility corridor.
- A portion of the proposed utility corridor will align the southern edge of Chestnut #264. In this case the client will be required to have the Project Arborist on site for excavation requirements. A small rubberized mounted excavator can be utilized for excavation in this case.

Tree Mitigation

- Provide two (2) tree replacement mitigation plantings due to the proposed removal of L cypress #261. Client to provide two (2) medium sized canopy trees. We recommend that a deciduous tree species be utilized for replacement. Our assessment of the site has indicated that a sufficient amount of vacant soil density can be utilized within this site.

Tree Protection Plan – General Notes

i. **Provide a detailed sign specifying that tree protection measures are in place and will be followed during the project. Fines will be posted for malicious acts and can be placed on individuals who disregard the tree protection plan and its guidelines. Signs will be placed at each entrance of the project detailing what is expected when working in potentially high impact tree protection zones.**

ii. **Provide tree protection fencing for all trees identified with protection requirement in this report. This fencing shall be four (4ft) feet in height and made of orange plastic. If required, header and footer boards will be used to secure the protective fencing. Utilize City of Victoria tree protection specifications.**

iii. **Tree protection and root protection signs will be placed on the fencing. No entry will be allowed, unless specified by the project arborist and in their presence while on site.**

iv. **Restrict vehicle traffic to designated access routes and travel lanes to avoid soil compaction and vegetation disturbances.**

v. **Make all necessary precautions to prevent the storage of material, equipment, stockpiling of aggregate or excavated soils within tree protection areas. No dumping of fuels, oils or washing of concrete fluids will be allowed in tree protection zones.**

vi. **Provide an onsite arborist when a risk of root damage, root cutting or limb removal is required within the tree protection zone.**

vii. **Avoid alterations to existing hydrological patterns to minimize vegetation impacts to the site.**

viii. **The use of a project arborist is required to provide layout of tree protection zones. The project arborist(s) will provide pre-construction information to all parties involved with the project. The arborist must be notified 72hrs prior to construction activities in sensitive areas. The project arborist should be used to provide root and branch pruning when diameters are greater than 6cm.**

ix. **At no time will tree protection zones be removed from the project unless approved by the project arborist.**

Excavation Process and Recommendation for Tree Root Zones

1. Provide and schedule Project Arborist to assess site prior to construction.
2. Inventory and identify trees and hazards which could complicate excavation process.
3. Utilize hand tools and cutting equipment when large tree roots are anticipated.
4. Provide small rubber tracked excavation equipment which will reduce soil compaction.
5. Excavator operator must be well informed about dig site and goal to complete project.
6. Use shallow excavation sweeps across the site to establish a depth which roots can be easily identified. (3cm to 5cm in depth of soil for each sweep across the soil face)
7. Roots greater than 6cm in diameter should be preserved and inspected by the Project Arborist. The project arborist shall determine if roots maybe pruned or cut
8. All roots greater than 6cm in diameter should be identified and documented for project records
9. Photos are highly recommended for documentation purposes.
10. **Hand digging and the use of alternative soil removal techniques may be required. Each tree and/or species profile had different demands when excavation is required**. **Soil profile, rock and grade formations must be considered. Hydro Excavation, Air Excavation and Boring techniques must be considered.**

Role of the Project Arborist

As well as creating the Tree Preservation Plan, the Project Arborist must be on site to supervise work within or immediately adjacent to the tree protection areas identified on the attached tree plan**. This will include improvements proposed for the front of the lot.**

The Project Arborist will be present to supervise landscaping operations and activity within the tree protection areas.

At completion of the project, the Project Arborist will confirm that any tree protection or remediation related deficiencies have been addressed by the owner and building contractor. Once all deficiencies (if any) have been remedied, the Project Arborist shall prepare a letter to the City of Victoria confirming completion of the project.

The following is a summary of important roles of the Project Arborist.

- A site meeting is required prior to the commencement of works adjacent to Tree Protection Zones to discuss the preservation plan prior to work commencing on site. **It is the responsibility of the Client to schedule a pre-work site meeting. *72 hrs Notice Required. SSFC 250-893-9056***
- The meeting will review the Tree Protection Plan, Tree Protection Zones and the specific measures required to protect the trees during the site preparation, construction and landscape phases of construction.
- The Project Arborist will inspect the Tree Protection Fencing and any other tree protection measures prior to a tree permit being issued by the City and prior to work commencing on site.
- The Project Arborist will be on site during the following work within or immediately adjacent to the Tree Protection Areas as indicated on the attached Site Plan:
-

❖ demolition
❖ grading
❖ excavation
❖ rock removal or blasting
❖ trenching for underground services and utilities
❖ preparation of grade for the proposed driveways and parking areas
❖ site inspections to insure adherence to Tree Protection Measures

Arborist Disclosure Statement:

Arborist are tree specialists who use their education, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risks.
Arborist cannot detect every condition that could possibly lead to structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below the ground.

Arborist cannot guarantee that the tree will be healthy and safe under all circumstances, or for a specific period of time. Trees are dynamic specimens, not static. Changes in conditions including the environment are unknown. Remedial treatments cannot be guaranteed.

Trees can be managed, but they cannot be controlled. The only way to eliminate all risk is to eliminate all trees.

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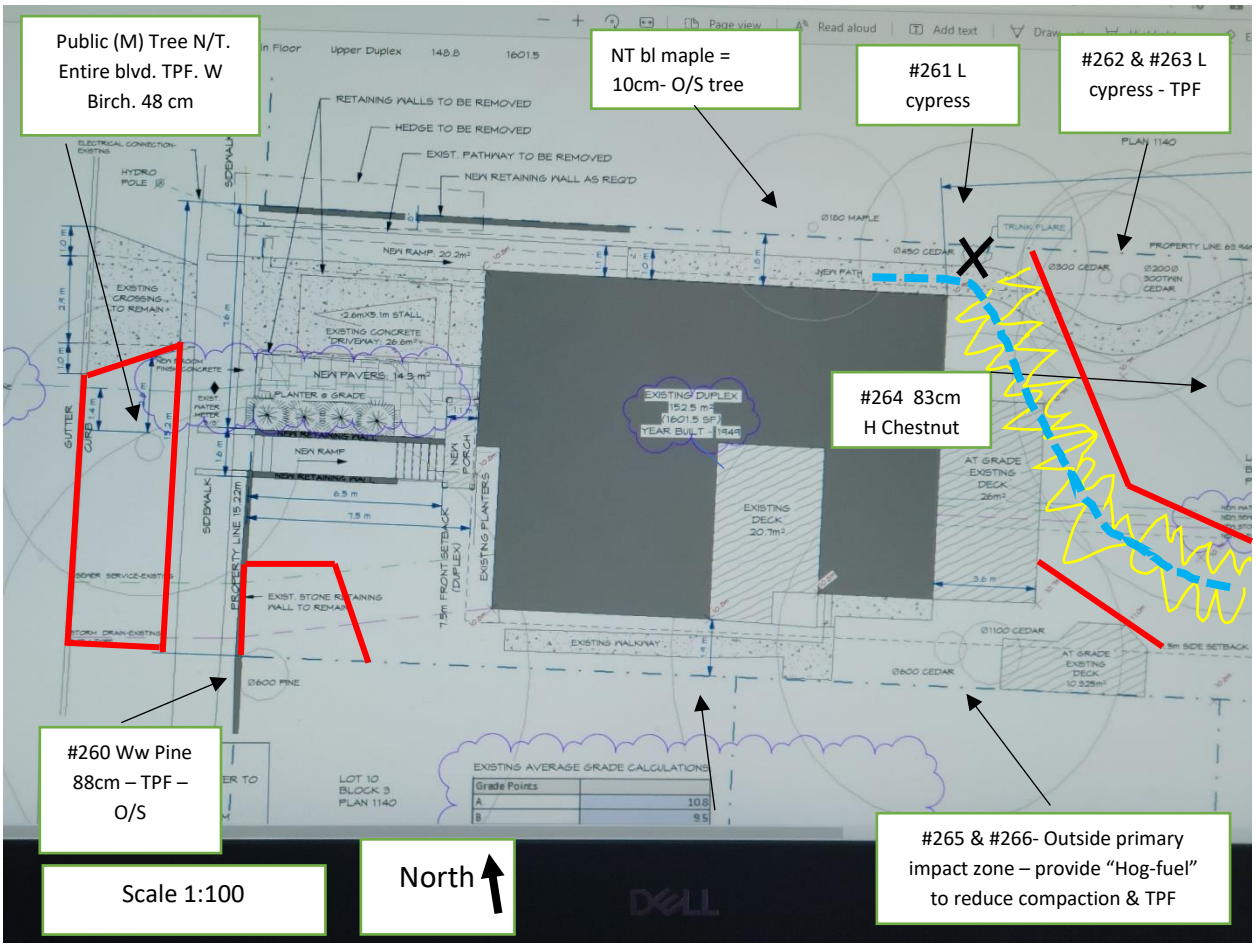
BC Danger Tree Risk Assessor P-2498
Certified Utility Arborist 00010-TT-14

ATTACHMENTS

- Appendix A– Site Plan and Photographs

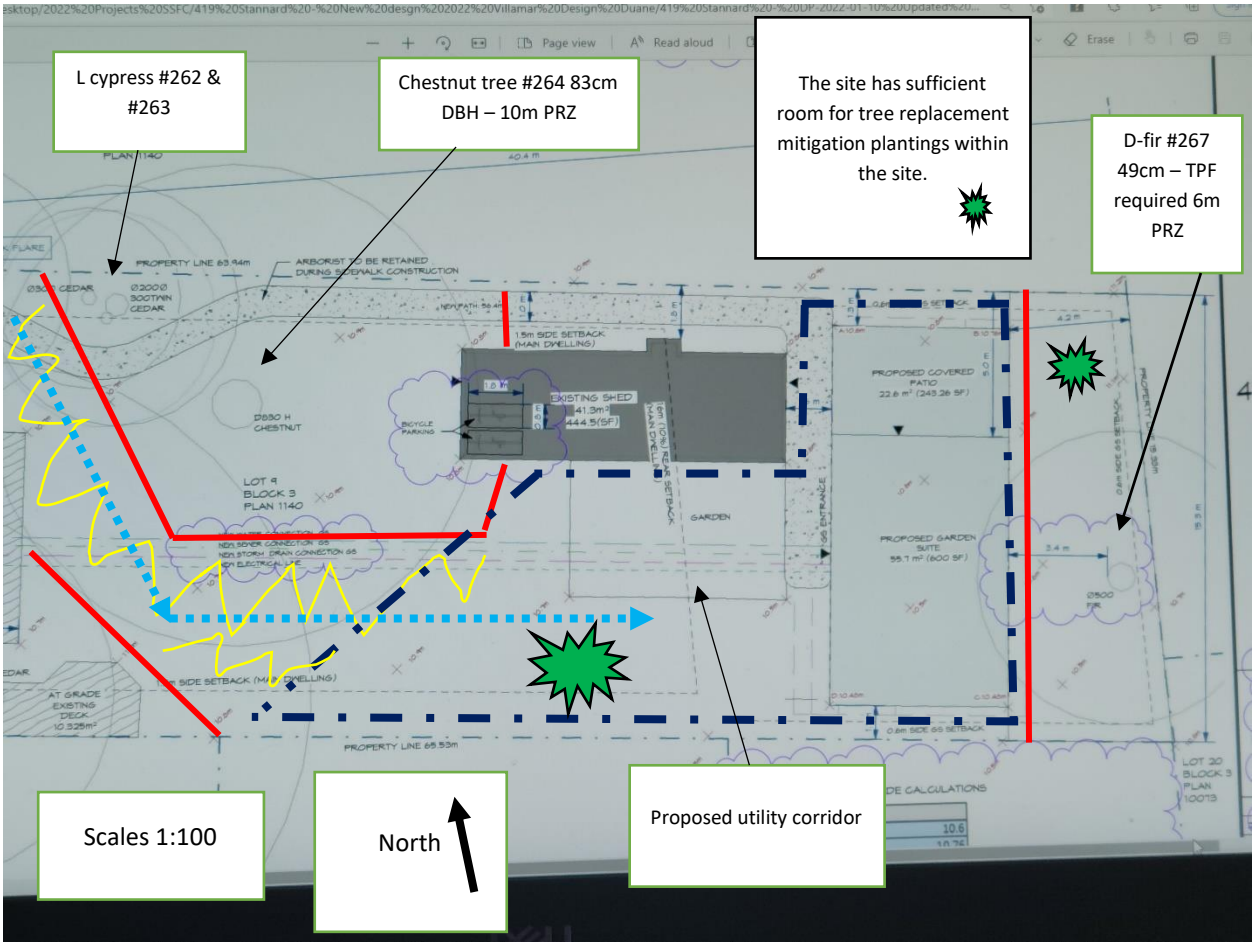
Appendix "A"

Figure #1 – Tree Site Map Section One (West End)



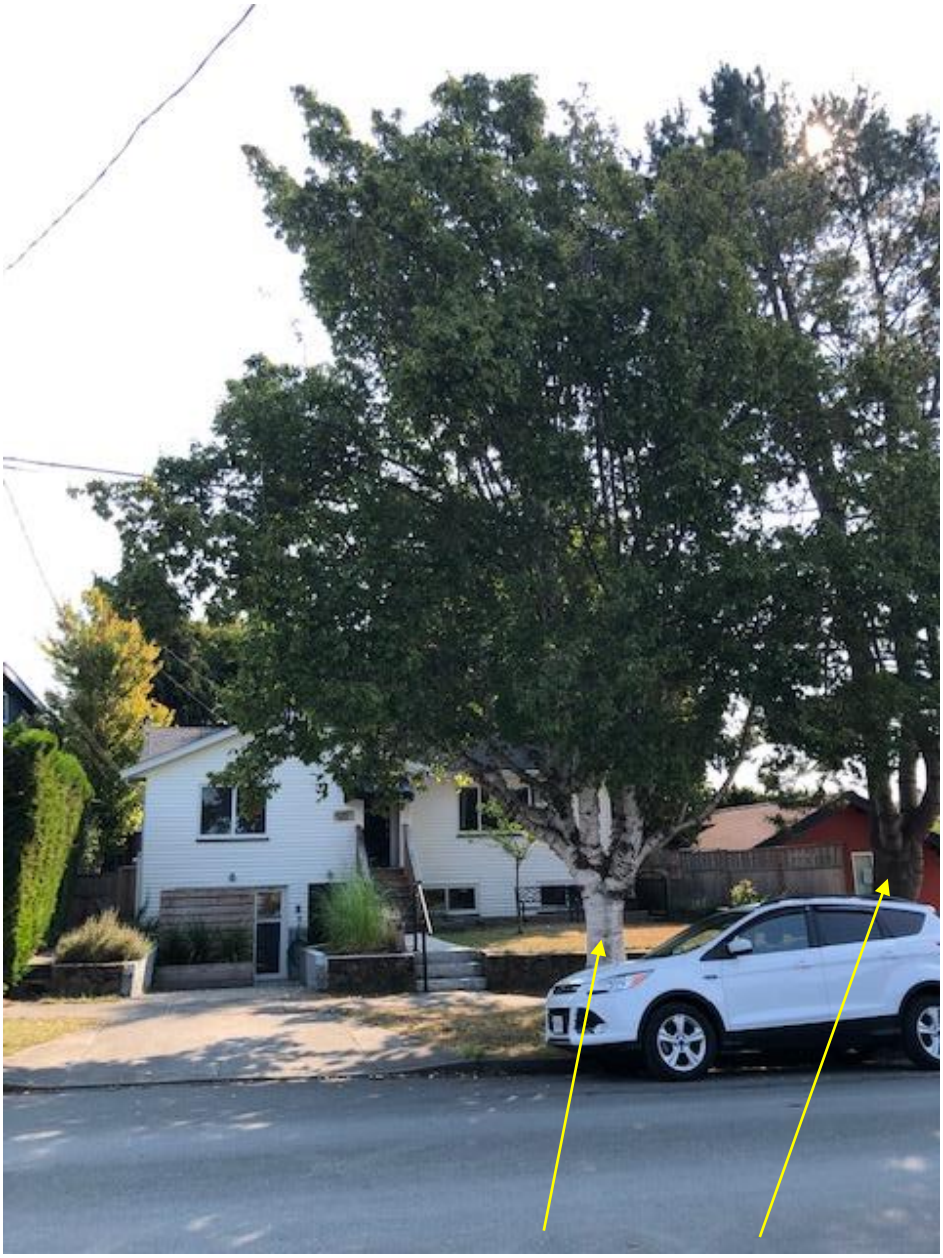
- Red hatched lines indicate Tree Protection Fencing.
- Yellow lines indicate Hog-Fuel/wood chip positioning. Wooden/rubber panel sheeting can be utilized to displace soil/root compaction.
- Blue Hatched Line – Path of travel into rear yard – Developer will be conditioned to follow a strict egress path into and out of the site.

Figure #2 – Tree Site Map Section Two (East End)



- Red hatched lines indicate Tree Protection Fencing.
- Yellow lines indicate Hog-Fuel/wood chip positioning. Wooden/rubber panel sheeting can be utilized to displace soil/root compaction.
- Blue Hatched Line – Path of travel into rear yard – Developer will be conditioned to follow a strict egress corridor into and out of the site.
- Purple solid line indicates the Staging Area for the site.

Figure #3 – Front of Site – Municipal Boulevard



View from Stannard of property frontage. 48cm DBH city owned White birch and 88cm DBH private Western white pine (#260) are visible in this photo.

Figure #3 – Rear Yard – Tree #266 Western Red Cedar

Photo showing WRC #266. TPF will be used to protect this tree.

Figure #4 – Rear Yard – Tree #264 Horse Chestnut

Phot showing Horse chestnut #264. TPF will be used to protect this tree.

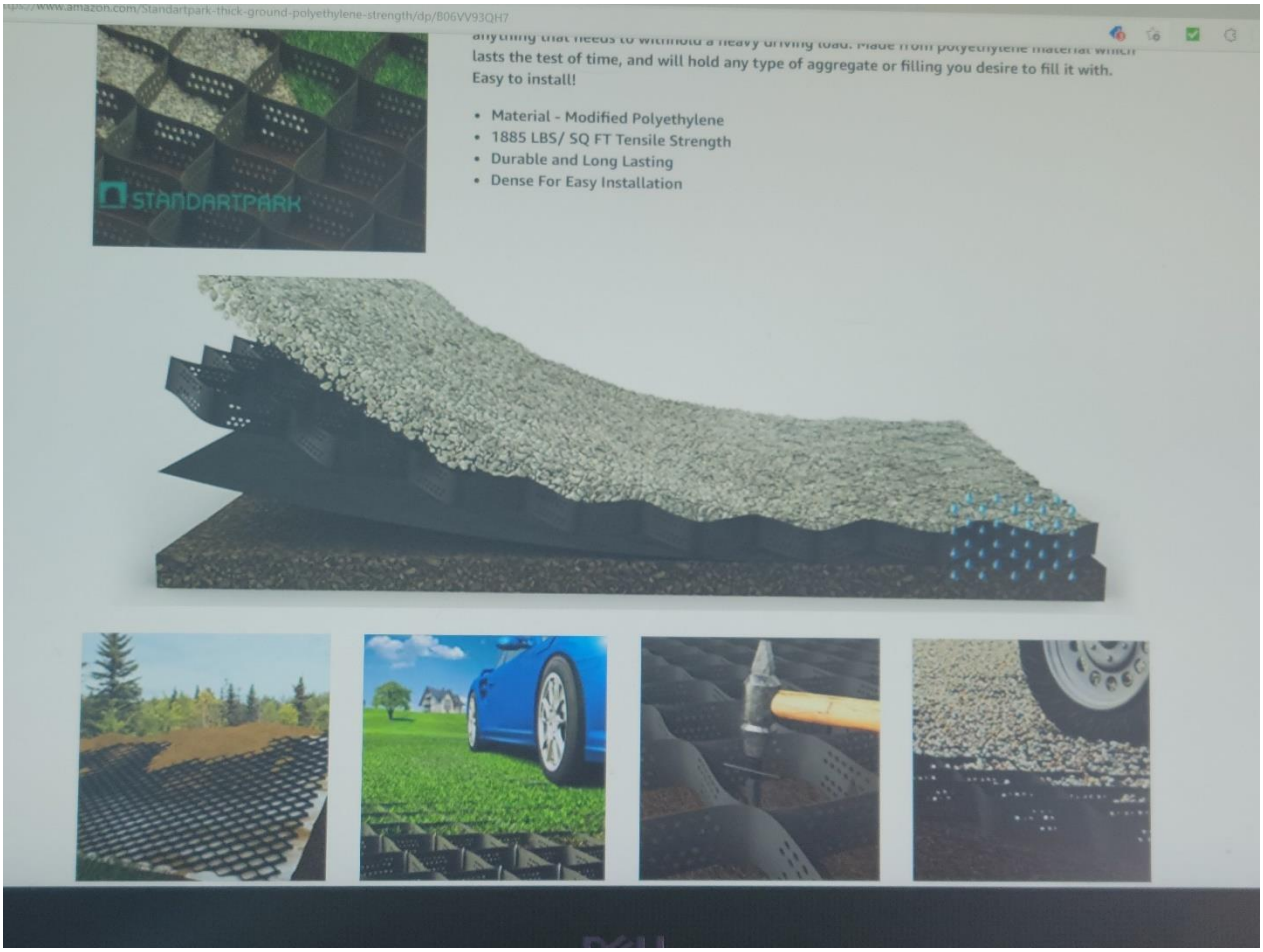
Figure #6 – Rear Yard – Proposed Garden Suite Location

Photo showing D fir #267 and the proposed location for a garden-suite. The red outline indicates where the suite would be positioned.

Figure #7 – Tree Protection Fencing (TPF) – Design

To be posted in visible areas of the TPF. As per Reference District of Saanich Sign.

Figure #9 – Geogrid Path Design



This design would be less invasive to tree root zones. In this case there would be less excavation depth required when traversing through tree PRZ's.

Figure #10 – Geogrid Web Layer & Gravel Cap – Limitied Excavation Impacts

Figure #11 – Tree Planting Area Soil Volume Chart

					Replacement Trees Proposed		Soil Volume Required			
Planting Area	Area (m2)	Soil Volume Multiplier	A. Est. Soil Volume	B. # Small	C. #Medium	D # Large	E. small	F. Medium	G. Large	Total
Planting Area 1	8	1	8m				X			1
Planting Area 2	24	1	24m					X		1
Planting Area OSA x										
							If B=1, Bx8 if B>1, Bx6	IF C=1, CX20 if C>1, Cx15	If D=1, Dx35 If D>1, Dx30	E+F+G
										2

Figure #12 Tree Replacement - Appendix "B" – Figure #2

	A	B	C	D	
Tree Status	Total # Protected Trees	# Of Trees to be Removed	# Of New or Replacement Trees to be Planted	# Of Existing Non-Protected Trees Counted as Replacements	Net Change (A-B+C+D)
Onsite trees	7	1	2	1	9
Offsite trees	3	0	0	0	3
Municipal trees	1	0	0	0	1
Total	11	1	2	1	13

Figure #13 Summery Table – Tree Replacement Counts & Calculations

	Count	Multiplier	Total
ONSITE Minimum Replacement Tree Requirement			
A. Protected trees removed	1	X 1	A. 1
B. Replacement proposed per schedule "E", Part 1	2	X 1	B. 2
C. Replacement trees proposed from Schedule "E", Part 2	0	X 0.5	C. 0
D. Replacement trees proposed per Schedule "E", Part 3	0	X 1	D. 0
E. Total replacement trees proposed (B+C+D) Rounded down - nearest whole #	3		E. 2
F. Onsite replacement tree deficit (A-E) Record 0 if negative number			F. 0
ONSITE Minimum trees per lot requirement (onsite trees)			
G. Tree Minimum on Lot*	6		G. 6
H. Protected trees retained (other than specimen tree.	5	X 1	H. 5
I. Specimen tree retained	0	X 3	I. 0
J. Trees per lot deficit (G-(B+C+H+I) record 0 if negative #	(6-(2+0+5+0)		J .0
OFFSITE Minimum replacement tree requirements (offsite trees)			
K. Protected Trees Removed	0	X 1	K. 0
L. Replacement Trees proposed per	0	X 1	L. 0
Schedule "E" – Part 1 or Part 3			
M. Replacement tree proposed from Schedule "E", Part 2	0	X 0.5	M. 0
N. Total replacement trees proposed (L+M) Round down to nearest whole #			N. 0
O. Offsite replacement tree deficit (K-N) Record 0 if negative #	0		O. 0
P. Onsite trees proposed for Cash-in-lieu Enter F. or J., whichever is the greatest #	0		P. 0
Q. Offsite Trees proposed for cash-in-lieu. Enter Q	0		Q. 0
R. Cash-in-lieu proposed ((P+Q) x $2,000.00	0		R. 0

Figure #14 – Most Recent Submission – Site Map

SEE ATTACHMENT LABELLED "FIGURE #14 TPP"