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614-618 GRENVILLE AVENUE—
ESQUIMALT, BC
CONSTRUCTION IMPACT ASSESSMENT &
TREE MANAGEMENT PLAN

PREPARED FOR: Finlayson Bonet Architecture Ltd. c/o Kyle Schick
#4 – 7855 East Saanich Road
Saanichton, BC
V8M 2B4

PREPARED BY: Talmack Urban Forestry Consultants Ltd.
Robert McRae – Consulting Arborist
ISA Certified # PN-7125A
Tree Risk Assessment Qualified
Tree Appraisal Qualified

DATE OF ISSUANCE: September 12, 2023

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REVISION RECORD

REVISION	DESCRIPTION	DATE (YYYY-MM-DD)	ISSUED BY
0	Construction Impact Assessment and Tree Management Plan	2023-09-12	RM

1. INTRODUCTION

Talmack Urban Forestry Consultants Ltd. was engaged to complete a tree inventory, construction impact assessment and management plan for the trees at the following proposed project:

Site:	614-618 Grenville Avenue
Municipality:	Township of Esquimalt
Client Name:	Finlayson Bohnet Architecture Ltd.
Dates of Site Visit(s):	September 1, 2023
Site Conditions:	One mixed commercial lot and two flat residential lots with no ongoing construction.
Weather During Site Visit:	Mostly sunny

The purpose of this report is to address requirements of the Township of Esquimalt arborist report terms of reference, and Tree Protection Bylaw No. 2837. The construction impact assessment section of this report (section 8), is based on plans reviewed to date, including building plans from Finlayson Bohnet Architecture (dated March 13th, 2023) and a site survey from Powell & Associates (dated October 13th, 2022 & August 16th, 2023). **At this time, we have not reviewed a site servicing plan.**

2. TREE INVENTORY METHODOLOGY

For the purpose of this report, the size, health, and structural condition of trees were documented. For ease of identification in the field, numerated metal tags are attached to the lower trunks of on-site trees. Trees located on neighbouring properties, the municipal frontage, or in areas where access was restricted, were not tagged. Each tree was visually examined on a limited visual assessment basis (level 1), in accordance with Tree Risk Assessment Qualification (TRAQ) methods (Dunster *et al.* 2017) and ISA Best Management Practices.

3. EXECUTIVE SUMMARY

Based on review of the plans and our understanding of the project scope, eight (8) on-site protected trees, and four (4) on-site non-protected trees are likely to require removal due to the proposed construction—*it should be noted that trees #2550 & 2551 appear to be under shared ownership with the Township of Esquimalt.* All other trees are located where their retention is possible, provided their CRZs can be adequately protected during construction.

4. TREE INVENTORY DEFINITIONS

Tag: Tree identification number on a metal tag attached to tree with nail or wire, generally at eye level. Trees on municipal or neighboring properties are not tagged.

NT: No tag due to inaccessibility or ownership by municipality or neighbour.

DBH: Diameter at breast height – diameter of trunk, measured in centimetres at 1.4m above ground level. For trees on a slope, it is taken at the average point between the high and low side of the slope.

* Measured over ivy

~ Approximate due to inaccessibility or on neighbouring property

Dripline: Indicates the radius of the crown spread measured in metres to the dripline of the longest limbs.

Relative Tolerance Rating: Relative tolerance of the tree species to construction related impacts such as root pruning, crown pruning, soil compaction, hydrology changes, grade changes, and other soil disturbance. This rating does not take into account individual tree characteristics, such as health and vigour. Three ratings are assigned based on our knowledge and experience with the tree species: Poor (P), Moderate (M) or Good (G).

Critical Root Zone: A calculated radial measurement in metres from the trunk of the tree. It is the optimal size of tree protection zone and is calculated by multiplying the DBH of the tree by 10, 12 or 15 depending on the tree's Relative Tolerance Rating. This methodology is based on the methodology used by Nelda Matheny and James R. Clark in their book "Trees and Development: A Technical Guide to Preservation of Trees During Land Development."

- 15 x DBH = Poor Tolerance of Construction
- 12 x DBH = Moderate
- 10 x DBH = Good

To calculate the critical root zone, the DBH of multiple stems is considered the sum of 100% of the diameter of the largest stem and 60% of the diameter of the next two largest stems. It should be noted that these measures are solely mathematical calculations that do not consider factors such as restricted root growth, limited soil volumes, age, crown spread, health, or structure (such as a lean).

Health Condition:

- Poor – significant signs of visible stress and/or decline that threaten the long-term survival of the specimen
- Fair – signs of stress
- Good – no visible signs of significant stress and/or only minor aesthetic issues

Structural Condition:

- Poor – Structural defects that have been in place for a long period of time to the point that mitigation measures are limited
- Fair – Structural concerns that are possible to mitigate through pruning
- Good – No visible or only minor structural flaws that require no to very little pruning

Suitability ratings are described as follows:

Rating: Suitable.

- A tree with no visible or minor health or structural defects, is tolerant to changes to the growing environment and is a possible candidate for retention provided that the critical root zone can be adequately protected.

Rating: Conditional.

- A tree with good health but is a species with a poor tolerance to changes to its growing environment or has a structural defect(s) that would require that certain measures be implemented, in order to consider it suitable for retention (ie. retain with other codominant tree(s), structural pruning, mulching, supplementary watering, etc.)

Rating: Unsuitable.

- A tree with poor health, a major structural defect (that cannot be mitigated using ANSI A300 standards), or a species with a poor tolerance to construction impacts, and unlikely to survive long term (in the context of the proposed land use changes).

Retention Status:

- Remove – Not possible to retain given proposed construction plans
- Retain – It is possible to retain this tree in the long-term given the proposed plans and information available. This is assuming our recommended mitigation measures are followed
- Retain * – See report for more information regarding potential impacts
- TBD – Final retention status “to be determined” at the time of construction or upon review of updated plans

TABLE 1. TREE INVENTORY

Tag or ID #	Surveyed? (Yes/No)	Location (On, Off, Shared, City)	Bylaw protected? (Yes/No)	Name		dbh (cm)	Dripline diameter (m)	Critical root zone radius (m)	Relative Tolerance	Condition		Retention Suitability (on-site trees)	General field observations/remarks	Tree retention / location comments	Retention status
				Common	Botanical					Health	Structural				
2550	Yes	On-site, possibly shared municipal	Yes, possibly shared municipal	English Holly	<i>Ilex aquifolium</i>	Multi-stem (21,21,18 largest)	6	4.4	Good	Good	Fair-poor	Unsuitable	Included bark in unions. Invasive species.	Within footprint of proposed underground parking.	X
2551	Yes	Likely shared municipal	Yes, likely shared municipal	English Holly	<i>Ilex aquifolium</i>	Multi-stem (18,17,16 largest)	6	3.8	Good	Good	Fair-poor	Unsuitable	Included bark in unions. Invasive species.	Within footprint of proposed underground parking.	X
2552	No	On-site	Yes	Pacific Dogwood	<i>Cornus nuttallii</i>	7	2	0.7	Good	Poor	Fair-poor	Unsuitable	Almost entirely defoliated from drought stress, decay in pruning wounds, lower trunk wound.	Within footprint of proposed underground parking.	X
2553	Yes	On-site	Yes	Pacific Dogwood	<i>Cornus nuttallii</i>	19	4	1.9	Good	Poor	Fair	Unsuitable	Drought stress, included bark in unions.	Within footprint of proposed underground parking.	X
2554	Yes	On-site	Yes	Hedge Maple	<i>Acer campestre</i>	23,18,15	10	5.1	Moderate	Good	Fair-poor	Unsuitable	Asymmetrical crown, included bark in unions.	Within footprint of proposed underground parking.	X
2555	Yes	On-site	No	Plum	<i>Prunus spp.</i>	23	5	2.8	Moderate	Fair	Fair-poor	Unsuitable	Epicormic growth, large pruning stubs, asymmetrical crown.	Within footprint of proposed underground parking.	X
2556	Yes	On-site	Yes	Horsechestnut	<i>Aesculus hippocastanum</i>	50	11	5	Good	Good	Fair	Unsuitable	Multiple stems originating at ~2m with included bark in unions.	Within footprint of proposed underground parking.	X
2557	Yes	On-site	No	Jeffrey Pine	<i>Pinus jeffreyi</i>	23	4	2.3	Good	Good	Fair	Unsuitable	Lean south (correcting) damaging fence.	Within footprint of proposed underground parking.	X
2558	Yes	On-site	No	Cherry	<i>Prunus spp.</i>	16,9,3	5	2.8	Moderate	Fair	Fair	Unsuitable	Health stress, tortrix, included bark.	Within footprint of proposed underground parking.	X
2559	Yes	On-site	Yes	Cherry	<i>Prunus spp.</i>	Multi-stem (29,24,22) largest)	10	6.8	Moderate	Poor	Poor	Unsuitable	Dieback, large dead stems (north side), columns of decay in scaffold limbs, multiple ganoderma fruiting bodies at base.	Within footprint of proposed underground parking.	X

2560	Yes	On-site	Yes	Pear	<i>Pyrus spp.</i>	23,15	7	3.2	Moderate	Fair-good	Fair	Unsuitable	Pruned for fruit production historically, included bark in primary stem union.	Within footprint of proposed underground parking.	X
2561	Yes	On-site	No	Lawson Cypress	<i>Chamaecyparis lawsoniana</i>	24	7	2.4	Good	Fair-good	Fair-good	Unsuitable	Extended limbs, sparse top.	Within footprint of proposed underground parking.	X
2562	Yes	On-site	Yes	Douglas-fir	<i>Pseudotsuga menziesii</i>	59	10	8.9	Poor	Fair-good	Fair	Conditional	Rooted adjacent to retaining wall, deflected trunk, majority of canopy removed (to trunk) on west side over parking lot, epicormic growth.		Retain
2563	Yes	On-site	Yes	Douglas-fir	<i>Pseudotsuga menziesii</i>	47	9	7.1	Poor	Fair	Poor	Conditional	Topped at ~5m with large deflected leaders (one extended south), majority of canopy removed west side over parking lot.		Retain
2564	Yes	On-site	Yes	Douglas-fir	<i>Pseudotsuga menziesii</i>	39	8	5.9	Poor	Fair	Fair-poor	Conditional	Topped with deflected leader, small deadwood		Retain
2565	Yes	On-site	Yes	Douglas-fir	<i>Pseudotsuga menziesii</i>	38	8	5.7	Poor	Fair	Fair-poor	Conditional	Topped with deflected leader, small deadwood		Retain
2566	Yes	Shared	Yes	European Hawthorn	<i>Crataegus monogyna</i>	15,14,13	6	3.1	Good	Fair	Fair-poor	Conditional	Multiple stems, extensive epicormic growth. Possibly shared between three properties. Invasive species.		Retain
NT1	Yes	On-site	Yes	Plum	<i>Prunus spp.</i>	26,17,17	6	5.6	Moderate	Fair	Fair	Suitable	Pruned for fruit production.		Retain
NT2	Yes	On-site	Yes	European Birch	<i>Betula pendula</i>	39	11	5.9	Poor	Fair-good	Fair-poor	Conditional	Topped at ~6m with new deflected leaders.		Retain
NT3	Yes	On-site	Yes	European Birch	<i>Betula pendula</i>	33	10	5	Poor	Fair-good	Fair-poor	Conditional	Topped at ~6m with new deflected leaders.		Retain
NT4	Yes	Off-site	Yes	Plum	<i>Prunus spp.</i>	~20,12,6	9	3.7	Moderate	Fair	Fair-poor	Conditional	Multiple stems, extensive epicormic growth.		Retain
NT5	Yes	On-site	Yes	Elm	<i>Ulmus spp.</i>	~45, 10	5	6.1	Moderate	Poor	Poor	Conditional	Stump ~5m high, ivy covered. ~10cm live stem leans west over fence.		Retain

NT6	Yes	On-site	Yes	Plum	<i>Prunus spp.</i>	~45	7	5.4	Moderate	Poor	Poor	Conditional	Dieback, large deadwood, ivy covering majority.	Retain
NT7	Yes	Off-site	Yes	Plum	<i>Prunus spp.</i>	~20,15,10	6	4.2	Moderate	Good	Fair	Suitable	Included bark in unions.	Retain
NT8	Yes	Off-site	Yes	Leyland Cypress	<i>Cuprocyparis leylandii</i>	~70	14	7	Good	Good	Fair	N/A	Codominant structure with included bark, multiple lower limbs becoming apical. Extended limbs west side.	Retain

5. SITE INFORMATION & PROJECT UNDERSTANDING

The development site consists of one mixed commercial lot and two flat residential lots (614-618 Grenville Avenue) in Esquimalt, B.C. It is our understanding that the proposal is to re-zone the existing properties into one lot, remove all on-site structures, and construct a new multi-storey residential complex. **At this time, we have not reviewed a site servicing plan**, though it is our understanding that underground utilities and overhead hydro will service the new complex from the Grenville Avenue frontage, which should not result in impacts to protected trees. It is our understanding that a 2.9m tract of land (belonging to 614 Grenville Avenue) exists on the west side of several properties (#620-634) along Grenville Avenue and that no development is proposed in this corridor.

Below is a general observation of the tree resource, as it appeared at the time of our site visit:

6. FIELD OBSERVATIONS

The on and off-site tree resource consists of a mixture of non-native tree species growing in ground in open landscape conditions (see [Figure 1](#)).



Figure 1: Site context air photo: The approximate boundary of the subject site is outlined in blue.

7. TREE RISK ASSESSMENT

During our September 1st (2023) site visit and in conjunction with the tree inventory updated same day, on-site trees were assessed for risk on a limited visual assessment basis (level 1) and in the context of the existing land uses. The time frame used for the purpose of our assessment is one year (from the date of the tree inventory). Unless otherwise noted herein, we did not conduct a detailed (level 2) or advanced (level 3) risk assessment, such as resistograph testing, increment core sampling, aerial examinations, or subsurface root/root collar examinations.

Existing Land Uses

We did not observe any trees that were deemed to be moderate, high, or extreme risk (in the context of the existing land uses) that would require hazard abatement to eliminate present and/or future risks (within a 1-year timeframe). Targets considered during this TRAQ assessment include: occupants of vehicles travelling or parked on Grenville Avenue (frequent use), pedestrians travelling along existing sidewalks (frequent use), hydro lines (constant use), occupants of the existing houses (constant use) or yards (occasional use) on-site or on neighbouring properties.

8. CONSTRUCTION IMPACT ASSESSMENT

8.1. RETENTION AND REMOVAL OF ON-SITE TREES

The following bylaw-protected on-site trees (indicated by tag or ID#) are located where they are possible for retention provided that their critical root zones are adequately protected during construction. The project arborist must be on site to supervise any excavation or fill placement required within the critical root zones (shown on the tree management plan in **Appendix A**):

Retain and protect 10 bylaw-protected on-site trees

- #2562-2566, NT1-3, NT5-6

Please note, these trees are naturally isolated from the proposed development by the presence of a fence along the property line of 618 & 620 Grenville Avenue. The project arborist shall be notified if any access to the 2.9m tract on the west side of 620-634 Grenville Avenue is required during the development process.

The following bylaw-protected on-site trees (indicated by tag#) are located where they are likely to be severely impacted by proposed construction and are recommended for removal:

Remove 8 bylaw-protected on-site trees

- #2550-2554, 2556, 2559-2560

*Please note, #2550 & 2551 appear to be under shared ownership with the municipal boulevard. Compensation for protected trees removed on municipal property to be determined by the Township of Esquimalt—replacement tree totals are calculated in **Section 8.3**.*

The following non-protected on-site trees (indicated by tag#) are located where they are likely to be severely impacted by proposed construction and are recommended for removal:

Remove 4 non-protected on-site trees

- #2555, 2556-2558, 2561

8.1.1. ADDITIONAL MITIGATION MEASURES FOR DEMOLITION PHASE

If trees must be retained during the demolition phase, all excavations (including decommissioning of underground services and removal of existing foundations) within the CRZs must be supervised by the project arborist.

Barrier fencing should be erected and maintained throughout the demolition process—to the extents of the CRZs, where possible (shown on the tree management plan in **Appendix A**). Temporary construction panels will be accepted (pending municipal approval) in lieu of wood frame barriers, provided the appropriate signage is included. The project arborist should be contacted to meet with the demolition contractor prior to site access by machinery.

8.2. RETENTION AND REMOVAL OF OFF-SITE TREES

The following bylaw-protected off-site trees (indicated by ID#) are located where they are possible for retention provided that their critical root zones are adequately protected during construction. The project arborist must be on site to supervise any excavation or fill placement required within the critical root zones (shown on the tree management plan in **Appendix A**):

Retain and protect 3 bylaw-protected on-site trees

- NT4, NT7-8

Please note, these trees are naturally isolated from the proposed development by the presence of a fence along the property line of 618 & 620 Grenville Avenue. The project arborist shall be notified if any access to the 2.9m tract on the west side of 620-634 Grenville Avenue is required during the development process.

8.3. TREE IMPACT SUMMARY

Quantity of Existing trees	# of Trees Retained	# of Trees Removed	Relevant Bylaw section (if applicable)	Replacement Tree Ratio	Replacement Trees Required
On-site Trees (Bylaw-protected)					
2	0	2	Section 9—Part 2 (Row 1, Column 2/3, sub-row 2)	1:1	2
4	4	0	Section 9—Part 2 (Row 1, Column 2/3, sub-row 3)	3:1	0
4	3	1	Section 9—Part 2 (Row 3, Column 2/3, sub-row 2)	1:1	1
5	2	3	Section 9—Part 2 (Row 3, Column 2/3, sub-row 3)	2:1	6
3	1	2	Section 9—Part 2 (Row 3, Column 2/3, sub-row 4)	3:1	6
On-site Trees (Non-protected)					
4	0	4	Section 9—Part 2 (Row 3, Column 2/3, sub-row 1)	N/A	0
Off-site trees (Bylaw-protected)					
3	3	0	N/A	N/A	0
25	13	12	Total:		15

Figure 2: Fifteen (15) replacement trees are required for planting as compensation for trees removed due to the proposed development.

9. IMPACT MITIGATION

Tree Protection Barrier: The areas surrounding the trees to be retained should be isolated from the construction activity by erecting protective barrier fencing (see [Appendix A](#) for municipal barrier specifications). Where possible, fencing should be erected at the perimeter of the critical root zone. The barrier fencing to be erected must be a minimum of 4 feet in height, of solid frame construction that is attached to wooden or metal posts. A solid board or rail must run between the posts at the top and the bottom of the fencing. This solid frame can then be covered with flexible snow fencing. The fencing must be erected prior to the start of any construction activity on site (i.e. demolition, excavation, construction), and remain in place through completion of the project. Signs should be posted around the protection zone to declare it off limits to all construction related activity. The project arborist must be consulted before this fencing is removed or moved for any purpose.

Arborist Supervision: All excavation occurring within the critical root zones of protected trees should be completed under supervision by the project arborist. Any severed or severely damaged roots must be pruned back to sound tissue to reduce wound surface area and encourage rapid compartmentalization of the wound. In particular, the following activities should be completed under the direction of the project arborist:

- Any excavations and/or addition of fill within the CRZs of protected trees to be retained.

Methods to Avoid Soil Compaction: In areas where construction traffic must encroach into the critical root zones of trees to be retained, efforts must be made to reduce soil compaction where possible by displacing the weight of machinery and foot traffic. This can be achieved by one of the following methods:

- Installing a layer of hog fuel or coarse wood chips at least 20 cm in depth and maintaining it in good condition until construction is complete.
- Placing medium weight geotextile cloth over the area to be used and installing a layer of crushed rock to a depth of 15 cm over top.
- Placing two layers of 19mm plywood.
- Placing steel plates.

Demolition of the Existing Buildings: The demolition of the existing houses, driveways, and any services that must be removed or abandoned, must take the critical root zone of the trees to be retained into account. If any excavation or machine access is required within the critical root zones of trees to be retained, it must be completed under the supervision and direction of the project arborist. If temporarily removed for demolition, barrier fencing must be erected immediately after the supervised demolition.

Paved Surfaces Above Tree Roots: If the new paved surfaces within the CRZ of tree to be retained require excavation down to bearing soil and roots are encountered in this area, this could impact their health and structural stability. If tree retention is desired, a raised and permeable paved surface should be constructed in the areas within the critical root zone of the trees. The “paved surfaces above root systems” diagram and specifications is attached.

The objective is to avoid root loss and to instead raise the paved surface and its base layer above the roots. This may result in the grade of the paved surface being raised above the existing grade (the amount depending on how close roots are to the surface and the depth of the paving material and base layers). Final grading plans should take this potential change into account. This may also result in soils which are high in organic content being left intact below the paved area.

To allow water to drain into the root systems below, we also recommend that the surface be made of a permeable material (instead of conventional asphalt or concrete) such as permeable asphalt, paving stones, or other porous paving materials and designs such as those utilized by Grasspave, Gravelpave, Grasscrete and open-grid systems.

Mulching: Mulching can be an important proactive step in maintaining the health of trees and mitigating construction related impacts and overall stress. Mulch should be made from a natural material such as wood chips or bark pieces and be 5-8cm deep. No mulch should be touching the trunk of the tree. See “methods to avoid soil compaction” if the area is to have heavy traffic.

Blasting: Care must be taken to ensure that the area of blasting does not extend beyond the necessary footprints and into the critical root zones of surrounding trees. The use of small low-concussion charges and multiple small charges designed to pre-shear the rock face will reduce fracturing, ground vibration, and overall impact on the surrounding environment. Only explosives of low phytotoxicity and techniques that minimize tree damage should be used. Provisions must be made to ensure that blasted rock and debris are stored away from the critical root zones of trees.

Scaffolding: This assessment has not included impacts from potential scaffolding including canopy clearance pruning requirements. If scaffolding is necessary and this will require clearance pruning of retained trees, the project arborist should be consulted. Depending on the extent of pruning required, the project arborist may recommend that alternatives to full scaffolding be considered such as hydraulic lifts, ladders or platforms. Methods to avoid soil compaction may also be recommended (see “Minimizing Soil Compaction” section).

Landscaping and Irrigation Systems: The planting of new trees and shrubs should not damage the roots of retained trees. The installation of any in-ground irrigation system must take into account the critical root zones of the trees to be retained. Prior to installation, we recommend the irrigation technician consult with the project arborist about the most suitable locations for the irrigation lines and how best to mitigate the impacts on the trees to be retained. This may require the project arborist supervise the excavations associated with installing the irrigation system. Excessive frequent irrigation and irrigation which wets the trunks of trees can have a detrimental impact on tree health and can lead to root and trunk decay.

Arborist Role: It is the responsibility of the client or his/her representative to contact the project arborist for the purpose of:

- Locating the barrier fencing
- Reviewing the report with the project foreman or site supervisor
- Locating work zones, where required

- Supervising any excavation within the critical root zones of trees to be retained
- Reviewing and advising of any pruning requirements for machine clearances

Review and site meeting: Once the project receives approval, it is important that the project arborist meet with the principals involved in the project to review the information contained herein. It is also important that the arborist meet with the site foreman or supervisor before any site clearing, tree removal, demolition, or other construction activity occurs and to confirm the locations of the tree protection barrier fencing.

10. DISCLOSURE STATEMENT

This arboricultural field review report was prepared by Talmack Urban Forestry Consultants Ltd. for the exclusive use of the Client and may not be reproduced, used or relied upon, in whole or in part, by a party other than the Client without the prior written consent of Talmack Urban Forestry Consultants Ltd. Any unauthorized use of this report, or any part hereof, by a third party, or any reliance on or decisions to be made based on it, are at the sole risk of such third parties. Talmack Urban Forestry Consultants Ltd accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report, in whole or in part.

Arborists are professionals who examine trees and use their training, knowledge, and experience to recommend techniques and procedures that will improve a tree's health and structure or to mitigate associated risks. Trees are living organisms whose health and structure change and are influenced by age, continued growth, climate, weather conditions, and insect and disease pathogens. Indicators of structural weakness and disease are often hidden within the tree structure or beneath the ground. The arborist's review is limited to a visual examination of tree health and structural condition, without excavation, probing, resistance drilling, increment coring, or aerial examination. There are inherent limitations to this type of investigation, including, without limitation, that some tree conditions will inadvertently go undetected. The arborist's review followed the standard of care expected of arborists undertaking similar work in British Columbia under similar conditions. No warranties, either express or implied, are made as to the services provided and included in this report.

The findings and opinions expressed in this report are based on the conditions that were observed on the noted date of the field review only. The Client recognizes that passage of time, natural occurrences, and direct or indirect human intervention at or near the trees may substantially alter discovered conditions and that Talmack Urban Forestry Consultants Ltd. cannot report on, or accurately predict, events that may change the condition of trees after the described investigation was completed.

It is not possible for an Arborist to identify every flaw or condition that could result in failure nor can he/she guarantee that the tree will remain healthy and free of risk. The only way to eliminate tree risk entirely is to remove the entire tree. All trees retained should be monitored on a regular basis. Remedial care and mitigation measures recommended are based on the visible and detectable indicators present at the time of the examination and cannot be guaranteed to alleviate all symptoms or to mitigate all risk posed.

Immediately following land clearing, grade changes or severe weather events, all trees retained should be reviewed for any evidence of soil heaving, cracking, lifting or other indicators of root plate instability. If new information is discovered in the future during such events or other activities, Talmack Urban Forestry Consultants Ltd. should be requested to re-evaluate the conclusions of this report and to provide amendments as required prior to any reliance upon the information presented herein.

11. IN CLOSING

We trust that this report meets your needs. Should there be any questions regarding the information within this report, please do not hesitate to contact the undersigned.

Yours truly,

Talmack Urban Forestry Consultants Ltd.

Prepared by:



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ISA Certified Arborist PN – 7125A
Tree Risk Assessment Qualification
Tree Appraisal Qualified
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12. REFERENCES

Dunster, J.A., E.T. Smiley, N. Matheny, and S. Lily. 2017. Tree Risk Assessment Manual, International Society of Arboriculture (ISA).

The Township of Esquimalt Tree Protection Bylaw No. 2837

13. COMPANY INFORMATION

General Liability: Intact Insurance, Policy No. 5V2147122 : \$5,000,000

APPENDIX A – TREE MANAGEMENT PLAN

Tree protection barrier shown in demolition phase orientation. Temporary construction panels may be accepted in lieu of wood frame barriers. Driveways should be left in place as root armoring until the conclusion of demo phase.. Project arborist to supervise removal of existing structures within the CRZs.

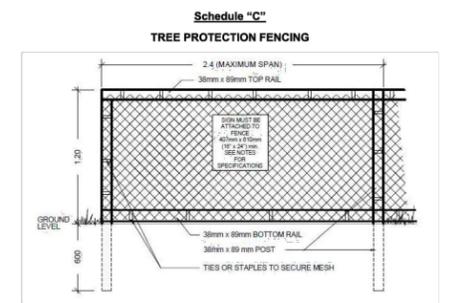


LEGEND

- Existing tree with tag or ID #
- Tree protection fencing
- Dripline radius (m)
- Critical root zone radius (m)
- Tree proposed for removal
- Unsurveyed tree
- Non-protected onsite tree
- Site boundary



TREE PROTECTION FENCING



- Tree Protection Fencing Specifications:**
- The fence will be constructed using 38 x 89 mm (2" x 4") wood frame:
 - Top, Bottom and Posts.
 - Use orange snow fencing mesh and secure to the wood frame with "zip" ties or galvanized staples.
 - Attach a sign with minimum size of 407 mm x 610 mm (16" X 24") with the following wording:
 - DO NOT ENTER**- Tree Protection Zone (For retained trees) or;
 - DO NOT ENTER**- Future Tree Planting Zone (For tree planting sites)
- This sign must be affixed on every fence face or at least every 10 linear metres.
- *In rocky areas, metal posts (I-bar or rebar) drilled into rock will be accepted.

TREE PROTECTION NOTES

Tree protection barrier: The areas, surrounding the trees to be retained, should be isolated from the construction activity by erecting protective barrier fencing. Where possible, the fencing should be erected at the perimeter of the critical root zone. The barrier fencing to be erected must be a minimum of 1200mm in height, of solid frame construction that is attached to wooden or metal posts. A solid board or rail must run between the posts at the top and the bottom of the fencing. This solid frame can then be covered with flexible snow fencing. The fencing must be erected prior to the start of any construction activity on site (i.e. demolition, excavation, construction), and remain in place through completion of the project. Signs should be posted around the protection zone to declare it off limits to all construction related activity. The project arborist must be consulted before this fencing is removed or moved for any purpose.

Arborist supervision: All excavation occurring within the critical root zones of protected trees must be completed under the supervision of the project arborist. Any severed or severely damaged roots must be pruned back to sound tissue to reduce wound surface area and encourage rapid compartmentalization of the wound.

Demolition: The demolition of the existing houses, driveways, and any services that must be removed or abandoned must take the critical root zone of the trees to be retained into account. If any excavation or machine access is required within the critical root zones of trees to be retained, it must be completed under the supervision of the project arborist. If temporarily removed for demolition, barrier fencing must be erected immediately after the supervised demolition.

Methods to avoid soil compaction: In areas where construction traffic must encroach into the critical root zones of trees to be retained, efforts must be made to reduce soil compaction where possible by displacing the weight of machinery and foot traffic. This can be achieved by one of the following methods:

- Installing a layer of hog fuel or coarse wood chips at least 20cm in depth and maintaining it in good condition until construction is complete.
- Placing medium weight geotextile cloth over the area to be used and installing a layer of crushed rock to a depth of 15cm over top.
- Placing two layers of 19mm plywood.
- Placing steel plates.

Mulching: Mulching can be an important proactive step in maintaining the health or trees and mitigating construction related impacts and overall stress. Mulch should be made from a natural material such as wood chips, bark pieces and be 5-8cm deep. No mulch should be touching the trunk of the tree. See "methods to avoid soil compaction" if the area is to have heavy traffic.

Pruning: We recommend that any pruning of by-law-protected trees be performed to ANSI A300 standards and Best Management Practices.

Paved surfaces above tree roots: Where paved areas cannot avoid encroachment within critical root zones of trees to be retained, construction techniques, such as floating permeable paving, may be required. The "paved surfaces above tree roots" detail above offers a compromise to full depth excavation (which could impact the health or structural stability of the tree). The objective is to avoid root loss and to instead raise the paved surface above the existing grade (the amount depending on how close roots are to the surface and the depth of the paving material and base layers). Final grading plans should take this potential change into account. This may also result in soils which are high in organic content being left intact below the paved area. To allow water to drain into the root systems below, we also recommend that the surface

be made of a permeable material (instead of conventional asphalt or concrete) such as permeable asphalt, paving stones, or other porous paving materials and designs such as those utilized by Grasspave, Gravelpave, Grasscrete and open-grid systems.

Blasting and rock removal: Care must be taken to ensure that the area of blasting does not extend beyond the necessary footprints and into the critical root zones of surrounding trees. The use of small low-concussion charges and multiple small charges designed to pre-shear the rock face will reduce fracturing, ground vibrations and overall impact to the surrounding environment. Only explosives of low phytotoxicity and techniques that minimize tree damage should be used. Provisions must be made to ensure that blasted rock and debris are stored away from the critical root zones of trees.

Scaffolding: This assessment has not included impacts from potential scaffolding including canopy clearance pruning requirements. If scaffolding is necessary and this will require clearance pruning of retained trees, the project arborist should be consulted. Depending on the extent of pruning required, the project arborist may recommend that alternatives to full scaffolding be considered such as hydraulic lifts, ladders or platforms. Methods to avoid soil compaction may also be recommended (see "Minimizing Soil Compaction" section).

Landscaping and irrigation systems: The planting of new trees and shrubs should not damage the roots of retained trees. The installation of any in-ground irrigation system must take into account the critical root zones of the trees to be retained. Prior to installation, we recommend the irrigation technical consult with the project arborist about the most suitable locations for the irrigation lines and how best to mitigate the impacts on the trees to be retained. This may require the project arborist supervise the excavations associated with installing the irrigation system. Excessive frequent irrigation and irrigation which wets the trunks of trees can have a detrimental impact on the tree health and can lead to root and trunk decay.

Arborists role: It is the responsibility of the client or his/her representative to contact the project arborist for the purpose of:

- Locating the barrier fencing.
- Reviewing the report with the project foreman or site supervisor.
- Locating work zones and machine access corridors where required.
- Supervising excavation for any areas within the critical root zones of trees to be retained including any proposed retaining wall footings and review any proposed fill areas near trees to be retained.



Tree Management Plan - 1 of 2
614-618 Grenville Avenue
Esquimalt, BC

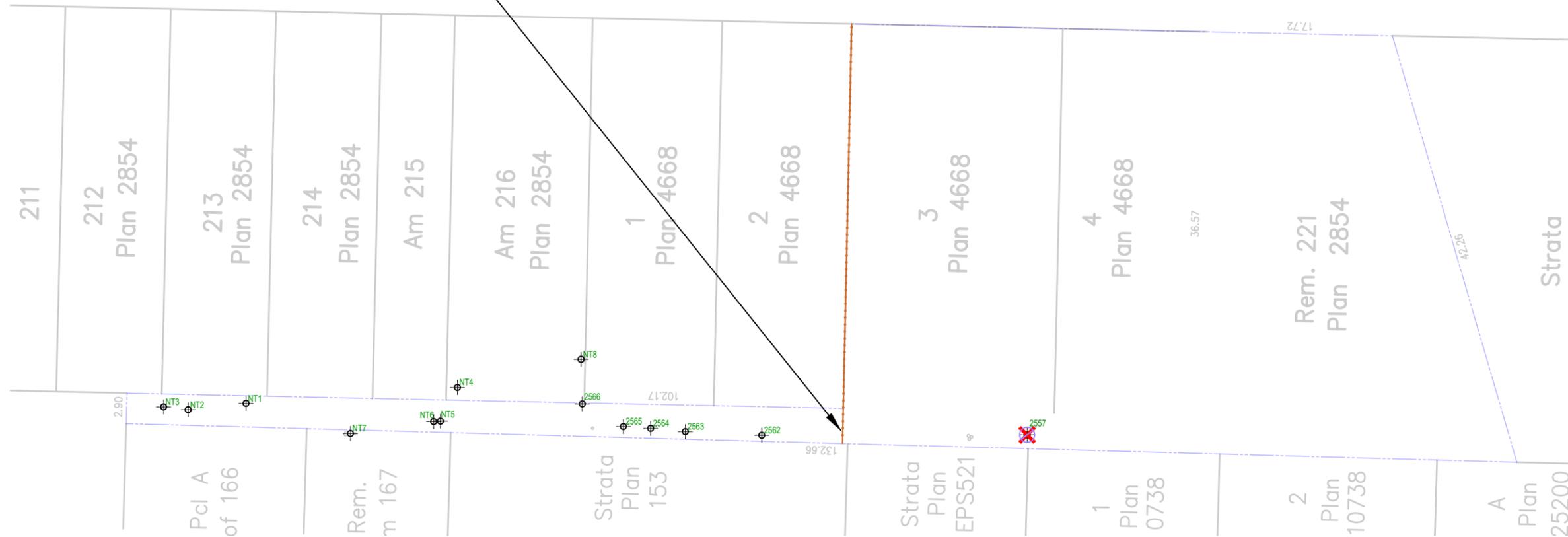
DATE: September 12, 2023
PREPARED FOR: Finlayson Bohnet Architecture
SCALE: 1 : 200 @ 11" X 17"
DRAWN BY: RM
REVISION: 0
REFERENCE DWG: 2212 SITE 614-616-618 GRENVILLE arch; 1.0-Site Plan

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URBAN FORESTRY
Consultants Limited

Trees within 2.9m corridor naturally isolated from construction activity by existing property fence. The project arborist should be notified of any access (related to development) required within this area.



Grenville Avenue

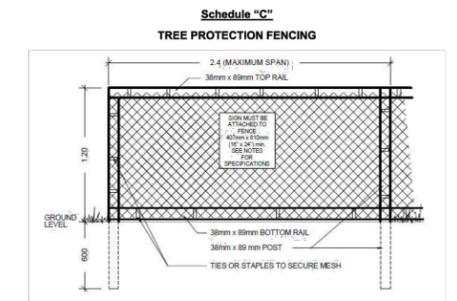


LEGEND

- Existing tree with tag or ID #
- Tree protection fencing
- Dripline radius (m)
- Critical root zone radius (m)
- Tree proposed for removal
- Non-protected onsite tree
- Site boundary



TREE PROTECTION FENCING



Tree Protection Fencing Specifications:

1. The fence will be constructed using 38 x 89 mm (2" x 4") wood frame:
 - Top, Bottom and Posts.
 - Use orange snow fencing mesh and secure to the wood frame with "zip" ties or galvanized staples.
2. Attach a sign with minimum size of 407 mm x 610 mm (16" X 24") with the following wording:
 - a) **DO NOT ENTER**- Tree Protection Zone (For retained trees) or;
 - b) **DO NOT ENTER**- Future Tree Planting Zone (For tree planting sites)

This sign must be affixed on every fence face or at least every 10 linear metres.

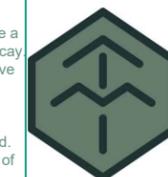
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DATE: November 2023
SCALE: N.T.S

Tree Management Plan - 2 of 2

614-618 Grenville Avenue
Esquimalt, BC

DATE: September 12, 2023
PREPARED FOR: Finlayson Bohnet Architecture
SCALE: NTS @ 11" X 17"
DRAWN BY: RM
REVISION: 0
REFERENCE DWG: 2212 SITE 02 - 614 GRENVILLE arch



TALMACK
URBAN FORESTRY
— Consultants Limited —

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APPENDIX B - SITE PHOTOGRAPHS



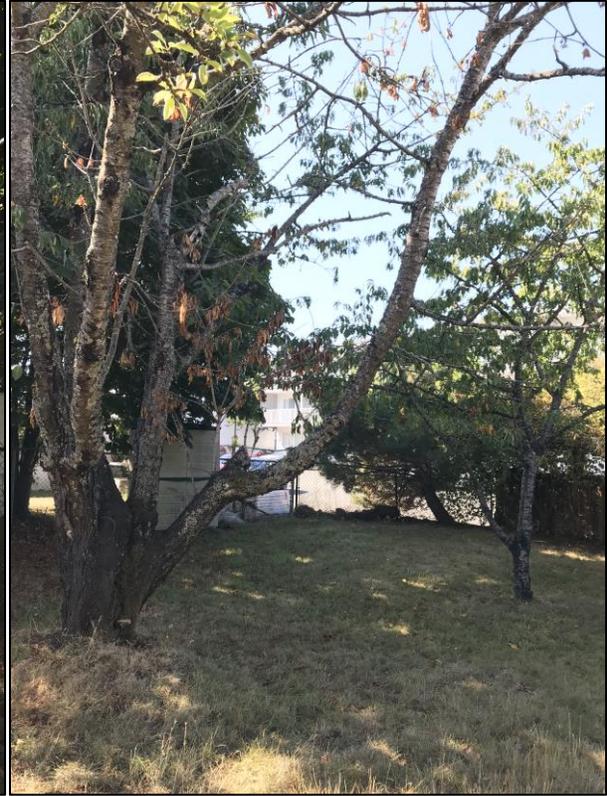
Photograph 1: English Holly #2550 & 2551 (right to left) proposed for removal.



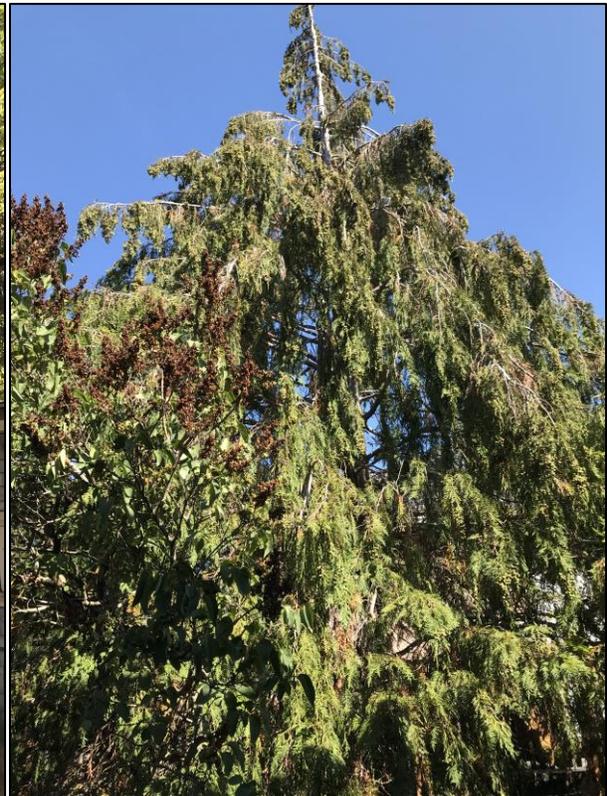
Photograph 2: *Pacific Dogwood #2552 & 2553 (right to left) proposed for removal.*



Photograph 3: *Hedge Maple #2554 proposed for removal.*



Photographs 4-7: Plum #2555 (upper left), Horsechestnut #2556 (upper right, background), Jeffrey Pine #2557 (upper right, background), Cherry #2558 & 2559 (upper right), Pear #2560 (lower left), Lawson Cypress #2561 (lower right)—proposed for removal.





Photograph 8: *Douglas-firs #2562-2565 (left to right), European Hawthorn #2566 (red arrow); canopy of Leyland Cypress NT8 visible (right frame).*