TALMACK
URBAN FORESTRY
Consultants Limited

1337 Saunders Ave. & 1340 Sussex St.

Esquimalt, BC

Construction Impact Assessment &

Tree Management Plan

PREPARED FOR: Intracorp

PREPARED BY: Talmack Urban Forestry Consultants Ltd.
Noah Talbot – Consulting Arborist
ISA Certified # PN-6822A
Tree Risk Assessment Qualified

DATE OF ORIGINAL ISSUANCE: May 13, 2024

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REVISION RECORD

REVISION	DESCRIPTION	DATE (YYYY-MM-DD)	ISSUED BY
0	Original TMP report.	2024-05-13	NT

1. INTRODUCTION

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

Site:	1337 Saunders Avenue & 1340 Sussex Street
Municipality	Esquimalt
Client Name:	Intracorp
Dates of Site Visit:	April 27, 2023
Site Conditions:	2 urban lots. No ongoing construction activity.
Weather During Site Visit:	Clean and sunny

The purpose of this report is to address requirements of the arborist report requirements of the Tree Protection Bylaw No. 2837. The construction impact assessment section of this report (section 8), is based on plans reviewed to date, including the: Architectural package – dated April 04, 2024 (prepared by WA Architects), and landscape concept package – dated April 05, 2024 (prepared by LADR). At this time we have not reviewed a civil servicing plan, grading plan or a geotechnical report or shoring design. Once these plans have been prepared, it is recommended that the project arborist review the plans and update this report, if necessary.

2. TREE INVENTORY METHODOLOGY

We attended the subject site to inventory onsite bylaw protected trees, and any trees offsite (within influencing distance of the proposed development). Prior to our site visit, we were provided with the site survey. For the purpose of this report, the size, health, and structural condition of trees was documented. For ease of identification in the field, numeric metal tags were attached to the lower trunks of bylaw protected onsite trees. Trees located on municipal property were not tagged, but were given ID numbers : M1 – M8. 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

5 Bylaw protected onsite trees and 8 municipal trees were inventoried. Based on review of the architectural plans and landscape plans, 5 bylaw protected onsite trees and 8 municipal trees will require removal to facilitate construction of the proposed underground parkade.

10 Replacement trees are required in compensation for the proposed removal of 5 bylaw protected onsite trees. The replacement tree ratio for the 8 municipal trees should be confirmed with the municipality. It is understood that a tree replacement plan will be prepared by others, which will provide locations for replacement trees. If the site cannot accommodate the required quantity of replacement trees, the deficit will be compensated to the City via a cash in lieu contribution to the Township's tree replacement and maintenance reserve account, by the owner.

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.

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.

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

Table 1. Tree Inventory

Tag or ID #	Surveyed ? (Yes / No)	Location (On, Off, Shared, City)	Bylaw protected ? (Yes / No)	Name		dbh (cm)	Ht (m)	Critical root zone radius (m)	Dripline radius (m)	Condition		Retention Suitability (onsite trees)	Relative tolerance	Remarks	Tree Retention/Location Comments	Retention status
				Common	Botanical					Health	Structural					
M1	**Yes**	**City**	**Yes**	Lawson cypress	*Chamaecyparis lawsoniana*	30	10	3.6	3	Good	Fair/good		Moderate	Located within close proximity to existing overhead utility lines.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade.	Remove
M2	**Yes**	**City**	**Yes**	Cherry plum	*Prunus cerasifera*	47	10	5.6	4	Fair	Poor		Moderate	Large stem tore out historically on South side of trunk. *Ganoderma applanatum* fruiting body attached to trunk.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade. Also located within the footprint of the proposed municipal sidewalk.	Remove
151	**Yes**	**On**	**Yes**	Horse chestnut	*Aesculus hippocastanum*	7, 7, 8, 3, 7, 4, 5, 5	5	1.6	2	Fair	Fair/poor	unsuitable	Good	Multiple stems form at .3m above grade, bark damage from deer rutting.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade.	Remove (2:1)
152	**Yes**	**On**	**Yes**	False cypress	*Chamaecyparis sp.*	15, 19, 21, 13	15	5	3	Good	Fair/poor	unsuitable	Moderate	Shaded on Borth side by existing building, corrected trunk lean.	Located within the footprint of the proposed u/g parkade.	Remove (3:1)
M3	**Yes**	**City**	**Yes**	Cherry plum	*Prunus cerasifera*	41	10	4.9	4	Fair	Fair		Moderate	Health stress - crown dieback, *Ganoderma applanatum* fruiting body attached to lower trunk.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade. Also located within the footprint of the proposed municipal sidewalk.	Remove
153	**No**	**On**	**Yes**	Arbutus	*Arbutus menziesii*	2, 3, 4	3	1	1	Good	Poor	unsuitable	Poor	Suckers emerging from old arbutus stump.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade.	Remove (1:1)
154	**No**	**On**	**Yes**	Douglas-fir	*Pseudotsuga menziesii*	7	4	0.8	2	Good	Fair	unsuitable	Moderate	Growing within confined rooting environment.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade.	Remove (1:1)
M4	**Yes**	**City**	**Yes**	Cherry plum	*Prunus cerasifera*	41	10	4.9	4	Fair/poor	Fair		Moderate	Health stress - crown dieback, heavily surface rooted.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade.	Remove
M5	**Yes**	**City**	**Yes**	Flowering cherry	*Prunus serrulata*	88	10	10.6	5	Fair	Fair		Moderate	Multiple stems from at 2m above grade, heavily surface rooted.	Located within the footprint of the prosed road realignment.	Remove
M6	**Yes**	**City**	**Yes**	Garry oak	*Queercus garryana*	59	15	5.9	6	Good	Fair		Good	Multiple stems form at 3m above grade - no major weakness visible at stem union, asymmetric crown on West side due to shading.	Located within the footprint of the prosed road realignment.	Remove
M7	**Yes**	**City**	**Yes**	Douglas-fir	*Pseudotsuga menziesii*	70	25	8.4	7	Good	Fair		Moderate	Heavily surface rooted.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade.	Remove
M8	**Yes**	**City**	**Yes**	Douglas-fir	*Pseudotsuga menziesii*	49	10	5.9	4	Fair	Fair/poor		Moderate	Suppressed by M7 - stunted growth form, *phaeolus schweinitzii* fruiting body attached to root collar, growing within close proximity to existing retaining wall.	Will be heavily impacted by excavation required to construct the foundation of the proposed u/g parkade.	Remove
155	**Yes**	**On**	**Yes**	Garry oak	*Queercus garryana*	51	20	5.1	7	Fair/good	Fair/good	suitable	Good	Small deadwood, historic pruning wounds with associated surface decay.	Located within the footprint of the proposed vehicular access.	Remove (3:1)

5. SITE INFORMATION & PROJECT UNDERSTANDING

The development site consists of 2 urban lots in Esquimalt, B.C. (see *figure 1* below). It is our understanding that the proposal is to remove the existing building structures and create new apartment buildings with underground parking, underground utility connections, outdoor amenity areas and new landscape features.

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

6. FIELD OBSERVATIONS

The onsite tree resource consists of a mixture of native (1 arbutus, 1 Douglas-fir, 1 Garry oak) and nonnative (1 Horse chestnut, 1 False cypress) species growing in open landscape conditions surrounding the existing buildings. Municipal trees within influencing distance of the subject site include: 8 trees (1 Lawson cypress, 3 Cherry plum, 1 Flowering cherry, 1 Garry oak, 2 Douglas-fir). There were 0 private offsite trees observed within influencing distance of the subject site.

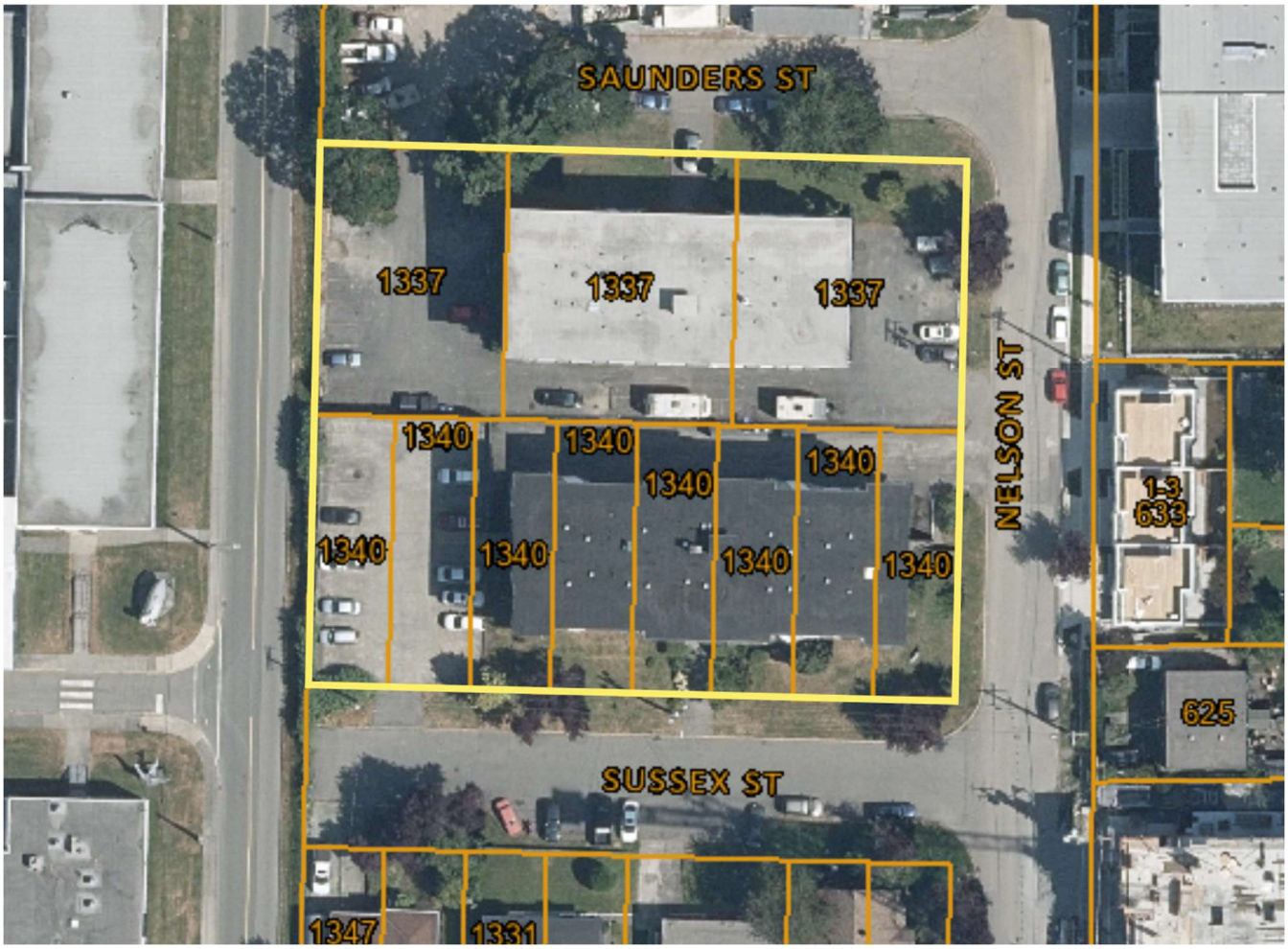


figure 1: Site context air photo: The approximate boundary of the subject site is outlined in Yellow.

7. TREE RISK ASSESSMENT

During our April 27, 2023 site visit and in conjunction with the tree inventory update, onsite 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 the existing onsite buildings (constant use), occupants of vehicles travelling on Saunders Street, Sussex Street or Nelson Street and within the onsite parking areas (frequent use), pedestrians travelling along the existing sidewalk (frequent use), hydro lines (constant use).

8. CONSTRUCTION IMPACT ASSESSMENT

8.1. RETENTION AND REMOVAL OF PRIVATE OFFSITE TREES

At the time of this reporting, there were no private offsite trees observed within influencing distance of proposed construction.

***Prior written consent from the neighbouring owner is required prior to the removal of any trees located on neignbouring properties.**

8.2. RETENTION AND REMOVAL OF ONSITE TREES

The following bylaw protected onsite trees (indicated by tag #) are located where they are in conflict with proposed construction and will require removal:

Remove 5 bylaw protected size onsite trees

- 151, 152, 153, 154, 155.

8.3. RETENTION AND REMOVAL OF ONSITE TREES

The following municipal trees (indicated by tag #) are located where they are in conflict with proposed construction and will require removal:

Remove 8 municipal trees

- M1, M2, M3, M4, M5, M6, M7, M8.

9. TREE REPLACEMENT

Pursuant to Esquimalt Tree Protection Bylaw No. 2837, the tree replacement calculations are as follows:

Quantity of Existing trees	# of Trees Retained	# of Trees Removed	Replacement Tree Ratio	Replacement Trees Required
Onsite (Bylaw protected size)				
5	0	5	2 trees @ 1:1 1 trees @ 2:1 2 trees @ 3:1	2 2 6
City Owned Trees				
8	0	8	1:1	8*
Private Offsite or shared trees				
0	N/A	N/A	N/A	N/A
			Total:	**18***

Based on bylaw criteria, 10 replacement trees are required to replace the 5 onsite bylaw protected size trees that are proposed for removal. It is understood that a tree replacement plan will be prepared by others. If the site cannot accommodate the required quantity of replacement trees, the deficit will be compensated to the City via a cash in lieu contribution to the Township's tree replacement and maintenance reserve account, by the owner. Current arboricultural best management practices and BCSLA/BCLNA standards apply to; quality, root ball, health, form, handling, planting, guying/staking and establishment care of replacement trees.

*Note that the replacement tree ratio for the boulevard trees should be confirmed with the municipality.

10. 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, the 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.

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.

11. 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.

12. 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:

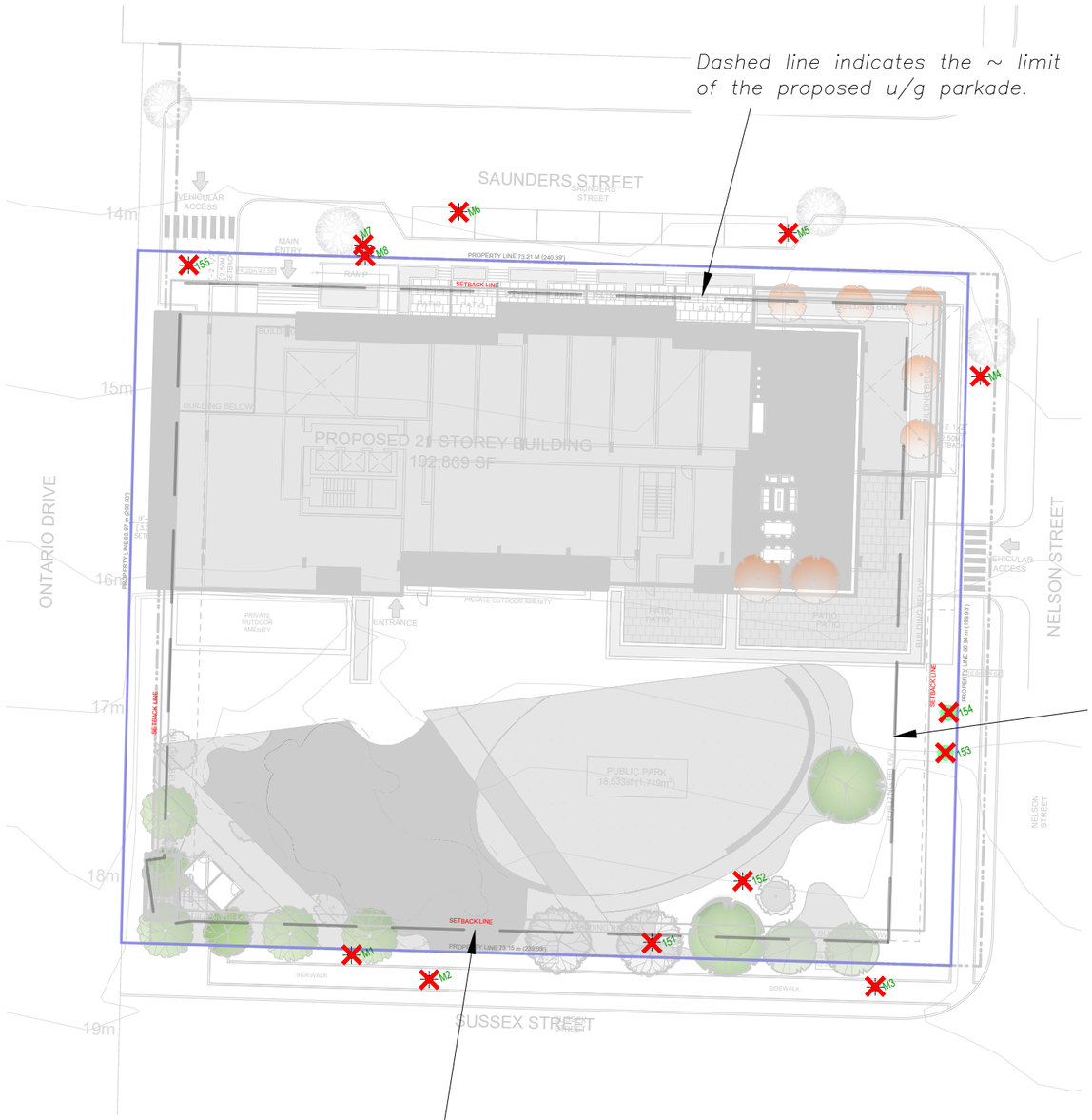
Noah Talbot, BA
ISA Certified Arborist PN – 6822A
Tree Risk Assessment Qualification
Email: Noah@talmack.ca

13. REFERENCES

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

Esquimalt Tree Protection Bylaw No. 2837.

APPENDIX A - TREE MANAGEMENT PLAN (T1)



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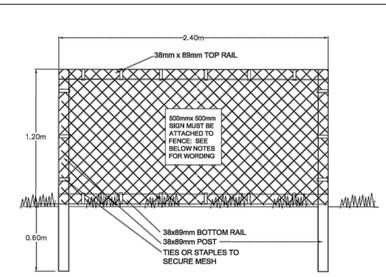
LEGEND

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

TREE PROTECTION FENCING



TREE PROTECTION FENCING

1. FENCE WILL BE CONSTRUCTED USING 38 mm X 89mm WOOD FRAME: TOP, BOTTOM AND POSTS * USE ORANGE SNOW-FENCING MESH AND SECURE THE WOOD FRAME WITH"ZIP" TIES OR GALVANIZED STAPLES.
2. ATTACH A 500mm X 500mm SIGN WITH THE FOLLOWING WORDING: PROTECTED ROOT ZONE - NO ENTRY. THIS SIGN MUST BE AFFIXED ON EVERY FENCE OR AT LEAST EVERY 10 LINEAR METERS.

* IN ROCKY AREAS, METAL POSTS (T-BAR OR REBAR) DRILLED INTO ROCK WILL BE ACCEPTED

Tree Management Plan - T1

1340 Sussex St. & 1337 Saunders Ave.
Esquimalt, BC

DATE:	May 13, 2024
PREPARED FOR:	Intracorp
SCALE:	1 : 500 @ 11" X 17"
DRAWN BY:	NT
REVISION:	0
REFERENCE DWG:	Topographic survey by Bennett Land Surv. Parkade plan & Site plan by WA Architects

TALMACK URBAN FORESTRY Consultants Limited

APPENDIX B - PHOTOGRAPHS

Photograph 1. Yellow arrow indicates Garry oak (tag# 155).

Photograph 2. Yellow arrows indicate Garry oak (M6 - left) and (M7 & M8 – right).

Photograph 3. Yellow arrows indicate Lawson cypress (M1 – left) and cherry plum (M2).