

TALBOT MACKENZIE & ASSOCIATES

CONSULTING ARBORISTS

50 Douglas Street, Victoria, BC

Construction Impact Assessment &

Tree Management Plan

PREPARED FOR:	Amica and Milliken Developments
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CONTENTS

1.	INTRO	DDUCTION	. 1
2.	TREE	INVENTORY METHODOLOGY	. 1
3.	EXEC	UTIVE SUMMARY	. 1
4.	TREE	INVENTORY DEFINITIONS	. 2
5.	SITE	INFORMATION & PROJECT UNDERSTANDING	. 6
6.	FIELD	OBSERVATIONS	. 6
7.	TREE	RISK ASSESSMENT	. 7
8.	CONS	STRUCTION IMPACT ASSESSMENT	. 7
	8.1.	Retention and Removal of Municipal Trees	7
	8.2.	Retention and removal of private offsite trees	7
	8.3.	Retention and removal of onsite trees	8
	8.4.	Tree impact summary table	9
9.	IMPA	CT MITIGATION	. 9
10.	DISCI	LOSURE STATEMENT	12
11.	IN CL	OSING	13
12.	REFE	RENCES	13

TABLES

le 1. Tree Inventory

APPENDICES

Appendix A	Tree Management Plan (T1)
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- Appendix B Tree Preservation Summary
- Appendix C Site Photographs
- Appendix D Hard Surface Over Tree Roots Detail

REVISION RECORD

REVISION	DESCRIPTION	DATE (YYYY-MM-DD)	ISSUED BY
DRAFT	Draft TPP report delivered to client to review.	2022-01-20	NT
0	Original TPP report	2022-02-10	NT
1	Revision to original TPP report dated 2022-02-10 to reflect review of the updated architectural site plan, civil plan and landscape plan	2023.04.18	NT
2	Revision or R1 TPP report dated 2023.04.18 to reflect review of the updated architectural site plan, civil plan and landscape plan	2023.07.27	NT

1. INTRODUCTION

Talbot Mackenzie & Associates was asked to complete a tree inventory, construction impact assessment and management plan for the trees at the following proposed project:

Site:	50 Douglas Street
Municipality	City of Victoria
Client Name:	Amica and Milliken Developments
Dates of Site Visit(s):	December 23, 2021
Site Conditions:	1 urban lot with existing apartment buildings. No ongoing construction activity.
Weather During Site Visit:	Overcast and rain

The purpose of this report is to address requirements of the City of Victoria arborist report terms of reference, and Tree Preservation Bylaw No. 21-035. The construction impact assessment section of this report (section 8), is based on plans reviewed to date, including the Architectural level 1 plan and Parking plan dated May 15, 2023 (By DHK Architects.), Preliminary civil plan – dated July 26, 2023 (By McElhanney Ltd.), and Landscape plan – dated July 27, 2023 (By LADR Landscape Architects).

2. TREE INVENTORY METHODOLOGY

Prior to our site visit we were provided with a site plan with surveyed tree locations. For the purpose of this report, the size, health, and structural condition of trees was documented. For ease of identification in the field, numerated metal tags are attached to the lower trunks of onsite trees. Trees located on neighbouring properties or the municipal frontage 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 architectural site plan, 2 onsite bylaw protected trees can be retained, provided that the critical root zones can be adequately protected during construction. 7 onsite bylaw protected trees are located where they required removal due to impacts from the proposed underground parking structure, new driveway alignment or landscape changes. The municipal trees and private offsite trees are located where they can be retained, using mitigation recommendations outlined in this report.

Based on bylaw criteria, 23 replacement trees (from Schedule "E", part 1 of Tree Preservation Bylaw No. 21-035) are required to be planted to meet the 25 tree minimum (credit for retention of 2 onsite bylaw protected trees). The Landscape plan (prepared by LADR Landscape Architects) shows locations for 22 part 1 replacement trees and 9 part 2 replacement trees. If the site cannot accommodate the required quantity of replacement trees, any replacement tree planting shortfall will be compensated to the city via a cash in lieu payment 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.

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

Table 1. Tree Inventory

Тас		Location (On. Off.		Name				Critical		Condition	Condition Rete		Condition Reter		Condition Reten Suita		ondition Retentio					
or ID	Surveyed ?	Shared,	Bylaw protected ?	Common	Botanical	dbh (cm)	Ht (m)	root zone	Dripline	Hoalth	Structural	(onsite	Relative	Conoral field observations/romarks	Trop rotantian commants	Retention						
	(1 6 37110)	Oity)	(res / No / Oity)	Ruby Vase Persian	Parrotia	(CIII)	(111)			Пеанн	Oliuciulai	1663)	tolerance		Project arborist to supervise any excavation required within the critical	318105						
M1	Yes	City	City	Parrotia	'Ruby Vase'	5	4	0.5	1.0	Fair/good	Fair		Good	Juvenile planting. Still staked.	root zone.	Retain						
M2	Yes	City	City	Hawthorn	Crataegus oxyacantha	31	8	3.3	4	Fair	Fair/poor		Good	Tearout wound at 2m above grade with extensive internal decay, fruiting body inside of wound, topped historically for hydro clearance - multiple regrowth leaders form at topping location.	Project arborist to supervise any excavation required within the critical root zone.	Retain						
М3	Yes	City	City	Hawthorn	Crataegus	16	5	17	2	Fair	Fair		Good	Growing under hydro limes, some	excavation required within the critical	Retain						
ine	100	ony	ony	Hawaron	oxyddanina	10	Ū		2				Cood		Project arborist to supervise any	rtotain						
M4	Yes	City	City	Hawthorn	Crataegus x Iavallei	10	5	1.1	2	Fair	Fair		Good	Growing under hydro lines.	excavation required within the critical root zone.	Retain						
					Crataegus x										Project arborist to supervise any excavation required within the critical							
M5	No	City	City	Hawthorn	lavallei	4	5	0.4	0.5	Fair	Fair		Good	Juvenile planting. Still staked.	root zone.	Retain						
M6	No	Citv	Citv	Persian Parrotia	Parrotia persica 'Vanessa'	4, 3, 2	4	0.7	0.5	Fair	Fair		Good	Juvenile planting. Still staked	excavation required within the critical	Retain						
1972	Vas	On	Vas	Mulherry	Morus sp	23, 34, 22	10	64	5	Fair/good	Fair	Suitable	Good	Multiple stems form at .5m above grade - no major weaknesses visible at stem unions, historic pruning wounds with associated surface decay, asymmetric crown on North side due to shading from huilding	*Excavation required within the critical root zone for the proposed underground parkade. Retention subject to review of a shoring plan. Project arborist to supervise any excavation required within the critical root zone	Retain*						
1372	163		165	Muberry	Morus sp.		10	0.4	5	T all/good		Suitable	COOU	Growing within close proximity to existing building, trunk narrows above	Shown on the landscape plan to be removed due to impacts from the new	Retain						
1973	No	On	Yes	Spruce	Picea sp.	33	10	4.1	1.5	Good	Poor	Unsuitable	Moderate	bh.	entrance to the heritage house.	Remove						
1974	Yes	On	Yes	Western Redcedar	Thuja plicata	49	20	6.1	5	Fair/good	Fair/good	Suitable	Moderate	Some evidence of drought stress, codominant leaders form at 15m above grade - no major weaknesses visible at stem union.	*Sidewalk proposed within the critical root zone. Project arborist to supervise any excavation required within the critical root zone.	Retain*						
1975	No	On	No	Pear	Pyrus sp.	18	8	2.3	3	Fair/good	Fair	Conditional	Moderate	Codominant leaders form at 2m above grade - no major weaknesses visible at stem union.	*Sidewalk proposed within the critical root zone. Project arborist to supervise any excavation required within the critical root zone.	Retain*						
1976	Νο	On	Νο	Golden Chain tree	Laburnum Sp.	5, 6	4	1.0	2	Fair	Fair/poor	Conditional	Good	Suppressed by 1977 - asymmetric crown on West side due to shading.	*Sidewalk proposed within the critical root zone. Project arborist to supervise any excavation required within the critical root zone.	Retain*						
1977	Yes	On	Yes	English hawthorn	Crataegus Iaeviaata	16, 11, 9, 8	8	2.9	3	Fair/good	Fair	Conditional	Good	Multiple stems form at .5m above grade - narrow angles of attachment	*Sidewalk proposed within the critical root zone. Project arborist to supervise any excavation required within the critical root zone.	Retain*						
					l aburratur	_	-		-					Dested on Devider sile soutiet	Will be heavily impacted by excavation							
1978	No	On	No	Golden Chain tree	Laburnum Sp.	18	4	2.3	2	Fair	Fair/poor	Conditional	Moderate	stems form at 1.5m above grade.	required to construct the foundation of the proposed underground parkade.	Remove						
1979	No	On	No	Golden Chain tree	Laburnum Sp.	10, 10	4	2	2	Fair	Fair/poor	Conditional	Moderate	Rooted on Boulder pile, multiple stems form at 1.0m above grade.	Will be heavily impacted by excavation required to construct the foundation of the proposed underground parkade.	Remove						

Construction Impact Assessment and Tree Management Plan for 50 Douglas Street Prepared for Amica and Milliken Developments

Tee		Location		n Name Critical				Condition Retention								
or ID	Surveyed ?	Shared,	Bylaw protected ?			dbh	Ht	root zone	Dripline			onsite	Relative			Retention
#	(Yes / No)	City)	(Yes / No / City)	Common	Botanical	(cm)	(m)	radius (m)	radius (m)	Health	Structural	trees)	tolerance	General field observations/remarks	Tree retention comments	status
051	No	Off	Yas	Plum	Prupus sp	40, 20, 18, 18~	10	7 9	6	Fair/good	Fair/poor		Moderate	Suppressed by OS2 - asymmetric crown on West side due to shading, multiple stems form at 1m above grade - narrow angles of attachment. Root system restricted on East side by existing landscape wall	*underground parkade and entrance/exit ramp are proposed within the critical root zone. Project arborist to supervise any excavation required within the critical root zone. No excavation can occur on the West side of the existing landscape wall	Retain*
031	NO		163	FIGIN	Frunus sp.	10.2	10	7.5	0	T all/good			WOUCHALE	by existing landscape wait.	*underground parkade and	Retain
OS2	No	Off	Yes	Douglas-fir	Pseudotsuga menziesii	50~	25	6.3	7	Fair/good	Fair/good		Moderate	Codominant crown with adjacent fir trees, topped historically at 15m above grade - multiple regrowth leaders form at topping location, root system restricted on East side by existing landscape wall.	entrance/exit ramp are proposed within the critical root zone. Project arborist to supervise any excavation required within the critical root zone. No excavation can occur on the West side of the existing landscape wall.	Retain*
053	No	Off	Vos	Austrian nine	Pinus nigra	70~	20	7.4	7	Good	Fair		Good	Multiple stems form at 4m above grade - included bark - not active, existing asphalt driveway covering	*underground parkade proposed within the critical root zone. Utility pole relocation proposed within the critical root zone. Project arborist to supervise any excavation required within the critical root zone. All crown clearance pruning to be performed to ANSI A300 standards	Retain*
033	NO		165	Austrian pine	Fillus Iligia	70.5	20	7.4	1	Good	1 all		Guu	Heavily surface rooted, historic	stanuarus.	Retain
					Betula	10								pruning wounds with associated surface decay, side pruned on North side for hydro clearance, growing within close proximity to existing	Located within the footprint of the	_
1980	Yes	On	Yes	Silver birch	pendula	46	20	5.8	6	Fair	Fair	Suitable	Moderate	retaining wall.	proposed driveway.	Remove
1981	Yes	On	Yes	Silver birch	Betula pendula	43	15	5.4	5	Fair	Fair	Suitable	Moderate	sidewalk and driveway, side pruned on North side for hydro clearance.	Located within the footprint of the proposed driveway.	Remove
1982	Yes	On	Yes	Silver birch	Betula pendula	38	20	4.8	6	Fair	Fair	Suitable	Moderate	Crown raise pruned over existing sidewalk and driveway, side pruned on North side for hydro clearance.	Will be impacted by excavation required to construct the proposed u/g parkade and sidewalk.	Remove
1983	Yes	On	Yes	Silver birch	Betula pendula	32	20	4	5	Fair	Fair	Suitable	Moderate	Crown raise pruned over existing sidewalk and driveway, side pruned on North side for hydro clearance.	Will be impacted by excavation required to construct the proposed u/g parkade and sidewalk.	Rermove
1984	Yes	On	Yes	Beech	Fagus sp.	87	15	10.9	8	Fair/good	Poor	Conditional	Moderate	Topped historically at 15m above grade - no regrowth leaders, multiple stems form at 7m above grade - narrow angles of attachment, growing within close proximity to existing retaining wall.	Will be impacted by excavation required to construct the proposed u/g parkade and sidewalk.	Remove
														Topped historically at 15m above grade - no regrowth leaders, multiple stems form at 7m above grade -	Will be heavily impacted by excavation required to construct the foundation of	
1985	Yes	On	Yes	Beech	Fagus sp.	63	15	7.9	7	Fair/good	Poor	Conditional	Moderate	narrow angles of attachment.	the proposed underground parkade.	Remove
1986	No	On	No	Southern magnolia	Magnolia grandiflora	27	15	2.8	4	Good	Fair/poor	Unsuitable	Good	Growing within close proximity to existing building foundation, asymmetric crown on West side due to shading, heavily surface rooted.	Located within the footprint of the proposed underground parkade.	Remove
				Japanese	Acer	5, 5, 6, 6,									Will be impacted by excavation required for the footprint of the proposed u/g parkade. *Remove or	
1987	Yes	On	Νο	maple	palmatum	6	4	1.4	2	Fair	Fair/poor	Suitable	Good	Growing within existing tree well.	transplant tree elsewhere onsite.	Remove*
1987	Yes	On	No	Japanese maple	Acer palmatum	5, 5, 6, 6, 6	4	1.4	2	Fair	Fair/poor	Suitable	Good	Growing within existing tree well.	Will be impacted by excavation required for the footprint of the proposed u/g parkade. *Remove or transplant tree elsewhere onsite.	Re

5. SITE INFORMATION & PROJECT UNDERSTANDING

The development site consists of one lot (50 Douglas Street), in Victoria, B.C., which has 2 existing apartment buildings with above ground parking. It is our understanding that the proposal is to remove the existing buildings and construct a new Senior citizen residential building with underground parking.

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 and nonnative tree species growing in open landscape conditions around the perimeter of the apartment buildings (see *figure 1*).



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

7. TREE RISK ASSESSMENT

During our December 23, 2021 site visit and in conjunction with the tree inventory, 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 update). 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 apartment buildings (constant use), occupants of vehicles travelling on Douglas Street, Batter Street and Niagara Street (frequent use), pedestrians travelling along existing sidewalks (frequent use), hydro lines (constant use).

8. CONSTRUCTION IMPACT ASSESSMENT

8.1. RETENTION AND REMOVAL OF MUNICIPAL TREES

The following municipal trees (indicated by ID #) are located where they are possible for retention providing that the critical root zones are adequately protected during construction. The project arborist must be onsite to supervise and excavation or fill placement required within its critical root zone (shown on the tree management plan (T1) in *appendix A*):

Retain and protect 6 municipal trees

• M1, M2, M3, M4, M5, M6

8.2. RETENTION AND REMOVAL OF PRIVATE OFFSITE TREES

The following private offsite trees (indicated by ID #) are located where they are possible for retention providing that their critical root zones are adequately protected during construction. The project arborist must be onsite to supervise and excavation or fill placement required within the critical root zone (shown on the tree management plan (T1) in *appendix A*):

Retain and protect 3 trees located on the neighbouring property at 657 Niagara Street

• OS1, OS2, OS3*.

*Prior written consent from the neighbouring owner is required prior to the pruning or removal of any trees located on neighbouring properties. Unsurveyed trees may require surveying to verify ownership.

8.3. RETENTION AND REMOVAL OF ONSITE TREES

The following <u>Bylaw protected</u> size onsite trees (indicated by tag #) are located where they are possible for retention providing that the critical root zone can be adequately protected during construction. The project arborist must be onsite to supervise any excavation or fill placement required within their critical root zones (shown on the tree management plan (T1) in *appendix A*):

Retain and protect 2 bylaw protected onsite trees

• 1972, 1974.

The following <u>Bylaw protected</u> size onsite trees (indicated by tag #) are located where they will be impacted by proposed onsite construction and are proposed for removal:

Remove 7 bylaw protected onsite trees

• 1973, 1980, 1981, 1982, 1983, 1984, 1985.

The following <u>Non bylaw protected</u> size onsite trees (indicated by tag #) are located where they are possible for retention providing that the critical root zone can be adequately protected during construction. The project arborist must be onsite to supervise any excavation or fill placement required within their critical root zones (shown on the tree management plan (T1) in *appendix A*):

Retain and protect 3 non bylaw protected onsite trees

• 1975, 1976, 1977.

The following <u>Non bylaw protected</u> size onsite trees (indicated by tag #) are located where they will be impacted by proposed onsite construction and are proposed for removal:

Remove 4 non bylaw protected onsite trees

• 1978, 1979, 1986, 1987.

8.4. TREE IMPACT SUMMARY TABLE

	A	В	С	D
Tree Status	Total # of	# Of Trees	# Of NEW or	# Of EXISTING
	Protected	to be	REPLACEMENT	non-protected
	Trees	REMOVED	Trees to be	Trees Counted as
			Planted*	Replacements
Onsite Trees	9	7	31	0
Private Offsite Trees	3	0	N/A	N/A
Municipal Trees	6	0	N/A	N/A
Total	18	7	31	0

Pursuant to City of Victoria Tree Preservation Bylaw No. 21-035, the tree replacement calculations are as follows:

Based on bylaw criteria, 23 replacement trees (from Schedule "E", part 1 of Tree Preservation Bylaw No. 21-035) are required to be planted to meet the 25 tree minimum (credit for retention of 2 onsite bylaw protected trees). The Landscape plan (prepared by LADR Landscape Architects) shows locations for 22 part 1 replacement trees and 9 part 2 replacement trees. If the site cannot accommodate the required quantity of replacement trees, any replacement tree planting shortfall will be compensated to the city via a cash in lieu payment by the owner.

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, 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. In particular, the following activities should be completed under the direction of the project arborist:

- All excavation required within the critical root zones of M1, M2, M3, M4, M5, M6 for the installation of the proposed new sidewalk.
- All excavation required within the critical root zones of 1972, 1974, 1975, 1976, 1977 for new sidewalk installation.
- All excavation required within the critical root zone of 1972 to remove the existing building foundation and for the footprint of the proposed building foundation.
- All excavation required within the critical root zones of OS1, OS2 and OS3 for the removal of the existing hard surface and installation of the new hard surface.
- All excavation required within the critical root zones of OS1 and OS2 for the footprint of the proposed u/g parkade and entrance/exit ramp. No excavation can occur west of the existing landscape wall.
- All excavation required within the critical root zones of OS3 for the footprint of the proposed u/g parkade and entrance/exit ramp.
- All excavation required within the critical root zone of OS3 for the proposed relocation of the utility pole (*it is understood that the final utility pole location will be provided at detailed design stage).

Pruning: Based on review of the civil plan provided, it is understood that the utility pole at the Northwest corner of the site will require relocation (Westward – and outside of the proposed driveway letdown). It is anticipated that branches of the following ~ sizes will require pruning back to the branch collar:

- 1 x ~ 12cm diameter
- 1 x ~ 10cm diameter
- 3 x ~ 8cm diameter
- 5 x ~ 5cm diameter

*See photograph 6 in *appendix C* for the limbs that are anticipated to be in conflict with the utility pole relocation and will require pruning. All crown pruning must be performed to ANSI A300 standards. One the exact new pole location is know (at detailed design stage), we can provide final pruning recommendations for OS3).

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 Talbot Mackenzie & Associates 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 Talbot Mackenzie & Associates. 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. Talbot Mackenzie & Associates 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 Talbot Mackenzie & Associates 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, Talbot Mackenzie & Associates 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,

Talbot Mackenzie & Associates

Prepared by:

1 Joah Talbot

Noah Talbot, BA ISA Certified Arborist PN – 6822A Tree Risk Assessment Qualification Email: tmtreehelp@gmail.com

12. REFERENCES

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

The City of Victoria Tree Preservation Bylaw No. 21-035.

APPENDIX A - TREE MANAGEMENT PLAN (T1)





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 be erected prior to the start of any construction activity on site (i.e. any purpose.

compartmentalization of the wound.

ed to ANSI A300 standards and Best Management Practices. charges and multiple small charges designed to pre-shear the rock face

APPENDIX B – TREE PRESERVATION SUMMARY

	Tree Pre	servation Summary	y						
City of	City of Victoria Project No: Unknown								
Addres	Address: 50 Douglas Street								
Arboris	Arborist: Noah Talbot, BA								
Certific	ations/Qualifications: ISA Certified Arborist (P	N6822A), Tree Risk	Assessment Qualified	1					
		Total							
Α.	Protected Trees Removed	7	X 1	Α.	7				
В.	Replacement Trees Proposed per		X 1	В.	22*				
	Schedule "E", Part 1	22*							
C.	Replacement Trees Proposed per		X 0.5	С.	4.5 *				
	Schedule ''E'', Part 2	9*							
D.	Replacement Trees Proposed per		X 1	D.	0*				
	Schedule "E", Part 3	0*		-					
<u> </u>	Total replacement trees proposed (B+C+I	D) Round down to ne	earest whole number	<u>E.</u>	26*				
F.	Onsite replacement tree deficit (A-E) Rec	cord 0 if negative nui	mber	F.	0				
	ONSITE Minimum trees	s per lot requireme	nt (onsite trees)						
G.	Tree minimum on lot*			G.	25				
H.	Protected trees retained (other than		X 1	Η.	2				
	specimen trees)	2							
Ι.	Specimen trees retained	0	X 3	Ι.	0				
J.	Trees per lot deficit (G - (B+C+H+I) Record	d 0 if negative numb	er	J.	0				
	OFFSITE Minimum replace	ement tree requirer	nent (offsite trees)						
К.	Protected trees Removed	0	X 1	К.	0				
L.	Replacement trees proposed per		X 1	L.	0				
	Schedule "E", Part 1 or Part 3	0							
М.	Replacement trees proposed from		X 0.5	Μ.	0				
	Schedule "E", Part 2	0							
N.	Total replacement trees proposed (L+ M)	Round down to near	rest whole number	Ν.	0				
О.	Offsite replacement tree deficit (K - N) Re	cord 0 if negative nu	ımber	О.	0				
Cash-in-lieu requirement									
Ρ.	Р.	0							
Q.	Offsite trees proposed for cash-in-lieu		Q.	0					
R.	Cash-in-lieu proposed ((P+Q) X \$2.000)			R.	\$0				
Summa Date:		*Refer Lands others	r to cape Plan by						

APPENDIX C – SITE PHOTOGRAPHS



Photograph 1. Yellow arrow indicates tag# 1972.



Photograph 2 – Yellow arrow indicates Western Redcedar (tag# 1974).



Photograph 3 – Yellow arrow indicates offsite pine (OS 3).



Photograph 4 – Yellow arrow indicates beech (tag# 1984).



Photograph 5 – Yellow arrow indicates beech (tag# 1985).



Photograph 6 – Yellow arrows indicate the branches from OS3 that we anticipate will require pruning for clearance from the new utility pole and utility line locations.

APPENDIX D – HARD SURFACE OVER TREE ROOTS DETAIL

HARD SURFACE ABOVE TREE ROOTS DETAIL



HARD SURFACE ABOVE TREE ROOTS NOTES

- 1. Maintain as large a setback between the fill encroachment and the root collar of the tree as possible.
- 2. Review any canopy clearance pruning requirements to accommodate vehicle or pedestrian clearances (Pruning to be performed to ANSI A300 standards).
- 3. Excavate the new footprint of the driveway or sidewalk under the supervision of the project arborist. Excavation will be limited to the removal of the existing sod layer. Excavation around root structures must be performed by hand, airspade, or hydroexcavation.
- 4. Install a two-dimensional (such as Combigrid $\frac{30}{30}$) or Three-dimensional geogrid reinforcement.
- 5. Install a 150mm depth layer of clear crushed gravel (no fines) using 20mm and/or 75mm diameter material or approved equivalent. *Note - the depth may be less than 150mm in some situations (dependant on grading constraints).
- 6. Install meduim weight geotextile fabric (such as Nilex 4535 or similar) over the clear crushed gravel layer to prevent fine particles of sand from infiltrating this layer.
- 7. The bedding or base layer and new driveway or sidewalk surface can be installed directly on top of the felted filter fabric.
- 8. Fill slopes where possible install loose stacked boulders to reduce the footprint of the fill slopes that encroach within the critical root zone. Fill slope materials must be permeable to air and water. Do not pile fill material directly against the trunk of a tree.



