



TALBOT MACKENZIE & ASSOCIATES

CONSULTING ARBORISTS

3130 Jutland Road, Victoria, BC

Construction Impact Assessment & Tree Management Plan

PREPARED FOR:	TL Housing Solutions 1212 – 450 SW Marine Drive Vancouver, BC V5X 0C3
PREPARED BY:	Talbot, Mackenzie & Associates Noah Talbot – Consulting Arborist ISA Certified # PN-6822A Tree Risk Assessment Qualified
DATE OF ISSUANCE:	December 10, 2020

CONTENTS

1.	INTRODUCTION	1
2.	TREE INVENTORY METHODOLOGY	1
3.	EXECUTIVE SUMMARY	1
4.	TREE INVENTORY DEFINITIONS	2
5.	SITE INFORMATION & PROJECT UNDERSTANDING	5
6.	FIELD OBSERVATIONS.....	5
7.	TREE RISK ASSESSMENT	6
8.	CONSTRUCTION IMPACT ASSESSMENT	6
8.1.	Retention and Removal of Municipal Trees.....	6
8.1.1.	Findings of Exploratory Excavation and Recommendations	6
8.2.	Retention and removal of private offsite trees	7
8.3.	Retention and removal of onsite trees	8
9.	IMPACT MITIGATION	8
10.	DISCLOSURE STATEMENT	11
11.	IN CLOSING.....	12
12.	REFERENCES	12

TABLES

Table 1. Tree Inventory	4
-------------------------------	---

APPENDICES

Appendix A Tree Management Plan (T1)

Appendix B Site Photographs

REVISION RECORD

REVISION	DESCRIPTION	DATE (YYYY-MM-DD)	ISSUED BY
0	Original TPP report.	2018-05-18	MM
1	Revision to original TPP report to update the tree inventory, update the construction impact assessment – based on review of updated architectural, civil servicing and landscape design drawings and report on the findings (found in section 8.1.1 below) of an exploratory excavation within the crz of municipal London Plane (NT5).	2020-12-10	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:	3130 Jutland Road - West portion of property, (496 and 498 Cecelia Road)
Municipality	City of Victoria
Client Name:	TL Housing Solutions
Dates of Site Visit:	April 9, 2018 & December 9, 2020
Site Conditions:	Grass field. No ongoing construction activity. Relatively Flat topography
Weather During Site Visit:	Clean and sunny

The purpose of this report is to address requirements of the City of Victoria arborist report terms of reference, and Tree Preservation Bylaw No. 05-106. The construction impact assessment section of this report (section 8), is based on plans reviewed to date, including the: Architectural site plan (prepared by Christine Lintott Architects), Civil servicing plan (prepared by Stantec), and Landscape plan (prepared by LADR Landscape Architects). At this time, we have not been provided with a preliminary grading plan to review (Once a grading plan has been prepared, it is recommended that the project arborist review the proposed grading and update this report, if necessary).

2. TREE INVENTORY METHODOLOGY

We initially inventoried the existing bylaw protected onsite and offsite trees on April 9, 2018 – as part of the initial development application. We returned to the site on December 9, 2020 to update the tree inventory. Prior to our site visits, we were provided with surveyed tree locations from the project surveyor (WSP). For the purpose of this report, the size, health, and structural condition of trees was documented. Trees were not tagged (identified as NT 4 – NT 6). 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

The proposed underground parkade foundation is located approximately 5.6 meters from the municipal London Plane NT 5 and 8 meters from the neighbour's Austrian Pine NT 6. If shoring techniques are used to limit the extent of excavation to just outside the footprint of the underground parkade, we do not anticipate the health of the London Plane NT 5 will decline as a result. In its proposed location, the sidewalk is conflicting

with the root flare of municipal London plane (NT 5). It will not be possible to construct a concrete sidewalk at grade, without severing a major structural root. If the sidewalk is constructed using asphalt (to avoid additional working space for concrete form works) and raised above the grade of the root flare of the tree it may be possible to retain the tree (to be confirmed upon review of a grading plan). Alternatively, if the sidewalk were shifted to the East 1.1 meters from the center of the tree, root flare conflicts would be avoided (see section 8.1.1 for the summary of the findings of our exploratory excavation and follow up recommendations).

We do not anticipate a significant impact to the health of the Austrian Pine if excavation for cut slope is not required beyond two metres from the underground parkade footprint. Both trees have fair to poor structural characteristics. Excavation will be required within the CRZ of onsite London Plan (NT 4) for the installation of the proposed storm and sanitary sewer services and a fire access lane (on modified grass). If low impact techniques are utilized during these installations the health of this tree will likely not be significantly impacted.

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.

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

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	General field observations/remarks	Tree retention comments	Retention status
				Common	Botanical					Health	Structural					
Nt4	Yes	On	Yes	London Plane	Platanus x acerifolia	110	20	11.55	11	Fair	Fair	Good	Good	Tag 744, asymmetric crown on South side associated with historic hydro clearance pruning, history of large limb pruning with associated surface decay. End weighted limbs, small cavity openings in the upper crown.	* Excavation for storm and Sanitary services and a fire access lane (on modified grass surface) within the CRZ. The project arborist to supervise all excavation and fill placement required within the CRZ. Shoring recommended to minimize excavation requirements within the CRZ.	Retain*
Nt5	Yes	City	Yes	London Plane	Platanus x acerifolia	57	15	5.99	8	Fair	Fair/poor	Good	Good	Municipal tree, asymmetric crown on South side associated with historic hydro clearance pruning, history of large limb pruning with associated surface decay, existing concrete sidewalk 20cm from South side of root collar.	*New sidewalk proposed within the CRZ. The parkade foundation proposed within the CRZ. If this tree is retained, the new sidewalk will need to be constructed using asphalt and raised above the grade of the buttress of the tree. If a concrete surface is required, the sidewalk should be shifted East – to avoid conflicts with the root flare of the tree. Recommend that the project arborist review a grading plan – once one is prepared. The project arborist to supervise all excavation and fill placement required within the CRZ.	Retain*
Nt6	Yes	Off	Yes	Austrian pine	Pinus nigra	100~	25	10.5	6	Good	Fair/poor	Good	Good	Multiple stems form at 2 and 4 m above grade - Included unions, reaching wood visible below unions, crown raise pruned above the existing parking lot.	*The parkade foundation proposed within the CRZ. A sidewalk proposed within the CRZ. The project arborist to supervise all excavation and fill placement required within the CRZ. Shoring recommended to minimize excavation requirements within the CRZ.	Retain*

*Critical root zone (CRZ) calculated above and drawn as follows on Tree Management Plan (T1): CRZ + 0.5 * d.b.h (drawn from the center of the stem)

5. SITE INFORMATION & PROJECT UNDERSTANDING

The development site consists of one urban lot (3130 Jutland Road - West portion of property, (496 and 498 Cecelia Road), in Victoria, B.C.. It is our understanding that the proposal is to create 2 new buildings, underground parking, fire truck access, underground utility connections, frontage improvements, plaza spaces and new landscape features and plantings.

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 1 London Plane tree (NT 4), located at the Southwest corner of the property. The offsite tree resource consists of 1 London Plane tree (NT 5) located on the Cecelia Road frontage, and 1 Austrian pine (NT 6) located on the neighbouring property at 3150 Jutland Road. The subject site is an open field, and all three trees included in the inventory are growing singularly, in open landscape conditions (see [figure 1](#)). London Plane NT 4 and NT 5 have been heavily side pruned historically for hydro clearance pruning (see photographs 1 and 2 - [appendix B](#)). Offsite Austrian pine (NT 6) was observed to have included bark at the stem unions (see photograph 3 – [appendix B](#)).

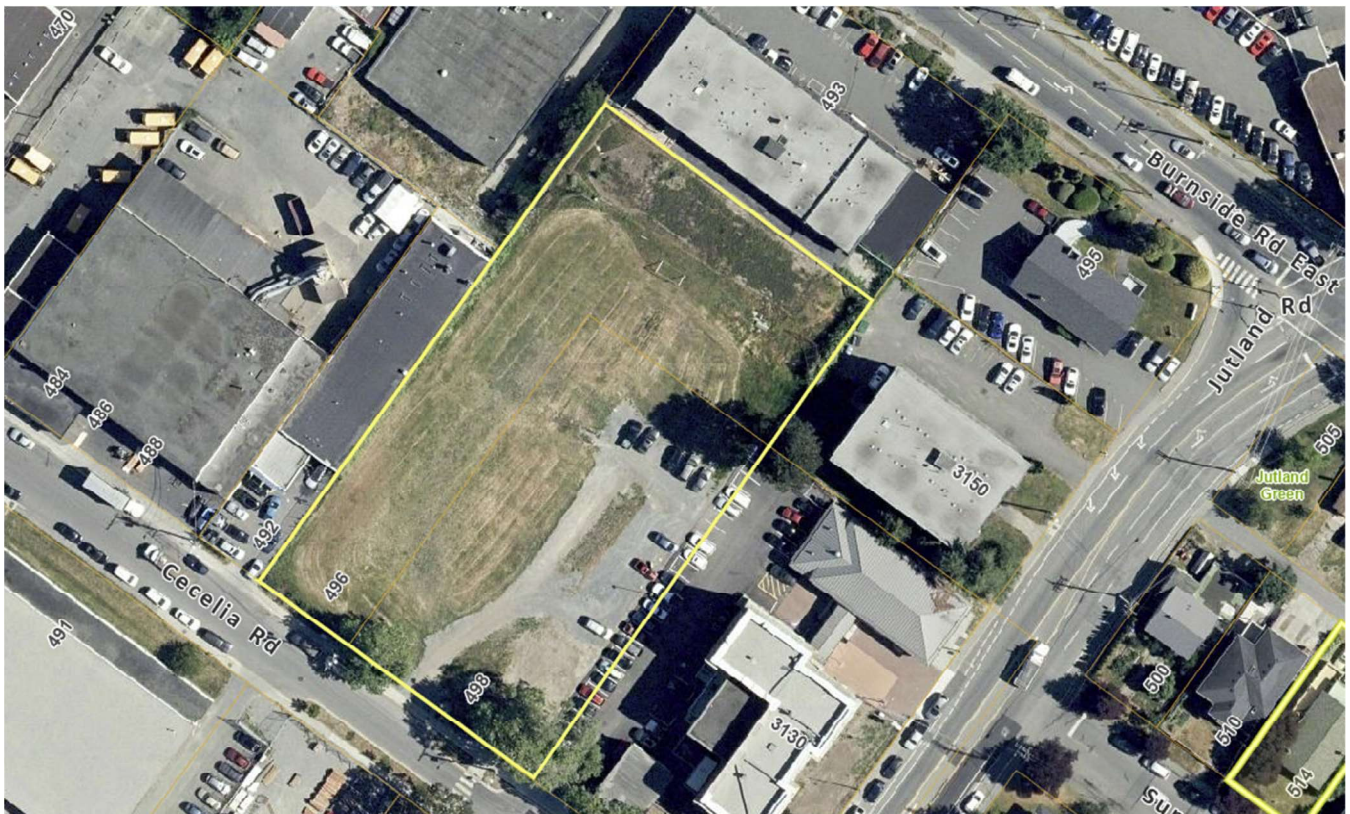


figure 1: Site context air photo: The boundary of the subject site is outlined in Yellow.

7. TREE RISK ASSESSMENT

During our November 09 2020 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 December 09, 2020 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 vehicles travelling on Cecelia Road (frequent use), occupants of vehicles parked onsite (occasional use), pedestrians travelling along the existing sidewalk (frequent use), hydro lines (constant use).

8. CONSTRUCTION IMPACT ASSESSMENT

8.1. RETENTION AND REMOVAL OF MUNICIPAL TREES

The following municipal tree (indicated by ID #) is located where it is possible for retention providing that its 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 1 municipal tree

- *NT5

*Note – Retention will only be possible using a modified sidewalk design. A grading plan should be reviewed to determine the grade of the proposed sidewalk in relation to the root collar of NT 5.

See below for the findings of an exploratory excavation along the edge of the proposed sidewalk footprint.

8.1.1. Findings of Exploratory Excavation and Recommendations

An exploratory excavation was performed by the project arborist on December 9, 2020 to determine the depth of root system of NT 5 within the footprint of the proposed sidewalk. Below is a summary of the findings:

- Hand excavation was performed along the existing fence line (which is approximately the property boundary). The West edge of the exploratory trench is 0.8 meters from the center of the stem of NT 5.
- The depth of the exploratory excavation was 0.4 meters below the existing grade (at the location of the proposed sidewalk footprint).

- A large buttress root (approximately 35 cm diameter) was encountered (see photographs 4 and 5 in [appendix B](#)) at 0.8 meters distance from the center of the stem of NT5). This root was observed to grow sharply downward at approximately the property boundary, then grows horizontally at 1.1 meters from the center of the stem.
- The topside of the root is approximately 40 cm below the existing grade – at a distance of 1.1 meters from the center of the stem of NT 5.
- No other roots were encountered from this tree, along the limits of our exploratory excavation.
- Based on the results of the exploratory excavation, the proposed new sidewalk is conflicting with the root flare of the tree; therefore the following is recommended:
 - An asphalt sidewalk is recommended, within the critical root zone of NT5, due to the close proximity of the proposed sidewalk to the trunk and root flare. There will not be sufficient working space for concrete forming on the West side of the proposed sidewalk.
 - The sidewalk must be constructed above the elevation of the buttress root that was exposed by exploratory excavation. If the sidewalk is constructed in its proposed location, excavation cannot occur below the existing grade that would require the removal of this structural root.
 - If a narrower sidewalk is possible, or if it can be shifted East – no closer than 1.1 meters from the center of the tree, it would avoid the conflicts with the root flare of NT 5, and could be constructed at grade (using concrete).
 - It is recommended that the project arborist review a grading plan, once one is available, to review the proposed site grading within the critical root zone of NT 5.

***Note that the municipality will need to provide consent, prior the removal of any trees that are located on Municipal property.**

8.2. RETENTION AND REMOVAL OF PRIVATE OFFSITE TREES

The following private offsite tree (indicated by ID #) is located where it is possible for retention providing that its 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 1 private offsite tree

- NT6

***Prior written consent from the neighbouring owner is required prior to the 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 Bylaw protected size onsite tree (indicated by tag #) is located where it is possible for retention providing that its critical root zone can be adequately protected during construction. The project arborist must be onsite to supervise and excavation or fill placement required within the critical root zones (shown on the tree management plan (T1) in [appendix A](#)):

Retain and protect 1 bylaw protected onsite tree

- NT4.

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:

1. Onsite London plane (NT 4):

- All excavation within the critical root zone during proposed storm and sanitary sewer service installations (refer to Stantec civil servicing drawing).
- All excavation and fill placement required within the critical root zone to remove the existing turf and install new reinforced grass, for the proposed fire truck access (refer to LADR Landscape Architects - Landscape drawing).

2. Municipal London Plan (NT 5):

- All excavation within the critical root zone to remove the existing City sidewalk (refer to Stantec civil servicing drawing) and any planting, soil or turf installation within the critical root zone (refer to LADR Landscape Architects - Landscape drawing).
- All excavation and fill placement within the critical root zone during installation of the new sidewalk along the new road dedication line (refer to Stantec - civil servicing drawing).
- All excavation within the critical root zone during exaction required for the footprint of the proposed underground parkade (refer to Christine Lintott Architects - architectural site plan).

3. Private offsite Austrian pine (NT 6):

- All excavation within the critical root zone during exaction required for the footprint of the proposed underground parkade (refer to Christine Lintott Architects - architectural site plan).
- All excavation and fill placement required within the critical root zone to remove the existing turf and install new walkway (refer to LADR Landscape Architects - Landscape drawing).

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.

Windthrow: Where forest edge trees are proposed to be removed, we recommend that trees that may experience an increase in wind exposure be re-examined, once tree clearing has taken place, to ensure that they are structurally stable, and suitable for retention as leading-edge trees.

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:



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. 05-106.

APPENDIX A - TREE MANAGEMENT PLAN (T1)

Field fit tree protection fencing along edge of existing sidewalk



The project arborist to supervise all excavation and fill placement required within the critical root zone.

[illegible]

Machining. Machining can be an important reactive step in maintaining the health of trees and mitigating construction related impacts and overall site impacts. Much should be made from a natural material such as wood chips or bark pieces, be 5-6cm deep, to 1m high should be tucking the soil. Use "methods to avoid soil compaction if the area is to have heavy traffic."

Planting. We recommend that any pruning of above-ground trees be performed to ANSI A300 standards and Best Management Practices. Payed surfaces listed 905.008. Where paved areas cannot avoid construction techniques such as **flexing permeable paving**, may be required. The "paved surfaces above trees' detail above offers a compromise to full depth excavation (which could impact the health or structural integrity of the trees). The objective is to avoid the roots and to provide a permeable surface for water to infiltrate. The detail is based on depending on base layers). Final grading should take this paving material and base layers). Final grading should take this paving material into account. This may also result in soils, which are high potential change into soils, below. We also recommend that the surface be covered with the post and stone, below.

[illegible]

grading plan, once one is available, to ensure that the proposed al London plane NT 5.

1. Maintain as **large** a setback between the fill encroachment and the rod collar of the tree as possible.
2. Review any canopy clearance planning requirements to accommodate vehicle or pedestrian clearances (Planning to be performed by the City of Portland).
3. Excavate the new footprint of the sidewalk under the supervision of the project arborist. Excavation will be **limited** to the existing soil layer. Excavation around root structures must be performed by hand, a auger, or hydroexcavation.
4. Install a two-dimensional (such as Combridg [®]) or Three-dimensional geogrid reinforcement.
5. Install a 150mm minimum depth **layer** of clear crushed gravel (no fines) using 20mm and/or 75mm diameter material approved equivalent.
6. Install felted filter fabric over the clear crushed gravel layer to prevent fine particles of sand from infiltrating this layer.
7. The bedding or base layer and new sidewalk surface (asphalt surface recommended, as addition working space is required for concrete form works) can be installed directly on top of the filter fabric fabric.
8. Fill slopes - where possible install loose stacked boulders to reduce the footprint of the fill slopes that encroach within critical root zone. Fill slope materials must be permeable to air and water. Do not pile fill material directly against the tree.



Existing tree with ID #

Dripline radius (m)

Tree protection fencing

Critical root zone radius (m)

Site boundary

[illegible]

- THREE PROTECTION FENCING**
1. FENCE WILL BE CONSTRUCTED USING 38 mm x 85 mm WOOD FRAME TOP, BOTTOM AND POSTS - 100% CHAIN STAPLE FENCING MESH AND SECURE THE WOOD FRAME WITH ZIP TIES OR GALVANIZED S/P LACES.
 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.
 3. IN ROCKY AREAS, METAL POSTS (T-BAR OR REBAR) DRILLED INTO ROCK WILL BE USED FOR ANCHORAGE.

Burnside School
3130 Jutland Road
Victoria, BC

DATE: December 10, 2020
PREPARED FOR: TL Housing Solutions Ltd.
SCALE: 1 : 500 @ 11" X 17"
DRAWN BY: NT
REVISION: 0

TALBOT MACKENZIE & ASSOCIATES
CONSULTING ARBORISTS
BOX 48153
VICTORIA, BC, V8Z 7H2
TEL: 250-479-8733
EMAIL: tmfreethehelp@gmail.com
www.freethehelp.ca

APPENDIX B - PHOTOGRAPHS



Photograph 1. Onsite London Plane (NT 4).



Photograph 2. Municipal London Plane (NT5).



Photograph 3. Offsite Austrian pine (NT6).



Photograph 4 – Municipal London Plane (NT5) – Exploratory excavation to determine root depth within the proposed sidewalk footprint.



Photograph 5 – Large buttress root (painted orange) found within the exploratory trench. No other roots were found during exploratory excavation.