



Talbot Mackenzie & Associates

Consulting Arborists

# **1025 Kings Road, Victoria, BC**

## **Construction Impact Assessment &**

## **Tree Preservation Plan**

Prepared For: Aryze Developments Inc  
1839 Fairfield Road  
Victoria, BC V8S 1G9

Prepared By: Talbot, Mackenzie & Associates  
Graham Mackenzie  
ISA Certified # PN-0428A  
TRAQ – Qualified

Date of Issuance: August 6, 2020  
*Amended May 5, 2021*  
*Amended August 27, 2021*

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## Talbot Mackenzie & Associates

Consulting Arborists

Jobsite Property: 1025 Kings Road, Victoria, BC

Date of Site Visits: May 22, 2020 – July 30, 2020, August 20, 2021

Site Conditions: Existing multi unit building, no ongoing construction activity.

**Summary:** We inventoried 1 bylaw protected tree located on the subject property and 7 trees located on the municipal frontages of Kings Road and Fifth Street. Based in the plans provided and attached, we anticipate that all these trees except 1 will require removal to facilitate the proposed building and servicing concept. Municipal tree 11614, may be possible to retain, depending on the impacts from the proposed service and building footing excavation and the new sidewalk and driveway entrance configuration. The client would like to try to retain this tree and determine if that is possible at the time of building construction, providing replacement value for the tree to the City of Victoria, if required. We have included a strategy for retaining the tree in this report. The landscape plan provided shows 2 replacement trees on the subject property to compensate for the 1 that is being removed.

### **Scope of Assignment:**

- Inventory the existing bylaw protected trees and any trees on municipal or neighbouring properties that could potentially be impacted by construction or that are within three metres of the property line.
- Review the proposal to demolish the existing building and construct a new multi unit building.
- Review the proposed new servicing details.
- Comment on how construction activity may impact existing trees.
- Prepare a tree retention and construction damage mitigation plan for those trees deemed suitable to retain given the proposed impacts.

### **Methodology:**

- We visually examined the trees on the property and prepared an inventory in the attached Tree Resource Spreadsheet.
- Each by-law protected tree was identified using a numeric metal tag attached to its lower trunk. Municipal trees and neighbours' trees were not tagged.
- Information such as tree species, DBH (1.4m), crown spread, critical root zone (CRZ), health, structure, and relative tolerance to construction impacts were included in the inventory.
- The conclusions reached were based on the information provided within the attached plans from WA Architect Ltd dated July 14, 2021.

- A Tree removal and replanting Plan was provided by Biophilia Design Collective Ltd dated August 26, 2021.
- A preliminary servicing plan was provided by J.E. Anderson & Associates dated April 28, 2021.

**Limitations:**

- No exploratory excavations have been conducted and thus the conclusions reached are based solely on critical root zone calculations and our best judgement using our experience and expertise. The location, size and density of roots are often difficult to predict without exploratory excavations and therefore the impacts to the trees may be more or less severe than we anticipate.

**Summary of Tree Resource:**

**Trees to be Removed:**

The following trees will require removal due to construction related impacts:

**Western Red cedar Nt1:** This tree is in direct conflict with the proposed pad mounted transformer location and will require removal.

**Red maple 11636:** This tree had been pruned for the overhead utility lines historically, resulting in an asymmetric form where most of the canopy extends onto the subject property. Due to the pruning that will be necessary to accommodate the proposed construction and the installation of the pad mounted transformer on the South side of the tree, this tree will require removal.

**European Birch 11637:** This tree will be impacted by the proposed sidewalk installation and given its present health and the pruning that has occurred due to the overhead utilities, the landscaping preference is to remove and replace with a more desirable species for this location.

**Purple leaf Plum 11638:** This tree will be impacted by the proposed sidewalk installation and given its present health and the pruning that has occurred due to the overhead utilities, the landscaping preference is to remove and replace with a more desirable species for this location.

**Hedge maple 11611:** The proposed sidewalk and offsite upgrade work proposed will require that this tree be removed.

**Hedge maple 11612:** The proposed sidewalk, offsite upgrade work and servicing proposed will require that this tree be removed.

**Hedge maple 11613:** The proposed sidewalk and offsite upgrade work proposed will require that this tree be removed.

### **Potential Impacts on Trees to be Retained and Mitigation Measures**

**Hedge maple 11614:** It is hoped that this tree can be retained and based on the plans reviewed, we feel there is a reasonable chance of retaining the tree provided the impacts from the proposed footing, retaining wall and service excavations do not impact the critical root zone too heavily and the proposed sidewalk can be installed while minimizing the need for additional root pruning within the critical root zone of the tree. Rather than complete exploratory excavations at this time, it is our understanding that the client would prefer to put up a financial bond for the tree and then make all reasonable efforts to retain the tree, getting reimbursed if the tree is retained to the satisfaction of the City of Victoria.

In order to achieve this, we propose the following strategy:

- Fence the critical root zone of the tree with barrier fencing prior to any demolition or construction activity occurring on site.
- Complete the excavation for the proposed building and services and any other required excavations under the direction of the project arborist documenting any roots severed. It is our understanding that the sanitary and drain services are approximately 3 meters deep at the property line. It will likely be necessary to shore the trench in order to reduce the width of the required excavation.
- Provided the excavations for the proposed building and services has not impacted the tree too heavily, review the potential impacts from the proposed sidewalk and determine if it can be installed without having additional impacts to the tree or re-designed to minimize the impacts.

#### **Neighbours trees:**

**Nt2:** There is a row of volunteer hedge maple trees and pyramidal cedar trees along the West property line on the neighbour side that will likely have to be pruned back. If the retaining wall is going to be replaced in this area it may require that some of the trees be removed. As these are not bylaw protected trees, if they do have to be removed, it should be discussed with the neighbour and it may be beneficial to both properties to replace them with a more desirable screening choice.

**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:

- Any excavation within the critical root zone of municipal tree 11614, including but not limited to: excavation for building or retaining wall footings, storm and sanitary services, new driveway curb and sidewalk configuration.

**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.

Please do not hesitate to call us at (250) 479-8733 should you have any further questions.

Thank you,



Graham Mackenzie  
ISA Certified # PN-0428A  
TRAQ – Qualified

Talbot Mackenzie & Associates  
ISA Certified Consulting Arborists

Encl. 1-page tree resource spreadsheet, 1-page Tree Management Plan, 1-page preliminary servicing plans, 2-page tree resource spreadsheet methodology and definitions.

**Disclosure Statement**

The tree inventory attached to the Tree Preservation Plan can be characterized as a limited visual assessment from the ground and should not be interpreted as a “risk assessment” of the trees included.

Arborists are professionals who examine trees and use their training, knowledge and experience to recommend techniques and procedures that will improve their 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. It is not possible for an Arborist to identify every flaw or condition that could result in failure or can he/she guarantee that the tree will remain healthy and free of risk.

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.

**Tree Resource Spreadsheet**  
**1025 Kings Road**

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (diameter in metres)	CRZ (radius in metres)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Retention Status
Nt1	Western Red cedar	<i>Thuja plicata</i>	44.0	8.0	5.5	Moderate	Good	Good	Roots likely restricted by retaining wall on West side.	X
11636	Red Maple	<i>Acer rubrum 'Armstrong'</i>	49.0	13.0	6.0	Moderate	Fair	Fair	Boulevard tree, pruned for utilities, asymmetric canopy.	X
11637	European birch	<i>Betula pendula</i>	20.0	6.0	3.0	Moderate	Fair/poor	Fair	Boulevard tree, pruned for utilities, some dieback in crown.	X
11638	Purple leaf plum	<i>prunus cerasifera</i>	18, 25	7.0	3.5	Good	Fair	Fair	Boulevard tree, pruned for utilities, asymmetric canopy.	X
11611	Hedge maple	<i>Acer campestre</i>	33.0	8.0	3.5	Good	Fair	Fair	Boulevard tree, roots may be restricted by existing rock wall.	X
11612	Hedge maple	<i>Acer campestre</i>	47.0	12.0	4.5	Good	Fair/good	Fair	Boulevard tree, roots may be restricted by existing rock wall.	X
11613	Hedge maple	<i>Acer campestre</i>	46.0	13.0	4.5	Good	Fair/good	Fair	Boulevard tree, roots may be restricted by existing rock wall.	X
11614	Hedge maple	<i>Acer campestre</i>	51.0	15.0	5.0	Good	Fair/good	fair	Boulevard tree, on neighbouring properties frontage.	*Retain/TBD
NT2	Hege maple. Pyramidal cedar	<i>Hedgerow</i>	multi	3.0	2.0	Good	Fair	Fair	Row of volunteer hedge maple trees and pyramidal cedars located along West property line on neighbors side.	Retain



TREE PROTECTION NOTES

# 1025 Kings Road, Tree Management Plan, 08.27.21

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

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

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

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

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

**Mulching:** Mulching can be an important proactive step in maintaining the health 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.

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

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

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

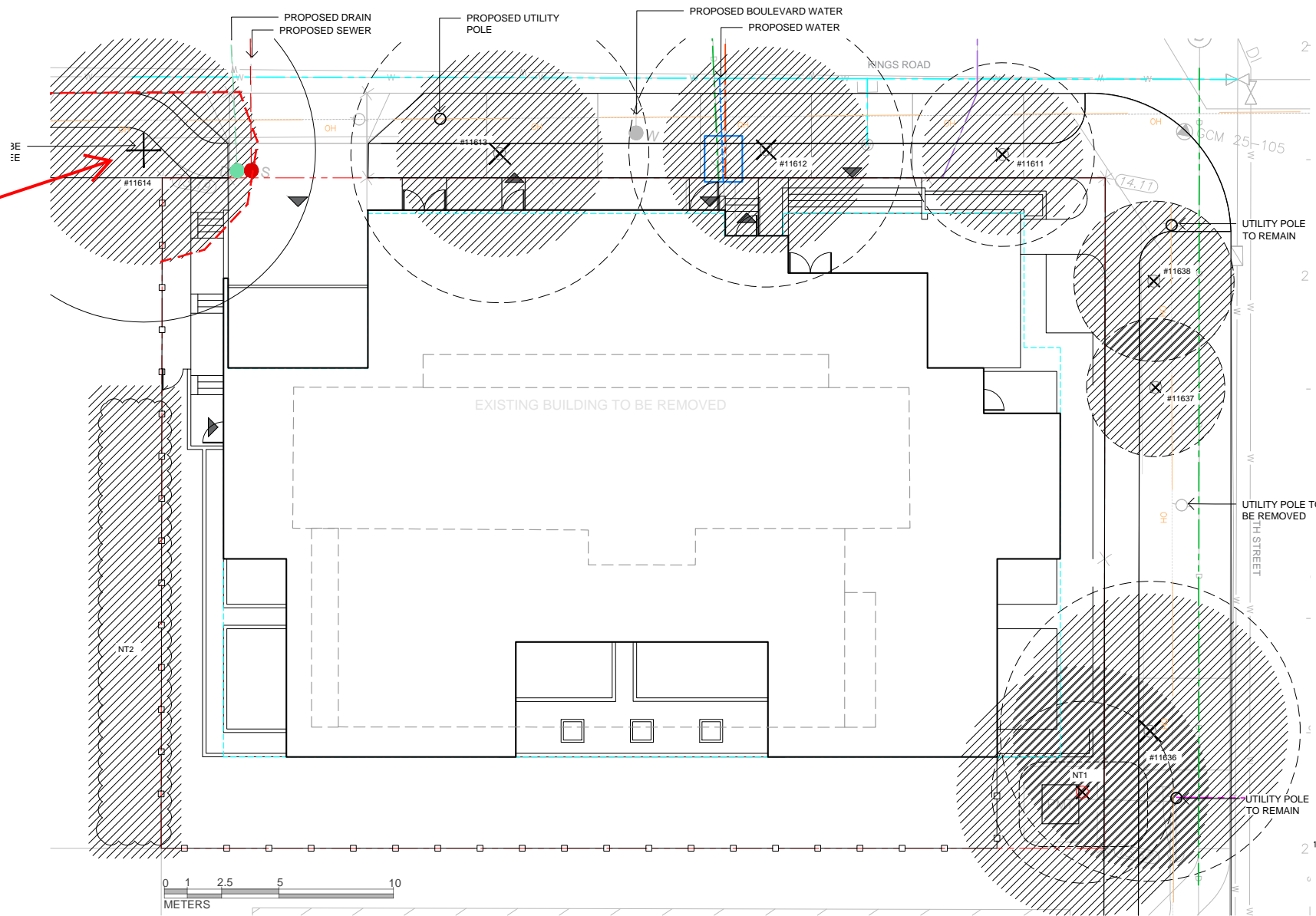
**Scaffolding:** This assessment has not included impacts from potential scaffolding including canopy clearance pruning requirements. If scaffolding is necessary and this will require clearance pruning of retained trees, the project arborist should be consulted. Depending on the extent of pruning required,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

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

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

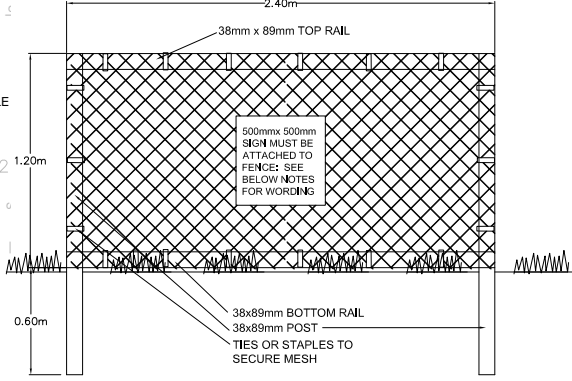
- Locating the barrier fencing.
- Reviewing the report with the project foreman or site supervisor.
- Locating work zones and machine access corridors where required.
- Supervising excavation for any areas within the critical root zones of trees to be retained including any proposed retaining wall footings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

**Municipal Hedge maple #11614 - retention to be determined at the time of excavation. Retention will depend on the ability to minimize the impacts from the excavation associated with the building footings, new service installations and sidewalk configuration. Project arborist to supervise and document any excavation within critical root zone of tree during excavation for building and servicing. Provided the tree isn't too heavily impacted by this excavation work, proposed sidewalk configuration to be reviewed on site and determined if it can be designed around remaining critical root zone of tree.**



**LEGEND**

- PROPERTY LINE
- UTILITY DRAIN
- UTILITY GAS
- UTILITY SEWER
- UTILITY TELECOM
- UTILITY WATER
- EXISTING DRAIN
- EXISTING SEWER
- UTILITY HYDRO
- TREE PROTECTION FENCING
- MUNICIPAL TREE FOR REMOVAL
- PROTECTED TREE ON SITE FOR REMOVAL
- ⊕ EXISTING TREE TO BE RETAINED
- ⊗ EXISTING TREE TO BE REMOVED
- ▨ EXTENT OF CRITICAL ROOT ZONE - SEE ARBORIST REPORT PREPARED BY TALBOT MACKENZIE & ASSOCIATES

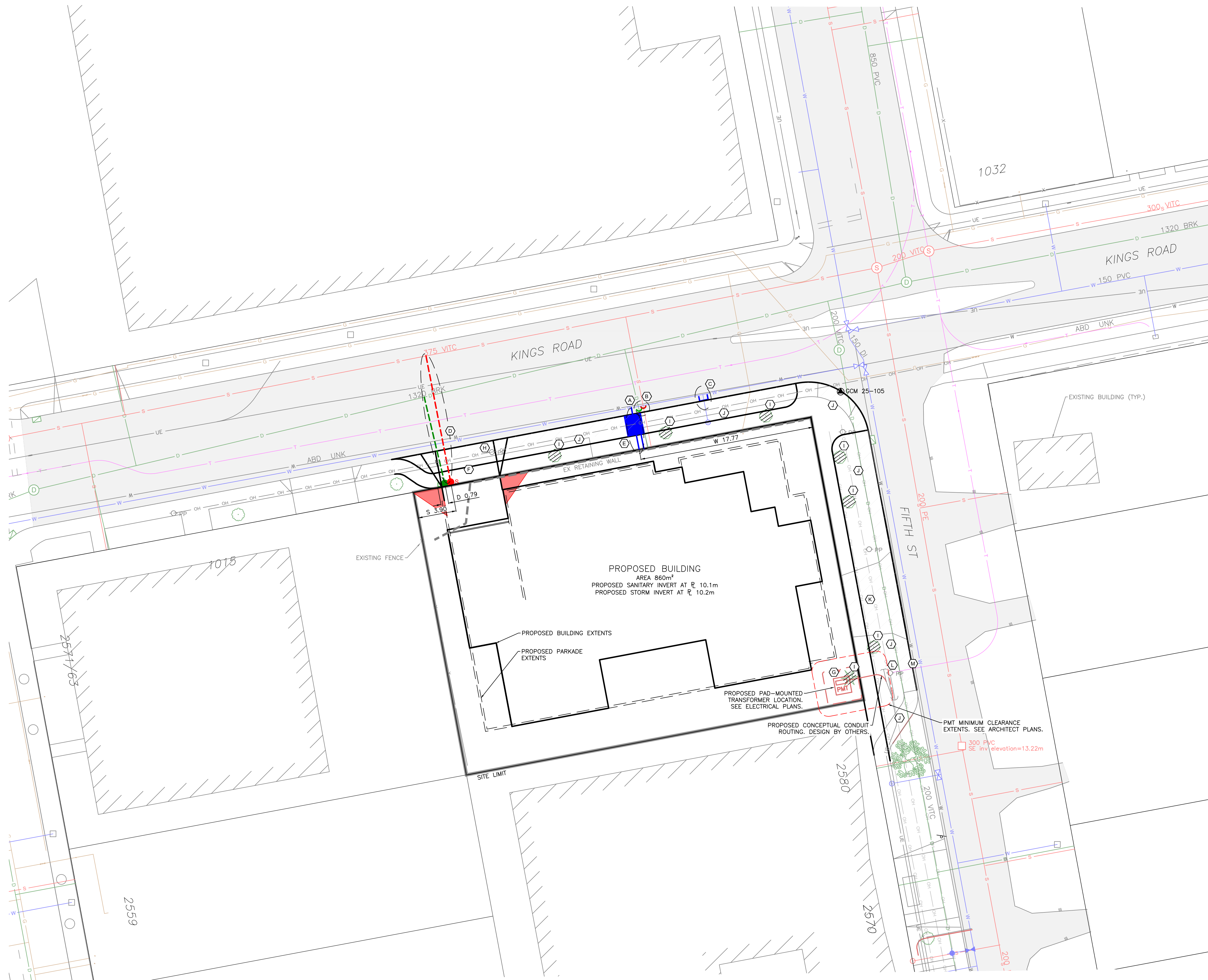


- TREE PROTECTION FENCING**
1. FENCE WILL BE CONSTRUCTED USING 38 mm X 89mm WOOD FRAME; TOP, BOTTOM AND POSTS \* USE ORANGE SNOW-FENCING MESH AND SECURE THE WOOD FRAME WITH "ZIP" TIES OR GALVANIZED STAPLES.
  2. ATTACH A 500mm X 500mm SIGN WITH THE FOLLOWING WORDING: WARNING- TREE PROTECTION AREA. THIS 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

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- SHEET NOTES:**
- (A) CITY OF VICTORIA CREWS TO CAP EXISTING DRAIN SERVICE AT DEVELOPERS EXPENSE.
  - (B) CITY OF VICTORIA CREWS TO CAP EXISTING SANITARY SERVICE AT DEVELOPERS EXPENSE.
  - (C) CITY OF VICTORIA TO CAP EXISTING WATER SERVICE AT DEVELOPER EXPENSE.
  - (D) CITY OF VICTORIA CREWS TO INSTALL DRAIN AND SANITARY SERVICE TO PROPERTY LINE COMPLETE WITH INSPECTION CHAMBERS AT DEVELOPERS EXPENSE. SIZES TO BE CONFIRMED DURING BUILDING PERMIT.
  - (E) CITY OF VICTORIA TO INSTALL WATER SERVICE TO PROPERTY LINE COMPLETE WITH METER AT DEVELOPERS EXPENSE. SIZES TO BE CONFIRMED DURING BUILDING PERMIT.
  - (F) CONTRACTOR TO INSTALL NEW 6.0m WIDE DRIVEWAY TO CITY OF VICTORIA STANDARDS.
  - (G) PROPOSED BC HYDRO TRANSFORMER LOCATION. BC HYDRO TO CONFIRM SERVICING DESIGN DURING BUILDING PERMIT.
  - (H) EXISTING UTILITY POLE TO BE RELOCATED. DESIGN BY OTHERS DURING BUILDING PERMIT.
  - (I) EXISTING TREE TO BE REMOVED. REFER TO LANDSCAPE PLANS.
  - (J) CONTRACTOR TO REMOVE EXISTING SIDEWALK AND INSTALL SEPARATED 1.5m WIDE SIDEWALK ON PROPERTY LINE.
  - (K) CONTRACTOR TO REMOVE EXISTING DRIVEWAY AND REINSTATE BOULEVARD.
  - (L) EXISTING UTILITY POLE TO BE RELOCATED AS REQUIRED TO FACILITATE BC HYDRO ACCESS TO PROPOSED PMT. TELLUS DUCTS TO BE MODIFIED AS REQUIRED. DESIGN BY OTHERS DURING BUILDING PERMIT.
  - (M) PROPOSED CURB TO BE DESIGNED TO FACILITATE BC HYDRO ACCESS TO PMT. DETAILED DESIGN TO BE DURING BUILDING PERMIT.



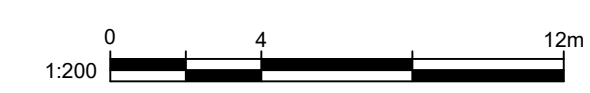
**KEY PLAN**  
NTS

LEGAL DESCRIPTION: LOT 1, SECTION 4, VICTORIA DISTRICT, PLAN 30761  
BENCHMARK: MONUMENT GCM 25-105  
ELEV. 14.13m

**1025 KINGS STREET  
PRELIMINARY SITE  
SERVICING PLAN**

Scale  
horiz. **1:200**  
Sheet **1** of **1**  
Eng. Project No. **32738**

**JEA** J E ANDERSON & ASSOCIATES  
SURVEYORS - ENGINEERS  
VICTORIA NANAIMO PARKSVILLE CAMPBELL RIVER  
PHONE: 250-727-2214 info@jeanderson.com



**ISSUED FOR DEVELOPMENT PERMIT**

PLAN - ROAD A  
H 1:200



## Talbot Mackenzie & Associates

Consulting Arborists

Box 48153 RPO - Uptown Victoria, BC V8Z 7H6

Ph: (250) 479-8733

Fax: (250) 479-7050

Email: tmtreehelp@gmail.com

### Tree Resource Spreadsheet Methodology and 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

**Crown Spread:** Indicates the diameter 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

**Retention Status:**

- X - Not possible to retain given proposed construction plans
- Retain - It is possible to retain this tree in the long-term given the proposed plans and information available. This is assuming our **recommended mitigation measures are followed**
- Retain \* - See report for more information regarding potential impacts
- TBD (To Be Determined) - The impacts on the tree could be significant. However, in the absence of exploratory excavations and in an effort to retain as many trees as possible, we recommend that the final determination be made by the supervising project arborist at the time of excavation. The tree might be possible to retain depending on the location of roots and the resulting impacts, but concerned parties should be aware that the tree may require removal.
- NS - Not suitable to retain due to health or structural concerns