



Talbot Mackenzie & Associates
Consulting Arborists

Arborist Report:
Construction Impact Assessment &
Tree Preservation Plan

90 Saghalie Road, Victoria

PREPARED FOR: Element Lifestyle Retirement Inc.
1147 Homer Street
Vancouver BC
V6B2Y1

PREPARED BY: Talbot, Mackenzie & Associates

Noah Borges – Consulting Arborist
ISA Certified # PN-8409A

DATE OF ISSUANCE: June 5, 2018

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Talbot Mackenzie & Associates

Consulting Arborists

Jobsite Property: 90 Saghalie Road, Victoria
Date of Site Visit: June 1, 2018
Site Conditions: SSR Zone. No construction activity present. Increasing elevation south to north.

Summary: Sixteen trees will require removal as a result of this development, including ten young Garry Oaks (#540-549) within the building footprint and six trees (NT1-NT6) on the Tyee Road municipal frontage that will be impacted by site re-grading. The small Austrian Pines and White Oaks along the north property boundary (NT7-NT9) will be isolated from construction by installing hoarding. Up to two Austrian pines at the east end of the hedge at the northwest property boundary may have to be removed.

Scope of Assignment:

- To inventory the existing bylaw protected trees and any trees on neighbouring properties that could potentially be impacted by construction or that are within three metres of the property line
- Review the proposal to construct a multi-story retirement residential building, private road, and driveway
- 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 by-law protected trees with their identification numbers were labelled on the attached Site Plan. The conclusions reached were based on the information provided within the attached plans from Wensley Architecture Ltd.

Limitations: No exploratory excavations have been requested 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.

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Summary of Tree Resource: 17 trees and hedges were inventoried, including six trees on the Tyee Road municipal frontage. There are ten by-law protected Garry Oak trees within the property boundary. There is a row of poplars south of the railway tracks more than 5m south of the property boundary and will not be impacted by construction-related activity.

Trees to be Removed: Sixteen trees will require removal due to construction related impacts:

- **Garry Oaks #540-549** are within the proposed building footprint.
- **Municipal trees NT1-NT6** will be impacted by site re-grading.

Potential Impacts on Trees to be Retained and Mitigation Measures

- **Austrian Pines and White Oaks (NT7-NT9):** The attached plans indicate hoarding will be installed along the north property boundary during construction. These trees will be impacted if any re-grading (either blasting, excavation, or laying fill) is required within their critical root zones for construction of the proposed walkway. Two pine trees at the east end of the hedge at the northwest property boundary may have to be removed. The project arborist should direct and supervise any construction-related activity that occurs near the property boundary. None of these trees are by-law protected (unless they are replacement trees that were planted to replace trees removed during construction on the adjacent property).
- **Service Connections:** The locations for proposed underground sewer, storm, and water servicing will not impact any by-law protected trees.
- **Arborist Supervision:** All excavation occurring within the critical root zones of protected trees should be completed under supervision by the project arborist. Any roots encountered must be pruned back to sound tissue to reduce wound surface area and encourage rapid compartmentalization of the wound.
- **Barrier fencing:** 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 zones. The barrier fencing 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 plywood, or 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.
- **Minimizing 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.
-
- **Mulching:** Mulching is an important proactive step to maintaining the health of the trees to be retained 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. As much of the area within two times the dripline of the tree should be mulched, both inside and outside of the critical root zone. 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.
-
- **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.

Talbot Mackenzie & Associates

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

Yours truly,

Talbot Mackenzie & Associates
ISA Certified Consulting Arborists

Encl. 2-page tree resource spreadsheet, 2-page tree resource spreadsheet methodology and definitions, 4-page site plan with trees, 1-page landscape plans, 1-page barrier fencing specifications

Disclosure Statement

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.

90 Saghalie Rd
Tree Resource Spreadsheet

Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	By-Law Protected	Retention Status
NT1	Cherry	<i>Prunus spp.</i>	32	6	4.0	Moderate	Good	Fair	Municipal. Topped. Deadwood over sidewalk.	N	X
NT2	Strawberry tree	<i>Arbutus unedo</i>	Multistem	2	-	Poor	Good	Fair	Municipal.	N	X
NT3	Strawberry tree	<i>Arbutus unedo</i>	Multistem	4	-	Poor	Good	Fair	Municipal.	N	X
NT4	Weeping birch	<i>Betula pendula</i>	14	3	2.0	Poor	Good	Fair	Likely shared with municipality.	N	X
NT5	Cherry	<i>Prunus spp.</i>	17	4	2.0	Moderate	Good	Fair	Municipal.	N	X
NT6	Cherry	<i>Prunus spp.</i>	24	5	3.0	Moderate	Fair/poor	Fair	Municipal.	N	X
NT7	White Oak	<i>Quercus alba</i>	10	3	1.0	Good	Fair	Good	On adjacent property. 3m from property line	N	Retain
NT8	Austrian Pine hedge	<i>Pinus nigra</i>	Multistem	3	1.5	Good	Good	Good	On adjacent property. 3 trees within 3m of property line (7-10cm DBH)	N	Retain
NT9	Austrian Pine and White Oak hedge	<i>Pinus nigra</i> and <i>Quercus alba</i>	Multistem	3	1.5	Good	Good	Good	On adjacent property. 21 pines (10-20cm DBH) and 6 oaks (5-11 cm DBH) within 3m of property line	N	Retain
540	Garry Oak	<i>Quercus garryana</i>	4	1	0.5	Good	Fair	Fair	Young tree	Y	X
541	Garry Oak	<i>Quercus garryana</i>	5	1	0.5	Good	Fair	Fair	Young tree	Y	X
542	Garry Oak	<i>Quercus garryana</i>	6	1	0.5	Good	Fair	Fair	Young tree	Y	X

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Tree ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	By-Law Protected	Retention Status
543	Garry Oak	<i>Quercus garryana</i>	4, 2	1	0.5	Good	Fair	Fair	Young tree	Y	X
544	Garry Oak	<i>Quercus garryana</i>	4	1	0.5	Good	Fair	Fair	Young tree	Y	X
545	Garry Oak	<i>Quercus garryana</i>	4	1	0.5	Good	Fair	Fair	Young tree	Y	X
546	Garry Oak	<i>Quercus garryana</i>	3	1	0.5	Good	Fair	Fair	Young tree	Y	X
547	Garry Oak	<i>Quercus garryana</i>	4	1	0.5	Good	Fair	Fair	Young tree	Y	X
548	Garry Oak	<i>Quercus garryana</i>	3, 3, 2	1	0.5	Good	Fair	Fair	Young tree	Y	X
549	Garry Oak	<i>Quercus garryana</i>	3, 3	1	0.5	Good	Fair	Fair	Young tree	Y	X



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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, Moderate or Good.

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."

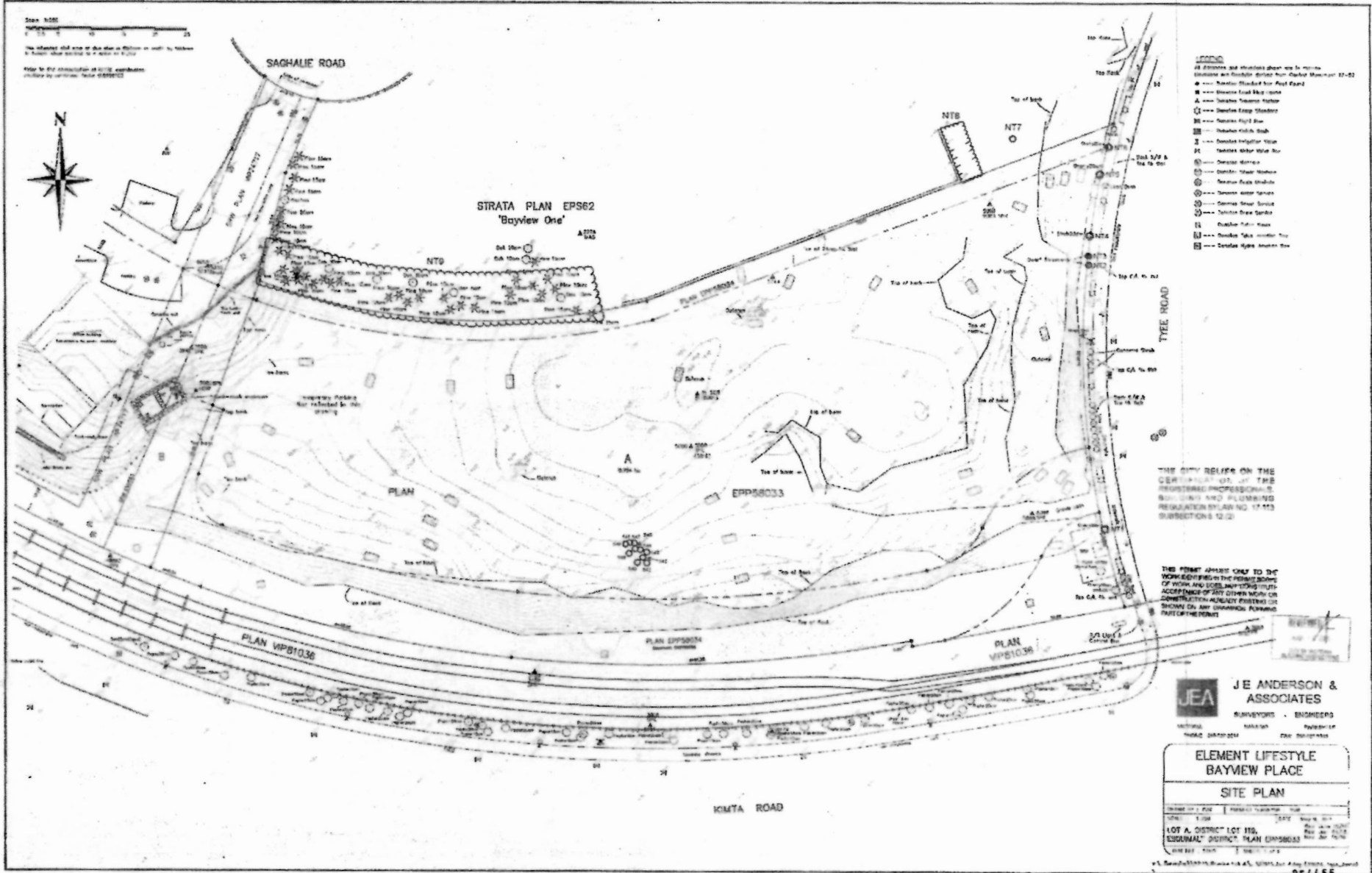
- 15 x DBH = Poor Tolerance of Construction
- 12 x DBH = Moderate
- 10 x DBH = Good

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 soil volume restrictions, age, crown spread, health, or structure (such as a lean).

Scale 1:500
1" = 50'

The information shown on this plan is derived from the information provided by the applicant and is not to be used for any other purpose.

Refer to the information on the site plan for details.



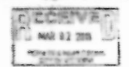
- LEGEND**
- 1. All dimensions and elevations shown are in metric.
 - 2. Structures are shown as they are to be constructed.
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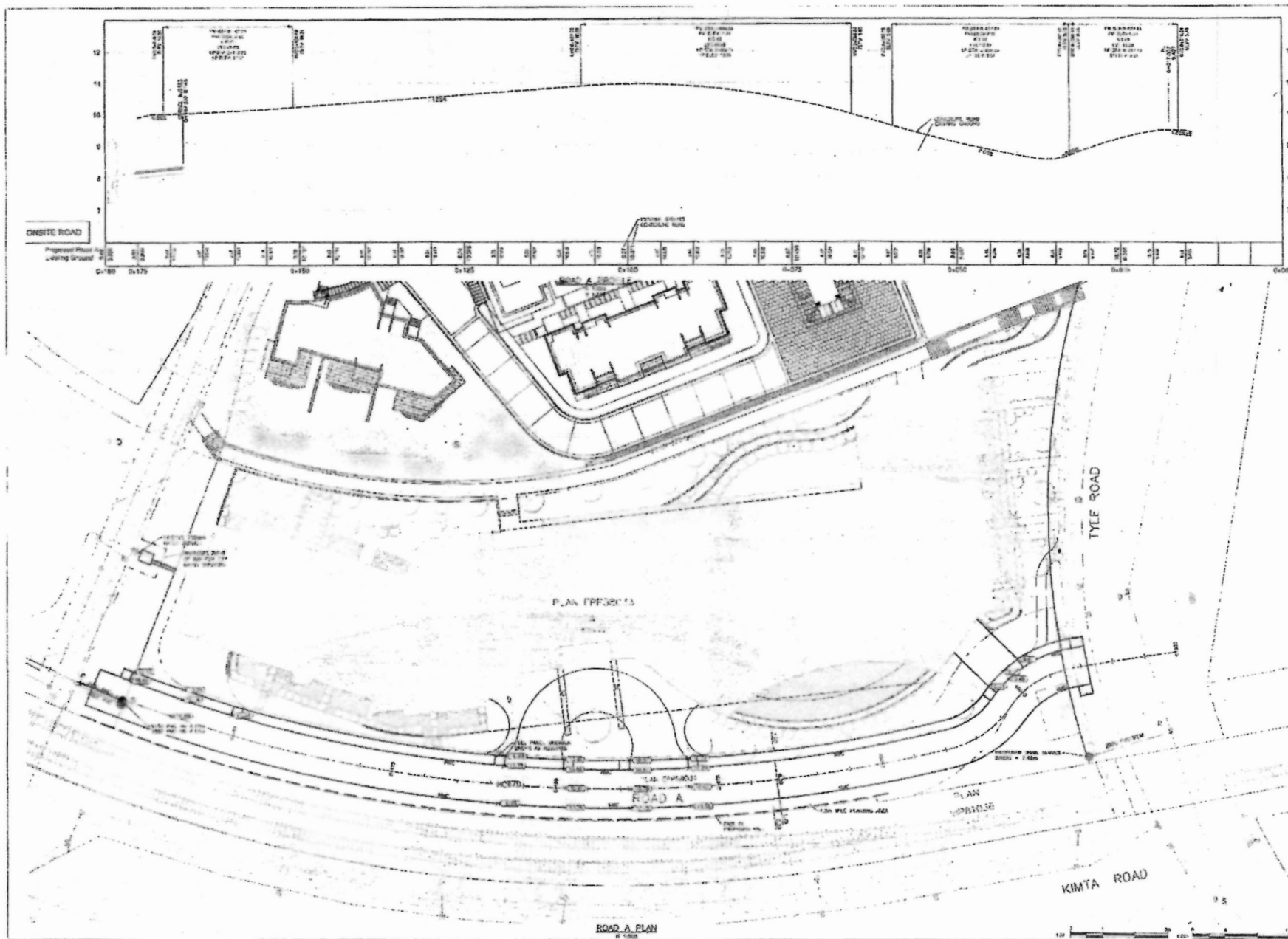
THE CITY RELIES ON THE CERTIFICATION OF THE REGISTERED PROFESSIONAL ENGINEER AND PLUMBER REGULATION BY LAW NO. 17-173 SUBSECTION 12 (2)

THIS PERMIT APPLIES ONLY TO THE WORK SHOWN IN THE PERMIT. ANY OTHER WORK OR CONSTRUCTION MUST BE APPROVED BY THE CITY OF VICTORIA. ANY WORK NOT SHOWN ON ANY CONSTRUCTION PERMIT IS NOT APPROVED.

JEA
J.E. ANDERSON & ASSOCIATES
SURVEYORS - ENGINEERS
1000 10th Avenue
VICTORIA B.C. V8W 2G1
250.681.1234

ELEMENT LIFESTYLE BAYVIEW PLACE
SITE PLAN
DATE: 1/1/2018
BY: JEA
FOR: LOT A, DISTRICT LOT 115, 'EQUUS' DISTRICT PLAN EPS6033
SHEET 1 OF 1





J.E. ANDERSON & ASSOCIATES
 ARCHITECTS - CIVIL ENGINEERS
 1000 10th Avenue, Suite 100, West Vancouver, B.C. V8V 2T6
 TEL: 604-261-1000 FAX: 604-261-1001
 E-MAIL: jea@jea.ca

element

1	Site Plan	100%	10/10/10
2	Site Plan	100%	10/10/10
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BAYVIEW
 PROPOSED
 RETIREMENT
 RESIDENTIAL
 PROJECT

PROPOSED

Wensley Architecture Ltd

CONSULTANT
 ARCHITECT
 CIVIL ENGINEER
 LANDSCAPE ARCHITECT
 ENVIRONMENTAL ENGINEER
 GEOTECHNICAL ENGINEER
 STRUCTURAL ENGINEER
 TRAFFIC ENGINEER
 WATER ENGINEER
 ELECTRICAL ENGINEER
 MECHANICAL ENGINEER
 CHEMICAL ENGINEER
 INDUSTRIAL ENGINEER
 AERONAUTICAL ENGINEER
 AGRICULTURAL ENGINEER
 AUTOMOTIVE ENGINEER
 BIOMEDICAL ENGINEER
 CELESTIAL ENGINEER
 CIVIL ENGINEER
 COASTAL ENGINEER
 CRANES ENGINEER
 DRAINAGE ENGINEER
 EARTHQUAKE ENGINEER
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 GEOTECHNICAL ENGINEER
 INDUSTRIAL ENGINEER
 LANDSCAPE ARCHITECT
 MARINE ENGINEER
 MATERIALS ENGINEER
 MECHANICAL ENGINEER
 METALLURGICAL ENGINEER
 MINING ENGINEER
 NUCLEAR ENGINEER
 OFFSHORE ENGINEER
 OPTICAL ENGINEER
 PETROLEUM ENGINEER
 POWER ENGINEER
 PROCESS ENGINEER
 RAILWAY ENGINEER
 REFRIGERATION ENGINEER
 ROCKET ENGINEER
 SAFETY ENGINEER
 SURVEYING ENGINEER
 THERMAL ENGINEER
 TRANSPORT ENGINEER
 URBAN ENGINEER
 WATER ENGINEER
 WIND ENGINEER
 WOOD ENGINEER

DATE: 10/10/10
 DRAWN BY: JEA
 CHECKED BY: JEA
 APPROVED BY: JEA

MR 612

Health Condition:

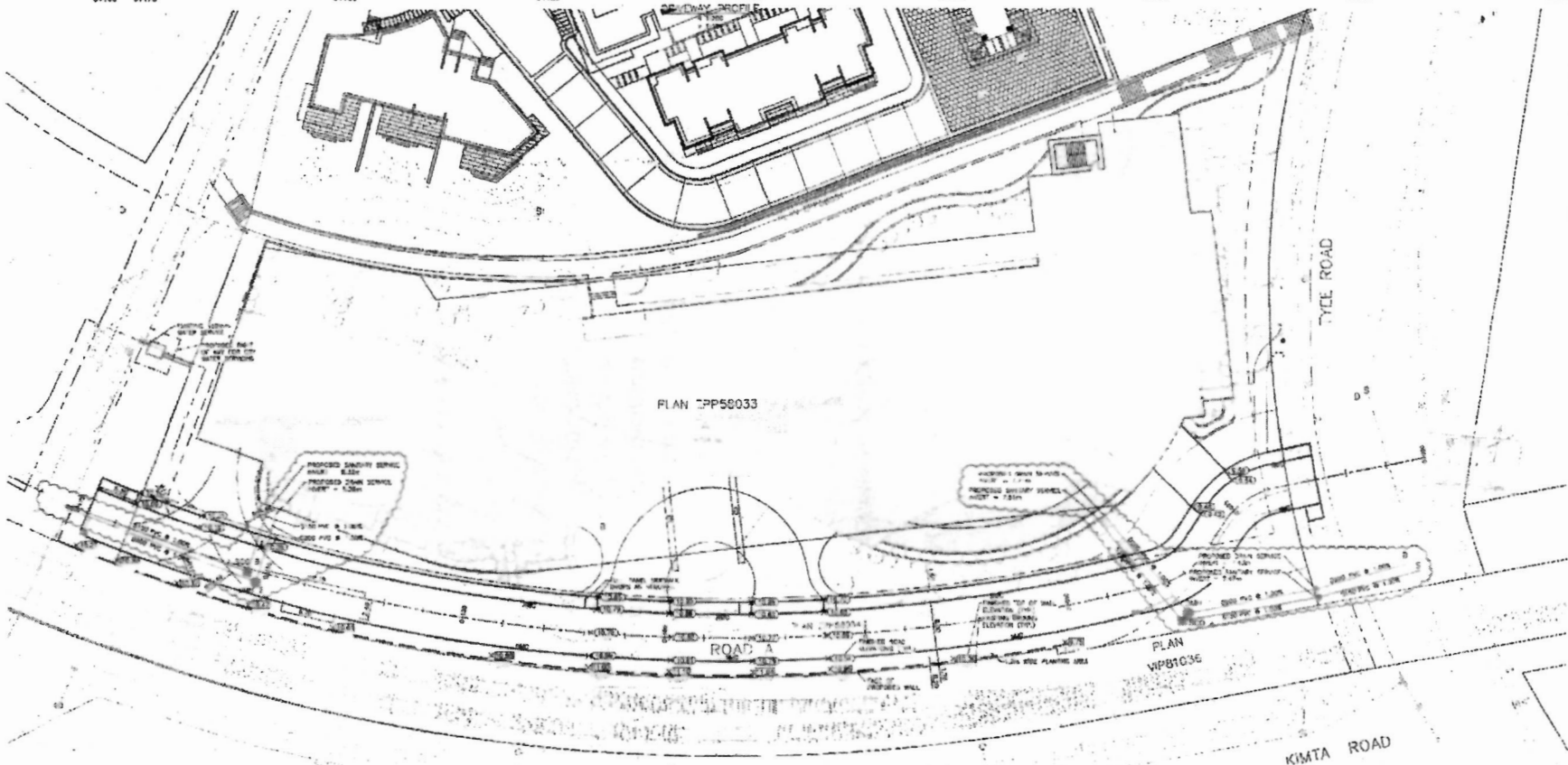
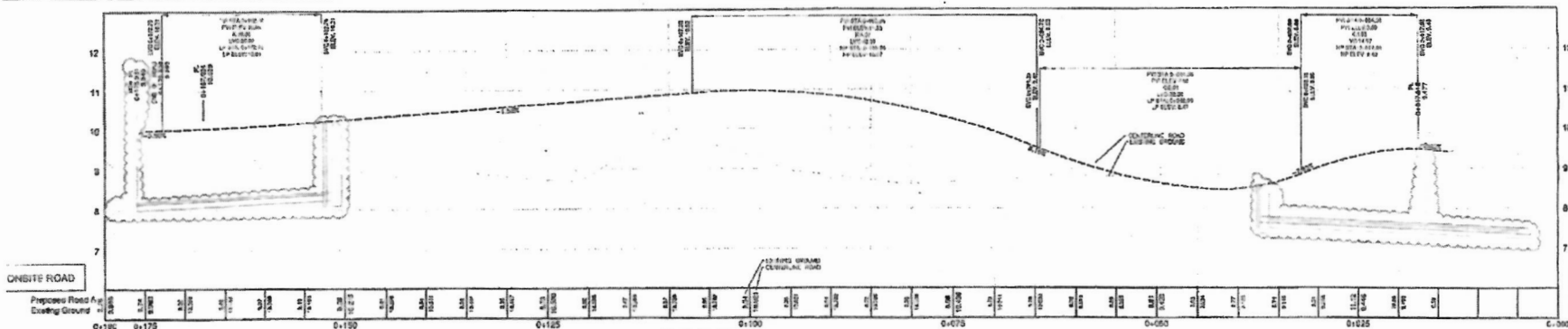
- Poor - significant signs of visible stress and/or decline that threaten the long-term survival of the specimen
- Fair - signs of stress
- Good - no visible signs of significant stress and/or only minor aesthetic issues

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



PRELIMINARY ONLY - ISSUED FOR INFORMATION

SITE PLAN



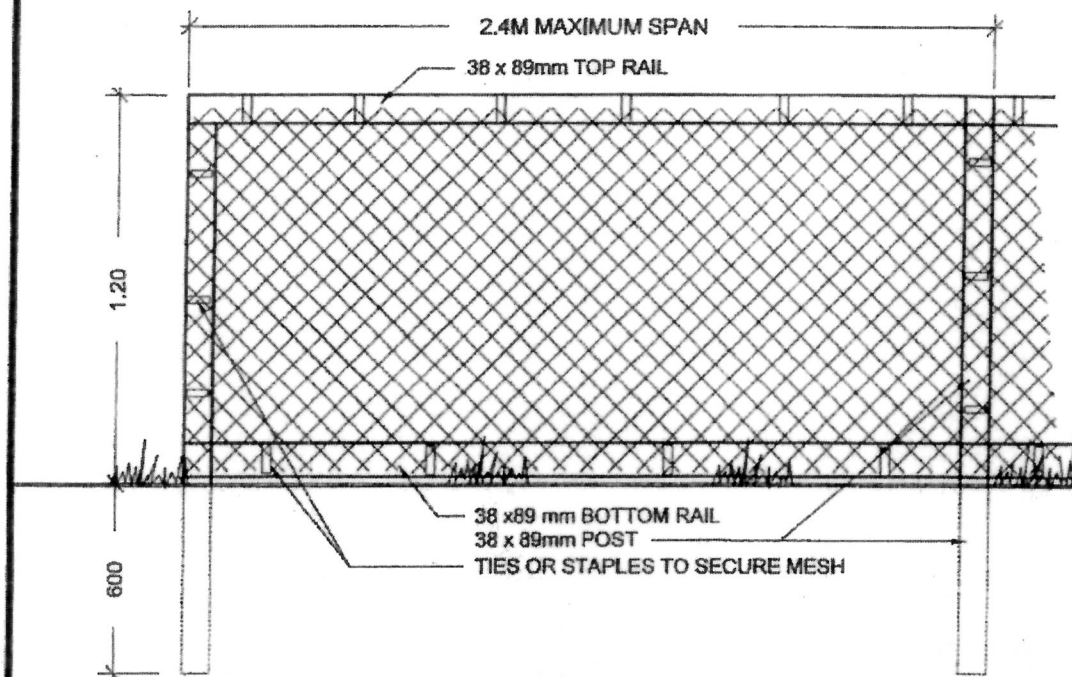
J.E. ANDERSON & ASSOCIATES
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 Richmond, BC V6V 1K7
 TEL: 604-271-7878 FAX: 604-271-7879
 EMAIL: jea@jea.ca

element

BAYVIEW
 PROPOSED
 RETIREMENT
 RESIDENTIAL
 PROJECT

Wensley Architecture Ltd

054466



TREE PROTECTION FENCING
 FENCE WILL BE CONSTRUCTED USING
 38 X 89 mm (2"X4") WOOD FRAME:
 TOP, BOTTOM AND POSTS. *
 USE ORANGE SNOW-FENCING MESH AND
 SECURE TO THE WOOD FRAME WITH
 "ZIP" TIES OR GALVANIZED STAPLES

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

DETAIL NAME:

TREE PROTECTION FENCING

DATE: Oct 30/07
 DRAWN: DM
 APP'D: RR
 SCALE: N.T.S.

E105
 DRAWING

