



Talbot Mackenzie & Associates

Consulting Arborists

1302 Finlayson St, Victoria

Construction Impact Assessment &

Tree Preservation Plan

Prepared For: Paul Fisher
1302 Finlayson Street
Victoria, BC
V8T 2V6

Prepared By: Talbot, Mackenzie & Associates
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Date of Issuance: TPP#1: October 15, 2018
TPP#2: October 21, 2019

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Jobsite Property: 1302 Finlayson St, Victoria

Date of Site Visit(s): October 10, 2019
October 2, 2019

Site Conditions: No ongoing construction activity.

Summary:

- No bylaw protected trees will be removed as a result of the development.
- As per the City of Victoria Parks request, the proposed water line lateral has been shifted away from Garry Oak #6; we do not anticipate a significant impact to the tree as a result.
- The four small Ash trees #1-4 (near the west property line) will require removal for the sidewalk and water line excavations.
- It is our understanding that the shared trees #7-11 (ashes and plum) along the east property line will be removed by the neighbour in the future, regardless of the development proposal and the installation of services which could have a significant impact on the health and stability of the trees. We have therefore listed them as to be 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 subdivide the property and construct a new house on the north lot, which will involve the installation of new services
- 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 dated 2019/10/18

Limitations:

- No exploratory excavations have been conducted and thus the conclusions reached are based solely on critical root zone calculations, observations of site conditions, 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.
- Where trees were not shown on the plans provided, we have added their approximate locations (such as trees #5-9). The accuracy of our estimated locations has not been verified by a professional surveyor.

Trees to be Removed

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

#1-4 Ashes: These trees will require removal due to either being located within the proposed sidewalk or directly at its edge (#2-4) or due to the proposed water line (#1 and 2). #1 is on private property, #2 is on municipal property and #3 and 4 are likely shared. None are bylaw protected size at the time of this report.

#7-11 Ashes and Plum: These trees likely straddle the east property line and therefore are likely under shared ownership with the neighbour at 1314 Finlayson St (#7-9 have not been surveyed). All trees are located less than 2m from the proposed sanitary and storm drain easement proposed; this could result in significant health and stability impacts to these trees. If retention of these trees were to be attempted, we would recommend these services be installed under arborist supervision. This would likely involve the use of a hydro-vac where possible and other less invasive digging techniques. However, based on our conversations with the proponent and the neighbour, it is our understanding that the neighbour plans on removing all of these trees in the future regardless of the development proposal. We have therefore listed these trees as to be removed. We recommend the neighbour be notified of the proposed impacts to these trees and that they be removed prior to the installation of services.

Potential Impacts on Retained Trees

#6 Garry Oak

This tree is located across the street (the side flank of 1230 Finlayson St) and the municipality has indicated this tree appears to be partially on private property. To minimize impacts to this tree, the water lateral has been shifted north away from this tree (to 1m south of the north property line), as requested by the City of Victoria Parks staff. We do not anticipate the excavation required will have a significant impact on the tree. The excavation should take place under the direction of the municipal arborist (or project arborist). We do not anticipate any large roots will be encountered

this far from the tree; any small severed roots should be pruned back to sound tissue prior to backfilling.

#5 Garry Oak

We do not anticipate any significant impact on this park tree. If the new fence requires excavation, the project arborist should be consulted. If roots are encountered during the foundation excavation, the project arborist should be contacted and the roots pruned back to sound tissue.

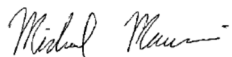
Mitigation Measures

- **Arborist Supervision:** All excavation occurring within the critical root zones of protected trees should be completed under the direction or supervision of the project arborist. This includes (but is not limited to) the following activities within CRZs:
 - #6 Garry Oak – Water Line installation
 - #5 Garry Oak – Excavation associated with new fence and foundation, if roots are encountered
- **Pruning Roots:** Any severed roots must be pruned back to sound tissue to reduce wound surface area and encourage rapid compartmentalization of the wound. Backfilling the excavated area around the roots should be done as soon as possible to keep the roots moist and aid in root regeneration. Ideally, the area surrounding exposed roots should be watered; this is particularly important if excavation occurs or the roots are exposed during a period of drought. This can be accomplished in a number of ways, including wrapping the roots in burlap or installing a root curtain of wire mesh lined with burlap, and watering the area periodically throughout the construction process.
- **Barrier fencing:** No barrier fencing is necessary unless the municipality desires fencing around Garry Oak #6 for the work the city engineering crews will perform for the water line.
- **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 (depending on the size of machinery and the frequency of use):
 - Placing a layer of geogrid (such as Combigrid 30/30) over the area to be used and installing a layer of crushed rock to a depth of 15 cm over top or a layer of hog fuel or coarse wood chips at least 30 cm in depth and maintaining it in good condition until construction is complete.
 - 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 two layers of 19mm plywood.
 - Placing steel plates

- **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.

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

Thank you,



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TRAQ – Qualified



Graham Mackenzie
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Encl. 1-page tree resource spreadsheet, 2-page site plan, 2-page tree resource spreadsheet methodology and definitions

Disclosure Statement

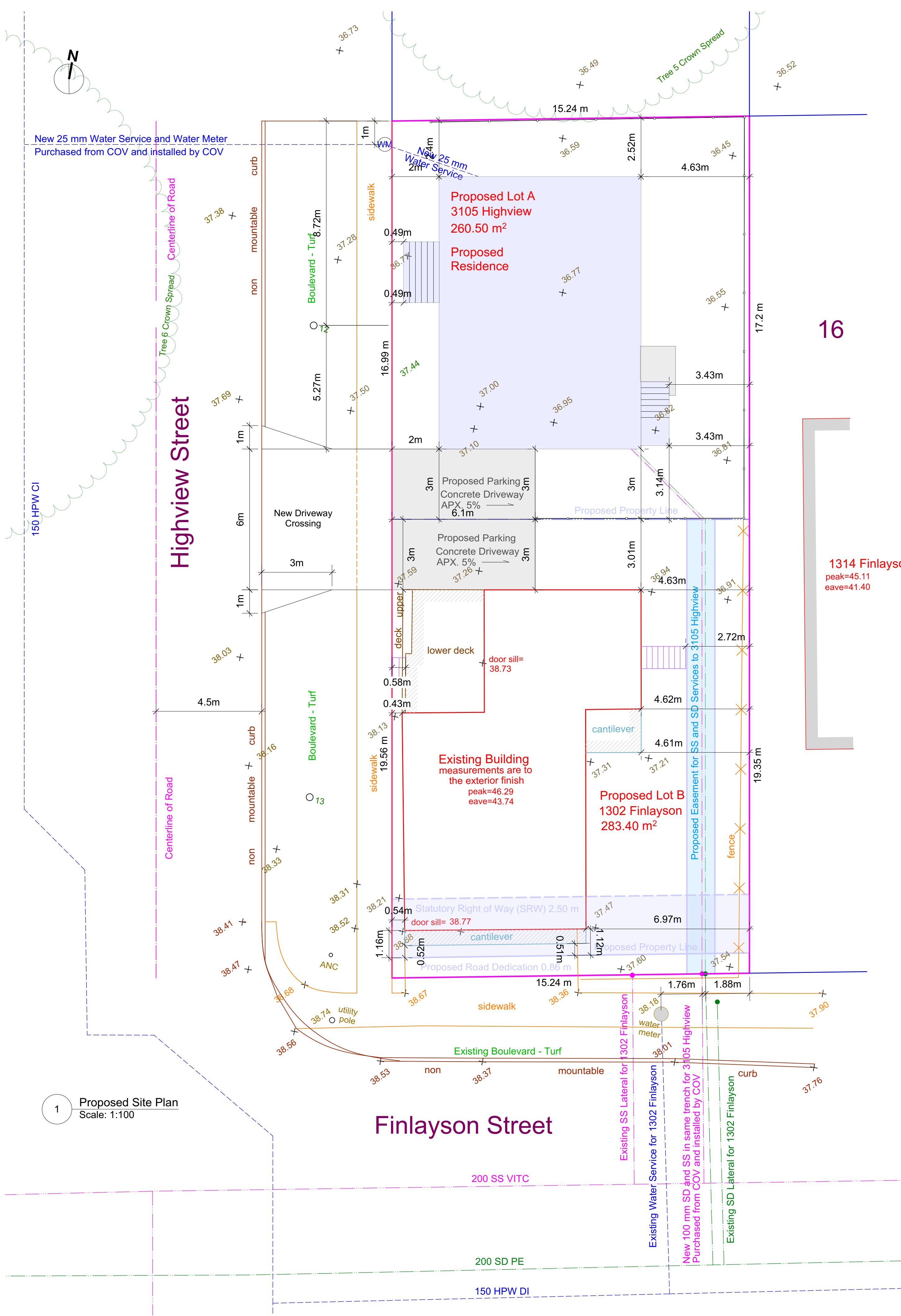
The tree inventory attached to the Tree Preservation Plan can be characterized as a limited visual assessment from the ground and should not be interpreted as a “risk assessment” of the trees included.

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 ID	Common Name	Latin Name	DBH (cm) ~ approximate	Crown Spread (diameter in metres)	CRZ (radius in metres)	Relative Tolerance (good, moderate, poor)	Health	Structure	Remarks and Recommendations	Bylaw Protected	Retention Status	Impacts
1	European Ash	<i>Fraxinus excelsior</i>	22	5	2.5	M	Fair	N/A	Private tree. Codominant stem previously removed	No	Removal	Sidewalk
2	European Ash	<i>Fraxinus excelsior</i>	22	6.0	2.5	M	Fair/Poor	Fair/Poor	Municipal ID# 11956. Decay at base. Trunk wound at 3m.	No	Removal	Sidewalk
3	European Ash	<i>Fraxinus excelsior</i>	19	6.0	2.5	M	Fair	Fair	Possibly shared with municipality. Municipal ID# 11957	No	Removal	Sidewalk
4	European Ash	<i>Fraxinus excelsior</i>	12, 12, 11	6.0	3.0	M	Fair	Poor	Possibly shared with municipality. Municipal ID# 11958 Tri-dominant form.	No	Removal	Sidewalk
5	Garry Oak	<i>Quercus garryana</i>	75	19.0	7.5	G	Good	Good	Park tree. Municipal ID# 5009. No impacts anticipated.	Protected	Retain	
6	Garry Oak	<i>Quercus garryana</i>	88, 80, 73	23.0	18.0	G	Fair	Poor	Municipal or possibly shared with neighbour across street. Open cracks in unions at base on east and west sides of tree; reaction wood between union on north side. Centre of union obscured by shrubs and soil. Deadwood. Some epicormic growth. Assessment recommended.	Protected	Retain	Water service
7	European Ash	<i>Fraxinus excelsior</i>	26, 12	7.0	4.0	M	Fair	Fair/poor	Likely shared with neighbour; not surveyed. Base and unions obscured by ivy.	No	Removal	Services, neighbour plans to remove
8	Wild Plum	<i>Prunus species</i>	25, 18, 17, 13	10.0	5.5	M	Fair	N/A	Likely shared with neighbour; not surveyed. Base and unions obscured by ivy. Large 20-30cm wide stem historically removed at DBH; site of decay.	No	Removal	Services, neighbour plans to remove
9	European Ash	<i>Fraxinus excelsior</i>	20, 16	10.0	3.5	M	Fair	Poor	Likely shared with neighbour; not surveyed. Growing against base of #7. Narrow union at base. Trunk braced against and engulfing trunks and branches of #7.	No	Removal	Services, neighbour plans to remove
10	European Ash	<i>Fraxinus excelsior</i>	46	17.0	5.5	M	Fair	Fair	Shared with neighbour. Limbs and trunk crossing and braced against trunk of #6.	No	Removal	Services, neighbour plans to remove
11	European Ash	<i>Fraxinus excelsior</i>	50	17.0	6.0	M	Fair	Fair	Shared with neighbour. Branch stub. Deadwood.	No	Removal	Services, neighbour plans to remove



Zoning Data

	Proposed Lot A 3105 Highview (metric)	Existing Lot B 1302 Finlayson (metric)
Existing Zone	R1-B	R1-B
Proposed Zone	R1-S2	NEW
Lot Area	260.50	283.40
Lot Frontage on Street	16.99	18.70
Site Coverage	38.41%	47.99%
FSR	0.60	0.75
Open Site Space	52.10%	45.37%
Site Coverage	100.07	135.99
Floor Area 1+2	157.13	211.26
Main	83.96	104.25
Upper	73.17	107.01
Basement	82.41	
Floor Area all Floors	239.54	211.26
Commercial Floor Area	N/A	86.64
Residential Floor Area	239.54	124.62
Number of Dwelling Units	1	1
Parking Stalls	1	1
Number of Storeys	2	2
Height	7.50	7.38
Average Grade	36.80	37.64
Peak Height	45.76	46.29
Eave Height	42.84	43.74
Front yard	2.00	0.43
Rear yard	3.43	2.72
North Side Yard	2.40	3.00
South Side Yard	3.00	0.51
Combined Side Yard	5.40	3.51
Outdoor Private Space Area	106.92	114.12

3105 Highview Average Grade

Grade Points	Geodetic Elevation (M)	Geodetic Elevation (FT)	Between Grade Points	Average of Points (M)	Average of Points (FT)	Between Grade Points	Distance (M)	Distance (FT)	Totals
A	36.73	120.47	AB	36.66	120.24	AB	8.62	28.26	315.83
B	36.59	120.02	BC	36.71	120.39	BC	8.86	29.07	325.35
C	36.82	120.77	CD	36.82	120.77	CD	1.20	3.94	44.18
D	36.82	120.77	DE	36.82	120.77	DE	2.73	8.95	100.52
E	36.82	120.77	EF	36.82	120.77	EF	1.20	3.94	44.18
F	36.82	120.77	FG	36.96	121.23	FG	8.62	28.26	318.41
G	37.10	121.69	GH	36.94	121.15	GH	6.24	20.45	230.29
H	36.77	120.61	HI	36.77	120.61	HI	1.51	4.95	55.52
I	36.77	120.61	IJ	36.77	120.61	IJ	2.60	8.53	95.60
J	36.77	120.61	JK	36.77	120.61	JK	1.51	4.95	55.52
K	36.77	120.61	KL	36.75	120.54	KL	2.78	9.12	102.20
Totals							45.86	1687.61	
Average Grade	36.80	120.70							

1302 Finlayson Average Grade

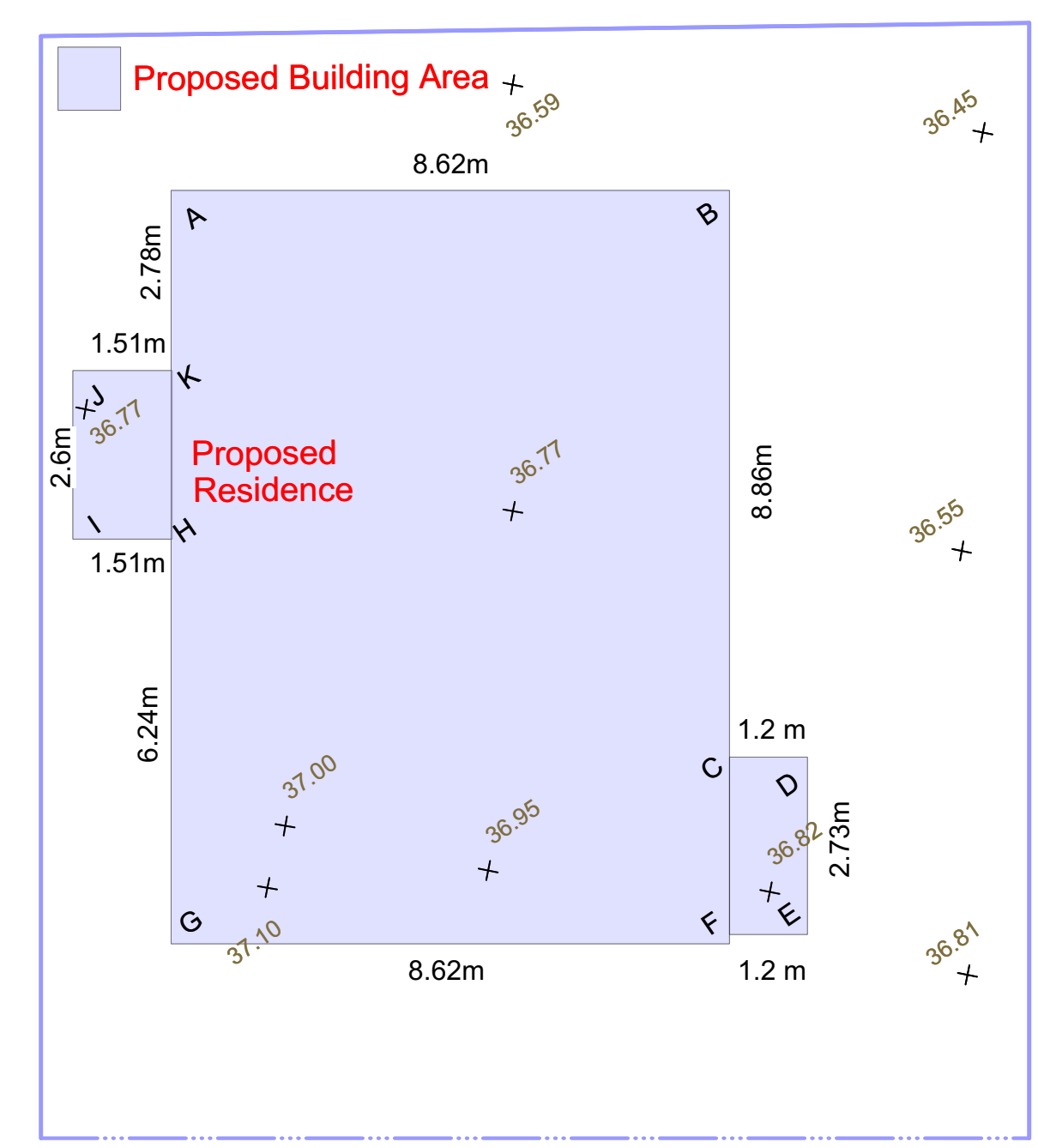
Grade Points	Geodetic Elevation (M)	Geodetic Elevation (FT)	Between Grade Points	Average of Points (M)	Average of Points (FT)	Between Grade Points	Distance (M)	Distance (FT)	Totals
A	37.59	123.30	AB	37.43	122.75	AB	3.46	11.35	129.49
B	37.26	122.21	BC	37.10	121.69	BC	6.69	21.94	248.20
C	36.94	121.16	CD	36.97	121.26	CD	5.08	16.66	187.81
D	37.00	121.36	DE	37.11	121.70	DE	1.85	6.07	68.64
E	37.21	122.05	EF	37.26	122.21	EF	2.37	7.77	88.31
F	37.31	122.38	FG	37.39	122.64	FG	7.52	24.67	281.17
G	37.47	122.90	GH	38.08	124.89	GH	7.73	25.35	294.32
H	38.68	126.87	HI	38.41	125.97	HI	9.28	30.44	356.40
I	38.13	125.07	IA	37.86	124.18	IA	5.26	17.25	199.14
Totals							49.24	1853.48	
Average Grade	37.64	123.47							

Hydraulic Calculations

Fixture or Device	Fixture Units	# of Fixtures	Total Fixture Units
Bathroom Group	3.6	3	10.8
Bathub	1.4		0
Clothes Washer	1.4	1	1.4
Dishwasher	1.4	1	1.4
Hose Bibb	2.5	2	5
Sink, bar	1	1	1
Sink, Bathroom (Basin)	0.7	2	1.4
Sink, Kitchen	1.4	1	1.4
Sink, Laundry	1.4		0
Shower stall	1.4		0
Water closet (toilet)	2.2	1	2.2
Total			24.6

Water meter and service from main to property line: **25 mm Water Meter and Service**

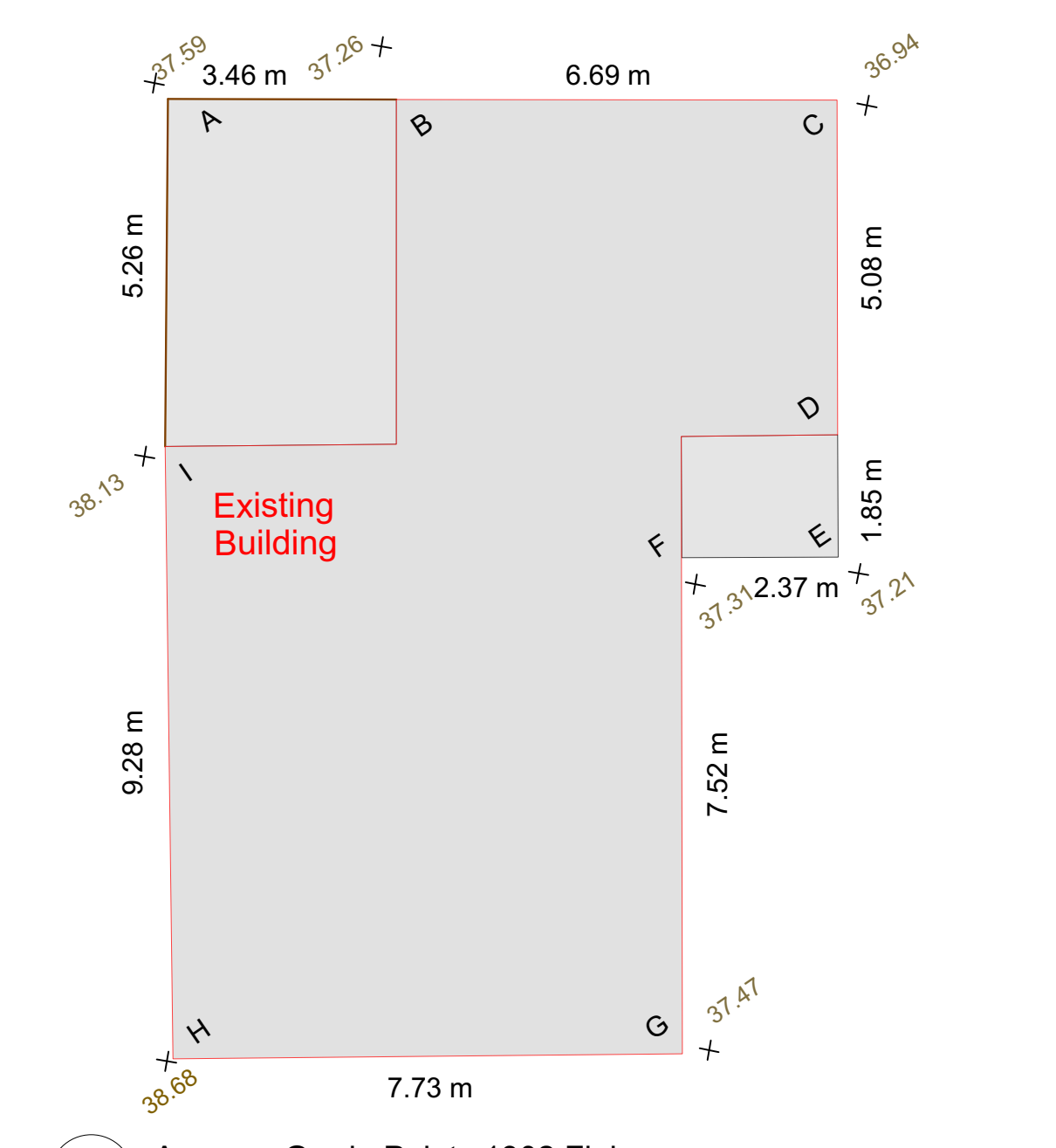
Water service size from property line to house: **25 mm Water Service**



Trees

Tree Number	Species	DBH (m)	Crown Spread (Dia. in m)	CRZ (radius in m)	Comments
1	European Ash - Fraxinus Excelsior	0.22	5.0	2.5	Existing to be removed
2	European Ash - Fraxinus Excelsior	0.22	6.0	2.5	Existing to be removed
3	European Ash - Fraxinus Excelsior	0.19	6.0	2.5	Existing to be removed
4	European Ash - Fraxinus Excelsior	0.12	6.0	3.0	Existing to be removed
5	Garry Oak - Quercus garryana	0.75	19.0	7.5	Existing to be retained. (Protected)
6	Garry Oak - Quercus garryana	0.88	23.0	18.0	Existing to be retained. (Protected)
7	European Ash - Fraxinus Excelsior	0.26	7.0	4.0	Existing to be removed
8	Wild Plum - Prunus Species	0.25	10.0	5.5	Existing to be removed
9	European Ash - Fraxinus Excelsior	0.20	10.0	3.5	Existing to be removed
10	European Ash - Fraxinus Excelsior	0.46	17.0	5.5	Existing to be removed
11	European Ash - Fraxinus Excelsior	0.50	17.0	6.0	Existing to be removed
12	TBD by Parks				New min. 6cm caliper
13	TBD by Parks				New min. 6cm caliper

2 Average Grade Points 3105 Highview Scale: 1:100



3 Average Grade Points 1302 Finlayson Scale: 1:100

No.	Date	Issue Notes
E	19-10-18	Revisions for COTW Meeting
D	19-5-02	Revisions for TRG
C	19-1-9	Rezoning & Development Permit
B	18-11-22	CALUC - Revision
A	18-10-21	CALUC - Client Review

Adrian Brett & Associates

Design Firm: Adrian Brett & Associates
10461 Resthaven DR Sidney BC V8L 3H6
C: 613-619-4171
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Consultant:

Project Title: 1302 Finlayson 3105 Highview Rezoning

Sheet Title: Proposed Site Data Table Site Servicing Plan

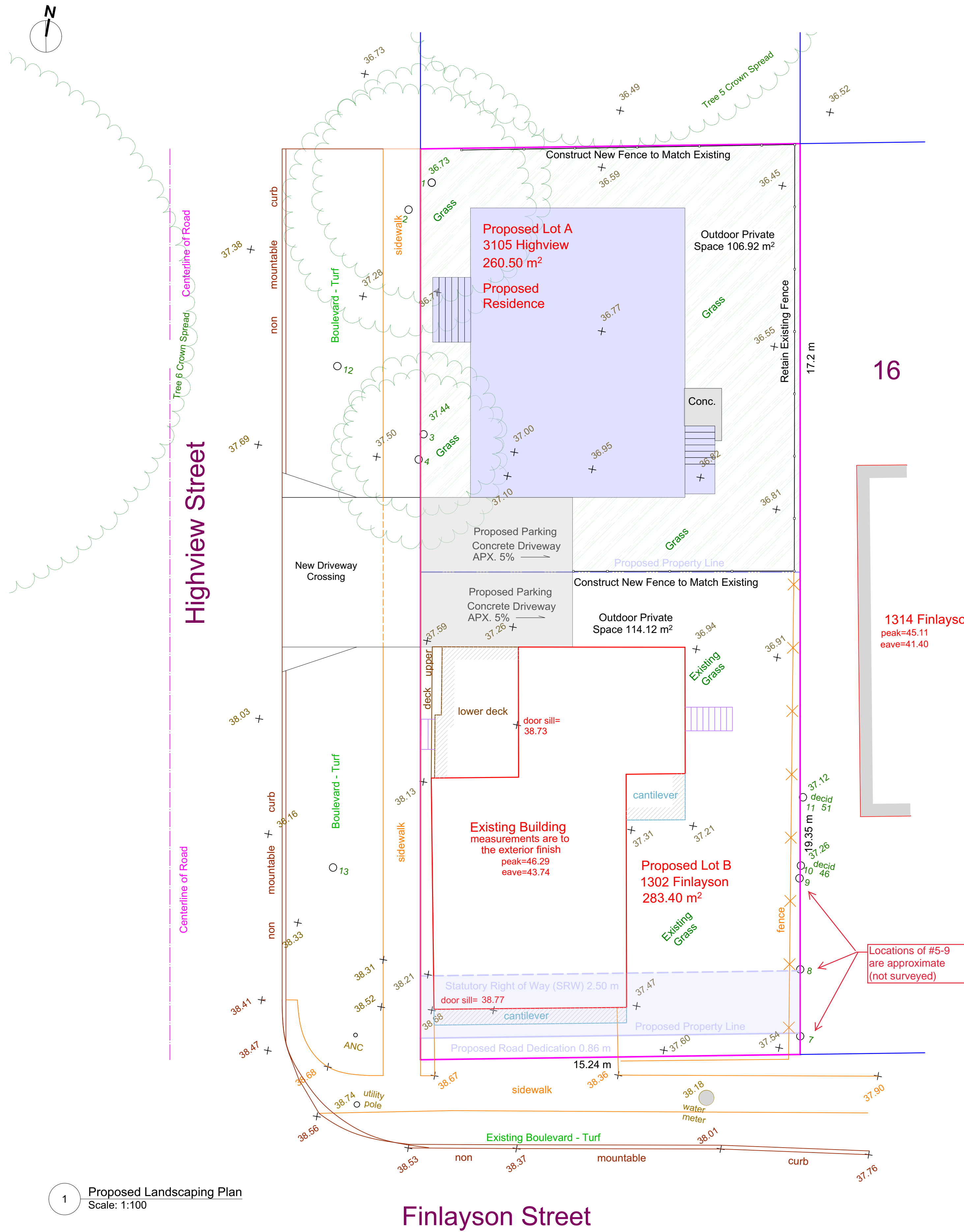
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Drawn By: Cantleaver Designs Scale: As Noted

Reviewed By: A.B. Sheet No. A 1.1

Date: 20191018 of 1

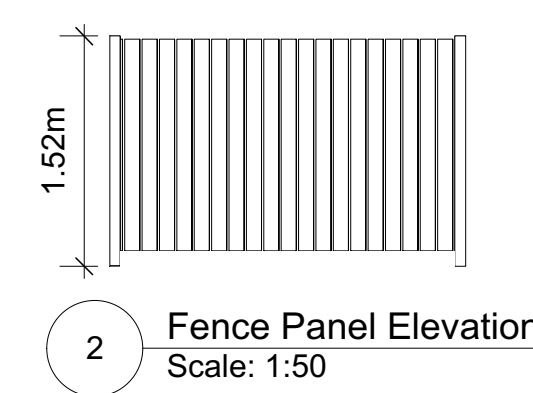
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1 Proposed Landscaping Plan
Scale: 1:100

Finlayson Street

Trees					
Tree Number	Species	DBH (m)	Crown Spread (Dia. in m)	CRZ (radius in m)	Comments
1	European Ash - Fraxinus Excelsior	0.22	5.0	2.5	Existing to be removed
2	European Ash - Fraxinus Excelsior	0.22	6.0	2.5	Existing to be removed
3	European Ash - Fraxinus Excelsior	0.19	6.0	2.5	Existing to be removed
4	European Ash - Fraxinus Excelsior	0.12 0.12 0.11	6.0	3.0	Existing to be removed
5	Garry Oak - Quercus garyana	0.75	19.0	7.5	Existing to be retained. (Protected)
6	Garry Oak - Quercus garyana	0.88 0.80 0.73	23.0	18.0	Existing to be retained. (Protected)
7	European Ash - Fraxinus Excelsior	0.26 0.12	7.0	4.0	Existing to be removed
8	Wild Plum - Prunus Species	0.25 0.18 0.17 0.13	10.0	5.5	Existing to be removed
9	European Ash - Fraxinus Excelsior	0.20 0.16	10.0	3.5	Existing to be removed
10	European Ash - Fraxinus Excelsior	0.46	17.0	5.5	Existing to be removed
11	European Ash - Fraxinus Excelsior	0.50	17.0	6.0	Existing to be removed
12	TBD by Parks				New min. 6cm caliper
13	TBD by Parks				New min. 6cm caliper



Existing fence panels. New fence to match existing fence.

16

1314 Finlayson
peak=45.11
eave=41.40

Locations of #5-9 are approximate (not surveyed)

No.	Date	Issue Notes
E	19-10-18	Revisions for COTW Meeting
D	19-5-02	Revisions for TRG
C	19-1-9	Rezoning & Development Permit
B	18-11-22	CALUC - Revision
A	18-10-21	CALUC - Client Review

Adrian Brett & Associates

Design Firm
Adrian Brett & Associates
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C: 613-619-4171
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Consultant

Project Title
1302 Finlayson
3105 Highview
Rezoning

Sheet Title
Landscape Plan

Project Manager	Project ID
Drawn By Cantilever Designs	Scale As Noted
Reviewed By A.B.	Sheet No. A 1.7
Date 20191018	of
CAD File Name	A 1.7



Talbot Mackenzie & Associates

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Tree Resource Spreadsheet Methodology and Definitions

Revised July 24, 2019

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 generally not tagged (“NT #”).

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.

~ 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

This method is solely a mathematical calculation that does not consider factors such as restricted root growth, limited soil volumes, age, crown spread, health, or structure (such as a lean). To calculate the critical root zone of trees with multiple stems below 1.4m, the diameter is considered the sum of 100% of the diameter of the largest stem and 60% of the diameter of the next two largest stems. This however can result in multi-stem trees having exaggerated CRZs. Where noted, sometimes the CRZ for trees with multiple stems will be calculated using the diameter of the trunk below the unions.

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:

- Removal (or “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