



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

February 12, 2019

Gonzales Holdings
295 King George Terrace
Victoria, BC
V8S 2J8

Subject: Second exploratory excavation within critical root zone of Garry Oak #450

During our February 7, 2019 site visit at your request, we conducted an exploratory excavation to evaluate the impacts of constructing a new house within the critical root zone (CRZ) of an 83cm DBH Garry Oak, located in the rear yard of 1888 Gonzales Ave. The tree was previously tagged #450 and included in our inventory and Tree Preservation Plan that we completed for the proposed development (latest revision dated December 19, 2018).

We had previously completed an exploratory excavation on December 12, 2018 for the same purpose. We hand-dug a 2.5m long trench 1.5m from the base of the tree. Roots of the following sizes were encountered and retained:

- One 12cm, 1.4m west of the base of the tree
- One 8cm, directly south
- Two 6cm, directly south
- Two 3cm
- Three 2cm
- A moderate density of 1cm and smaller roots

The large structural roots were all encountered at a depth of about 30cm. We determined that if these roots were severed, the health and structural stability of the tree would be significantly impacted. We recommended it be removed if the building were to be constructed as then proposed.

For our second dig, the house design had been altered in an effort to retain the tree (see attached). The revised plans we received show a master suite being constructed 2.5m from the base of the tree and an ensuite 3.5m away. Based on discussions with the applicant, it is our understanding that the building foundation could be constructed with only 30cm of working room outside the house footprint. We excavated 0.5m outside the footprint to be certain of no unintended impacts. 2.5m long trenches were excavated outside both the footprint of the master bedroom and ensuite. We hand-dug to depths of 60-80cm, where we encountered a mix of small rocks and sandy soil.

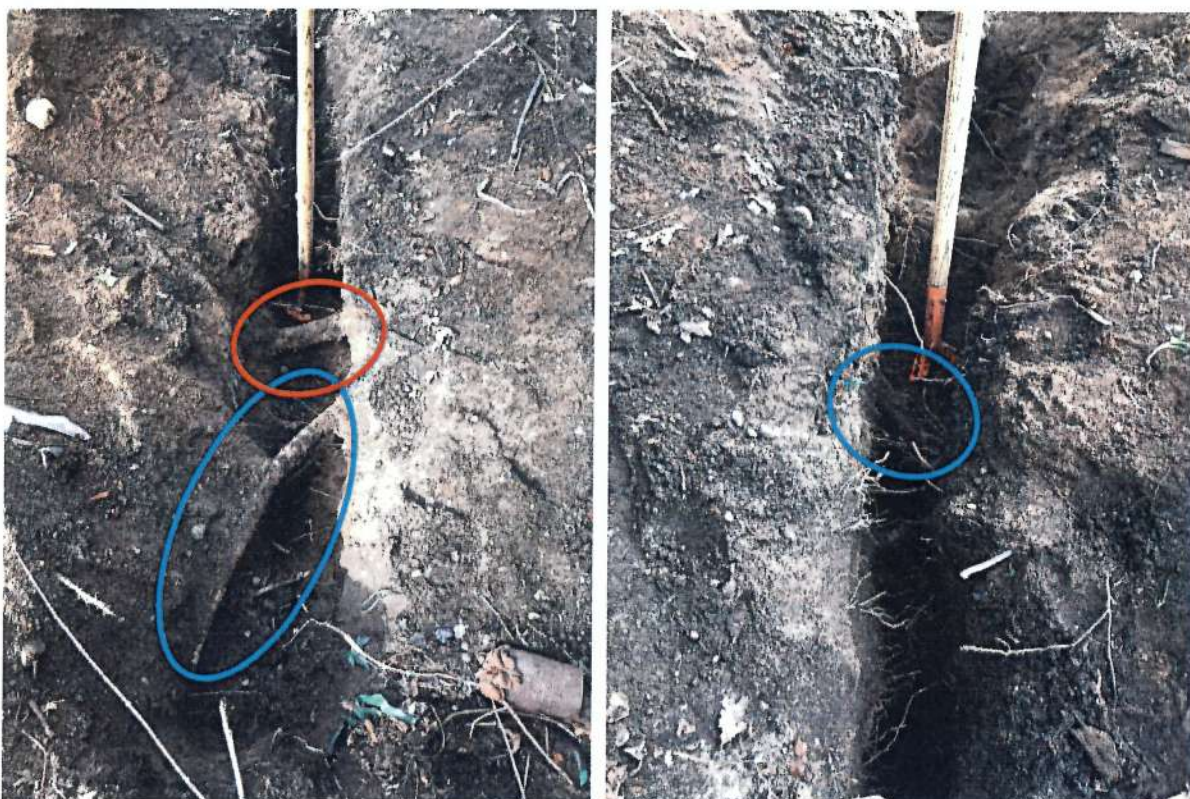
Two metres from the base of the tree (0.5m outside the master bedroom footprint), we encountered only one large root (5cm diameter), in addition to a moderate density of roots 1cm and smaller. Three metres from the base of the tree (0.5m outside the ensuite footprint), we encountered and retained roots of the following diameters:

- One 6.5cm
- Two 5cm
- Three 3cm

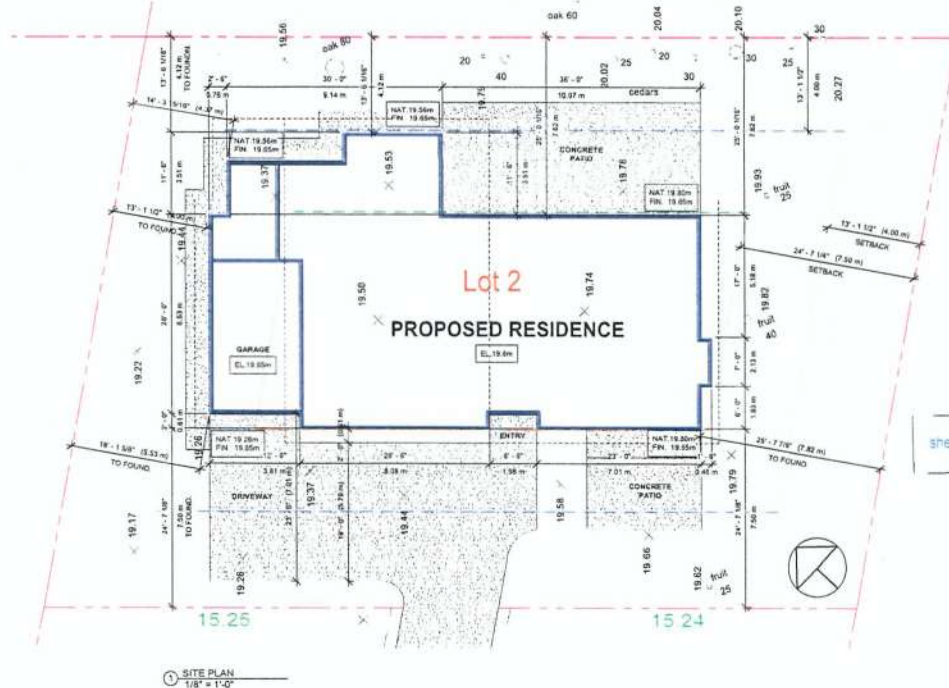
Several of the large roots we encountered during the first exploratory excavation we conducted were not found and are therefore likely growing to a depth beyond 80cm.

We believe we encountered bearing soils in the areas excavated. If excavation does not occur more than 0.5m outside the proposed building footprint and the soil we encountered is sufficient to construct the foundation, then, in our opinion, the new house can be constructed as proposed with only short-term health impacts. We anticipate some signs of health stress (e.g. areas of dieback, reduced annual shoot growth) may be observable as a result of the root loss and decrease in permeability within approximately one-third of the tree's CRZ, but that the tree's health will not decline in the long-term. The tree is currently in fair to good health and oaks typically exhibit good tolerance to root disturbance. We do not expect the tree's structural stability will be significantly impacted. If it is found that deeper excavation is necessary and large roots are encountered, alternative building techniques may be necessary. This evaluation assumes that the tree's remaining CRZ has not been previously impacted by historic excavation.

There is large deadwood in the crown overhanging the proposed house footprint, which we recommend be removed if the house is to be constructed as proposed. The pruning should be completed by an ISA Certified Arborist to ANSI A300 pruning standards. The tree will not require any additional pruning to attain clearance from the new house.



One 6.5cm (circled in red), two 5cm (circled in blue), and three 3cm diameter roots were encountered in the trench 3m from the base of the tree.



General Notes

Dimensions provided shall take preference over scale. Contractor to verify all dimensions of Building Designer and Consultants drawings prior to work commencement. Any discrepancies are to be reported immediately. Any notes elsewhere on the plans that exceed the requirements stated in the general notes take precedence. Prior to any alterations or modifications of plans or details on site, Contractor(s), tradesperson(s), or homeowner(s) must contact the Building Designer to confirm Building Code requirements and to maintain accuracy and completeness of the plans.

All references to the "British Columbia Building Code" (B.C.B.C.) are its current edition or published revision thereto, as approved by ministerial order by the Province of British Columbia. Any reference to a dated edition or revision is to be assumed for the equivalent requirement in the most current edition. All work shall comply with the current edition of the "British Columbia Building Code", the rules and customs of best trade practice to be executed by skilled tradespersons, well equipped and adequately supervised.

Surveyor and/or Contractor to confirm all aspects of siting and placement of structure on lot. Designer not responsible for placement. In the event that the proposed new or existing structure does not conform to the requirements of the B.C. Building Code an engineer(s) may be necessary and such services are for the owner's account.

All materials to be of best quality, complying with the applicable sections of the current C.S.A., C.G.S.B. and B.C.B.C. standards. All materials shall be used strictly according to manufacturers printed directions, where not inconsistent with this specification, no dilution permitted except where specified. All work shall comply with B.C.B.C. 9.23.13, and to be designed by structural engineer unless noted elsewhere. Structural Engineering and trades manufacturers drawings to take precedence over structural design stated within.

1 SITE PLAN
1/8" = 1'-0"

PROJECT INFORMATION

ZONE	R1-G
SITE AREA	994 sqm
TOTAL FLOOR AREA	204.7 sqm
COMMERCIAL FLOOR AREA	N/A
FLOOR SPACE RATIO	N/A
SITE COVERAGE	214.33 sqm
HEIGHT OF BUILDING	21.81m
NUMBER OF STOREYS	ONE
PARKING STALLS ON SITE	N/A
BICYCLE PARKING NUMBER	N/A

BUILDING SETBACKS

FRONT YARD	7.5 m
REAR YARD	4.12 m NH
SIDE YARD (WEST)	4.0 m
SIDE YARD (EAST)	7.62 m
COMBINED SIDE YARDS	11.82m

RESIDENTIAL USE DETAILS

TOTAL NUMBER OF UNITS	ONE
UNIT TYPE	3 BEDROOM
GROUND ORIENTED UNITS	ONE
MINIMUM UNIT FLOOR AREA	280 sqm
TOTAL RESIDENTIAL FLOOR AREA	192.1 sqm
(2004 + 294) - 200 + 2068 at 192.1 sqm	

AVERAGE GRADES:

(19.26+19.40)/2	x8.53= 164.88
(19.40+19.40)/2	x0.76= 14.74
(19.40+19.56)/2	x3.51= 68.37
(19.56+19.56)/2	x3.14= 178.78
(19.56+19.55)/2	x3.51= 68.81
(19.65+19.65)/2	x10.97= 215.56
(19.65+19.65)/2	x5.18= 101.79
(19.65+19.65)/2	x0.48= 9.04
(19.65+19.65)/2	x2.13= 41.85
(19.65+19.65)/2	x0.48= 9.04
(19.65+19.65)/2	x1.63= 35.96
(19.65+19.57)/2	x7.01= 137.47
(19.57+19.57)/2	x0.81= 11.94
(19.57+19.57)/2	x1.98= 38.75
(19.57+19.57)/2	x0.61= 11.94
(19.57+19.40)/2	x0.08= 157.44
(19.40+19.40)/2	x0.61= 11.93
(19.40+19.26)/2	x3.81= 73.65
	1301.84
1351.84 / 89.19	= 19.54m 64.11ft

Revision Number	Revision Description	Revision Date

Proposed Residence for:
1888 Gonzales Holdings Ltd.
Lot 2, 1888 Gonzales Ave, Victoria, BC



Talbot Mackenzie & Associates

Consulting Arborists

1888 Gonzales Ave, Victoria

Construction Impact Assessment &

Tree Preservation Plan

PREPARED FOR: Roberts Bay Holding Ltd.
 295 King George Terrace
 Victoria, BC
 V8S 2J8

PREPARED BY: Talbot, Mackenzie & Associates

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

DATE OF ISSUANCE: December 19, 2018

Box 48153 RPO - Uptown Victoria, BC V8Z 7H6
Ph: (250) 479-8733
Fax: (250) 479-7050
Email: tmtreehelp@gmail.com



Talbot Mackenzie & Associates
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Jobsite Property: 1888 Gonzales Ave, Victoria
Date of Site Visit: August 30, 2018
Site Conditions: Residential lot. No ongoing construction activity.

Summary: Six trees will have to be removed as a result of the proposed subdivision. Our exploratory excavation revealed that construction of the house on lot 2 will significantly impact the health, and possibly the stability, of Garry Oak #450 and we therefore recommend it be removed. Cypress #451 will likely require removal for construction of the new house on lot 3 and municipal trees NT2-5 will require removal to install underground services or for driveway construction. Our exploratory excavation 3m from the north property boundary revealed Garry Oak NT6 and Maple NT7 in Pemberton Park will not be significantly impacted by house construction on lot 1, as long as excavation does not encroach within 3m of the property boundary. Arborist supervision is recommended during excavation within the critical root zones of several trees for construction of the lot 1 driveway, lot 2 patio, and installation of underground services to all 3 lots. If our recommended mitigation measures are followed, we do not anticipate the health of any additional trees will be significantly impacted.

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 subdivide the property into three lots and construct three new buildings and three separate access driveways
- 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 building plans from Precision Engineering and landscape plans from Demitasse Garden Services.



We hand-dug a 2.5m long trench 1.5m from the base of the 83cm DBH Garry Oak (#450), where we anticipate excavation will occur to for construction of the building on lot 2.



Several large structural roots were found, including one 12cm diameter root (left image), one 8cm root (right image circled in red), and two 6cm roots (one in right image circled in blue).



We hand dug a 2.5m long trench 3m from the fence line (5.5m from the base of Big Leaf Maple NT7), where the applicant informed us would be the limit of excavation.



One 3cm (bottom of left image) and four 2cm roots were encountered and retained.

installed as close to the south end of the driveway as possible to minimize the likelihood of large roots from **Big Leaf Maple #448** and **Deodar Cedar #449** being encountered. We recommend that alternative excavation methods be used (hydro-vac, air-spade, or a combination of machine and hand-digging) where excavation occurs within their CRZs. We do not anticipate large roots from trees **NT4-NT7** will be encountered.

- **Storm and Sanitary:**

- **Lot 1:** Storm and sanitary connections to lot 1 are proposed to be installed approximately 4.5m northeast of **Deodar Cedar #449**. We recommend the arborist be on site to any supervise excavation within the tree's CRZ. Alternative excavation methods may be required (e.g. hand-digging, in combination with machine excavation), depending on if large roots are encountered. They will also be installed within the CRZs of **Garry Oak NT6** and **Big Leaf Maple NT7**, though large roots are unlikely to be encountered. We do not anticipate the health of any of these trees will be significantly impacted.
- **Lot 2:** Excavation will be required only at the periphery of the CRZs of **Big Leaf Maples NT7** and **NT8**, and we do not anticipate large roots from either tree will be encountered.
- **Lot 3:** These services are proposed to be installed 2.5m from **Garry Oak NT1** (53cm DBH), and depending on the alignment beyond the municipal boundary, are likely to be installed within the CRZ of **Garry Oak NT20** (40cm DBH). We recommend these services be shifted to the west, as it will likely be difficult to retain roots across a 1m wide trench. Any excavation within the CRZs of these trees should be supervised by the project arborist using alternative excavation methods (e.g. hydro-vac, air-spade, or hand-digging).

- **Hydro/Telephone/Cable:** It is our understanding that each of these services will be installed at a depth of 1m. In addition to municipal trees **NT4** and **NT5** that will have to be removed (see above), the attached site servicing plans show excavation within the municipal frontage will occur approximately 3m from **Garry Oak NT1** and 4.5m from **Big Leaf Maple #448**. Any excavation within the CRZs of these trees should be supervised by the project arborist, and less-invasive excavation techniques employed (e.g. hydro-vac, air-spade, or hand-digging).
- **Site Access:** All trees to be retained should have barrier fencing erected as close to the perimeter of their CRZs as possible prior to the demolition of the existing house and up to the point where construction of the proposed houses, patios, and driveways requires their deconstruction (see attached site survey for recommended barrier fencing locations). If vehicle and/or equipment access are required within the CRZs of any trees to be retained, the recommendations listed in the "Minimizing Soil Compaction" section below should be followed.

To avoid compacting the soil within the critical root zones of trees #448, #449, #451, NT1, NT2, NT4-NT7, and NT16-NT21 during demolition of the existing house, we recommend using only the existing gravel and asphalt driveways to access the property.

- **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 the “Minimizing Soil Compaction” section if the area is to have heavy traffic.
- **Blasting:** If required, 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.

Yours truly,

Tag	Common Name	Latin Name	DBH (cm) * over ivy ~ approximate	Crown Spread (m)	CRZ (m)	Relative Tolerance	Health	Structure	Remarks and Recommendations	Retention Status
448	Big Leaf Maple	<i>Acer macrophyllum</i>	64, 35, 24	10	12.0	Moderate	Fair	Fair	Ivy and swelling at base, crack on 24cm stem, asymmetric crown due to competition with cedar	Retain
449	Deodar Cedar	<i>Cedrus deodara</i>	97	14	11.5	Moderate	Fair	Fair	Ivy at base, large deadwood. Multiple growth leaders	Retain
450	Garry Oak	<i>Quercus garryana</i>	83	15	8.5	Good	Fair	Fair	Large deadwood, small cavities on limb with tearout wound	X
451	Cypress	<i>Chamaecyparis spp.</i>	67, 20, 18	8	11.0	Moderate	Good	Fair	Previously topped	X
NT1	Garry Oak	<i>Quercus garryana</i>	53	8	5.5	Good	Good	Fair	Municipal. Pruned for utility lines, asymmetric crown	Retain
NT2	Golden Chain Tree	<i>Laburnum anagyroides</i>	21 below union	4	2.5	Moderate	Good	Fair	Municipal.	X
NT3	Cherry	<i>Prunus spp.</i>	20	3	2.5	Moderate	Fair/poor	Fair	Possibly shared with municipality. Dieback	X
NT4	Cherry	<i>Prunus spp.</i>	20*, 8	4	3.0	Moderate	Poor	Poor	Municipal. Significant dieback	X
NT5	Hazel	<i>Corylus spp.</i>	7x10	5	2.5	Moderate	Fair	Fair	Municipal. Multistem at base	X
NT6	Garry Oak	<i>Quercus garryana</i>	~40, 35	14	6.0	Good	Fair	Fair	In park, ~3m from property line. Codominant, included stems, deadwood	Retain
NT7	Big Leaf Maple	<i>Acer macrophyllum</i>	~130	16	15.5	Moderate	Good	Fair	In park, ~2.5m from property line. Asymmetric crown, several cavities and active response growth at base	Retain
NT8	Big Leaf Maple	<i>Acer macrophyllum</i>	~15, 15, 15	8	4.0	Moderate	Good	Fair	In park, 2m from fence	Retain
NT9	Garry Oak	<i>Quercus garryana</i>	61	10	6.0	Good	Fair	Fair	Neighbour's. ~2m from property line. Leaning, dieback, areas of sparse foliage	Retain
NT10	Garry Oak	<i>Quercus garryana</i>	60	12	6.0	Good	Good	Fair	Neighbour's. ~3m from property line	Retain
NT11	Leyland Cypress hedge	<i>Cupressus x leylandii</i>	Multistem	2	2.0	Moderate	Fair/poor	Fair	Neighbour's. ~1m from property line. 11 stems, ~10cm DBH. Suppressed	Retain
NT12	Holly cluster	<i>Ilex spp.</i>	~20, 15, 10	5	3.5	Good	Good	Fair	Neighbour's. Adjacent to property line	Retain
NT13	Purple Leaf Plum	<i>Prunus cerasifera</i>	16	4	2.0	Moderate	Good	Fair	Neighbour's. Adjacent to fence. Overhangs subject property 3m	Retain

BC LAND SURVEYORS SITE PLAN OF:

Civic: 1888 Gonzales Avenue

Legal: Lot 7, Section 68, Victoria District, Plan 3071

Parcel Identifier: 006-248-837 in the City of Victoria

Scale - 1 : 300 Distances are in metres.

0 2 5 10 15 20



The intended print size is 11" by 17".

LEGEND

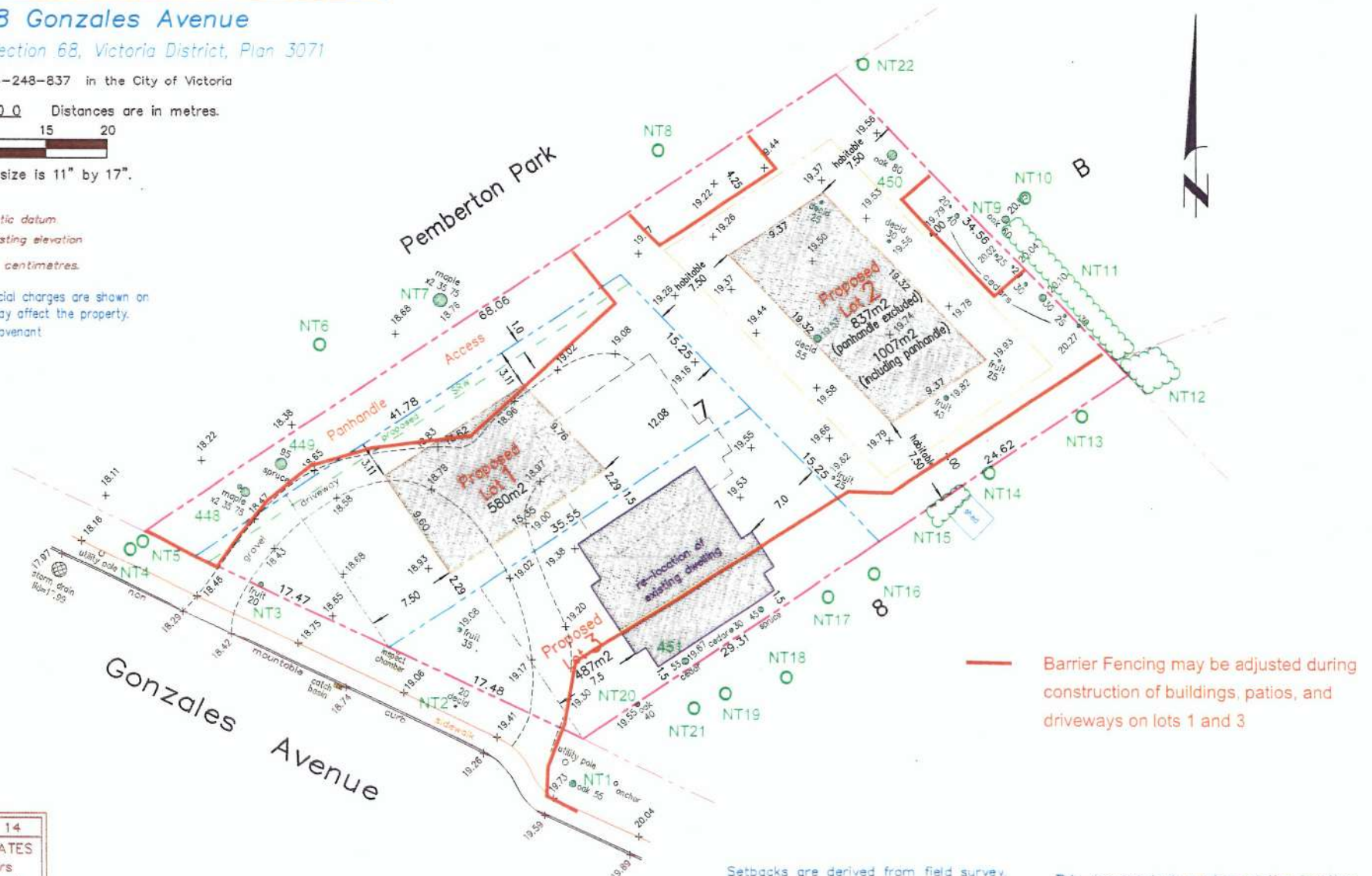
Elevations are to geodetic datum.

+ - denotes - existing elevation

Tree diameters are in centimetres.

The following non-financial charges are shown on the current title and may affect the property.

572660 - Restrictive Covenant



Barrier Fencing may be adjusted during construction of buildings, patios, and driveways on lots 1 and 3

July 10, 2018

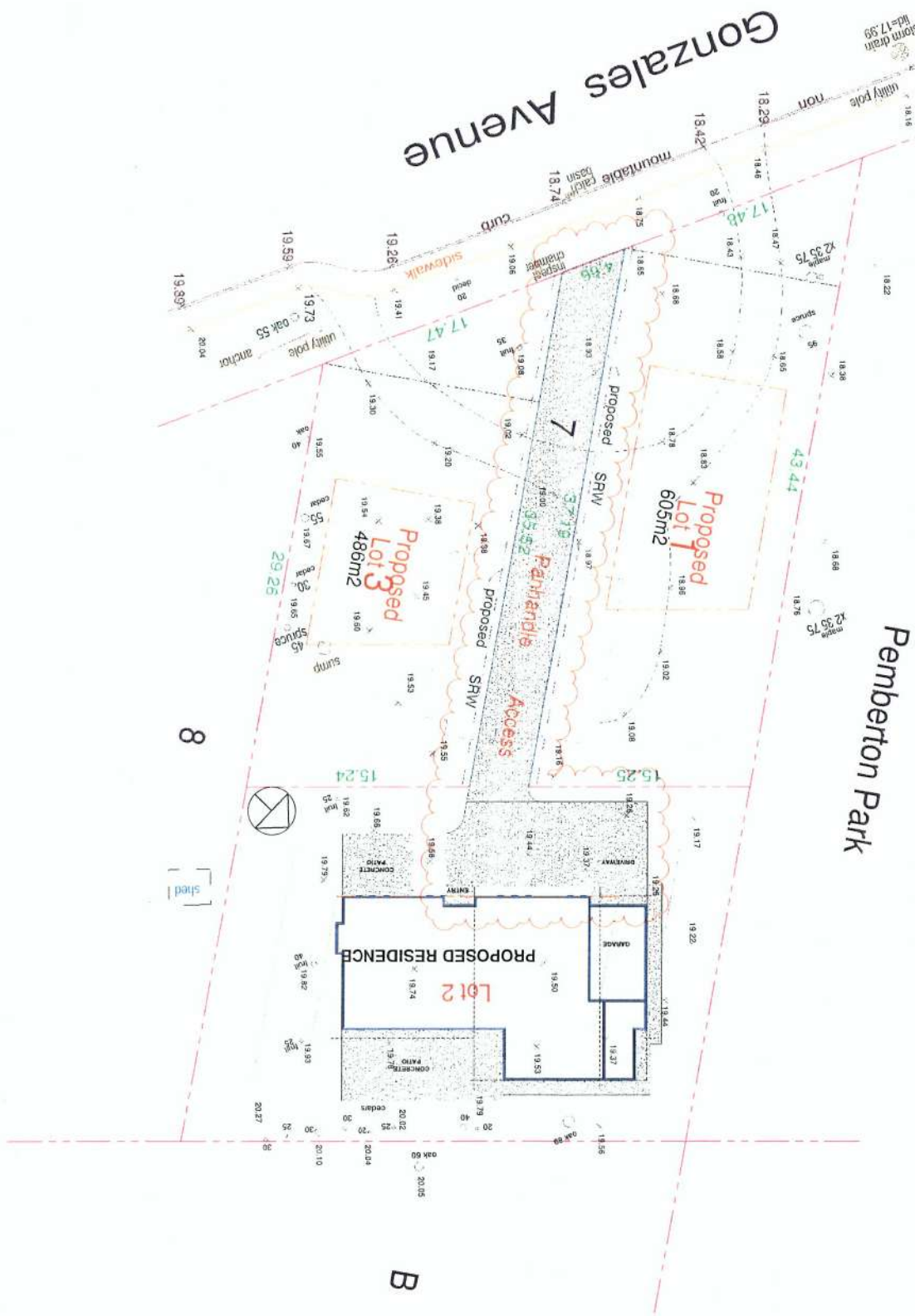
File : 12,768 - 14
POWELL & ASSOCIATES
B C Land Surveyors
250-2950 Douglas Street
Victoria, BC V8T 4N4
phone (250) 382-8855

Setbacks are derived from field survey.

Parcel dimensions shown hereon are derived from Land Title Office records.

This document shows the relative location of the surveyed features and shall not be used to define property boundaries.

ALL DIMENSIONS ARE TO FACE UNLESS OTHERWISE SPECIFIED. ELEVATIONS ARE TO FINISH GRADE UNLESS OTHERWISE SPECIFIED. LOT 1 IS SHOWN FOR REFERENCE ONLY.



A1.1
 SHEET 1.1 OF 8

Proposed Residence for:
1888 Gonzales Holdings Ltd.
 Lot 2, 1888 Gonzales Ave, Victoria, BC

Revision Schedule		
Revision Number	Revision Description	Revision Date
1	Revisions	Aug 24 2018

PRECISION ENGINEERING LTD.
 2007 10th Ave S.E.
 Victoria, B.C. V8N 1A5
 (250) 363-2015
 info@precisioneng.ca
 www.precisioneng.ca

