



ARBORIST REPORT

March 13, 2023

Update: March 21, 2024

3805 Lakeshore Road

VDZ PROJECT#: DP2022-76

SITE ADDRESS: 3805 Lakeshore Road, Kelowna, BC

PREPARED FOR:

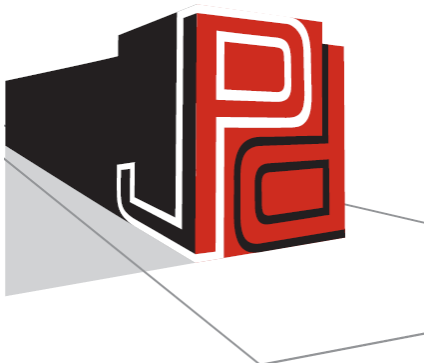
Jim Pattison Developments
#200 – 879 Marine Drive
North Vancouver, BC
V7P 1R7

PROJECT ARBORIST:

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ISA Certified Arborist PN-7929A

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ASSIGNMENT

VDZ has been retained by the Jim Pattison Developments to prepare a report to assess the tree(s) located at 3805 Lakeshore Road, Kelowna, BC. VDZ performed a site review entailing identification and visual assessment of the tree(s) on-site based on the documents provided by the client or representative(s).

The Project Arborist will provide recommendations for the retention or removal of the tree(s) on this site based on the existing site conditions and the proposed use of the site. Mitigation of development impact on the tree(s) has been considered as part of the tree assessment process.

LIMITS OF THE ASSIGNMENT

VDZ's observations are limited to one site visit on March 4, 2023. No tissue or soil samples were sent to a lab for identification or analysis. VDZ located the trees using onsite navigation and a tree survey was supplied by the client or representative(s).

During the winter season, deciduous trees are in winter dormancy, limiting the assessment of tree health during this time.

All recommendations are based on the health and condition of the tree, as well as conflicts with the architectural plan provided at the time of this report. Should there be changes to finalized working drawings, final recommendations will be adjusted to address the changes where necessary.

TESTING AND ANALYSIS

VDZ used visual tree assessment and mallet sounding to test the trees' health, condition, and risk level. Glyn Romaine of VDZ+A completed the fieldwork for this assignment under overcast conditions and a temperature of ~0 degrees Celcius. The topographic survey used during this assessment was completed by Summit Land Surveying and dated February 4, 2022. Site observations were recorded and trees were affixed with an aluminum tree tag. A limited level 1 assessment was completed for tree OS1 as it was not accessible at the time of assessment.

PURPOSE AND USE OF REPORT

The purpose of this report is to assist the property owner in compliance with the City of Kelowna Tree Protection Bylaw No. 8041, the Municipal Properties Tree Bylaw No. 8042, and the Current Zoning Bylaw, No. 8000.

SITE REVIEW

The property is located in southwest Kelowna at the southeast corner of Lakeshore Road and Cook Road. There is mixed use residential/commercial building to the north, strata homes to the east and south, and a lakeside resort across Lakeshore Rd to the west. The north portion of the site contains a single-story commercial building and open parking lot, while the entire southern portion is an un-developed riparian area.



FIG. 1 - AERIAL VIEW OF PROPERTY (Kelowna Map Viewer, 2021)

Off-site Trees - There are private off-site tree associated with this project.

Municipal Trees - There are municipal trees associated with this project.

Straddling Trees - There are no trees straddling the property lines associated with this project.

PROPOSED SITE DEVELOPMENT

The conceptual site plan calls for the demolition and clearing of a commercial building and surface parking lot, followed by the construction of a multi-family mixed-use residential and commercial building.

ENVIRONMENTAL DESCRIPTION

Half of the site is a riparian area with mostly herbaceous species with some black cottonwood, willow and growing around the perimeter. 3 Siberian elm trees (invasive in the Okanagan) have established on the edge of the riparian area. Vegetation on the northern, developed portion of the site is mostly lawn with non-native ornamental shrubs growing around the existing building and parking lot.

There is no evidence of raptors' nests, osprey nests, or heron colonies on the site. **Removal of trees however between March 15 – August 15 (date subject to change depending on seasonal nesting behavior and therefore must be confirmed with the City) will require a bird nesting survey.** This is as prescribed by the federal Migratory Birds Convention Act (MBCA), 1994 and Section 34 of the BC Wildlife Act. It is the responsibility of the owner/developer to ensure they comply with the city's regulations governing nesting birds on sites where development is occurring.

TREE PRESERVATION SUMMARY

All the Trees identified on the Tree Management Plan and within the Tree Assessment Data Table have been given their Retention/Removal recommendation on a preliminary basis. Final recommendations will be based upon design/construction and grading details.

Long-term tree preservation success is dependent on minimizing the impact caused during pre-construction clearing operations, construction, and post-construction activities. Best efforts must be made to ensure the Tree Protection Zone remains undisturbed. Ongoing monitoring of retained trees through the development process and implementation of mitigating works (watering, mulching, etc.) is essential for success.

SPECIES RECOMMENDATION FOR REPLACEMENT TREES

Given the required replacement plantings for the site, the Arborist recommends the following tree species for long-term survivability based on local conditions and future climate projections. In addition to the following trees, other interior adapted species are also recommended.

- Colorado spruce (*Picea pungens*)
- flowering crab apple (*Malus spp.*)
- green ash (*Fraxinus pennsylvanica*)
- lilac Tree (*Syringa reticula*)
- ponderosa pine (*pinus ponderosa*)
- quaking aspen (*Populus tremuloides*)

SUMMARY OF FINDINGS

- 16 on-site trees and 1 on-site hedge were identified. 1 tree is within the development area and recommended for removal. 15 tree are within the riparian area and are recommended for retention. 1 hedge is recommended for removal to provide space for restoration plantings.
- Of the 15 on-site riparian trees 3 are Siberian elm, an invasive species. Current retention recommendations are subject to advice from RPBio.
- 2 City trees were identified. Both are recommended for retention, and 1 will require Tree Protection Barrier (TPB).
- 11 off-site trees were identified. All are recommended for retention.

TABLE 1 - TREE INVENTORY ASSESSMENT

Removals are based on the condition of the tree and take into consideration the provided site plan.

CRZ = Critical Root Zone - see Tree Protection Barrier (TPB) Specification (see pg. 19) **LCR** = Live Crown Ratio **DBH** = Diameter at Breast Height (1 m)
CRAD = Crown Radius

Tag #	Common name <i>Botanical name</i>	DBH (cm)	CRAD (m)	LCR (%)	Condi- tion	Comments	Remove / Retain
201	Norway maple <i>Acer platanoides</i>	66	7.6	70	Good	Codominant at 2 m. Large butters some damage to exposed roots. Growing within proposed building envelope.	Remove
202	Norway maple <i>Acer platanoides</i>	52	6.5	70	Good	Codominant at 2 m with 3 leaders.one awkwardly attached and wraps around other. Some broken branches hanger. Exposed surface roots. Growing in riparian area. Tree Protection Barrier required.	Retain
203	Black cottonwood <i>Populus trichocarpa</i>	36	3.3	80	Good	Crook at 8 m. Surface roots visible & m north of tree. With several suckering stems wmerging from roots from 2 m to 5 m north of the tree and 3 m to west. Suckers between 5-11 cm diameter. 5,7,9,11,11, 6,6,8, 9. Gall on surface roots. Growing in riparian area. Tree Protection Barrier required.	Retain
204	Siberian elm <i>Ulmus pumila</i>	39 (18, 21)	4	80	Fair	Codominant at 1 m with included bark and wet wood. Leans south. Growing in riparian area. *Invasive tree - Not protected by Tree Protection Bylaw.	Retain*

TREE INVENTORY ASSESSMENT

205	Siberian elm <i>Ulmus pumila</i>	31	4.3	60	Fair	Growing on a mound in wetland. Codominant at 2 m. Some dead branches. Girdling root. Growing in riparian area. *Invasive tree - Not protected by Tree Protection Bylaw.	Retain*
206	Siberian elm <i>Ulmus pumila</i>	131 (49, 43, 39)	10.6	90	Fair	Multiple stems from 0.4 m. 6 trunks. Growing on mound. Some broken branches. Hangers. Growing in riparian area. *Invasive tree - Not protected by Tree Protection Bylaw.	Retain*
207	Black cottonwood <i>Populus trichocarpa</i>	45 (16, 14, 15)	5.5	80	Fair	Multistemmed from base. Under crown of 206. Growing in riparian area. Tree Protection Barrier required.	Retain
208	Black cottonwood <i>Populus trichocarpa</i>	40 (27, 13)	4.2	70	Fair	Multistemmed from base. Under crown of 206. Growing in riparian area. Tree Protection Barrier required.	Retain
NT1	Black cottonwood <i>Populus trichocarpa</i>	18	4	70	Good	Codominant at 1 m. Suckers from roots around 3 m from trunk. Growing in riparian area.	Retain
NT2	Black cottonwood <i>Populus trichocarpa</i>	22	4	60	Good	Growing on bank. Phototrophic lean to north. Growing in riparian area.	Retain
NT3	Black cottonwood <i>Populus trichocarpa</i>	38 (22, 16)	4	60	Good	2 stems from base. Growing in riparian area.	Retain
NT4	Black cottonwood <i>Populus trichocarpa</i>	39	5.9	60	Good	Growing in riparian area.	Retain
NT5	Willow <i>Salix</i> sp.	23	6.1	40	Good	Growing with large Act. Reaching south. Growing in riparian area.	Retain

TREE INVENTORY ASSESSMENT

NT6	Black cottonwood <i>Populus trichocarpa</i>	27 (16, 11)	4	60	Good	3 stems from base. Smallest stem is dead. Growing in riparian area.	Retain
NT7	Black cottonwood <i>Populus trichocarpa</i>	18	4	60	Good	Pistol butt. Dead stem adjacent that is same size. Growing in riparian area.	Retain
NT8	Black cottonwood <i>Populus trichocarpa</i>	14	4	60	Good	Pistol butt. Growing in riparian area.	Retain
H1	American arborvitae <i>Thuja occidentalis</i>			100	Fair	Cedar hege. Some sagging branches. Growing in riparian area. Conflict with proposed restoration plantings.	Remove
The following trees are growing on City property.							
C1	Red maple <i>Acer rubrum</i>	35	5.5	60	Good	Previously topped. Exposed roots with some damage mainly on west side. Growing 0.7 m from utilities box. Buried trunk flare. Tree Protection Barrier required.	Retain
C2	Red maple <i>Acer rubrum</i>	25	4	60	Good	Previously topped.	Retain
The following trees are growing off-site on private property.							
OS1	Callery pear <i>Pyrus calleryana</i>	20	2.5	60	Good	Vigourous growth. Crown does not reach property line. Limited assessment. No access.	Retain
OS2	Black cottonwood <i>Populus trichocarpa</i>	80 (28, 29, 23)	6.4	60	Good	Multistemmed from basset. Around 5 stems. Growing in riparian area.	Retain
OS3	Black cottonwood <i>Populus trichocarpa</i>	15	4.4	70	Good	Reaches north. Growing in riparian area.	Retain
OS4	Black cottonwood <i>Populus trichocarpa</i>	15	5.3	40	Good	Reaches northeast. Growing in riparian area.	Retain
OS5	Black cottonwood <i>Populus trichocarpa</i>	12	3	50	Good	Some dead branches. Growing in riparian area.	Retain

TREE INVENTORY ASSESSMENT

OS6	Black cottonwood <i>Populus trichocarpa</i>	19	4.5	50	Good	Growing in riparian area.	Retain
OS7	Black cottonwood <i>Populus trichocarpa</i>	27 (17, 10)	4.5	50	Fair	Codominant at 0.1 m. Large west stem has dead broken top. Small stem reaches north. Growing in riparian area.	Retain
OS8	Black cottonwood <i>Populus trichocarpa</i>	12	5.2	50	Good	Reaches east. Growing in riparian area.	Retain
OS9	Black cottonwood <i>Populus trichocarpa</i>	19	4	50	Good	Reaches southeast. Growing in riparian area.	Retain
OS10	Willow <i>Salix sp.</i>	43	6.8	50	Good	Some dead branches. Growing in riparian area.	Retain
OS11	Black hawthorn <i>Crataegus douglasii</i>	13 (7, 6)	3.5	50	Good	2 stems from base. Growing in riparian area.	Retain

Table 2 : Summary of Tree Preservation by Tree Species - On-site and City trees

Tree Species	Existing	Remove	Retain
Deciduous Trees			
Black cottonwood	10	0	10
Willow	1	0	1
Norway maple	2	1	1
Red maple	2	0	2
Siberian elm	3	0	3
Coniferous Trees			
	0	0	0
Total	18	1	81
Total Replacement Trees Proposed (excluding Boulevard Street Trees)		TBD	
Total Retained and Replacement Trees Number		TBD	

Summary, report, and plan prepared and submitted by: D. Glyn Romaine



(Signature of Arborist)

March 21, 2024

Date



FIG. 2 - Tree 201, looking southeast from Lakeshore Rd.



FIG. 3 - Surface roots on Tree 201



FIG. 4 - Tree OS1 - limited access.



FIG. 5 - Tree 206, 204, 202, 203.



FIG. 6 - Surface roots on Tree 202



FIG. 7 - Surface roots and suckers on Tree 203.



FIG. 8 - Tree 204



FIG. 9 - Included bark and wetwood on Tree 204.



FIG. 10 - H1 (Hedge), Tree 205, Tree 204 (L-R).



FIG. 11 - H1 (Hedge), Tree 206, Tree 207, looking east.

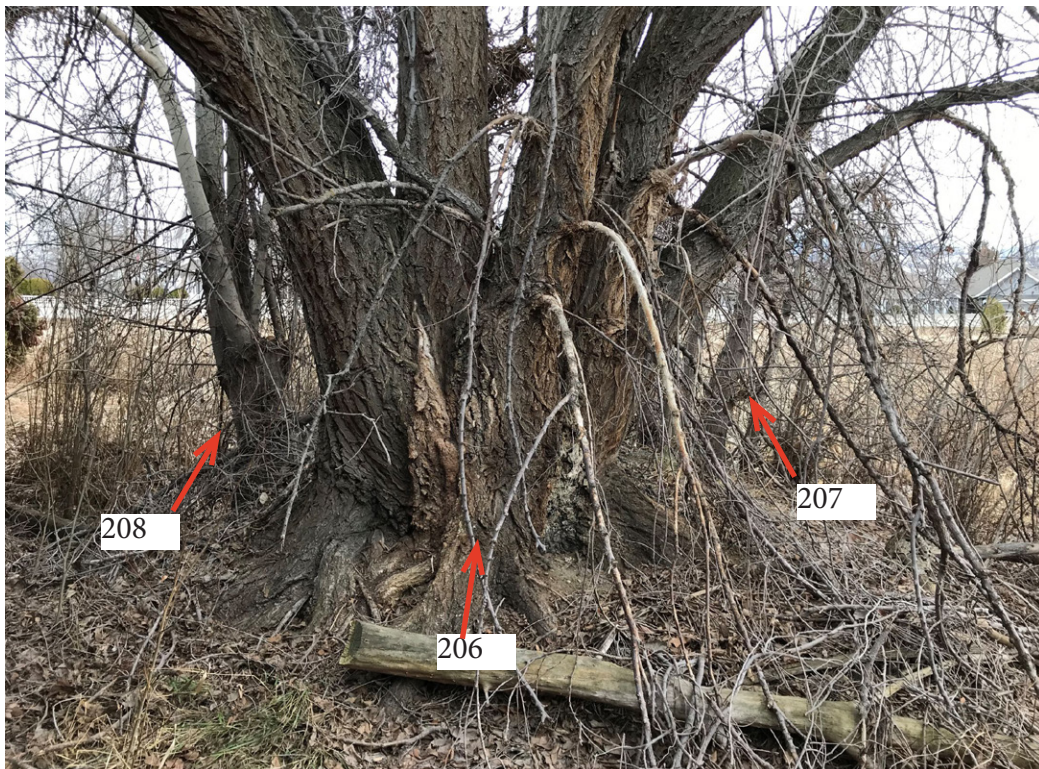


FIG. 12 - Tree 208, 206, 207.

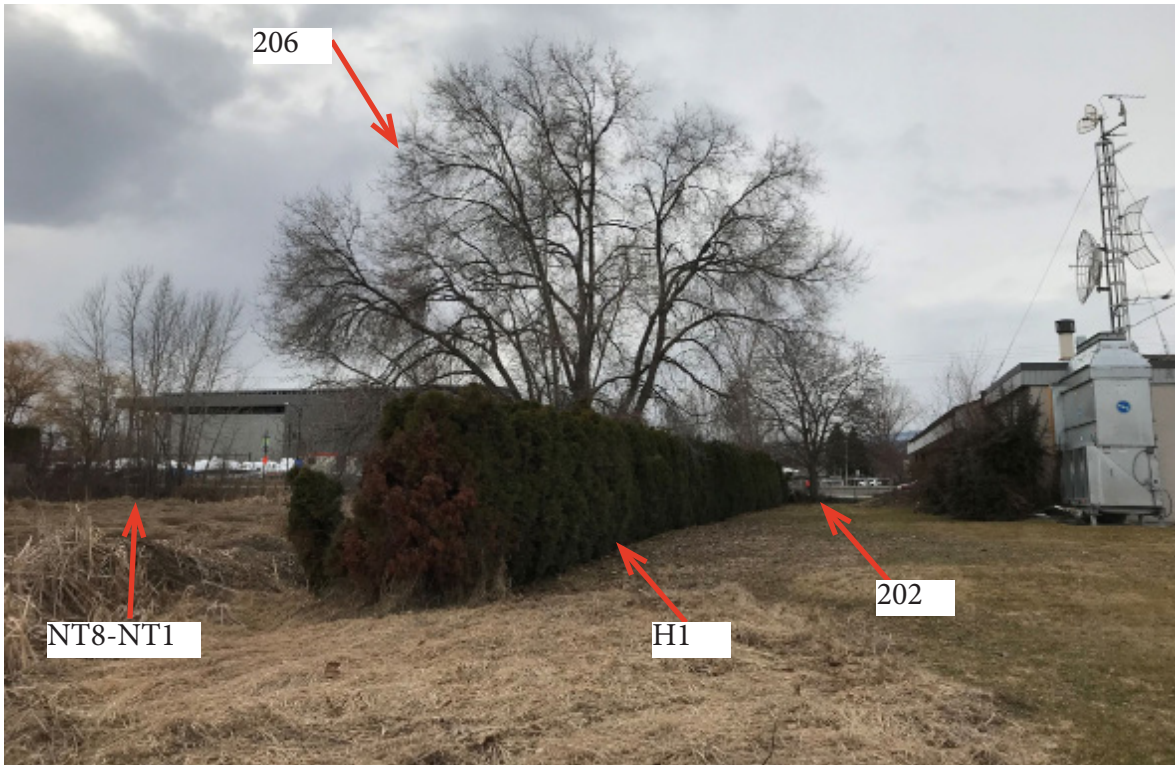


FIG. 13 - Trees NT8-NT1, H1, 206, 202.



FIG. 14 - Trees OS10 - OS2, NT8-NT1, looking southwest.



FIG. 15 - Trees C2, C1, growing along Cook Rd.



FIG. 16 - Exposed surface roots fo Tree C1 extend into subject property.



FIG. 17 - Entrance form Cook Rd. looking west. Tree 201 visible.



FIG. 18 - Looking north along Lakeshore Rd.

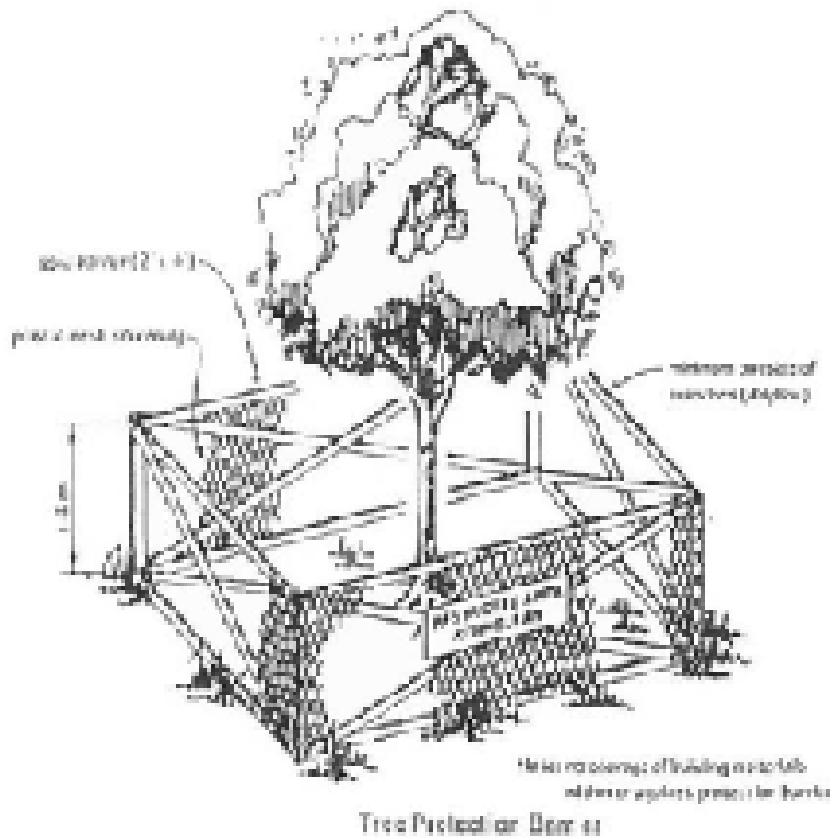


FIG. 19 - Looking south along Lakeshore Rd. at southwest corner of property at on and off-site cottonwoods and willows in Riparian area.



FIG. 20 - Looking southeast across riparian area.

Specifications for Tree Protection Barriers - SCHEDULE C



Tree Protection Distance Table

Trunk Diameter (in)	Minimum Protection Radius Around Tree (distance from trunk in metres)
20	1.2
25	1.5
30	1.8
35	2.1
40	2.4
45	2.7
50	3
55	3.3
60	3.6
75	4.5
90	5.4
100	6.0

Tree Protection Barrier Height

General Requirements and Limitations for Operations Within the Tree Protection Zone

- The Contractor shall not engage in any construction activity within the Tree Protection Zone (TPZ) without the approval of the Project Arborist including: operating, moving or storing equipment; storing supplies or materials; locating temporary facilities including trailers or portable toilets and shall not permit employees to traverse the area to access adjacent areas of the project or use the area for lunch or any other work breaks. Permitted activity, if any, within the Tree Protection Zone maybe indicated on the drawings along with any required remedial activity as listed below.
- In the event that construction activity is unavoidable within the Tree Protection Zone, notify the Project Arborist and submit a detailed written plan of action for approval. The plan shall include: a statement detailing the reason for the activity including why other areas are not suited; a description of the proposed activity; the time period for the activity, and a list of remedial actions that will reduce the impact on the Tree Protection Zone from the activity. Remedial actions shall include but shall not be limited to the following:

- In general, demolition and excavation within the drip line of trees and shrubs shall proceed with extreme care either by the use of hand tools, directional boring and/or Air Spade. If any excavation work is required within the Tree Protection Zone (TPZ), the Project Arborist must be present during excavation, and a trench should be 'hand dug' to a depth of 60 cm outside the Drip Line, to uncover any potential roots. The Project Arborist should cleanly prune roots and recommend the appropriate treatment for any structural roots encountered.
- Knife excavation where indicated or with other low impact equipment that will not cause damage to the tree, roots soil.
- When encountered, exposed roots, 1 inches and larger in diameter shall be worked around in a manner that does not break the outer layer of the root surface (bark). These roots shall be covered in Wood Chips and shall be maintained above permanent wilt point at all times. Roots one inch and larger in diameter shall not be cut without the approval of the Project Arborist. Excavation shall be tunnelled under these roots without cutting them. In the areas where roots are encountered, work shall be performed and scheduled to close excavations as quickly as possible over exposed roots.
- Tree branches that interfere with the construction may be tied back or pruned to clear only to the point necessary to complete the work. Other branches shall only be RETAINED when specifically indicated by the Project Arborist. Tying back or trimming of all branches and the cutting of roots shall be in accordance with accepted arboriculture practices (ANSI A300, part 8) and be performed under supervision of the Project Arborist.
- Do not permit foot traffic, scaffolding or the storage of materials within the Tree Protection Zone.
- Protect the Tree Protection Zone at all times from compaction of the soil; damage of any kind to trunks, bark, branches, leaves and roots of all plants; and contamination of the soil, bark or leaves with construction materials, debris, silt, fuels, oils, and any chemicals substance. Notify the Project Arborist of any spills, compaction or damage and take corrective action immediately using methods approved by the Project Arborist

GLOSSARY OF KEY TERMS

Caliper: the diameter of a tree at 15 centimetres [6 inches] above the natural grade of the ground, measured from the base of the tree.

Certified arborist: a person accredited as such by the International Society of Arboriculture.

Council: the Municipal Council of the City of Kelowna.

Cut down: to cut down a tree, remove or kill a tree by any means.

Dangerous or hazardous tree or limb: a tree or limb identified by a qualified person as being, or likely to become in the immediate future, a danger to people or property.

D.B.H.: a tree diameter at breast height (1 m above grade).

Dead, diseased or damaged trees or limbs: a tree or limb identified by a qualified person as being or likely to become in the immediate future, a danger to people or property.

Deciduous: tree or plant that sheds most or all of its foliage annually.

Drip line: horizontal line on the ground encircling a tree corresponding to the furthest extension of the branches of a tree.

Director of Planning & Development Services: the person appointed by Council as such and includes his or her lawful deputy.

Engineer: a person registered or licensed as a professional engineer pursuant to the provisions of the Engineers and Geoscientists Act, R.S.B.C. 1996, c. 116, as amended.

General Manager: the person appointed by Council as the General Manager of Planning and Development or the duly authorized representative.

Group of trees: a tree massing that includes a minimum of 20 trees with a maximum spacing of 5 m between each tree.

Landscape architect: a person registered with the British Columbia Society of Landscape Architects.

Leave strip: an area established to protect the riparian zone of all streams identified in Tables 2.1 and 2.2 of the Kelowna Official Community Plan (1994-2013) Bylaw No. 7600. Leave strips along stream corridors with banks which have a slope of greater than 10% shall be measured from the top of the bank. Leave strips along streams with moderately sloping banks (less than 10% slope) shall be measured from the normal high water mark. The Leave Strip width is determined in Table 2.2 of the Kelowna Official Community Plan (1994-2013) Bylaw No, 7600.

Owner: means the registered owner of an estate in fee simple, and includes:

- (a) the tenant for life under a registered life estate,
- (b) the registered holder of the last registered agreement for sale, and
- (c) the holder or occupier of land held in the manner mentioned in Sections 356 and 357 of the *Municipal Act*.

Permit: a Tree Cutting Permit issued pursuant to Section 7.0 of the Tree Protection Bylaw.

Person: a natural person, his heirs, executors, administrators, or assigns, a firm corporation, municipal or quasi-municipal corporation, society or party school board, hospital board, or other government or government agency.

Professional engineer: a professional engineer registered under the *Engineers and Geoscientists Act*, with experience in geotechnical engineering.

Protected tree: means any tree with a diameter of 150 mm or more measured 1 m above grade which is:

- located within a designated stream corridor Leave Strip within a Natural Environment/Hazard Condition Development Permit Area as identified in the Kelowna Official Plan (1994-2013).
- located on a slope with a grade equal to or greater than 30% and which is within a Natural Environment/Hazardous Condition Development Permit Area as identified in the Kelowna Official Plan (1994-2013)
- a tree located on land listed in Schedule "A" of the Tree Protection Bylaw.

Qualified person: a professional engineer, landscape architect or a certified arborist.

Replacement tree: a tree planted on a property to replace a tree which has been removed or damaged on the same property.

Retained Tree: a tree that is shown on a site plan attached to a Tree Cutting Permit as a tree that will be retained.

Stream: a natural watercourse or source of water supply, whether usually containing water or not, ground water, lake, river, creek, spring, ravine, swamp and gulch, as defined by the *Water Act*.

Tree: a self-supporting woody plant that is a species of coniferous or deciduous genus which normally grows to a height of five (5) metres or greater, notwithstanding its current size.

Sound Arboricultural Practice: tree planting, pruning and maintenance practices endorsed by the International Society of Arboriculture.

LIMITATIONS

This report is considered valid for the day of the site assessment. Trees are living things and as such are subject to changes over time. Photographs, drawings, or excerpts of plans provided within this report are not tantamount to legal surveys or engineering reports. They are intended to be used as visual aides and at such time that further details are required, it will be necessary to review the source documents.

The trees included in this assessment were done so under the standards and parameters of the Tree Protection Bylaw 2006, No. 16100. This does not imply any information regarding trees outside of this scope.

As the project arborist, I have exercised my reasonable Duty of Care while assessing the subject trees. Defects and potential risk issues are sometimes not observable. It is the responsibility of the Owner to exercise the Standard of Care and maintain the trees to said standards, and to carry out recommended mitigations outlined in this report.

Sincerely,



D. Glyn Romaine, VDZ+A Consulting Inc.

ISA Certified Arborist PN-7929A

ISA Tree Risk Assessment Qualification

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TREE MANAGEMENT PLAN

See attached Tree Management Plan

Original size: 24x36

Print as 11x17 for foldout