



**Tree Management Report:**

2024-04-18 | Revision #2

**264th Street to Whatcom  
Road, Abbotsford, BC**

Submitted to: Ministry of Transportation and  
Infrastructure

Prepared by McElhanney Ltd.

**Project #7 – King Road  
Realignment**

**Contact**

Robin Ong, BSc, MGEM

Consulting Arborist

ISA Certified Arborist SG 0706A

Tree Risk Assessment Qualification

Email: [rong@mcelhanney.com](mailto:rong@mcelhanney.com)

McElhanney project #: 2121-00815-07

**Address**

100 – 8837 201 Street

Langley, BC

V2Y 0C8



# Your Challenge. Our Passion.

REVISION	DESCRIPTION	DATE (YYYY-MM-DD)	ISSUED BY	REVIEWED BY
0	ORIGINAL	2023-08-04	RO	LS
1	UPDATE TO INCORPORATE 90% DETAILED DESIGN	2023-12-20	RO	LS
2	UPDATE TO INCORPORATE 100% DETAILED DESIGN & 90% DETAILED DESIGN COMMENTS	2024-04-18	RO	LS



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- A Tree Management Plan
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## 1. Introduction

McElhanney Ltd. was asked to complete a tree inventory and impact assessment for the trees at the following proposed development:

Site Address	Intersection of King Rd & Riverside Rd, Abbotsford, BC
McElhanney Project #	2121-00815-07
Client Name	Ministry of Transportation and Infrastructure
Date of Site Visit	June 16, 2023
Weather During Site Visit	Light-moderate rain

This report aims to address the Arborist report component of the City of Abbotsford Tree Bylaw No. 1831-2009, 2010. To facilitate assessment of impacts to onsite and offsite trees, we were provided with the current version of the 100% detailed design (prepared by McElhanney) showing the extents of the area. The impact assessment section of this report is based on this plan.

## 2. Tree Inventory Methodology

For this report, the size, health, and structural condition of trees located within 5m adjacent to the existing and proposed Roads, Statutory Right of Way (SROW) or offset alignment were documented. For ease of identification in the field, numerated metal tags were attached to the lower trunks of each tree (existing tag numbers were also recorded for cross-referencing prior tree surveys and arborist reports. Each tree was visually examined on a limited visual assessment basis, by Tree Risk Assessment Qualification (TRAQ) methods (Dunster *et al.* 2017) and ISA Best Management Practices. The following information was included in the tree inventory table (*Table 1*).

- Tag or ID #
- Surveyed (Y/N)
- Species
- Diameter at breast height (DBH measured in cm)
- Root Protection Zone (m)
- Dripline (radius)
- Health and structural condition (good, fair, poor or a combination)
- General remarks
- Tree Retention/Location Comments

Black cottonwood (*Populus trichocarpa*) and red alder (*Alnus rubra*) trees were inventoried in clusters and represented by two polygons in the tree management plan. Each polygon contains count data by species and average DBH observed.



### 3. Definitions

- **DBH** – diameter at breast height – diameter of trunk measured to the nearest centimetre (cm) at 1.4 metres (m) above ground level.
- **Ht** – Height in metres
- **Dripline** – Indicates the radius of the crown spread, measured in meters, from the centre of the tree to the dripline of the longest limbs.
- **Critical Root Zone** – Eight times the tree DBH was used to calculate the critical root zone (CRZ). The critical root zone is a radial distance (in metres) measured from the center of the trunk where it emerges from the ground, and is the optimal, no-disturbance setback that is required for a tree to stand a reasonable chance of long-term survival. If the typical (8 times DBH) critical root zone does not provide sufficient protection to the entire tree (canopy and root system), the project arborist will specify a larger setback.
- **Working Space Setback** – A 1-metre setback, or other setback specified by the project arborist, beyond the CRZ, where the buildings/structures, hard landscape features, and/or finished grades must be designed so minimal over excavation within the CRZ is required for working space, cut slopes, fill slopes, retaining walls, etc. Any excavation within the Working Space Setback must be performed under the supervision of the project arborist.

The condition of the health/structure of each tree was evaluated with the following criteria:

- **Good:** No visible or minor health or structural flaw.
- **Fair:** Health or structural flaws present that can be corrected through ordinary arboricultural or horticultural care.
- **Poor:** Significant health or structural defects that compromise the long-term survival or retention of the specimen.

Descriptive information for each tagged tree is recorded in the tree inventory table (*Table 1*). The locations and retention/removal recommendations for each tagged tree are detailed in Appendix A in the attached tree retention/removal plan.



Table 1. Tree Inventory

ID #	Name		DBH (cm)	Ht (m)	Dripline (radius)	Critical Root Zone (m) 8xDBH or dripline, whichever is higher	Condition		Remarks	Tree Retention/Location Comments	Recommended Action
	Common	Botanical					Health	Structural			
2755	Douglas-fir	<i>Pseudotsuga menziesii</i>	35	23	2.5	2.5	Fair	Fair	Row of 20 hemlock with dbh classes 22, 35 & 50cm. Mostly larger sized. To 2757.		Retain
2756	Paper birch	<i>Betula papyrifera</i>	26,22	20	2	2	Fair/good	Fair	Codominant from 0.2m, asymmetrical crown due to phototropic competition		Retain
2757	Douglas-fir	<i>Pseudotsuga menziesii</i>	56	21	4	4	Fair/good	Fair	Row of Fd to tree 2755. See 2755 for count. This tree standing along slope		Retain
2758	Fruiting cherry	<i>Prunus avium</i>	22,18	6	0	1.6	Dead	Poor	Danger tree, dead. Leaning N away from slope	Hazard tree	Remove
2759	Bigleaf maple	<i>Acer macrophyllum</i>	31	18	3	3	Fair/good	Fair	1 dead branch along lower crown. Codominant stems from 5m		Retain
2760	Bigleaf maple	<i>Acer macrophyllum</i>	30	18	2	2	Fair/good	Fair	Codominant from 4m.		Retain
2761	Bigleaf maple	<i>Acer macrophyllum</i>	31	17	5	5	Fair/good	Fair	Codominant branching at 4.5m & 4.7m	Located where tree will be heavily impacted by proposed earthworks	Remove
2762	Bigleaf maple	<i>Acer macrophyllum</i>	25	12	2	2	Fair	Fair	Dieback along top 30% trunk extent	Located where tree will be heavily impacted by proposed earthworks	Remove
2763	Black cottonwood	<i>Populus trichocarpa</i>	37	23	3	3	Fair/good	Poor	Potential danger tree. Lean with trunk bow use to phototropic competition. Signs of scaffold branch failure 4m. Leaning 26° NW	Hazard tree	Remove
2764	Bigleaf maple	<i>Acer macrophyllum</i>	27	24	3	3	Fair/good	Fair/good	Asymmetric crown heavier downslope.		Retain
2765	Bigleaf maple	<i>Acer macrophyllum</i>	40	9	2	2	Fair/good	Fair	Poor trunk taper with tight unions.		Retain
2766	Bigleaf maple	<i>Acer macrophyllum</i>	32	20	2	2	Fair/good	Fair/poor	Codominant at 5m with failed branches along S stem.		Retain
2767	Bigleaf maple	<i>Acer macrophyllum</i>	49	26	5	5	Good	Fair/poor	Multiple secondary branch open wounds. Adjacent snag resting on codominant branching @ 5m		Retain
2768	Bigleaf maple	<i>Acer macrophyllum</i>	31,31	23	3	3	Fair/good	Fair	Codominant with v crotch @ 0.8m. 2 failed dead secondary branches. 1 hanger in canopy 4m x 10cm		Retain
2769	Bigleaf maple	<i>Acer macrophyllum</i>	20	7	2	2	Fair/good	Poor	Snapped trunk @ 5m, danger tree.	Hazard tree	Remove
2770	Bigleaf maple	<i>Acer macrophyllum</i>	42	18	4	4	Fair/good	Fair/good	Slight crown imbalance, heavier along S		Retain
2771	Bigleaf maple	<i>Acer macrophyllum</i>	30	24	5	5	Fair/good	Fair	Danger tree. Horizontal crack @ 1.8m 30% circumference. Remove if target introduced	Hazard tree	Remove
2772	Bigleaf maple	<i>Acer macrophyllum</i>	21	17	3	3	Fair/good	Fair	Slight kink along trunk @ 7m due to phototropism. Leaning 6° N		Retain
2773	Bigleaf maple	<i>Acer macrophyllum</i>	41	23	5	5	Good	Fair	Good foliage health & density. Codominant union @ 4.5m		Retain
2774	Bigleaf maple	<i>Acer macrophyllum</i>	29	8	3	3	Fair	Fair	Poor primary and secondary branch unions. Mechanical injury along trunk 70x15cm @ 2m height		Retain
2775	Bigleaf maple	<i>Acer macrophyllum</i>	45	15	3	3	Fair/good	Fair/good	2 dead secondary branches tending NE		Retain
2776	Bigleaf maple	<i>Acer macrophyllum</i>	25	7	3	3	Fair/good	Fair/poor	Codominant stems from 0.3m with failed scaffold branch.		Retain



ID #	Name		DBH (cm)	Ht (m)	Dripline (radius)	Critical Root Zone (m) 8xDBH or dripline, whichever is higher	Condition		Remarks	Tree Retention/Location Comments	Recommended Action
	Common	Botanical					Health	Structural			
2777	Bigleaf maple	<i>Acer macrophyllum</i>	27	9	3	3	Fair	Fair	Dead primary branch tending N, existing branches mostly adventitious		Retain
2778	Douglas-fir	<i>Pseudotsuga menziesii</i>	22	19	2	2	Fair	Fair/good			Retain
2779	Black cottonwood	<i>Populus trichocarpa</i>	24	12	0	0.96	Dead	Poor	Danger tree, dead. Remove if targets introduced	Hazard tree	Remove
2780	Bigleaf maple	<i>Acer macrophyllum</i>	51	24	4	4	Fair/good	Fair	Pistol butt along trunk base with lean in same direction		Retain
2781	Bigleaf maple	<i>Acer macrophyllum</i>	41	21	3	3	Fair/good	Fair/poor	Trunk bow & sweep @ 3m, previous scaffold branch failure wound & exposed dead wood		Retain
2782	Bigleaf maple	<i>Acer macrophyllum</i>	34	10	2	2	Fair/good	Fair/poor	Danger tree, remove if targets introduced. Multiple trunks exposed dead wood with horizontal cracks.		Retain
2783	Bigleaf maple	<i>Acer macrophyllum</i>	29	15	2	2	Fair/good	Fair	Suppressed by adjacent cottonwoods. Longitudinal trunk mechanical injury facing S from soil line to 3m		Retain
2784	Bigleaf maple	<i>Acer macrophyllum</i>	33,28,23	15	5	5	Fair/good	Fair	Tridominant from soil line. Pistol butt along 2 stem bases. Mechanical injury base of NE stem		Retain
2785	Bigleaf maple	<i>Acer macrophyllum</i>	28	15	3	3	Fair/good	Fair	Asymmetric crown with few branches tending SE (downslope)		Retain
2786	Bigleaf maple	<i>Acer macrophyllum</i>	23	6	2	2	Fair	Poor	Potential danger tree, remove if targets introduced. Extensive trunk decay from 0.2 to 2.3m height		Retain
2787	Bigleaf maple	<i>Acer macrophyllum</i>	38	25	3	3	Fair/good	Fair	Trunk seams facing NW & S, 0-1.6m height		Retain
2788	Bigleaf maple	<i>Acer macrophyllum</i>	24	7	1.5	1.5	Fair	Poor	Danger tree, remove if targets introduced. Previous trunk top failure with longitudinal split below		Retain
2789	Bigleaf maple	<i>Acer macrophyllum</i>	54,40	25	8	8	Good	Fair	Danger tree if targets introduced. West-facing split (35cm depth) along codominant trunk near soil line with fungal activity.		Retain
2790	Western redcedar	<i>Thuja plicata</i>	38,30	17	4	4	Fair/good	Fair/good	Codominant stems from soil line		Retain
2791	Douglas-fir	<i>Pseudotsuga menziesii</i>	56	22	3	3	Fair/good	Fair/good	Row of 8 bylaw sized Fd, avg 50 dbh, to tree 2792. Smallest 24 largest 64 dbh		Retain
2792	Douglas-fir	<i>Pseudotsuga menziesii</i>	54	20	3	3	Fair/good	Fair/good	Tree row to 2791		Retain
2793	Bigleaf maple	<i>Acer macrophyllum</i>	30,15,15,10	16	3	3	Fair/good	Fair	Cluster of stems standing at top edge of slope		Retain
2794	Bigleaf maple	<i>Acer macrophyllum</i>	23,19	18	2	2	Fair/good	Fair	Codominant stems from 0.2m, mechanical injuries along trunk. 2 dead lower branches 1.5mx3cm		Retain
2795	Western redcedar	<i>Thuja plicata</i>	61	20	3	3	Good	Good	Tree standing midway along slope. Lower branches tending S previously removed		Retain
2796	Western redcedar	<i>Thuja plicata</i>	50	21	3	3	Fair/good	Poor	Danger tree. Longitudinal crack along included bark from 0.2m to 2m above soil line where primary stem union located	Hazard tree	Remove
2797	Western redcedar	<i>Thuja plicata</i>	36	21	3	3	Fair/good	Fair/good	Row of 5 Fd to tree 2798. Dbh range 25 to 46cm.few branches tending N		Retain
2798	Douglas-fir	<i>Pseudotsuga menziesii</i>	46	22	3	3			Row of 5 Fd to 2797		Retain
2799	Bigleaf maple	<i>Acer macrophyllum</i>	34,33	21	5	5	Good	Fair	Codominant with included bark. Well balanced crown.		Retain



ID #	Name		DBH (cm)	Ht (m)	Dripline (radius)	Critical Root Zone (m) 8xDBH or dripline, whichever is higher	Condition		Remarks	Tree Retention/Location Comments	Recommended Action
	Common	Botanical					Health	Structural			
2800	Bigleaf maple	<i>Acer macrophyllum</i>	90	15	4	4	Fair/good	Fair	Cluster of stems with crown balance tending S.		Retain
2800	Bigleaf maple	<i>Acer macrophyllum</i>	176	22	6	7.04	Fair/good	Fair	Cluster of 6 stems standing midway along slope. Sapwood death along NW stem, Approx 9 dead branches 5m x 0.8m.	Perform crown cleaning, remove NW stem	Retain
2801	Bigleaf maple	<i>Acer macrophyllum</i>	74	20	4	4	Fair	Fair	Sapwood death along NE stem.	Hazard tree	Remove
2827	Bigleaf maple	<i>Acer macrophyllum</i>	35	10	4	4	Fair	Poor	North stem dead. Dead top	Top the tree	Retain
2828	Bigleaf maple	<i>Acer macrophyllum</i>	82	20	5	5	Fair/good	Fair/good	Tridominant stems from base. Ok tree		Retain
2829	Western redcedar	<i>Thuja plicata</i>	29	13	0	1.16	Dead	Poor	Dead tree by road	Hazard tree	Remove
2830	Western redcedar	<i>Thuja plicata</i>	28	12	0	1.12	Dead	Poor	Dead tree, dead top	Hazard tree	Remove
2831	Bigleaf maple	<i>Acer macrophyllum</i>	23	12	4	4	Fair/good	Fair/good	Asymmetric canopy. Leaning 6° SE		Retain
2832	Douglas-fir	<i>Pseudotsuga menziesii</i>	52	21	6	6	Fair/good	Fair/good			Retain
2833	Douglas-fir	<i>Pseudotsuga menziesii</i>	30	19	4	4	Fair	Fair/good	Necrotic 1/2 low tree		Retain
2834	Douglas-fir	<i>Pseudotsuga menziesii</i>	36	21	5	5	Fair/good	Fair/good	Ok tree		Retain
2835	Bigleaf maple	<i>Acer macrophyllum</i>	81	21	5	5	Fair/good	Fair/good	Tridominant from base		Retain
2836	Bigleaf maple	<i>Acer macrophyllum</i>	29	14	2	2	Fair/good	Fair/good	Ok tree, codominant with bark included reaction wood base		Retain
2837	Douglas-fir	<i>Pseudotsuga menziesii</i>	51	24	6	6	Fair/good	Fair/good	Ok tree		Retain
2838	Bigleaf maple	<i>Acer macrophyllum</i>	46	14	5	5	Fair/good	Fair/good	Codominant from base		Retain
2840	Bigleaf maple	<i>Acer macrophyllum</i>	45	13	4	4	Fair/good	Fair	Dominated		Retain
2841	Douglas-fir	<i>Pseudotsuga menziesii</i>	51	24	0	2.04	Fair/good	Fair/good	Ok tree		Retain
2842	Western hemlock	<i>Thuja plicata</i>	55	24	5	5	Fair	Fair/good	A bit stress. Sparse canopy		Retain
2849	Bigleaf maple	<i>Acer macrophyllum</i>	35	0	0	1.4	Fair/good	Fair	Dominated, codominant from base		Retain
2850	Bigleaf maple	<i>Acer macrophyllum</i>	73	21	7	7	Fair	Fair	Stem damage at NE at 1.7 m some dead branches less than 10 cm		Retain
2851	Douglas-fir	<i>Pseudotsuga menziesii</i>	66	23	0	3	Fair/good	Fair/good	Good tree		Retain





ID #	Name		DBH (cm)	Ht (m)	Dripline (radius)	Critical Root Zone (m) 8xDBH or dripline, whichever is higher	Condition		Remarks	Tree Retention/Location Comments	Recommended Action
	Common	Botanical					Health	Structural			
2853	Western redcedar	<i>Thuja plicata</i>	52	23	5	5	Fair/good	Fair/good	Good tree a bit sparse foliage in canopy		Retain
2873	Bigleaf maple	<i>Acer macrophyllum</i>	67	25	7	7	Fair/good	Fair/good	Some dead branches different heights >10 cm diameter.		Retain
2875	Fruiting cherry	<i>Prunus avium</i>	27	7	3	3	Good	Fair	Asymmetric crown, some mechanical injury along trunk 1m height.		Retain
2876	Red alder	<i>Alnus rubra</i>	18	8	0	0.72	Dead	Poor	Dead tree 2 m to the road. Dangerous tree by the road. Leaning 5° NW	Hazard tree	Remove
2877	Bigleaf maple	<i>Acer macrophyllum</i>	23	13	5	5	Fair/good	Fair/good	Leaning to the road 15° NW. Dominated defoliation at the top. 15%. Structurally ok Asymmetric canopy	Located where tree will be heavily impacted by proposed earthworks	Remove
2878	Bigleaf maple	<i>Acer macrophyllum</i>	23	15	5	5	Fair	Fair	Leaning towards road 30° NW asymmetric canopy	Located where tree will be heavily impacted by proposed earthworks	Remove
2879	Bigleaf maple	<i>Acer macrophyllum</i>	30	16	5	5	Fair/good	Fair	Conk at 1.6 m E. Stem damage, crack with internal decay. Leaning 8° NW corrected	Hazard tree	Remove
2880	Bigleaf maple	<i>Acer macrophyllum</i>	26	12	0	1.04	Poor	Poor	98% necrotic, leaning 7° NW. Dead branches top. General decline situation	Located where tree will be heavily impacted by proposed earthworks	Remove
2881	Bigleaf maple	<i>Acer macrophyllum</i>	24	15	0	0.96	Fair/good	Fair	Tree in slope Root adapted. Leaning 20° NW	Located where tree will be heavily impacted by proposed earthworks	Remove
2882	Fruiting cherry	<i>Prunus avium</i>	24	16	5	5	Fair/good	Fair/good	Defoliation 10% canopy. Leaning 5° NW General ok tree	Located where tree will be heavily impacted by proposed earthworks	Remove
2883	Red alder	<i>Alnus rubra</i>	21	10	4	4	Poor	Poor	Dead top risk. 5 m to the road, decline tree. Leaning 8° NW	Hazard tree	Remove
2884	Red alder	<i>Alnus rubra</i>	21	18	5	5	Fair/good	Fair/good	Ok tree. Leaning 6° NW	Located where tree will be heavily impacted by proposed earthworks	Remove
2885	Fruiting cherry	<i>Prunus avium</i>	21	8	2	2	Fair/good	Fair		Located where tree will be heavily impacted by proposed earthworks	Remove
2886	Bigleaf maple	<i>Acer macrophyllum</i>	70	16	0	2.8	Fair	Fair	4 codominant stems bark included West stem bark peeling. Asymmetric canopy. Leaning 5° NW	Located where tree will be heavily impacted by proposed earthworks	Remove
2887	Paper birch	<i>Betula papyrifera</i>	17	12	2	2	Dead	Poor	Necrotic 100%. Leaning 12° NW	Hazard tree	Remove
2888	Bigleaf maple	<i>Acer macrophyllum</i>	61	19	6	6	Fair/good	Fair/good	Codominant Asymmetric canopy. Leaning 12° NW	Located where tree will be heavily impacted by proposed earthworks	Remove
2889	Black cottonwood	<i>Populus trichocarpa</i>	44	24	6	6	Fair/good	Fair	Base stem damage with potential decay. Old dead stem. Overextended branches SW. Leaning 35° NW	Located where tree will be heavily impacted by proposed earthworks	Remove
2890	Bigleaf maple	<i>Acer macrophyllum</i>	51	25	6	6	Fair/good	Fair/good	Ok	Located where tree will be heavily impacted by proposed earthworks	Remove
2891	Hazelnut	<i>Corylus avellana</i>	Multi >20	9	3	3	Fair	Fair	Dead stems facing NW		Retain
2892	Bigleaf maple	<i>Acer macrophyllum</i>	>20	10	0	0	Fair	Fair	3 stems. 1 broken. Dominated. Asymmetric canopy	Located where tree will be heavily impacted by proposed earthworks	Remove



ID #	Name		DBH (cm)	Ht (m)	Dripline (radius)	Critical Root Zone (m) 8xDBH or dripline, whichever is higher	Condition		Remarks	Tree Retention/Location Comments	Recommended Action
	Common	Botanical					Health	Structural			
2893	Black cottonwood	<i>Populus trichocarpa</i>	81	24	5	5	Fair/good	Fair	Codominant stem Asymmetric canopy. Ok. Leaning 40° NW	Located where tree will be heavily impacted by proposed earthworks	Remove
2894	Buckthorn	<i>Rhamnus sp</i>	26	7	2	2	Fair	Poor	Defoliated 40%. Stem damage. Weak structure. Carpenter ants. Dead top	Hazard tree	Remove
2895	Bigleaf maple	<i>Acer macrophyllum</i>	20	14	4	4	Fair/good	Fair	Asymmetric canopy	Located where tree will be heavily impacted by proposed earthworks	Remove
2896	Bigleaf maple	<i>Acer macrophyllum</i>	24	16	5	5	Fair/good	Fair	Leaning 30° top NW	Located where tree will be heavily impacted by proposed earthworks	Remove
2897	Bigleaf maple	<i>Acer macrophyllum</i>	41	21	0	1.64	Fair/good	Fair	Codominant. leaning 1/2 top tree.	Located where tree will be heavily impacted by proposed earthworks	Remove
2898	Black cottonwood	<i>Populus trichocarpa</i>	30	18	5	5	Fair	Fair	Stem damage with potential internal decay, callus looks good. Leaning 5° NW		Retain
2899	Bigleaf maple	<i>Acer macrophyllum</i>	39	19	7	7	Fair/good	Fair	Asymmetric canopy. Dominated		Retain
2900	Bigleaf maple	<i>Acer macrophyllum</i>	27	12	5	5	Fair/good	Fair	Asymmetric canopy. Leaning 10° NW		Retain
2901	Bigleaf maple	<i>Acer macrophyllum</i>	46	27	6	6	Fair/good	Fair/good	Asymmetric canopy some dead branches canopy. Leaning 15° NW		Retain
2902	Bigleaf maple	<i>Acer macrophyllum</i>	63	28	7	7	Fair/good	Fair	Cavity north 0.5 m tree. Decay compromising 50% cross section		Retain
2903	Buckthorn	<i>Rhamnus sp.</i>	Multi +20	12	5	5	Fair	Poor	Active borers affecting most of the stems at .5 m		Retain
2904	Bigleaf maple	<i>Acer macrophyllum</i>	45	20	8	8	Fair/good	Fair	Bark stripping and potential decay from 3 m to 5 m height on south side. Bores from woodpecker activity. Broken top. Monitor tree		Retain
2905	Bigleaf maple	<i>Acer macrophyllum</i>	102	25	7	7	Good	Good	Dead stems (>10cm) beginning at 11 m height. Dead mainstem at top. Remove dead mainstem and branches.		Retain
2906	Western redcedar	<i>Thuja plicata</i>	30	13	2	2	Poor	Poor	95 % necrotic dead top	Hazard tree	Remove
2907	Bigleaf maple	<i>Acer macrophyllum</i>	27	30	8	8	Good	Poor	Cavity and fungus at base until 1.5 m compromising 60% cross section on south side. Column of decay on east side from base to 2 m with extended decay.	Hazard tree	Remove
2908	Bigleaf maple	<i>Acer macrophyllum</i>	61	15	0	0	Dead	Poor	Borers. Bark peel around diameter. Horizontal crack wider than 1 cm with displacement on south side. Root decay. Fungus around lower 1 m of trunk. Leaning 13° N	Hazard tree	Remove
2909	Black cottonwood	<i>Populus trichocarpa</i>	169	26	6	6.76	Poor	Poor	Codominant branching. West stem is dead due to dead top. Woodpecker damage. White rot in west stem and internal decay. Borers so structurally compromised. Remove west stem. East stem damage with exposed sap and potential internal decay. Monitor east stem.		Retain
2910	Bigleaf maple	<i>Acer macrophyllum</i>	78	26	7	7	Fair	Poor	Decay from Carpenter ants starting from 3 m height to 9 m SW side of trunk. More than 60% cross section compromised with weaker structure.	Offsite hazard tree. Wildlife/remove if targets introduced.	Retain



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	Common	Botanical					Health	Structural			
2911	Bigleaf maple	<i>Acer macrophyllum</i>	17 18	13	2	2	Good	Fair	Co-dominant branching. Some decay on West stem damage ground up to 2 m height.		Retain
Corylus 3 cluster	Hazelnut	<i>Corylus avellana</i>	Multi+20	5	2.5	2.5	Fair	Fair	Multistem		Retain
No Tag 1	Bigleaf maple	<i>Acer macrophyllum</i>	68 cod	22	0	0	Fair	Poor	Codominant stems dead top.	Hazard tree	Remove
No Tag 2	Black cottonwood	<i>Populus trichocarpa</i>	80	21	0	3.2	Good	Good		Located where tree will be heavily impacted by proposed earthworks	Remove
No Tag 3	Black cottonwood	<i>Populus trichocarpa</i>		0	0	0					Retain
No Tag 3	Fruiting cherry	<i>Prunus avium</i>	48	10	4	4	Fair/good	Fair	Previous heavy pruning with open scars/tissue	Located where tree will be heavily impacted by proposed earthworks	Remove
No Tag 4	Plum tree	<i>Prunus domestica</i>	41	11	5	5	Fair/good	Fair/good	Previous pruning. Black knot fungus - early stage.		Retain
No Tag 5	Pear tree	<i>Pyrus sp</i>	23	6	3	3	Fair	Fair	Necrotic canopy 40%	Located where tree will be heavily impacted by proposed earthworks	Remove
No Tag 6	Apple tree	<i>Malus sp</i>	40	3	4	4	Fair/good	Fair/good		Located where tree will be heavily impacted by sidewalk construction	Remove
No Tag 7	Fruiting cherry	<i>Prunus avium</i>	23	4	2	2	Fair/good	Fair/good		Located where tree will be heavily impacted by King Road construction	Remove
No Tag 8	Bigleaf maple	<i>Acer macrophyllum</i>	Multi stem > 20 cm	6	4	4	Fair/good	Fair/good			Retain



## 4. Site Information & Project Understanding

The proposed road realignment site consists of construction work in sections along approximately 286m of King Road and 110m of Riverside Road. King Road is to be shifted south of its present alignment, which will allow the construction of the highway embankment and a new bridge structure carrying Highway 1 across Riverside Road and existing railways.

Site ownership of land on which the observed tree resource was surveyed consists of MoTI Highway 1 right of way (no PID), municipal land (PID: 006-228-330) and private land (PID: 010-997-326, civic address: 1651 Riverside Road). The roadway realignment will involve earthworks (cut & fill, embankment construction) and the installation of a soil nail reinforced slope along the edge of a forested area.

Works directly south of existing Highway 1 will involve the installation of a proposed sanitary sewer that will be tied in with an existing municipal sanitary sewer. These works will involve excavation near existing protected trees. Detailed recommendations for protection of these trees will be prescribed at the 100% detailed design stage.

This report aims to provide information on the condition of existing trees, their suitability for retention and recommended measures to protect any retained trees during the proposed construction.

## 5. Field Observations

### 5.1. TREES OBSERVED

The following is a numeration and summary of the trees observed. This includes trees individually tagged, and clusters of black cottonwood and red alder trees collectively described.

#### 5.1.1. Onsite Trees

A total of 146 bylaw-sized trees (DBH  $\geq$ 20cm) were located within the MoTI ROW, consisting of 89 trees tagged individually, and 32 black cottonwood and 25 red alder trees that were untagged. These cottonwood and alder trees were clustered in two groups, inventoried on either side of the existing King Road alignment.

#### 5.1.2. Offsite Trees

Three offsite trees were inventoried (No Tag 3, No Tag 4, No Tag 5) within privately owned land (1651 Riverside Road).

#### 5.1.3 Municipal Trees

Two municipal trees were inventoried (No Tag 6, No Tag 7) along Riverside Road.

## 6. Tree Risk Assessment

During our June 16, 2023 site visit, we identified 18 trees (tags #2758, 2763, 2769, 2771, 2779, 2796, 2801, 2829, 2830, 2876, 2879, 2883, 2887, 2894, 2906, 2907, 2908, No Tag 1) that were deemed to be moderate, high or extreme risk rating that would require hazard abatement through height reduction and transform them into wildlife trees (WLT) or tree removal. These trees are highlighted in yellow rows in the tree inventory table ([Table 1](#)). Target position influences risk ratings: existing trees deemed to have





a higher probability of failure, but with low or very low probabilities of striking a target are excluded from this count.

Existing targets considered during this TRAQ assessment included the existing building, the proposed construction sites and future extension footprint, parking area, vehicles, occupants, and users. Anticipated targets were also considered. The time frame used for the purpose of our assessment is one year (from the date of the tree inventory). Unless otherwise noted herein, we did not conduct a basic (level 2) or advanced (level 3) assessment, such as resistograph testing, increment core sampling, aerial examinations, or subsurface root/root collar examinations.

## 7. Impact Assessment

### 7.1. ONSITE TREES TO BE REMOVED

The following trees (indicated by tag #) are located where they will require removal due to impacts from onsite construction.

- 15 trees tagged individually (hazard trees are not included in this count): 2761, 2762, 2878, 2881, 2885, 2886, 2888, 2889, 2890, 2893, 2896, 2897, 2898, 2904, No Tag 2
- 8 cottonwood and red alder trees within stands

### 7.2. ONSITE TREES TO BE RETAINED

74 trees are located where they can be retained: See [Table 1](#)

### 7.3. OFFSITE TREES TO BE REMOVED

Two offsite trees (No Tag 3, No Tag 5) are proposed for removal due to their close proximity to the soil cut near the new King Road / Riverside Road intersection.

### 7.4. MUNICIPAL TREES TO BE REMOVED

Two municipal trees (No Tag 6, No Tag 7) along Riverside Road are proposed for removal due to conflicts with road and sanitary main construction.

## 8. Tree Replacement

For trees recommended for removal within the City of Abbotsford, pending the approval of the tree removal application for development purpose, and pursuant to City of Abbotsford Tree Management Bylaw No. 1831-2009, 2010, the City of Abbotsford representative will determine the number, species, size, and location of the replacement trees.

- Subject site area: 18,318m<sup>2</sup> (approximate)
- Trees greater than 20cm DBH remaining on the lot after removal: 74 individually tagged and approximately 49 trees within two stands, consisting of black cottonwood and red alder.

Current arboricultural best management practices and BCSLA/BCLNA standards apply to; quality, root ball, health, form, handling, planting, guying/staking, and establishment care.



Trees noted for removal within Ministry of Transportation right of way will not be replaced during the King Road project. Future tree planting may occur in conjunction with the overall Highway 1 project.

Table 2. City of Abbotsford Replacement Tree Criteria

Size of Tree to be Removed (DBH)	Number of Replacement Trees Required for Each Tree Cut (a)	Number of Trees to be Removed (hazardous trees, cottonwood, alder excluded) (b)	Total Replacement Trees (a*b)
< 20cm	0	0	0
20 - 30cm	2	13	26
> 30cm	3	10	30
<b>Total recommended replacement trees (in future)</b>			<b>56</b>

Per the calculations in Table 2, we recommend a total of 56 replacement trees based on the City's guidelines to be installed in the future. All replacement trees are recommended to be field fit into the project site within the open area north of the 1651 Riverside Road lot with arborist direction at the landscaping stage of the Highway 1 widening project. All replacement trees shall be minimum 1.5 m height.

As no riparian area was identified at the time of this submission, no provincial tree replacement guidelines for riparian trees are applicable for this project site.

Recommended replacement tree species are as follows:

- Bigleaf maple (*Acer macrophyllum*), Douglas-fir (*Pseudotsuga menziesii*), Pacific dogwood (*Cornus nuttallii*), cascara (*Rhamnus purshiana*), bitter cherry (*Prunus emarginata*) and Sitka spruce (*Picea sitchensis*)

## 9. Impact Mitigation

**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). Where possible, the fencing should be erected at the perimeter of the tree dripline. 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.



**Excavation:** We recommend that no excavation occur within tree protection zones of trees that are to be retained. Any excavation that is necessary, within the working space setback of trees to be retained must be completed under the direction of the project arborist. If it is found, at the time of excavation, that the excavation cannot be completed without severing roots that are critical to the trees health or stability it may be necessary to remove additional trees.

**Material storage:** Areas must be designated for material storage and staging during the construction process. Ideally these areas will be located outside of the tree protection areas that will be isolated by barrier fencing. Should it be necessary to store material temporarily within any of the tree protection areas, the project arborist must be consulted.

**Mulch layer or plywood over heavy traffic areas:** Should it be necessary to access tree protection areas during the construction phase of the project, and heavy foot traffic or vehicular encroachment is required, we recommend that a layer of wood chip horticultural mulch or plywood be installed to reduce compaction. This project arborist must be consulted prior to removing or moving the protection barrier for this purpose.

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

**Stump removal:** We recommend that, if stumps require removal, they are removed under arborist supervision or ground using a stump grinder to avoid disturbing root systems of trees in close proximity to retained trees in plan.

**Windthrow:** Where forest edge trees are proposed to be removed, we recommend that trees that may experience an increase in wind exposure be re-examined, once tree clearing has taken place, to ensure that they are structurally stable, and suitable for retention as leading-edge trees.

**Washout area:** It may be necessary to designate any area on the property for washing out cement and masonry tools and equipment. This area should be located away from the critical root zones of any trees to be retained.

**Paved areas over critical root zones of trees to be retained:** 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. (specifications can be provided by the project arborist, in consultation with the design consultant).

**Landscaping:** Any proposed landscaping within the critical root zones of trees to be retained must be reviewed with the project arborist.

**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 demolition, site clearing, or other construction activity occurs.

## 10. Limitations of Report

This arboricultural field review report was prepared by McElhanney for the exclusive use of the Client and may not be reproduced, used or relied upon, in whole or in part, by a party other than the Client without the prior written consent of McElhanney. Any unauthorized use of this report, or any part thereof, by a third party, or any reliance on or decisions to be made based on it, is at the sole risk of such third



parties. McElhanney accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report, in whole or in part.

Arborists are professionals who examine trees and use their training, knowledge, and experience to recommend techniques and procedures that will improve a tree's health and structure or 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. The arborist's review is limited to a visual examination of tree health and structural condition, without excavation, probing, resistance drilling, increment coring, or aerial examination. There are inherent limitations to this type of investigation, including, without limitation, that some tree conditions will inadvertently go undetected. The arborist's review followed the standard of care expected of arborists undertaking similar work in British Columbia under similar conditions. No warranties, either express or implied, are made as to the services provided and included in this report.

The findings and opinions expressed in this report are based on the conditions that were observed on the noted date of the field review only. The Client recognizes that passage of time, natural occurrences, and direct or indirect human intervention at or near the trees may substantially alter discovered conditions and that McElhanney cannot report on, or accurately predict, events that may change the condition of trees after the described investigation was completed.

It is not possible for an Arborist to identify every flaw or condition that could result in failure, nor can he/she guarantee that the tree will remain healthy and free of risk. The only way to eliminate tree risk entirely is to remove the entire tree. All trees retained should be monitored on a regular basis. 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.

Immediately following land clearing, grade changes or severe weather events, all trees retained should be reviewed for any evidence of soil heaving, cracking, lifting or other indicators of root plate instability. If new information is discovered in the future during such events or other activities, McElhanney should be requested to re-evaluate the conclusions of this report and to provide amendments as required prior to any reliance upon the information presented herein.

## 11. Company Information

WorkSafe BC #	200094159
General Liability	ACE INA Insurance Company, Policy No: CGL 524064: \$3,000,000
Errors & Omissions	Certain Underwriters at Lloyds as arranged by Lockton Companies LLP, Policy No: GLOPR 1601496: \$3,000,000
City of Surrey Inter-Municipal Business License (Metro West)	148615, expires November 26, 2024.





## 12. In Closing

We trust that this report meets your needs. Should there be any questions regarding the information within this report, please do not hesitate to contact the undersigned.

Yours truly,

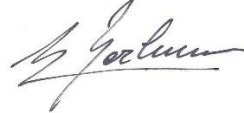
McELHANNEY LTD.

Prepared by:



Robin Ong, B.Sc., M.G.E.M.  
ISA Certified Arborist SG 0706A  
Tree Risk Assessment Qualification  
Email: [rong@mcelhanney.com](mailto:rong@mcelhanney.com)

Reviewed by:



Lucian Serban, RPF  
ISA Certified Arborist MS PN 7558AM  
Tree Risk Assessment Qualification  
Email: [lserban@mcelhanney.com](mailto:lserban@mcelhanney.com)

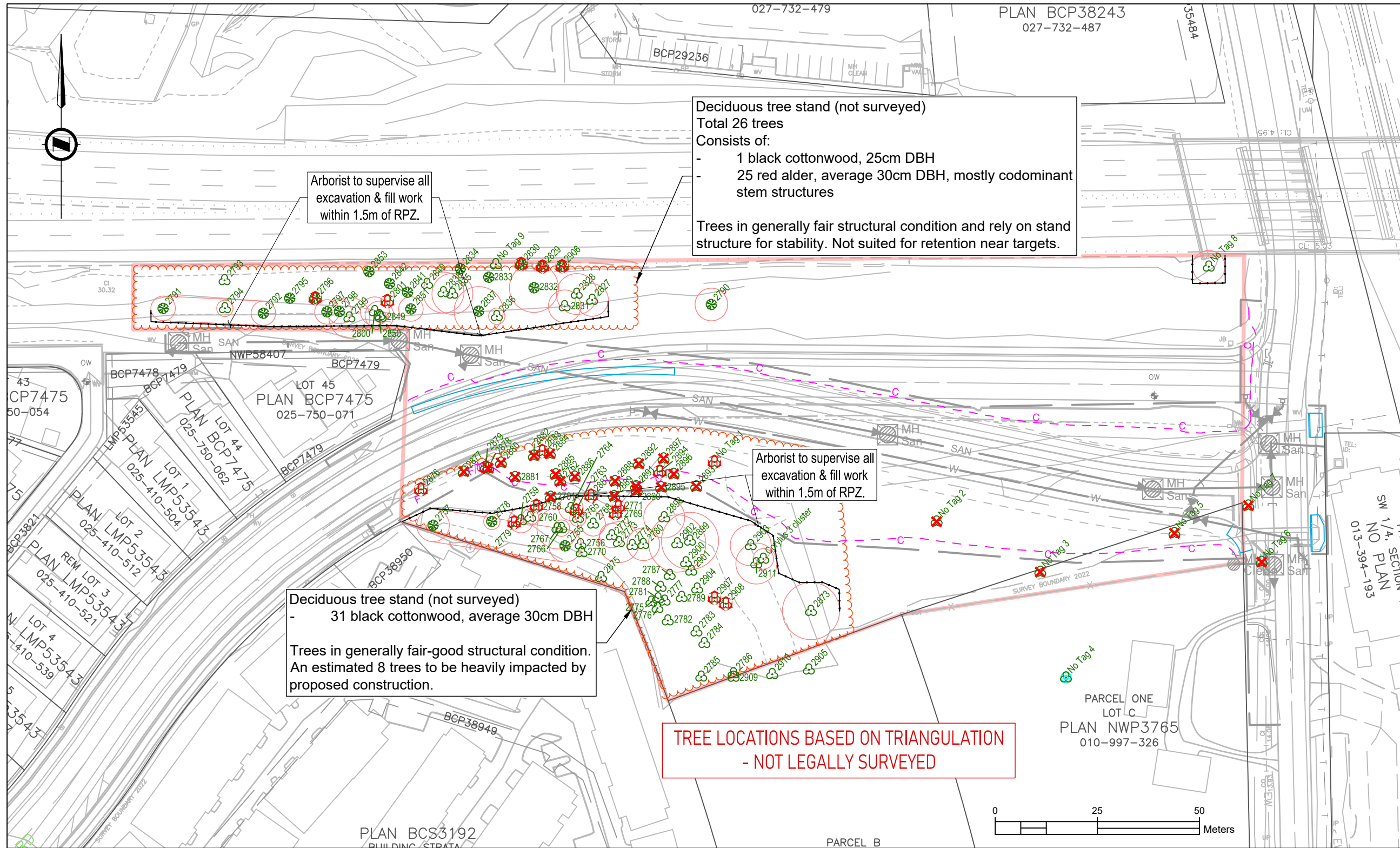
## 13. References

City of Abbotsford. 2010. Tree Bylaw No. 1831-2009.

Dunster, J. A., Smiley, E. T., Matheny, N., & Lilly, S. (2017). *Tree risk assessment manual* (No. Ed. 2). International Society of Arboriculture.

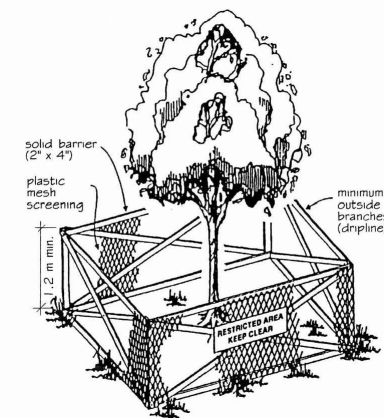


# **APPENDIX A – TREE MANAGEMENT PLAN**



## LEGEND

- Site boundary (Approximate)
- Root protection zone (RPZ)
- Deciduous tree w/Tag No.
- Coniferous tree w/Tag No.
- Tree to be removed
- Tree protection barrier
- Hazardous tree to be removed
- Offsite tree to be protected



Tree Protection Barrier Detail - Abbotsford

## IMPACT MITIGATION

**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 tree protection zones. 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 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.

**Excavation:** We recommend that no excavation occur within tree protection zones of trees that are to be retained. Any excavation that is necessary, within the working space setback of trees to be retained must be completed under the direction of the project arborist. If it is found, at the time of excavation, that the excavation cannot be completed without severing roots that are critical to the trees health or stability it may be necessary to remove additional trees.

**Material storage:** Areas must be designated for material storage and staging during the construction process. Ideally these areas will be located outside of the tree protection

areas that will be isolated by barrier fencing. Should it be necessary to store material temporarily within any of the tree protection areas, the project arborist must be consulted.

**Mulch layer or plywood over heavy traffic areas:** Should it be necessary to access tree protection areas during the construction phase of the project, and heavy foot traffic or vehicular encroachment is required, we recommend that a layer of wood chip horticultural mulch or plywood be installed to reduce compaction. This project arborist must be consulted prior to removing or moving the protection barrier for this purpose.

**Pruning:**

- Once tree clearing has taken place we recommend that trees to be retained be pruned to remove deadwood, and to address any structural flaws.
- We recommend that any pruning of bylaw-protected trees be performed to ANSI A300 standards and Best Management Practices.

**Stump removal:** We recommend that, if stumps require removal, they are removed under arborist supervision, or ground using a stump grinder to avoid disturbing root systems of trees in close proximity, that are shown on the tree management drawing to be retained.

**Windthrow:** Where forest edge trees are proposed to be removed, we recommend that trees that may experience an increase in wind exposure, be re-examined, once tree clearing has taken place, to ensure that they are structurally stable, and suitable for retention as leading edge trees.

Paved areas over critical root zones of trees to be retained: 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. (specifications can be provided by the project arborist, in consultation with the design consultant).

**Landscaping:** Any proposed landscaping within the critical root zones of trees to be retained must be reviewed with the project arborist.

**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.

## SKETCH T1

Tree Management Plan  
King Road / Riverside Road  
Abbotsford, BC

DATE: April 18, 2024  
PREPARED FOR: Ministry of Transportation and Infrastructure  
SCALE: 1 : 1000 @ 11" X 17"  
McE PROJECT: 2121-00815-07

**McElhanney**  
Suite 2300 13450 - 102 Avenue Surrey BC Canada V3T 5X3  
Tel 604 596 0391 - Fax 604 584 5050

# **APPENDIX B – SITE PHOTOGRAPHS**





*Photo 1. Westward view of the two main tree resource clusters, separated by existing King Road roadway.*



*Photo 2. Eight Douglas-fir trees in fair/good health and structure between tags #2791 & 2792.*







*Photos 3 & 4. Trees #2829 & #2830 respectively, two dead trees recommended for removal along Hwy 1.*





*Photo 5. Tree #2796, a tree with a longitudinal crack extending from near soil line to primary stem union, recommended for removal along Hwy 1.*





## Contact

Robin Ong, BSc, MGEM

Consulting Arborist

ISA Certified Arborist SG 0706A

Tree Risk Assessment Qualification

Email: [rong@mcelhanney.com](mailto:rong@mcelhanney.com)



**McElhanney**

