

ARBORIST REPORT

TREE MANAGEMENT FOR DP OR BP APPLICATION

ISSUANCE DATE: **April 26, 2017**

REVISION # 2, dated July 12, 2023

ACL FILE: **17130**

ISSUED FOR: **DP Application**

CITY FILE: **TBD**

PREPARED FOR:

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PREPARED BY:

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SUBJECT SITE:

**Proposed Re-Development
1780 East Broadway, Vancouver**

BACKGROUND

The subject site is comprised of an existing grocery store with related hardscape, landscaping and surface parking lot. We understand that the project is intended to consist of demolition of existing structures and construction of a new mixed commercial, residential development, including related site preparation works, installation of infrastructure, road improvements, amenities and landscape finishing. This office conducted a site investigation on March 15, 2017, and most recently updated on June 21, 2023 to assess the site and the existing trees relative to the proposed development.

Figure 1. Aerial Photo of the Subject Site



This report has been prepared in accordance with provisions in the City of Vancouver Tree Protection Bylaw No. 9958

The municipal development application and tree permit processes require that existing trees outside of an approved building envelope be considered for preservation within the development, and retained where possible and practical. In some cases, the municipality requires the design of the project to be altered in order to achieve that objective. It is also incumbent on the project to provide adequate protection for municipal owned trees in the street frontages as well as off-site private located in close proximity to the site. To assist the project in meeting the municipal requirements, we have compiled a record of trees required to be removed to accommodate the construction, and developed specifications for responsible tree retention, protection and removal.

Reference Documents relied upon by the consultant in the preparation of this report:

- | | |
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| • Topographic and Tree Location Survey | source; Bennett Land Surveying, dated October 26, 2016 |
| • Architectural Design | source; Perkins and Will, dated May 30, 2019 |
| • Landscape Design | source; to be provided when available. |
| • Civil Design | source; to be provided when available. |
| • Excavation and Shoring Plan | source; to be provided when available. |

NOTE: This report, including appendices, is a living document that is only relevant to the version dates of the reference documents listed above. If any of those designs are advanced or revised beyond the noted version date, then this report is no longer valid. In order to ensure relevance to the applicable phase of the project, this report may require revision or updating to coordinate with the current designs. It is the responsibility of the client to provide this office with updated design drawings and/or any other project details that may affect our tree preservation findings as and when they become available, in order to maintain validity of our report.

METHODOLOGY

Our site and tree assessment included a review of site conditions and an assessment of the existing trees via direct visual inspection which includes tagging or assigning an identification number, collection of pertinent tree data such as species, size (i.e. trunk diameter, height and spread), the current condition (health and structure), the age class, the structural class, visual presence/absence of tree disease and site specific details.

We have assigned retention suitability rankings for tree preservation planning context. These rankings are notwithstanding the proposed design and site coverage of the project and are described as follows:

- **Good** – denotes trees in good to excellent condition, are tolerant of indirect construction impacts, and deemed by the assessor as highly valued candidates for preservation. These tree are expected to have strong long term prospects for survivorship if the project can reasonably accommodate the specified protection measures and treatments.
- **Fair** – denotes trees in fair condition with correctable or minor defects and/or with moderate aesthetic or functional impairments and/or have moderate tolerances for indirect construction impacts, and that present acceptable value for retention. These trees can reasonably be expected to survive the rigours of construction, conditional to compliance with protection measures and completing corrective treatments.
- **Poor** – denotes trees in poor or worse condition, have significant pre-existing health or structural impairments, and/or that are intolerant of the unavoidable indirect impacts from construction in their vicinity. These trees are predictably expected to pose risks of failure or mortality relative to the general site changes from the development and have nil retention suitability.

We have overlain the proposed design on our tree management drawing to develop specifications for tree retention, protection and removal. Our findings are summarized in report sections herein, and in the report appendices.

NOTE: This report is not intended as a tree risk report, however the structural form as well as the presence and severity of defects were factors in our tree assessment. Based on Tree Risk Assessor Qualification (**TRAQ**) Level 1 – Limited Visual Assessment methods protocols, if we observe any trees within the study area that are imminently posing risk to current targets in the existing land uses, they are brought to the attention of the owner for consideration of further assessment and/or action.

TREE PROTECTION PLANNING

Existing trees have been considered for retention. Trees in very poor condition and that are not expected to survive the construction are designated for removal. Trees located within the building envelope (including required construction work areas) that were not able to be practically accommodated by the project through design strategies are deemed to be in direct conflict with the construction and are also designated for removal. Viable condition trees located outside of the building envelope proposed for retention have been specified for retention. Our tree protection strategy encourages the project to implement tree protection barrier installation at the optimal tree protection zone (TPZ) setbacks, however where the project requires certain activities within the optimal setbacks, we are supportive of managed encroachments into the optimal TPZ via;

- applying best management practices to ensure that the proposed encroachment does not destabilize or mortally injure the tree, and so that the form, function and aesthetic value of the retained tree is preserved;
- implementing innovative strategies such as strategic design, arboricultural measures and/or selective use of certain construction methods and materials to limit impacts to the trees;
- conducting treatments or measures to enhance the growing environment to compensate for the loss of roots and changes to the growing space; and
- when those strategies are not able to be adequately achieved, specify removal of those trees as a last resort.

With managed encroachment into the optimal TPZ, there is an increased duty of care for the project to ensure implementation of the recommended protection measures.

Certain site and tree condition factors may also require other measures. For instance, existing structures or hardscapes that are located within the tree protection zone and the presence of underlying or interfacing roots and/or overhanging crowns may result in a need for low impact methods to remove them. Those areas may also be required to be converted to a productive growing environment (i.e. soft landscape condition). There may also need to be a phased implementation of tree protection barriers and measures as the project advances from site preparation phase – to construction phase – to the landscape finishing phase.

The main components of our tree protection prescription are as follows:

- ***Crown Protection Zone (CPZ):***
The protection of the crown is to the dripline extents, representing the current extents of the branches and foliage. Buildings should be designed so that the structure, as well as the operation of any equipment required to build and maintain the structure, do not require encroach into that aerial space. Planning for the access to construct the building, including installing building cladding and finishing, is necessary. Where possible, additional setback should be added to accommodate those needs as well as for future growth of the tree crown. In some cases, pruning can be implemented to enable construction access, for maintenance or to control the growth of the tree, but there are tree specific restrictions and limits on the scope of pruning that can be undertaken for those purposes. Any encroachments into the CPZ requires due consideration of the pruning scope required to accommodate those activities.
- ***Root Protection Zone (RPZ):***
Conditional to meeting CPZ requirements and any associated limitations on pruning, ground based disturbance may be tolerable to a reduced TPZ setback, and the tree protection barrier alignment for the construction phase can be aligned at the RPZ. An impact and mitigation analysis via detailed testing is required before confirming viability, and root mapping investigation may be needed to inform that analysis. There must be strong and defensible rationale for making such adjustments, and there are limits on the proximity to a tree relative to maintaining its health and stability. The proximity of root and soil disturbance toward a tree may differ on each side of a tree. When a setback is reduced on one side of a tree, the setbacks on other sides of the tree should be increased. Measures/treatments to enhance the soil gas exchange, percolation and fertility as well as to moderate soil desiccation, will be a component of their management. Other construction related encroachments into the RPZ, whether temporary or permanent, are not desirable. However, when absolutely necessary and unavoidable, temporary access may be able to be accommodated via interim measures. We have a large tool box of cost effective solutions to consider in this regard.
- ***Cautionary Zone – Working Space Setback (WSS):***
Tree roots can extend many metres beyond the dripline of a tree. Any construction activity that will disturb the soil adjacent to a specified RPZ requires the on-site supervision by our staff to implement appropriate measures that will minimize risks that root damage will extend into the RPZ. These measures include proactive root pruning either in advance of the planned construction activities or concurrent with those works. This WSS is applicable to all aspects of

the site preparation, construction and landscape finishing for the project, however once root pruning is completed along the RPZ interface, no further limitations in the WSS are required (notwithstanding CPZ requirements).

Tree protection setbacks, barriers and restrictions are specified in the Tree Management Drawing (see appendix C), Tree Protection Specifications (see appendix D) and Letter of Assurance/Undertaking (see appendix E). On-site field services or supervision by the project arborist from this office are required as specified on those documents.

To avoid non-compliance issues with city bylaws, and to ensure that a favourable final sign-off can be issued by this office, the client is responsible to ensure coordination of our specifications with all contractors and trades working on the site. Strong communication protocols between the client, the general contractor and this office is vital in order to keep the arborist apprised of progress on the site and to ensure advance notice to schedule attendance at specific times and project milestones.

The fees associated with implementing tree protection measures and treatments and for our construction phase inspections, supervision, site review reports, and final sign off are the responsibility of the client.

TREE PRESERVATION ANALYSIS AND FINDINGS

Considering our tree condition findings, and after careful review of the supplied project design, we have used our experience and knowledge to anticipate the construction impacts. From this process we have developed a proposed tree retention and removal scheme including tree protection setbacks and measures. Refer to the report appendices for additional details, tree location reference, and additional specifications.

The subject trees consist of a mix of coniferous and deciduous, ornamental and native species trees in the site, as well as private and City-owned road frontage trees deemed to be growing within influencing distance to the site.

The proposed treatment of trees subject trees is as summarized by location as described below.

ON-SITE TREES:

Proposed Removal of 16 On-Site Trees:

- Tree Tag/ID's of on-site trees proposed for removal:
- 970, 972, 973, 974, 975, 976, 978, 979, 981, 982, 983, 984, 985, 987, 988, 989, 991, 993, 994, 995, 996, 997, and 998
- Excessive impacts will result from excavation for the underground parking structure, pruning to mitigate aerial conflict with construction as well as preparation for installation of hardscape features. Protection measures cannot be accommodated in the current design, and these trees are specified for removal accordingly.
- See appendices for removal tree Tag/ID's and locations.
- Any removal trees which are shared ownership (i.e. trunks straddle the property line) will require a letter of consent from the joint tree owner(s) before the municipality considers issuing a tree cutting permit, and the municipality usually wants this resolved before issuing development approvals.
 - Shared Tree 978, 979, 981, 982, 983, 984, and 985.
 - These trees appear to straddle the common property line in the East 10th Avenue road frontage and are thought to be owned jointly with the City. Approval from the Parks department arborist is required to enable the City to approve their removal and issue a permit accordingly.

CITY TREES:

Proposed Retention of 2 City Trees:

- Tree Tag/ID's: S003, and S009
- Retained trees will require protection measures implemented as specified for the duration of construction.
- Protect these trees with measures as detailed and dimensioned on the Tree Management Drawing for the duration of construction.
- Coordinate with this office for any contemplated access within tree protection zones for direction,

recommendations and/or on-site supervision from the project arborist.

Proposed Removal of 8 City Trees:

- Due to certain project related construction needs, the following trees are proposed to be removed.

City Tree Tag# 977:

- Seek approval from the Parks board arborist to remove this tree due to excessive root loss which will result from excavation for the underground parking structure. Protection measures cannot be accommodated in the current design. Furthermore, the tree structure appears prone to failure and design revisions to accommodate protection of this tree are thought to be unwarranted.

City Tree Tag# 980:

- Seek approval from the Parks board arborist to remove this tree due to excessive root loss which will result from preparation for installation of proposed hardscape features. Protection measures cannot be accommodated in the current design and these trees are specified for removal accordingly.

City Tree Tag#/IDs S002, S005, S006, S007, and S008:

- Seek approval from the Parks board arborist to remove these trees due to direct conflict with the proposed curb re-alignment for street parking, road improvements and driveway crossing. Protection measures cannot be accommodated in the current design and these trees are specified for removal accordingly.

City Tree Tag #/ID S004:

- Seek approval from the Parks board arborist to remove this tree due to excessive impacts to tree structure which will unavoidably result from the removal of adjacent trees. Protection measures cannot be accommodated in the current design and this tree is specified for removal accordingly.

NEIGHBOUR TREES:

Proposed Retention of 8 Neighbour Trees:

- Tree Tag/ID's: N23, N24, N25, N26, N27, N28, N29, and N30
- Retained trees will require protection measures implemented as specified for the duration of construction.
- The project arborist must be on-site at the time land clearing works progress towards protected off-site trees to identify any trees which may require treatment (i.e., pruning, modification, removal) for risk mitigation and windfirming. Approval from the neighbouring owner and municipal permitting as applicable is required prior to performing treatment of any off-site trees.

Proposed Removal of 24 Neighbour Trees:

- Due to certain project related construction needs, the following trees are proposed to be removed.
 - Neighbour Tree Tag #s 999, N01, N02, N03, N04, N05, N06, N07, N08, N09, N10, N11, N12, N13, N14, N15, N16, N17, N18, N19, N20, N21, N22, and N31: Seek approval from the neighbouring owner to remove these trees due to direct conflict with the proposed Broadway site access and related construction working space.

**TREE RETENTION AND REMOVAL SUMMARY****Table 1.** Tree Retention/Removal by Ownership

Ownership:	SubTotal:	Remove:	Retain:
<i>On-Site Trees</i>	23	23	0
<i>City Street Trees</i>	10	8	2
<i>Neighbour Trees</i>	32	24	8
TOTALS	65	55	10

Table 2. Tree Retention/Removal of On-Site Trees by Priority Ranking

Priority Ranking:	SubTotal:	Remove:	Retain:
<i>1</i>	0	0	0
<i>2</i>	8	8	0
<i>Low</i>	15	15	0
TOTALS	23	23	0

Table 3. Tree Retention/Removal of On-Site Trees by Species

Species:	SubTotal:	Remove:	Retain:
Pacific dogwood (<i>Cornus nuttallii</i>)	6	6	0
Green ash (<i>Fraxinus pennsylvanica</i>)	10	10	0
Flowering cherry (<i>Prunus serrulata</i>)	1	1	0
Douglas-fir (<i>Pseudotsuga menziesii</i>)	2	2	0
Pin oak (<i>Quercus palustris</i>)	1	1	0
Western redcedar (<i>Thuja plicata</i>)	2	2	0
Littleleaf linden (<i>Tilia cordata</i>)	1	1	0
TOTALS	23	23	0

TREE REPLACEMENT

Tree replacement requirements will be confirmed by the municipality in relation to their policies. The municipality requires one or two replacement trees for each bylaw tree to be removed (1:1 or 2:1 quota), depending on the species selected for replacement. We recommend limiting the quantity of trees to an appropriate quantity relative to the available space for planting and meeting arboricultural best management practices. The replacement trees must meet city requirements for minimum size at planting (i.e. 6 cm calliper for deciduous species and 3.5 m height for coniferous species) and other criteria. Design and specifications for the replacement trees will be provided by the project landscape architect.



TREE PERMIT OR REGULATORY CONSIDERATIONS

The city requires that a valid tree permit is obtained by the tree owner (property owner) or their authorized agent in advance of the removal and/or pruning of any bylaw regulated tree, and that the tree permit is posted at the site as per the conditions therein. The conditions of the permit approval process may also include payment of application fees, submission of securities/bonds or cash-in-lieu for replacement trees and/or other requirements. Tree removal, including permit tree as well as trees that are exempt from a permit, may be removed at the owner discretion subject to the following:

- Any tree that is located on or partially on a neighbouring property will require that the joint owners both agree on its treatment before proceeding. The city requires proof of that agreement in the form of an authorization letter signed by both tree owners before they issue a tree permit.
- The cutting of any tree may be limited or restricted relative to Federal and Provincial Regulatory requirements. Certain types of nests or habitat are protected year-round and would be subject to special permits from the Province if and disturbance were necessary. Otherwise tree removals proposed to be undertaken during the bird breeding and nesting season (approximately Mar 1 to Aug 31 annually but subject to change by region, seasonality and weather) will be subject to a pre-cutting tree removal nesting bird survey. The nesting bird survey should be conducted by qualified environmental professional (QEP), that is; a wildlife biologist who is appropriately trained and experienced in this type of assessment.
- Notwithstanding the above, in the case of tree removals proposed within an urban or suburban setting, and when the tree can be viewed adequately to identify the presence of nests or other habitat, a tree worker who is trained and experienced in nesting bird surveys may be an acceptable alternative professional.
- The tree owner (property owner) is ultimately responsible to ensure that the tree work is conducted with adherence to the conditions of any tree permits and other related regulations, requirements, standards and best management practices.

STANDARDS OF WORK FOR TREE TREATMENTS

The methods to undertake any **Tree Work** (i.e. climbing the tree, accessing the tree by any means, cutting/removal and rigging operations, pruning, hardware installation, lightning protection, IPM, etc) should conform to ANSI A300 and ANSI Z133 standards and best management practices, as well as applicable WorksafeBC regulations and standards. The scope and specifications for all tree work is to be directed by the project arborist from this office and undertaken by a crew that includes a qualified **Tree Worker** who is; an ISA Certified Arborist, TRAQ qualified and competent in assessing the structural soundness of the tree relative to the proposed tree work activities and, in the case of commercial land clearing operations, may also be required to be a **Certified Faller** as accredited by the BC Forest Safety Council. The tree worker must be well experienced with spurless climbing and technical rigging techniques that may need to be utilized. When accessing or climbing a tree, the crew performing the tree work must include an additional tree worker and the necessary equipment to conduct the rescue of a tree worker in the case of an injury. Operational decisions in the performance of tree work are at the sole discretion of the tree service worker with their responsibilities being to, among other things, carry out those works while meeting the required standards for safety.

The recovery, reuse and/or disposal of waste from the tree work is to be planned and executed by the tree worker, and in conformance with municipal regulations. Merchantable timber requires that a **Timber Mark** is first obtained by, or on behalf of, the property owner in advance of transporting such timber from the site. We encourage certain salvageable waste from the tree work to be made available for use by first nations and/or artisans wherever possible and practical.

Where overhead power lines are located near to the subject tree(s), the tree worker must consider the safety setbacks and protocols related to the conductors, as specified by the power Utility Company. If applicable, the tree worker may be required to consult with that utility company and/or a Certified Utility Arborist (CUA) in advance to plan and supervise the tree work.

Removals of approved trees from within the municipal road frontage or any other municipal property may be required by the city to be undertaken by; municipal crews or by a tree service company pre-qualified by the municipality to perform such work within their lands.

If trees located within adjacent private property require specific treatments or methods of removal in order to protect retained trees, or for any reason, those treatments and removals must be undertaken by a tree worker adhering with the standards for



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tree work as described above. If stumps are requested to be removed, stump grinding or extraction by machinery with root cutting and other tactics may be considered. The project arborist from this office can provide additional advice in this regard on a tree-by-tree basis upon request.

Certified by;

Nick McMahon, Senior Consulting Arborist

Qualifications of the Author:

ISA Board Certified Master Arborist #PN-7136B

ISA Qualified Tree Risk Assessor (TRAQ)

PNWISA Certified Tree Risk Assessor #1763

BC Certified Wildlife Dangerous Tree Assessor (Parks) # P2519

Enclosures;

APPENDIX A – PHOTOS

APPENDIX B – TREE INVENTORY LIST

APPENDIX C – TREE MANAGEMENT DRAWING

APPENDIX D – TREE PROTECTION ZONE SPECIFICATIONS

APPENDIX E – ARBORISTS LETTER OF UNDERTAKING (LETTER OF ASSURANCE)

Assumptions and Limiting Conditions:

- This report was prepared for the client as addressed herein. Upon receipt of payment in full for our account, this report will become the property of the client. This report is intended for the exclusive use of our client in its entirety. Arbortech shall not accept any liability derived from partial, unintended, unauthorized or improper use of this report.
- This report is restricted only to the subject trees as detailed herein, and no other trees were inspected or assessed and our findings are not meant to infer that other trees are healthy and sound.
- The inner tissue of the trunk, stems, limbs and roots are hidden within the tree and the majority of a trees' root system is hidden below ground. Our tree assessments are limited to relying upon visual inspection of the tree parts and, where applicable, utilizing basic non-destructive testing methods such as probing and sounding to identify potential structural defects. Trees utilize adaptive growth strategies in response to their growing site conditions to sustain their structural integrity and their health and their response growth can compensate for structural impairments, however the results of those growth responses may mask defects from visual detection. Using our experience and training we carefully inspect the tree for indicators of internal defect. Where applicable, subject to the discretion of the client, we may have utilized advanced and minimally invasive testing methods to determine the severity of certain observed defects to the extent possible. Our defect analysis considers the mitigating effects of response growth and common weather conditions in the region when we are rating the probabilities for tree failure.
- The client is advised that not all defects can be detected or reliably assessed through available non-destructive or minimally invasive methods, and that the forces acting upon trees during extraordinary and extreme weather are unpredictable. During uncommon storm events any tree, healthy or not, has a risk of failure. For these reasons, we do not guarantee or warrant that an assessed tree is free of defect or that it will not fail.
- The ownership of trees is determined based on the location of the trunk where it emerges from the ground relative to the property line. If a part of the trunk at ground level crosses over a property line, then it is deemed to be jointly owned by those property owners. The client is advised that the accurate determination of tree ownership may require the advice from a duly qualified professional surveyor.
- Third party information may have been relied upon in the formation of the opinion of the consultant and in the preparation of this report. We have verified that information to a reasonable extent of our capabilities to assume it to be reliable, however we do not warrant that third party information to be true and correct.
- The use of maps, sketches and diagrams (figures) are intended for reference by the reader in understanding our findings, and are not intended as a representation of fact. These figures shall not be used in determining property lines, ownership or project layout.
- Permits, approvals or authorizations from a municipality and/or a regulatory agency may be required prior to carrying out treatments that may be proposed in this report. The client is responsible for the application, related fees and costs, and meeting all requirements and conditions for the issuance of such permits, approvals or authorizations. If a tree located on or partially within adjacent lands is proposed for treatment, consent from the tree owner is required.



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APPENDIX A: Tree Photos

Tree # 970



Tree # 972



Tree #s 973 & 974



Tree # 977





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Tree # 977



Tree # 978



Tree #s 977, 978, 979, 980, 981 (left to right), S003 (center)



Tree #s 980, 981 (center)





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Tree # 987



Tree # 988 - 2017



**Tree # 988 (concrete wall at east
property line)**



Tree #s 989 & 990 - 2017





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Tree #993



Tree #s 994, 995



Tree # 999 - 2017



Tree S002, S009 (right to left)





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**S003, S004 (left to right), S004 –
embedded in crown of adjacent tree.**



Tree S005 - 2017



Tree S005 - 2023



Tree S006 - 2023





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Tree S007



Tree S008



Untagged Trees Within Closed Lane



APPENDIX B: TREE INVENTORY LIST: (all dimensions are metric)

Tag/ID denotes the arborist tag # or serial ID number as referenced in report and drawing documentation.

SURVEY/ID denotes whether the tree location is shown on the topographic survey provided by client (Y/N). If we are relying on survey tag #'s we include it for reference.

LOC denotes location as from survey; **ON** (on site), **SHARED** (straddling PL), **OFF** (off site private), **CITY** (road frontage or other), **ESA** (environmentally sensitive area), **PARK** (city park - existing or proposed)

DBH (ISA) denotes the diameter(s) of the main stems of the subject tree as measured by the arborist in accordance with arboricultural best management practices.

- This data supersedes any other data (including surveyor dimensions).

DBH BYLAW: denotes the diameter of a tree calculated by the project arborist based on municipal bylaw definitions and provisions.

DBH TPZ: denotes the diameter of a tree calculated by the project arborist using arboricultural standards and using the CTLA trunk area method to determine a single stem equivalent for multi-stem trees.

- This diameter is the basis for consideration by the project arborist in determining the tree protection setback (RPZ in particular). Measurements be estimated based on arborist observations.

Spr denotes the spread RADIUS of the branches and foliage (dripline) in metres as measured or estimated by the assessor.

LCR denotes the live crown ratio based on percent of live crown observed in relation to a tree of normal form and with a full crown.

Class denotes the structural class of a tree. **Landscape Trees;** considers exposure: **O** denotes open, **G** denotes Grove, **E** denotes Edge, **W** denotes Windrow

Viability rating denotes preservation ranking for consideration in tree retention planning considering multiple factors including; condition, value rating, age, species, etc.

G (Good), **F** (Fair) and **P** (Poor). NOTE: Individual trees within forest stands are generally deemed Poor priority for selective retention except when sufficiently large stands are protected.

Assessment Findings includes; our summary of overt defects, noteworthy growing condition factors, preservation and protection considerations and treatment rationale.

Action denotes proposed treatment in context to the project design; **RETAIN, REMOVE or PROTECT**. Removal of Shared and Off-Site trees **require owner consent**.

RPZ and CPZ; arborist setbacks for **Root Protection Zone** (measured from centre of trunk) and **Crown Protection Zone**. The **Cautionary Zone - Working Space Setback** (WSS) is additional to the RPZ .

All 3 form the **Tree Protection Zone** (TPZ).

6X Dbh is an arbitrary city guideline for minimum root protection, not a specification. The calculation includes radius of the trunk and is dimensioned relative to the center of trunk. **Use RPZ plus WSS.**

Reference Bylaw: VANCOUVER PROTECTION OF TREES BYLAW NO. 9958, AMENDED JUNE 2022

Minimum Bylaw Protected Tree Size: 20 cm DBH ; and Multi-stem trees with a cumulative diameter of the largest three stems equal to or > 20 cm.

Tag/ID	Survey ID	Loc	# of Trees	Common name, (Botanical)	DBH ISA	DBH BYLAW	DBH TPZ	Bylaw Y/N	Ht (m)	Spr (m)	LCR (%)	Class	Assessment Findings:	Viability	Optimal RPZ	City RPZ (min)	ACTION	RPZ (m)	CPZ (m)
970		ON	1	Pin oak (Quercus palustris)	39	39	39	Y	11	7	80	O	- Roots are growing on the surface in the soft landscape, restricted by and in direct contact with existing curb and hardscape. - Historically pruned via heading cuts on the southwest side for building clearance. - Excessive root and crown loss will result from excavation for the new underground parking structure, and this tree is proposed to be removed. RATIONALE: - DIRECT CONFLICT WITH PROPOSED BUILDING AND UNDERGROUND PARKING STRUCTURE.	F	2.7	2.3	REMOVE		
972		ON	1	Green ash (Fraxinus pennsylvanica)	14	14	14	N	6	4	50	O	- Roots restricted by hardscape. - Bow to the south. RATIONALE: - DIRECT CONFLICT WITH PROPOSED BUILDING AND UNDERGROUND PARKING STRUCTURE.	P	1.4	0.8	REMOVE		



Tag/ID	Survey ID	Loc	# of Trees	Common name, (<i>Botanical</i>)	DBH ISA	DBH BYLAW	DBH TPZ	Bylaw Y/N	Ht (m)	Spr (m)	LCR (%)	Class	Assessment Findings:	Viability	Optimal RPZ	City RPZ (min)	ACTION	RPZ (m)	CPZ (m)
973		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	14	14	14	N	8	3	80	0	- Historically topped at 4.0m above grade. - Replacement leaders attach at the historic topping site and have developed a weak crown structure. - Root crown obscured by historic placement of excess fill. RATIONALE: - DIRECT CONFLICT WITH PROPOSED BUILDING AND UNDERGROUND PARKING STRUCTURE.	P	1.4	0.8	REMOVE		
974		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	15	15	15	N	8	4	80	0	- Historic placement of excess fill (mulch) obscures root crown. - Bow to the northeast. RATIONALE: - DIRECT CONFLICT WITH PROPOSED BUILDING AND UNDERGROUND PARKING STRUCTURE.	F	1.5	0.9	REMOVE		
975		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	16	16	16	N	8	5	80	0	- Historic placement of excess fill obscures the root crown. - Divergent co-dominant leaders narrowly attach at 2.2m above grade with a bark inclusion. RATIONALE: - DIRECT CONFLICT WITH PROPOSED BUILDING AND UNDERGROUND PARKING STRUCTURE.	F	1.6	1	REMOVE		
976		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	17	17	17	N	11	3	50	0	- Historic placement of excess fill obscures the root crown. - Divergent co-dominant leaders narrowly attach at 2.2m above grade with a bark inclusion. - Narrowly bifurcated at 5.0m above grade. - Girdling root over 30% of root crown on the south side. - Sparsely foliated crown suggests significant health decline. RATIONALE: - DIRECT CONFLICT WITH PROPOSED BUILDING AND UNDERGROUND PARKING STRUCTURE.	P	1.7	1	REMOVE		
977		CITY	1	Green ash (<i>Fraxinus pennsylvanica</i>)	36+2 8	64	46	Y	12 J), 8(W		90	0	- DBH of a single stem equivalent is calculated based on the area of measured stems (36+28cmø) at 1.4m above grade for protection setback calculation purposes. - Narrowly bifurcated at 0.5m above grade with a long bark inclusion extending upwards to 1.5m with reaction wood and seeping water. Ribs forming in alignment with bark inclusion with no structure between and appear to be splitting apart. - Crown gap in upper crown. East stem is sparsely foliated. - Historic placement of excess fill obscures root crown. RATIONALE: - DIRECT CONFLICT WITH PROPOSED BUILDING AND UNDERGROUND PARKING STRUCTURE.	P	4.6	3.8	REMOVE		



Tag/ID	Survey ID	Loc	# of Trees	Common name, (<i>Botanical</i>)	DBH ISA	DBH BYLAW	DBH TPZ	Bylaw Y/N	Ht (m)	Spr (m)	LCR (%)	Class	Assessment Findings:	Viability	Optimal RPZ	City RPZ (min)	ACTION	RPZ (m)	CPZ (m)
978	SHARED CITY		1	Pacific dogwood (<i>Cornus nuttallii</i>)	38	38	38	Y	11	4	90	0	- Two co-dominant leaders narrowly attach at 3.5m above grade with a bark inclusion. - Crown suppressed on the east and west sides due to proximity and suppression from adjacent trees. - Somewhat sparsely foliated crown (20%) RATIONALE: - EXCESSIVE IMPACTS TO TREE HEALTH AND STABILITY WILL RESULT FROM PREPARATION FOR INSTALLATION OF HARDSCAPE FEATURES, REMOVAL OF ADJACENT TREES AND PRUNING TO MITIGATE AERIAL CONFLICT WITH CONSTRUCTION.	F	3.8	2.3	REMOVE		
979	SHARED CITY		1	Pacific dogwood (<i>Cornus nuttallii</i>)	18, 9, 10, 17 ,14	49	18	Y	10	5	80	0	- DBH is representative of the largest of measured stems (18, 9, 10, 17 ,14cmø) at 1.4m above grade for protection setback calculation purposes. - Multiple stems narrowly attach at base with a bark inclusion extending below grade. - Embedded in the crown of adjacent trees, resulting in an asymmetrical crown biased to the west. - Girdling root on the south side over 15% of the root crown. - Historic branch failures throughout the crown. RATIONALE: - EXCESSIVE IMPACTS TO TREE HEALTH AND STABILITY WILL RESULT FROM PREPARATION FOR INSTALLATION OF HARDSCAPE FEATURES, REMOVAL OF ADJACENT TREES AND PRUNING TO MITIGATE AERIAL CONFLICT WITH CONSTRUCTION.	P	1.8	2.9	REMOVE		
980	CITY		1	Douglas-fir (<i>Pseudotsuga menziesii</i>)	57	57	57	Y	14	5	90	0	- Asymmetrical crown suppressed on the northeast side. - Growing on a mound with very large surface roots - biased to the west. - Stem has been damaged via vandalism. RATIONALE: - EXCESSIVE IMPACTS TO TREE HEALTH AND STABILITY WILL RESULT FROM PREPARATION FOR INSTALLATION OF HARDSCAPE FEATURES, AND REMOVAL OF ADJACENT TREES.	G	4	3.4	REMOVE		



Tag/ID	Survey ID	Loc	# of Trees	Common name, (<i>Botanical</i>)	DBH ISA	DBH BYLAW	DBH TPZ	Bylaw Y/N	Ht (m)	Spr (m)	LCR (%)	Class	Assessment Findings:	Viability	Optimal RPZ	City RPZ (min)	ACTION	RPZ (m)	CPZ (m)
981	SHARED CITY		1	Douglas-fir (<i>Pseudotsuga menziesii</i>)	44	44	44	Y	14	5	90	0	- Shared tree. - Asymmetrical crown merged with adjacent tree and suppressed on the southwest side. - Suitable for joint retention with adjacent tree. RATIONALE: - EXCESSIVE IMPACTS TO TREE HEALTH AND STABILITY WILL RESULT FROM PREPARATION FOR INSTALLATION OF HARDSCAPE FEATURES, AND REMOVAL OF ADJACENT TREES.	F	3.1	2.6	REMOVE		
982	SHARED CITY		1	Pacific dogwood (<i>Cornus nuttallii</i>)	18, 14	29	18	Y	8	3	90	0	- DBH is representative of the largest of measured stems (18, 14cmØ) at 1.4m above grade for protection setback calculation purposes. - Two co-dominant stems narrowly attach at base with a bark inclusion extending below grade. - Roots from adjacent tree girdling the stem at root crown. - Embeddd in the crown of adjacent tree, resulting in a suppressed, asymmetrical crown biased to the east. - Dependent upon adjacent trees for stability. RATIONALE: - EXCESSIVE IMPACTS TO TREE HEALTH AND STABILITY WILL RESULT FROM PREPARATION FOR INSTALLATION OF HARDSCAPE FEATURES, AND REMOVAL OF ADJACENT TREES.	P	1.8	1.7	REMOVE		
983	SHARED CITY		1	Pacific dogwood (<i>Cornus nuttallii</i>)	20	20	20	Y	10	4	90	0	- Multiple leaders narrowly attach at 10m. RATIONALE: - EXCESSIVE IMPACTS TO TREE HEALTH AND STABILITY WILL RESULT FROM PREPARATION FOR INSTALLATION OF HARDSCAPE FEATURES.	F	2	1.2	REMOVE		
984	SHARED CITY		1	Pacific dogwood (<i>Cornus nuttallii</i>)	13+1 6	28	21	Y	10	4	80	0	- DBH of a single stem equivalent is calculated based on the area of measured stems (13+16cmØ) at 1.4m above grade for protection setback calculation purposes. - Narrowly bifurcated at base with bark inclusion and forming ribs. - Somewhat sparsely foliated crown. RATIONALE: - EXCESSIVE IMPACTS TO TREE HEALTH AND STABILITY WILL RESULT FROM PREPARATION FOR INSTALLATION OF HARDSCAPE FEATURES.	P	2.1	1.7	REMOVE		



Tag/ID	Survey ID	Loc	# of Trees	Common name, (<i>Botanical</i>)	DBH ISA	DBH BYLAW	DBH TPZ	Bylaw Y/N	Ht (m)	Spr (m)	LCR (%)	Class	Assessment Findings:	Viability	Optimal RPZ	City RPZ (min)	ACTION	RPZ (m)	CPZ (m)
985	SHARED CITY		1	Pacific dogwood (<i>Cornus nuttallii</i>)	22, 13	21	22	Y	10	4	80	0	- DBH is representative of the largest of measured stems (22, 13cmø) at 1.4m above grade for protection setback calculation purposes. - Two stems narrowly attach at base with a bark inclusion and well limb-tied in the crown. - Historic placement of excess fill over the root zone obscures root crown. - Sparsely foliated crown (70% deficient). RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	2.2	1.3	REMOVE		
987	ON		1	Douglas-fir (<i>Pseudotsuga menziesii</i>)	23	23	23	Y	10	3	80	0	- Girdling roots over 30% of root crown. - Root growth restricted by existing hardscape. - Object embedded in the stem at base. - Stem historically damaged on the east side - likely due to vehicle contact. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	1.6	1.4	REMOVE		
988	ON		1	Littleleaf linden (<i>Tilia cordata</i>)	28	28	28	Y	14	4	90	0	- Historic placement of excess fill obscures the root crown. - bowed to the north. - Root zone restricted by existing curb 2.0m to the northwest and concrete wall to the east. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	F	2	1.7	REMOVE		
989	ON		1	Eastern white cedar (<i>Thuja occidentalis</i>)	S	14	0	N	7	1	100	0	- DBH is representative of the largest of measured stems (14, 26cmø) at 1.4m above grade for protection setback calculation purposes. - Open column of decay on the east side of the stem extending from the historic topping site at 2.0m to base. - Historically shear pruned into a topiary. - This tree has declined beyond a reasonable expectation of recovery approaching mortality. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	0	0.8	REMOVE		



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991		ON	1	Eastern white cedar (<i>Thuja occidentalis</i>)	34	34	34	Y	7	1	100	0	- Somewhat sparsely foliated crown (20% deficient). - Historic aggressive shear pruning into a topiary. - Stem damaged on the west side at base with missing bark. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	3.1	2	REMOVE		
993		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	21	21	21	Y	10	3	60	0	- Continuous sweep to the north corrected at 2.0m above grade. - High crown and poorly tapered stem. - Epicormic growth on the stem suggests high levels of health related stress. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	2.1	1.3	REMOVE		
994		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	12	12	12	N	7	2	30	0	- Dieback (30%) from the top-down. This tree has declined beyond a reasonable expectation of recovery. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	1.2	0.7	REMOVE		
995		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	13	13	13	N	8	2	30	0	- Narrowly bifurcated at 2.0m above grade. - Dieback (20%) throughout the crown. - Poorly tapered stem with high crown. - Lean to the southwest. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	1.3	0.8	REMOVE		
996		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	17	17	17	N	12	2	70	0	- Very poorly tapered stem with excessive epicormic growth. - Sun scalded stem between 4 and 8.0m above grade. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	1.7	1	REMOVE		
997		ON	1	Green ash (<i>Fraxinus pennsylvanica</i>)	14	14	14	N	5	3	80	0	- Historically topped at 3.0m above grade, resulting in decayed pruning wounds and the development of a weakly structured crown. - Sparsely foliated crown (40% deficient). RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	P	1.4	0.8	REMOVE		



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998		ON	1	Flowering cherry (<i>Prunus serrulata</i>)	26	26	26	Y	11	5	70	O	- Multiple co-dominant scaffold branches narrowly attach at 2.0m above grade with a bark inclusion. - Historically pruned via heading cuts over the parking lot, resulting in decayed pruning wounds. - Narrow crown due to suppression from adjacent trees. RATIONALE: - DIRECT CONFLICT WITH UNDERGROUND PARKING STRUCTURE.	F	1.8	1.6	REMOVE		
999		OFF	1	Horsechestnut (<i>Aesculus hippocastanum</i>)	60	60	60	Y	12	7	80	O	- Multiple co-dominant scaffold branches narrowly at and above 2.0m with bark inclusion and seeping water. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO EXCESSIVE ROOT LOSS WHICH WILL RESULT FROM EXCAVATION FOR THE UNDERGROUND PARKING STRUCTURE AND CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	G	5.4	3.6	REMOVE		
N01		OFF	1	Red alder (<i>Alnus rubra</i>)	30	30	30	Y	12	5		g	- Asymmetrical crown biased to the west. - Epicormic growth on stem at base. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	2.1	1.8	REMOVE		
N02		OFF	1	Red alder (<i>Alnus rubra</i>)	35	35	35	Y	14	5		g	- Sweep to the north corrected at 2.0m above grade. - Growing on a steep slope. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	2.5	2.1	REMOVE		
N03		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	16	7		g	- Significantly cankered stem above 8.0m and prone to failure. - Dead tops. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N04		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	12	3		g	- Fully dead and decaying stem. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		



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N05		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	14	4		g	- Poorly tapered stem and high crown, co-dependent with adjacent trees for stability. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N06		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	14	3		g	- Epicormic growth on stem from base to entire height. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N07		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	13	4		g	- Asymmetrical crown biased to the south. - Stem cankered on the north side at 9.0m and prone to failure. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N08		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	16	4		g	- High crown, poorly tapered stem, co-dependent on adjacent trees for stability. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N09		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	15	2		g	- Fully dead and prone to failure. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N10		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	15	5		g	- Sweep to the northeast corrected at 2.0m above grade. - Asymmetrical crown biased to the northeast. Co-dependent with adjacent trees for stability. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		



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N11		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	17	4		g	- Lean to the northeast, High crown due to shading from adjacent trees. - Growing at the bottom of a steep slope. - Historically pruned for sidewalk clearance on the bridge. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N12		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	12	5		g	- Fully dead and decayed stem - prone to failure. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N13		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	12	2		g	- Fully dead and decayed stem - prone to failure. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N14		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	12	4		g	- High, asymmetrical crown biased to the south. - Poorly tapered stem and dieback of lower branches due to shading from adjacent trees. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N15		OFF	1	Black cottonwood (<i>Populus x trichocarpa</i>)	30	30	30	Y	22	5		g	- Narrow crown, co-dependent with adjacent trees for stability. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	2.1	1.8	REMOVE		
N16		OFF	1	Black cottonwood (<i>Populus x trichocarpa</i>)	30	30	30	Y	22	6		g	- Epicormic growth on stem from base to 10m above grade. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	2.1	1.8	REMOVE		



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N17		OFF	1	Flowering cherry (<i>Prunus serrulata</i>)	32	32	32	Y	13	5		g	- Wire fence over root crown. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	F	2.2	1.9	REMOVE		
N18		OFF	1	Red alder (<i>Alnus rubra</i>)	24	24	24	Y	14	5		g	- DBH is representative of the largest measures stems (24, 24, 14 cm ø at 1.4m above grade) for protection setback calculation purposes. - Fully dead. - Multiple stems narrowly attach at base with a bark inclusion extending below grade. - Fruiting bodies (<i>Tremetes</i> sp.) observed on stem. - One stem girdled at 1.2m above grade. - Asymmetrical crown biased to the south. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.7	1.4	REMOVE		
N19		OFF	1	Black locust (<i>Robinia pseudoacacia</i>)	30	30	30	Y	14	5		g	- Multiple stems narrowly bifurcated at 1.5m above grade. - Asymmetrical crown suppressed on the north side. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	2.1	1.8	REMOVE		
N20		OFF	1	Black locust (<i>Robinia pseudoacacia</i>)	20	20	20	Y	14	5		g	- Asymmetrical crown biased to the south. - Stem cankered on the north side at 9.0m and prone to failure. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.4	1.2	REMOVE		
N21		OFF	1	Red alder (<i>Alnus rubra</i>)	25	25	25	Y	12	3		g	- High crown. - Cankered stem at 8.0m on the south side. - Low vigor RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	P	1.8	1.5	REMOVE		



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N22		OFF	1	Red alder (<i>Alnus rubra</i>)	20	20	20	Y	12	3		g	- Stem cankered at 4.0m above grade. - Narrow crown and poorly tapered stem, dependent on adjacent trees for stability. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION AND IMPACTS FROM REMOVAL OF ADJACENT TREES.	P	1.4	1.2	REMOVE		
N23		OFF	1	Red alder (<i>Alnus rubra</i>)	25	25	25	Y	14	3		g	- Poorly tapered stem, high crown, suppressed by adjacent trees. RATIONALE: - THE PROJECT ARBORIST WILL RE-INSPECT AT THE TIME OF LAND CLEARING TO REVIEW CONDITION FINDINGS AND UPDATE TREATMENT SPECIFICATIONS ACCORDINGLY. ANY OFF-SITE TREES UPDATED TO RECOMMEND TREATMENT WILL REQUIRE APPROVAL FROM THE NEIGHBOURING OWNER AND MUNICIPAL PERMIT PRIOR TO PERFORMING TREATMENTS.	P	1.8	1.5	PROTECT	0.0	3.0
N24		OFF	1	Red alder (<i>Alnus rubra</i>)	25	25	25	Y	14	4		g	Poorly tapered stem, high crown, suppressed by adjacent trees.	P	1.8	1.5	PROTECT	0.0	4.0
N25		OFF	1	Red alder (<i>Alnus rubra</i>)	25	25	25	Y	14	4		g	- Poorly tapered stem, high crown, suppressed by adjacent trees. RATIONALE: - THE PROJECT ARBORIST WILL RE-INSPECT AT THE TIME OF LAND CLEARING TO REVIEW CONDITION FINDINGS AND UPDATE TREATMENT SPECIFICATIONS ACCORDINGLY. ANY OFF-SITE TREES UPDATED TO RECOMMEND TREATMENT WILL REQUIRE APPROVAL FROM THE NEIGHBOURING OWNER AND MUNICIPAL PERMIT PRIOR TO PERFORMING TREATMENTS.	P	1.8	1.5	PROTECT	0.0	4.0
N26		OFF	1	Black cottonwood (<i>Populus x trichocarpa</i>)	25	25	25	Y	14	6		g	- Asymmetrical crown biased to the north. RATIONALE: - THE PROJECT ARBORIST WILL RE-INSPECT AT THE TIME OF LAND CLEARING TO REVIEW CONDITION FINDINGS AND UPDATE TREATMENT SPECIFICATIONS ACCORDINGLY. ANY OFF-SITE TREES UPDATED TO RECOMMEND TREATMENT WILL REQUIRE APPROVAL FROM THE NEIGHBOURING OWNER AND MUNICIPAL PERMIT PRIOR TO PERFORMING TREATMENTS.	P	1.8	1.5	PROTECT	0.0	6.0



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N27		OFF	1	Black cottonwood (<i>Populus x trichocarpa</i>)	20	20	20	Y	14	5		g	- Asymmetrical crown biased to the north. RATIONALE: - THE PROJECT ARBORIST WILL RE-INSPECT AT THE TIME OF LAND CLEARING TO REVIEW CONDITION FINDINGS AND UPDATE TREATMENT SPECIFICATIONS ACCORDINGLY. ANY OFF-SITE TREES UPDATED TO RECOMMEND TREATMENT WILL REQUIRE APPROVAL FROM THE NEIGHBOURING OWNER AND MUNICIPAL PERMIT PRIOR TO PERFORMING TREATMENTS.	P	1.4	1.2	PROTECT	0.0	5.0
N28		OFF	1	Black locust (<i>Robinia pseudoacacia</i>)	25	25	25	Y	14	4		g	High crown, poorly tapered stem, co-dependent on adjacent trees for stability.	P	1.8	1.5	PROTECT	0.0	4.0
N29		OFF	1	Black locust (<i>Robinia pseudoacacia</i>)	20	20	20	Y	14	4		g	High crown, poorly tapered stem, co-dependent on adjacent trees for stability.	P	1.4	1.2	PROTECT	0.0	4.0
N30		OFF	1	Black locust (<i>Robinia pseudoacacia</i>)	20	20	20	Y	14	4		g	High crown, poorly tapered stem, co-dependent on adjacent trees for stability.	P	1.4	1.2	PROTECT	0.0	4.0
N31		OFF	1	Apple (<i>Malus sp.</i>)	18	18	18	N	7	7	50		- Asymmetrical crown biased to the southwest over surface parking. - Chainlink fence embedded in the stem at base. RATIONALE: - SEEK APPROVAL FROM THE NEIGHBOURING OWNER TO REMOVE THIS TREE DUE TO AERIAL CONFLICT WITH CONSTRUCTION OF GRADE LEVEL SITE ACCESS.	F	1.3	1.1	REMOVE		
S002		CITY	1	Norway maple (<i>Acer platanoides</i>)	26	26	26	Y	9	4	80		- Access restricted due to current construction activity. - Protection measures not in place and encroachments observed within the root zone (i.e. storage, trailers etc.) RATIONALE: - REFER TO THE PARKS BOARD ARBORIST FOR APPROVAL TO REMOVE DUE TO DIRECT CONFLICT WITH PROPOSED CURB REALIGNMENT AND ROAD IMPROVEMENTS.	G	1.8	1.6	REMOVE		
S003		CITY	1	Horsechestnut (<i>Aesculus hippocastanum</i>)	7	7	7	Y	3	1	70	0		F	0.5	0.4	PROTECT	1.5	1.0



Tag/ID	Survey ID	Loc	# of Trees	Common name, (<i>Botanical</i>)	DBH ISA	DBH BYLAW	DBH TPZ	Bylaw Y/N	Ht (m)	Spr (m)	LCR (%)	Class	Assessment Findings:	Viability	Optimal RPZ	City RPZ (min)	ACTION	RPZ (m)	CPZ (m)
S004		CITY	1	Horsechestnut (Aesculus hippocastanum)	10	10	10	Y	5	1	70	0	- Embedded in the crown of adjacent tree, resulting in a severely bowed and asymmetrical crown structure, biased to the south. - Large injury to the stem on the east side (50% circumference) - nearly occluded. - Historically pruned via heading cuts over the road. - Seek Parks department approval to remove this tree due to direct conflict with the new commercial and office driveway entrance. RATIONALE: - SEEK PARKS BOARD APPROVAL TO REMOVE THIS TREE DUE TO EXCESSIVE IMPACTS TO TREE STABILITY WILL RESULT FROM REMOVAL OF ADJACENT TREES.	P	0.7	0.6	REMOVE		
S005		CITY	1	Horsechestnut (Aesculus hippocastanum)	31	31	31	Y	10	4	50	0	- Large, open decayed cavity on the northwest side of the stem from 0.8- 1.2m above grade - probed to a depth of 17cm horizontally. - Stem appears irregular in profile at the cavity opening. RATIONALE: - SEEK PARKS BOARD APPROVAL TO REMOVE THIS TREE DUE TO DIRECT CONFLICT WITH PROPOSED CURB REALIGNMENT AND ROAD IMPROVMENTS.	F	2.8	1.9	REMOVE		
S006		CITY	1	Horsechestnut (Aesculus hippocastanum)	62	62	62	Y	12	7	70	0	- Historically topped between 4 and 6.0m above grade, resulting in large, decayed pruning wounds. - Longitudinal in-turned seam from 3.5m above grade to an open cavity at 2.0m - seeping water. - Longitudinal shear plane crack on scaffold branch on the north side over the sidewalk. RATIONALE: - SEEK PARKS BOARD APPROVAL TO REMOVE THIS TREE DUE TO DIRECT CONFLICT WITH PROPOSED CURB REALIGNMENT AND ROAD IMPROVMENTS.	G	5.6	3.7	REMOVE		
S007		CITY	1	Red maple (Acer rubrum)	14	14	14	Y	12	3	80	0	- Longitudinal crack on the stem from 0.3-1.0m above grade on the southwest side has occluded and formed a rib. - High, narrow crown. RATIONALE: - SEEK PARKS BOARD APPROVAL TO REMOVE THIS TREE DUE TO DIRECT CONFLICT WITH PROPOSED CURB REALIGNMENT AND ROAD IMPROVMENTS.	F	1.3	0.8	REMOVE		



Tag/ID	Survey ID	Loc	# of Trees	Common name, (<i>Botanical</i>)	DBH ISA	DBH BYLAW	DBH TPZ	Bylaw Y/N	Ht (m)	Spr (m)	LCR (%)	Class	Assessment Findings:	Viability	Optimal RPZ	City RPZ (min)	ACTION	RPZ (m)	CPZ (m)
S008		CITY	1	Horsechestnut (Aesculus hippocastanum)	56	56	56	Y	12	7	60	0	- Historically topped at a height of 6.0m above grade, resulting in large, decayed pruning wounds with reaction wood. - Historic placement of excess fill obscures the root crown. - Sounding suggests significant internal defect above 2.5m. - Seek Parks department approval to remove this tree due to direct conflict with the proposed new residential and loading bay entrance. RATIONALE: - SEEK PARKS BOARD APPROVAL TO REMOVE THIS TREE DUE TO DIRECT CONFLICT WITH PROPOSED NEW DRIVEWAY CROSSING, CURB REALIGNMENT AND ROAD IMPROVMENTS.	G	5	3.4	REMOVE		
S009		CITY	1	Horsechestnut (Aesculus hippocastanum)	6	6	6	Y	5	2	60	o		F	0.4	0.4	PROTECT	1.5	2.0



The Client and their Contractor(s) are responsible to maintain the tree protection compliance through the entire construction term, and to arrange attendance of the PA to the site prior to and during certain work activities, generally as follows:

- A. Barrier Installation:**
To direct and inspect the tree protection barrier installation to our specifications and provide a barrier sign-off report.
- B. Pre-Treatment of Trees:**
To undertake or direct tree treatments (i.e. pruning, enhancements to the growing site, interim watering program and special measures) to prepare the trees and assist them in sustaining and adapting to the rigours of reconstruction.
- C. Pre-Construction:**
To meet with the contractor in advance of any mobilization to the site to plan our on-site assistance to direct/supervise pre-construction works in and around TPZ's, such as but not limited to:
- site access and egress and installation of temporary power, site hoarding, site office or other infrastructure,
 - service and utility decommissioning,
 - demolition of structures or hardscapes,
 - installation of ESC or stormwater management infrastructure,
 - invasive plant controls, treatments or management,
 - site clearing and tree removal including identification of retention trees and direction of low impact removal of trees, vegetation and stumps within the TPZ's as well as to reinspect retained trees after clearing for condition,
 - preloading or site grading (as applicable), and
 - installation of site hoarding, site office and temporary power.
- D. Construction Phase:**
To attend and assist with specific activities within or in close proximity of a TPZ to review design details that the Client deems may present conflicts with a TPZ, to assist in resolving project constructability challenges, to direct or undertake low impact methods of certain planned works, to implement the use of low impact materials, and/or to perform root pruning and to direct tree and root protection, concurrent with the following:
- on a regular monthly schedule or at an interval determined by the PA relative to the construction progress and activities,
 - at any time when access within a CRZ, RPZ or CPZ is planned or executed,
 - site grading (cuts or fills),
 - excavations,
 - trenching or overhead works related to services and utility installation,
 - forming and concrete placing,
 - scaffolding, craning or manlift operation,
 - framing and building envelope finishing,
 - all landscape works (see below), and
 - at certain times as identified in the Special Measures section (see below).
- E. PRIOR TO REMOVING BARRIERS – Landscape Finishing:**
To review landscape drawings and subcontractor work plan including TPZ related limitations on methods and materials in advance of commencing those works and to provide on-site direction and guidance for the associated preparation works and construction of PA approved hardscape and soft landscape elements including but not limited to:
- sidewalks/paths,
 - patios/decks/benches,
 - retaining walls,
 - fencing,
 - irrigation/electrical conduit
 - soil placement/plantings and grass/turf installation.

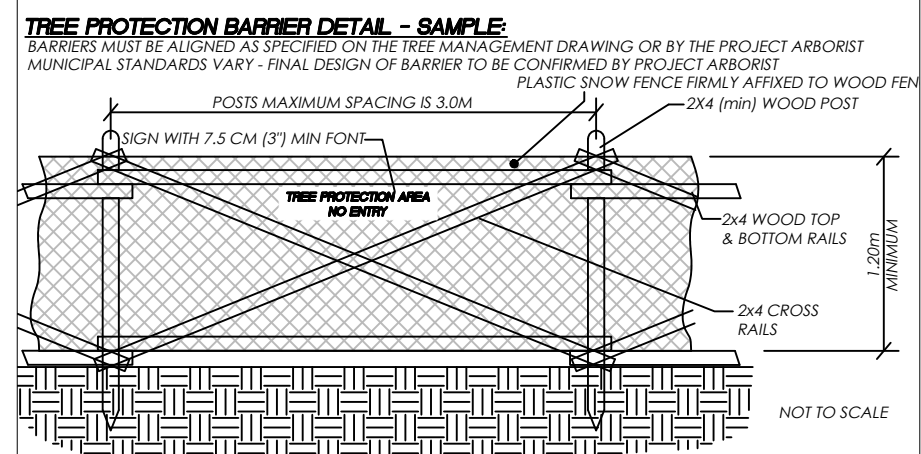
Note that certain landscape features may be excluded, may require an arboricultural aeration system, or will be limited to specific materials and methods that meet tree and root protection requirements. Planting of any plants, shrubs or hedges within a TPZ is restricted to small pot sizes such as "4 inch" and "#1", but these may vary depending on tree species and proximity to the tree. The "pocket planting" standards will apply via minimizing planting hole size, limited digging into existing grade to avoid damage to woody roots, and backfilled with minimal addition of growing medium.

- F. Documentation:**
To provide site review reports at certain milestones issued to; the owner/developer, the general contractor and the prime consultant, during the construction phase. Note that if non-compliance is observed, the PA is required by the city to report the non-compliance to them in the form of an impact and mitigation assessment which may require investigative work by the PA. A final sign off at substantial completion of the project is required.

TREE PROTECTION – SPECIFIC MEASURES:

The following items within a TPZ require PA direction, treatment or supervision/monitoring. See the Tree Management Drawing for additional references to locations where special measures are required.

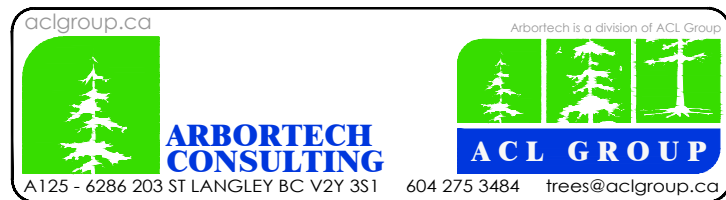
- 1. Tree Removal or Land Clearing Operations:**
The tree removals, land clearing and/or stump removals within or in close proximity to a TP2 require on-site supervision and direction to ensure that the contractor implements low impacts methods for those operations, and to ensure retained trees are protected adequately.
- 2. Demolition:**
The removal of existing structures and hard landscape features within or in close proximity to a TP2 require on-site supervision and direction to ensure that the contractor implements low impacts methods for those operations, and to ensure retained trees are protected adequately.
- 3. STREET TREE #'s S003, and S009 – Sidewalk and Road Frontage Works:**
 - Root protection zones extend below existing hardscapes adjacent to street trees and all restrictions and limitations for tree protection are applicable in those zones. However, street tree protection barriers cannot impede vehicular and pedestrian uses and are to be installed as follows:
 - a. In the case of sidewalk planters or grates, at edges of the planter/hardscape, hardscape zones adjacent to the barriers are to remain intact and/or subject to limitations on treatments as per below.
 - b. In the case of soft landscape planting strips or boulevards, at setbacks as dimensioned and at an offset 0.6m from curb and 0.3m from sidewalk edge.
 - Restrictions on disturbance within and access to these soft landscape zones and hardscapes within the dipline extents are to remain compliant with the tree protection restrictions and limitations noted herein.
 - Any site hearings, including any tree preservation or pedestrian protection measures and other works planned within the road frontage areas will require consideration of the protection of roots and crowns of the street trees.
 - Any pruning of the street trees that may be required for the project will be limited in scope to be compliant with ANSI A300 standards. All pruning requests should be coordinated with the project arborist who will provide guidance to the project team and also liaise with the park board arborist. Pruning is to be performed by park board crews at the developers cost (or as otherwise directed by park board).
 - If city sidewalks or road infrastructure are proposed to be renovated, realigned, removed and/or replaced, low impact methods are required relative to street tree protection. Project arborist to be consulted to review the design and in advance of undertaking those works so that we can provide an impact and mitigation assessment, advise on root protection, plan root pruning or other treatments, and liaise with the city park board arborist for approvals of the work plan. Additional measures for tree protection (crown, soil and roots) will be specified by the project arborist and must be implemented before demolition or removal of sidewalk or curbs is permitted.
 - Alignments for underground service connections should be designed such that the construction can avoid conflict with the tree protection zones to the fullest extent possible. If services or utilities are required to pass through a RZP or WSS, then low impact methods as required by the project arborist must be implemented.
 - If tree protection measures for street trees cannot be adequately implemented, approval for removal will be at the discretion of the city (via park board) and subject to compensation and other fees to be paid by the developer to the city, amounts to be determined by park board.



DRAWING USE AND COORDINATION

- [illegible]

**ISSUED FOR DP APPLICATION PURPOSES
TREE ASSESSMENT AND MANAGEMENT DRAWINGS**



PROJECT:	PROPOSED REDEVELOPMENT		
ADDRESS:	1780 EAST BROADWAY VANCOUVER		
CLIENT:	WESTBANK		
CITY REF:		ACL FILE:	17130
PLOT SIZE:	22"x34"	REV #:	2 DATE: JULY 12, 2023

APPENDIX D: TREE PROTECTION SPECIFICATIONS

1. REFERENCE DOCUMENTS AND CONTACT INFORMATION:

A component of the reference documents includes a Letter of Assurance (LOA) or Letter of Undertaking (LOU) to meet city requirements for arborist supervision during site works, with a mandatory requirement for the owner and their contractor(s) to comply with tree protection measures and specifications. For clarifications and coordination regarding tree protection, please contact this office, acting as **Project Arborist (PA)** for this project:

ARBORTECH CONSULTING (a division of ACL Group) PHONE: 604 275 3484 EMAIL: trees@aclgroup.ca

The following should be read in conjunction with the rest of the reference documents in the most current version of the **Tree Management Report, Drawing, Construction Impact Assessment or other Documents** prepared by this office.

2. TREE PROTECTION PROTOCOLS FOR DESIGN, CONTRACT MANAGEMENT AND CONSTRUCTION MANAGEMENT:

All project consultants must remain updated with the current tree protection specifications as they may be revised from time to time. If project consultant drawings and designs are revised they should be forwarded to this office for review by the PA. Tendering, IFC drawings (architectural, civil, landscape, mechanical, geo-technical, etc.) and construction work plans for all phases of construction (i.e. enabling works, general access/egress, site office, hoarding installation, demolition, ESC, and all site works) should be planned and implemented in accordance with the tree protection specifications herein and as per the reference documents. Any areas or trees that are not identified in these documents and/or where potential conflicts with the TPZ's are identified by the Client will require additional review by the PA in advance of proceeding with those works.

3. TREE LOCATIONS:

Tree locations and other data presented on the tree management drawing (see Appendix C of the reference document) are derived from the project topographical survey. The locations of trees that are not surveyed (if any) may be approximated by the project arborist. Non-surveyed retained or protected trees should be accurately located before any design or construction activity is planned in their proximity.

4. TREE PROTECTION BARRIERS:

Temporary tree protection barriers (fences) must be erected for retained and protected trees as specified on our drawing or adjusted to suit field conditions as approved by the PA. The PA should direct the installation of the barriers to troubleshoot. The PA must inspect and provide a sign off report to meet LOU/LOA specifications (and is required by city where applicable). Where interim barriers are specified, the contractor should be prepared to realign the barrier when and as directed by the PA conditional to certain measures and treatments prescribed by the PA. Where the barrier is aligned with a property line or a proposed design element, the project may require a survey to stake those reference items in advance to enable accurate barrier installation. Signs stating "TREE PROTECTION ZONE - NO ENTRY" must be placed on the tree protection fence at a suitable frequency and as directed by the PA. The contractor, sub-contractors and trades should all be made aware of the tree protection zone restrictions (see below). The barriers must be maintained in good condition at those alignments, and may not be removed or realigned for any reason (including access for workers and especially for landscaping phase), except when prior approval from the PA is obtained.

5. TREE TREATMENT, ENHANCEMENT AND SPECIAL MEASURES:

Prior to or during the course of construction the project is responsible to complete or enable enhancement or remedial tree treatments, and proactive tree protection measures for retained and protected trees that may be specified by the PA from time to time, such as:

- Pruning for risk mitigation, crown restoration, form, building or overhead clearance, and/or sight lines,
- Pre-treatments such as root mapping, vertical aeration, advance root pruning, conversion to soft landscape, etc,
- Installation of soil amender (i.e. mulch) within the **RPZ** to mitigate soil desiccation and to improve soil fertility,
- Interim supplemental watering to compensate for soil hydrology changes,
- Low impact removal of plants or stumps located within a **TPZ** (i.e. stump grinding or cutting with PA supervision),
- Installation of drainage infrastructure along the perimeter of the TPZ to prevent storm water accumulation within,
- Windfirming treatments of new forest edges created by clearing of the development lands, including; re-assessment, tree removals, pruning, modification to wildlife tree, or other treatments as specified by the PA, and
- Installation of interim soil protection and load distribution measures for personnel or equipment access, where feasible.

Note that any PA authorized tree pruning will require on-site direction from the PA and must be completed by a tree service firm employing Arborists who are ISA Certified and TRAQ Qualified in compliance with ANSI A300 and ANSI Z133 Standards. Pruning to reduce the height or size of retained trees (topping or heading) and pruning to excessively raise the crown of a tree CANNOT be undertaken. Pruning of any city, shared or neighbour trees requires consent from tree owner.

6. RESTRICTIONS WITHIN TREE PROTECTION ZONES:

Retained and protected trees must have measures in place to prevent damage being incurred to those trees from site works during all phases of the project. Any access within a TPZ requires advance approval and on-site direction/supervision by the PA, and implementation of measures to be specified by the PA. Except where permitted by the PA, and conditional to certain measures being implement the project shall ensure that there is:

- No soil disturbance of any scope or to any depth, including; over-excavation for working space to construct a design element, cuts or fills for grade transitions, trenches for services/utilities, excavation of any scope including overburden stripping and

- deeper excavations (i.e. buildings, retaining walls, sidewalks, patios, planting holes for new trees or plants, etc),
- No passage or operation of equipment, machinery, trucks, vehicles of any size or type (whether on tracks or tires),
- No storage of materials, soil, gravel, construction supplies, materials, excavation spoil, waste, etc.,
- No accumulation of storm water or standing water conditions,
- No waste or washing of concrete, stucco, drywall, paint, or other chemicals or materials that are deleterious to soil or roots,
- No placement of temporary structures, services or utilities,
- No affixing lights, signs, cables or any other devices to tree parts (i.e. trunk or branches),
- No pruning or cutting of any part of a retained tree,
- No landscape finishing, except certain planned landscape works that have prior approval and scheduled supervision by the PA.

7. DEMOLITION OR PRE-CONSTRUCTION OPERATIONS:

Municipalities vary in whether they will approve tree removals at the demolition phase. In cases where a tree removal or cutting permit is not issued in conjunction with the demolition or other pre-construction site works, there may be a need to obtain an early tree permit to remove risk trees from pre-existing defects or that will be made high risk from unavoidable demolition impacts. Certain areas of work may require low impact methods of work by the contractor. Tree protection barriers may also need to be realigned after those works. The contractor must coordinate with the PA to review, plan and direct those works accordingly.

8. TREE REMOVAL/CLEARING OPERATIONS:

Tree removal or cutting permits (where applicable) including tree owner consent for city or neighbour trees, must be issued before commencing tree removal or clearing works. A copy of these documents must be provided to the PA for our review and reference. A pre-work meeting with the PA is strongly recommended to review their work plan, mark/identify retained trees, identify removal trees requiring low impact methods or measures, and to ensure contractor compliance with the tree protection specifications. Note that certain trees requiring removal may not be shown or referenced on the drawing or documents prepared by this office (i.e. undersize or non-bylaw trees or untagged trees assessed in groups in our documentation). For the removal of any trees that are located in proximity of overhead power lines, the contractor is required to retain a Certified Utility Arborist (CUA) to determine appropriate measures from the utility company.

9. CONSTRUCTION OPERATIONS:

The contractor (project manager/site superintendent and/or other key personnel) should be apprised of the LOA/LOU, and are encouraged to schedule a tree protection specific pre-construction meeting with the PA to; review IFC drawings, establish communication and procedural protocols, review responsibilities for tree protection measures at specific milestones of the project and identify and resolve any anticipated tree protection related constructability challenges. While we strive to be as comprehensive as possible in our tree protection planning, it is acknowledged that certain unpredictable construction conflicts with a TPZ may arise. Any proposed encroachment into a TPZ and/or changes to the tree retention scheme are subject to approval in advance by the PA and the municipality (where applicable). Certain measures required for tree protection compliance related to construction work in the **CPZ** or within an **RPZ** may be required in order to accommodate PA accepted and managed encroachments into a **TPZ**, such as but not limited to:

- Undertaking root mapping by the PA,
- Armouring the soil within the **RPZ** to accommodate temporary worker or equipment passage,
- Utilizing low impact trenching via air-vac or hydro-vac with air spade assistance, by the PA or with PA supervision, to accommodate underground services or utilities. Feasibility of these measures is limited based on PA review of; the intended scope of work, duration of encroachment, type of equipment or access, proximity to a tree, scope of pruning that may be necessary, width/depth of trenching and related shoring needs, tree species, site/soil conditions and other factors.

10. LANDSCAPING OPERATIONS:

A pre-landscape meeting between the landscape contractor and the PA is required to review their work plan relative to retained/protected trees in advance of the removal of the tree barriers. The operation of equipment of any size or type, the placement of growing medium, all grading and site preparation for permitted hard landscape features within a TPZ (i.e. sidewalks and patios), site preparation for retaining walls and footings, excavation for fences, signs and other landscape features, digging of planting holes for new plants and trees, the digging of trenches for irrigation, drainage and lighting infrastructure, and the placement of soft landscape finishing, are all activities that have high potential for causing damage to trees, roots or soil. Advance of PA attendance concurrent with certain activities, are necessary in order to avoid tree protection non-compliance and bylaw issues.



APPENDIX E: LETTER OF ASSURANCE

PROOF OF CONTRACT FOR ARBORIST ASSISTANCE DURING CONSTRUCTION

ISSUANCE DATE: **July 12, 2023**

ACL FILE: **17130**

ISSUED TO: **Jacqueline Garvin - Westbank**

SUBJECT SITE: **1780 East Broadway, Vancouver**
Proposed Re-Development

REF DOC.'S: **Arborist Report (including all appendices) prepared by this office (most current version)**

Pursuant to city bylaws and/or policies; a duly executed copy of this Letter of Assurance (LOA) serves as confirmation that ACL Group Enterprises Ltd (the "Consultant"), is retained under contract to the **Owner** (the "Client") as **Project Arborists** (the "PA") to provide arboricultural consulting and field services for the duration of the site preparation and construction phase at the above noted project to assist the Client in remaining compliant with the tree protection requirements.

By signing below, the owner and their prime or general contractor agree to the responsibilities associated with fully implementing the Tree Protection Zones (TPZ) and related restrictions and measures, and to;

- furnish this office with IFC drawings and the construction logistics plan for pre-mobilization review,
- notify the PA of any mobilizations to the site with a minimum of two weeks advance notice,
- notify the PA in advance of any potential tree protection conflicts with construction work to resolve those proactively,
- ensure that the PA is provided 3 business days advance notice for attendance by the PA at required times,
- comply with any PA directed/supervised adjustments to the construction work, including implementing the use of low impact materials and methods, and conformance with arboricultural standards and best management practices,
- facilitate any remedial work or treatments that may be prescribed or required by the PA or the city,
- pay all costs associated with tree protection compliance measures or treatments, including any non-compliance penalties and remediation treatments required thereof,
- schedule an inspection by the PA at substantial completion of the project to enable final signoff of tree protection compliance (required for final or occupation permits to be issued by city and for tree protection bond release), and
- pay all fees of the Consultant at our current hourly rates, including portal to portal travel, on net 30 terms;

	<i>Owner:</i>	<i>Prime or General Contractor:</i>	<i>Project Arborist:</i>
Authorized Signature:			
Date Signed:			July 12, 2023
Name:			Nick McMahon
Company:			ACL Group
Phone:			General: 604-275-3484 ext 101
Email:			General: trees@aclgroup.ca

TREE PROTECTION – STANDARD SUPERVISION REQUIREMENTS:

The Client and their Contractor(s) are responsible to maintain the tree protection compliance through the entire construction term, and to arrange attendance of the PA to the site prior to and during certain work activities, generally as follows:



A. Barrier Installation:

To direct and inspect the tree protection barrier installation to our specifications and provide a barrier sign-off report.

B. Pre-Treatment of Trees:

To undertake or direct tree treatments (i.e. pruning, enhancements to the growing site, interim watering program and special measures) to prepare the trees and assist them in sustaining and adapting to the rigours of construction.

C. Pre-Construction:

To meet with the contractor in advance of any mobilization to the site to plan our on-site assistance to direct/supervise pre-construction works in and around TPZ's, such as but not limited to:

- site access and egress and installation of temporary power, site hoarding, site office or other infrastructure,
- service and utility decommissioning,
- demolition of structures or hardscapes,
- installation of ESC or stormwater management infrastructure,
- invasive plant controls, treatments or management,
- site clearing and tree removal including identification of retention trees and direction of low impact removal of trees, vegetation and stumps within the TPZ's as well as to reinspect retained trees after clearing for condition,
- preloading or site grading (as applicable), and
- installation of site hoarding, site office and temporary power.

D. Construction Phase:

To attend and assist with specific activities within or in close proximity of a TPZ to review design details that the Client deems may present conflicts with a TPZ, to assist in resolving project constructability challenges, to direct or undertake low impact methods of certain planned works, to implement the use of low impact materials, and/or to perform root pruning and to direct tree and root protection, concurrent with the following:

- on a regular monthly schedule or at an interval determined by the PA relative to the construction progress and activities,
- at any time when access within a CRZ, RPZ or CPZ is planned or executed,
- site grading (cuts or fills),
- excavations,
- trenching or overhead works related to services and utility installation,
- forming and concrete placing,
- scaffolding, craning or manlift operation,
- framing and building envelope finishing,
- all landscape works (see below), and
- at certain times as identified in the Special Measures section (see below).

E. PRIOR TO REMOVING BARRIERS – Landscape Finishing:

To review landscape drawings and subcontractor work plan including TPZ related limitations on methods and materials in advance of commencing those works and to provide on-site direction and guidance for the associated preparation works and construction of PA approved hardscape and soft landscape elements including but not limited to:

- sidewalks/paths,
- patios/decks/benches,
- retaining walls,
- fencing,
- irrigation/electrical conduit
- soil placement/plantings and grass/turf installation.

Note that certain landscape features may be excluded, may require an arboricultural aeration system, or will be limited to specific materials and methods that meet tree and root protection requirements. Planting of any plants, shrubs or hedges within a TPZ is restricted to small pot sizes such as "4 inch" and "#1", but these may vary depending on tree species and proximity to the tree. The "pocket planting" standards will apply via minimizing planting hole size, limited digging into existing grade to avoid damage to woody roots, and backfilled with minimal addition of growing medium.

F. Documentation:

To provide site review reports at certain milestones issued to; the owner/developer, the general contractor and the prime consultant, during the construction phase. Note that if non-compliance is observed, the PA is required by the city to report the non-compliance to them in the form of an impact and mitigation assessment which may require investigative work by the PA. A final sign off at substantial completion of the project is required.

TREE PROTECTION – SPECIFIC MEASURES:

The following items within a TPZ require PA direction, treatment or supervision/monitoring. See the Tree Management Drawing for additional references to locations where special measures are required.



1. Tree Removal or Land Clearing Operations:

The tree removals, land clearing and/or stump removals within or in close proximity to a TPZ require on-site supervision and direction to ensure that the contractor implements low impacts methods for those operations, and to ensure retained trees are protected adequately.

2. Demolition:

The removal of existing structures and hard landscape features within or in close proximity to a TPZ require on-site supervision and direction to ensure that the contractor implements low impacts methods for those operations, and to ensure retained trees are protected adequately.

3. STREET TREE #'s S003, and S009 – Sidewalk and Road Frontage Works:

- Root protection zones extend below existing hardscapes adjacent to street trees and all restrictions and limitations for tree protection are applicable in those zones. However, street tree protection barriers cannot impede vehicular and pedestrian uses and are to be aligned;
 - a** - In the case of sidewalk planters or grates, at edges of the planter/hardscape, hardscape zones adjacent to the barriers are to remain intact and/or subject to limitations on treatments as per below.
 - b** - In the case of soft landscape planting strips or boulevards, at setbacks as dimensioned and at an offset 0.6m from curb and 0.3m from sidewalk edge.
- Restrictions on disturbance within and access to these soft landscape zones and hardscapes within the dripline extents are to remain compliant with the tree protection restrictions and limitations noted herein.
- Any site hoarding, site office, temporary pedestrian protection measures and other works planned within the road frontage areas will require consideration of the protection of roots and crowns of the street trees.
- Any pruning of the street trees that may be required for the project will be limited in scope to be compliant with ANSI A300 standards. All pruning requests should be coordinated with the project arborist who will provide guidance to the project team and also liaise with the park board arborist. Pruning is to be performed by park board crews at the developer's cost (or as otherwise directed by park board).
- If city sidewalks or road infrastructure are proposed to be renovated, realigned, removed and/or replaced, low impact methods are required relative to street tree protection. Project arborist to be consulted to review the design and in advance of undertaking those works so that we can provide an impact and mitigation assessment, advise on root protection, plan root pruning or other treatments, and liaise with the city park board arborist for approvals of the work plan. Additional measures for tree protection (crown, soil and roots) will be specified by the project arborist and must be implemented before demolition or removal of sidewalk or curbs is permitted.
- Alignments for underground service connections should be designed such that the construction can avoid conflict with the tree protection zones to the fullest extent possible. If services or utilities are required to pass through a RPZ or WSS, then low impact methods prescribed by the project arborist must be implemented.
- If tree protection measures for street trees cannot be adequately implemented, approval for removal will be at the discretion of the city (via park board) and subject to compensation and other fees to be paid by the developer to the city, amounts to be determined by park board.