ACL GROUP ARBORTECH CONSULTING

TREE MANAGEMENT REPORT FOR DEVELOPMENT APPLICATION PURPOSES

Date: **July 23, 2019** **Rev 0:** ACL File: **19196**

To: **Winter Blossum Holdings Ltd**
c/o Harrison Han – Nexst Properties
200 – 3466 W Broadway
Vancouver, BC V6R 2B3

Prepared by: **Norman Hol**
Senior Consulting Arborist

Project: **Proposed Development**
57 Lakewood Dr Vancouver BC

BACKGROUND

Our site investigation was performed on July 10, 2019. Reference documents provided by the client include; ***Tree Location and Topographic Survey*** and the current ***Architectural Site Plan***. Further revisions of this report and appendices may be forthcoming once service connection and other details are made available as the project advances through the city application process. We have undertaken a ground based visual assessment of the existing trees including; measuring the size (trunk diameter, height and spread), rating the current health and structural condition, as well as identifying the; species, age class, structural class, indicators of the presence/absence of tree disease, role in the landscape/habitat/ecology, general topography, general soil/drainage and other relevant tree or site factors. We analyzed our findings to determine the viability and value of the trees, and to establish priority rankings for preservation consideration in context to the proposed land use. The available project designs and details were carefully reviewed with consideration of the tree location relative to proposed construction of facilities and infrastructure in order to determine the direct and indirect construction impacts expected to be incurred by the trees to develop a mitigation plan. These documents are prepared in context to municipal tree bylaw and other regulations to detail the tree preservation and protection strategy for the project. This report is not intended as a tree failure risk analysis, however the structural form and presence and severity of defects were factors in our assessment.

TREE PRESERVATION FINDINGS

The site is currently occupied by a commercial building and parking area and fully covered with hardscape or buildings. No on-site trees of bylaw size were observed within the subject site, nor were any trees found within influencing distance of the project on neighbouring private property.

Summary of Treatment of Trees within City Frontages:

Protect City trees as follows:

- Protect 4 City Trees, Tag/ID's: C01, C02, C03 and C04

Seek approval from the City to remove city frontage trees due to conflict with construction:

- Proposed remove of 4 Trees, Tag/ID's: C05, C06, C07 and C08

NOTE:

Any city tree specified for removal will require explicit consent from the city, and may require specific measures such as but not limited; payment of compensation to the city, approval of replacement tree design and specifications, an approved contractor to perform the removals, and/or other restrictions or limitations that the city may specify.

TREE REMOVAL METHODS:

The methods of cutting, rigging and removal of trees should conform to ANSI A300 and ANSI Z133 standards and best management practices, as well as WorksafeBC regulations as applicable. In the case of commercial land clearing operations the felling/handling of removal trees is required to be in conformance with other applicable regulations. Recovery and transport of any timber from any site will require that the land owner obtain a Timber Mark from the local BC Forest office in advance of transportation from the site.

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

Removals of approved trees from within adjacent private property may require the expertise of a qualified tree service contractor. Specific access arrangements from that neighbour will be required. We recommend that the stumps be left intact and the debris be removed and disposed. If stumps are requested to be removed, stump grinding or extraction by machinery with root pruning and other tactics may be considered. The project arborist can provide additional advice in this regard on a tree by tree basis upon request.

Removal of trees from within an Environmental Protection Area (EPA) will have specific details determined as a field measure prior-to and in conjunction with the tree removal and/or land clearing operations. In general, removal trees will be left cut to a height and modified as specified by the project arborist in consultation with the Qualified Environmental Professional (QEP) so that it can function as habitat (wildlife tree). Coarse woody debris (CWD) available from the tree removal debris will be left within the EPA in lengths that enable the logs and sections to lie flat on the ground and in contact with the soil, and/or as directed by the project arborist and QEP.

TREE PROTECTION PRESCRIPTION

Our specified ***Tree Protection Zone*** **(TPZ)** consists of 3 main components;

- ***Crown Protection Zone*** (**CPZ**): the dripline is the furthest extent of branches and foliage projected to the ground below, and is a zone where aerial encroachment is not desirable. Buildings should be set back from the CPZ sufficiently to allow working space to; install the envelope/glazing, undertake future maintenance, and to accommodate future growth of the crown as the tree matures. Any encroachments (i.e. for building encroachments, machinery or equipment operation, pedestrian or vehicle access, operation of cranes or lifts etc) may affect viability for tree retention and will require an impact assessment by the project arborist to determine feasibility and to specify mitigation measures as necessary.
- ***Root Protection Zone*** (**RPZ**): a setback prescribed by the project arborist representing the closest proximities of soil and root disturbance toward a tree that are deemed manageable and tolerable based on site and tree factors, and conditional to mitigation measures and compensatory treatment that may be specified. Minor encroachments may be possible but such encroachments would require a detailed analysis by the project arborist.
- ***Working Space Setback*** (**WSS:** a setback outside of the RPZ as specified by the project arborist where soil and root disturbances may occur (i.e. for excavation or site preparation), conditional to the on-site supervision and direction by the project arborist, implementation of mitigation measures and undertaking of certain best management practices and treatments (i.e. root pruning).

All dimensions and protection setbacks are relative to the center of the tree trunk where it emerges from the ground in accordance with arboricultural best management practices and the practices of other design team professionals.

It is incumbent on the client and/or the design consultants to keep this office apprised of any revisions or additional details that may impact the tree preservation scheme and protection zones presented herein so that we can keep our documentation up to date with the most current project design.

The tree protection measures and treatments will require coordination and cooperation with the general contractor and/or their subcontractors or trades, and may also require that they undertake certain work to remain in compliance. Refer to Tree Management Drawing (Appendix C), Tree Protection Specifications (Appendix D) and Letter of Undertaking (Appendix E) for details. The owner is required to seek guidance and/or arrange on-site field services or supervision by the project arborist from this office, as specified on those documents.

It is important to include our report and appendices in the tendering for reference by the proponents. Prior to construction, the applicable Issued for Construction (IFC) drawings should be forwarded to this office, and a pre-con meeting between the project arborist, the general contractor and relevant subcontractors to review the tree protection specifications, treatments and other measures.

TREE REPLACEMENT

Tree replacement requirements will be confirmed by the municipality in relation to their policies. Design and specifications for the replacement trees will be provided by the project landscape architect.

Respectfully;



Norman Hol, Senior Consulting Arborist

ISA Certified Arborist #PN-0730A
ISA Qualified Tree Risk Assessor (TRAQ)
PNWISA Certified Tree Risk Assessor #0076
BC Certified Wildlife and Danger Tree Assessor #P2529
Land Surveying Technologist

APPENDICES;
APPENDIX A – PHOTOS
APPENDIX B – TREE INVENORY LIST
APPENDIX C – TREE MANAGEMENT DRAWING
APPENDIX D – TREE PROTECTION ZONE SPECIFICATIONS
APPENDIX E – LETTER OF UNDERTAKING (LETTER OF ASSURANCE)

Assumptions and Limiting Conditions:

This report was prepared for and on the behalf of the client as addressed herein. Upon receipt of payment of our account in full, this report will become the property of the client. This report is intended for the exclusive use of our client, but in its entirety. Arbortech Consulting 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.

The inner tissue of the trunk, limbs and roots, as well as the majority of the root systems of trees are hidden within the tree and below ground and trees have adaptive growth strategies that can effectively mask defects. Our assessment is limited by relying on presence or absence of outward signs or symptoms of defect and non-destructive testing to identify the severity of defects that may be indicators of structural deficiencies. We use our training, experience and judgement in this regard, however not all defects can be diagnosed through available methods. It may not be feasible to identify certain defects, or to measure the severity, without causing mortal injury to the tree. Further, we must acknowledge that extreme weather and environmental influences are unpredictable, and that any tree has risk of failure in such events. We do not guarantee or warrant that a tree that we have assessed 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. This determination may require the advice from a duly qualified professional surveyor.

Third party information provided to the consultant may have been relied upon in the formation of the opinion of the consultant in the preparation of this report, and that information is assumed to be true and correct. We have not verified that information, and we do not warrant it as correct.

The use of maps, sketches, photographs and diagrams are intended only as a reference for the readers' use in understanding the contents and findings of this report, and are not intended as a representation of fact.

Approvals from a municipality and/or regulatory agency may be required prior to carrying out treatments that may be recommended in this report. The owner or client is responsible to make application for, pay related fees and costs, and meet all requirements and conditions for the issuance of such permits, approvals or authorizations.

APPENDIX A: TREE PHOTOS

Tree #'s C01 to C04



Tree #'s C05 to C06



Undersize Japanese maple at Southeast Corner



Hedges at Southwest Corner



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TREE INVENTORY LIST: (all dimensions are metric)

Tag/ID denotes the serial numbered aluminum tag affixed to the tree or a reference ID as referenced in report and on tree management drawing.

Loc based on project plans provided; **ON** (on site), **SHARED** (straddling PL), **OFF** (off site private), **CITY** (road frontage), **EPA** (environmental protection areas to be conveyed), **PARK** (off-site city lands)

Survey denotes whether tree is shown on the tree and topogrpahic survey provided by client (Y/N).

Dbh denotes the trunk diameter in cm at 1.4 m above grade or to arboricultural standards (i.e. below scaff union). The dbh may be estimated or derived from survey data.

Multiple stems; attached above the root crown used trunk area method for equivalent single stem dbh; attached below the root crown references the largest stem.

Ht denotes the height of the tree in metres as measured or estimated by the assessor.

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

Condition represents the **Health** and **Structural** characteristics as observed by arborist. **VP** denotes Very Poor, **P** denotes Poor, **F** denotes Fair, **G** denotes Good

Value rating considers **Condition** and **Contribution** to the proposed land use; **VL** denotes Very Low. **L** denotes Low. **M** denotes Medium, **H** denotes High. **VH** denotes Very High

Priority denotes a preservation ranking for consideration in tree retention planning, as a product multiple factors including condition, value rating, age, species, etc.

Priority rankings; **1, 2** and **NIL. NOTE;** the **S** prefix denotes stand tree suitable for retention only with special measures and in grove/stand form.

Individual trees ; from forest stands are generally deemed Nil priority in selective retention withinin active development areas except when sufficiently large stands are protected.

Assessment Findings include our summary of overt defects, noteworthy growing condition factors, preservation and protection considerations and rationale (when applicable).

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

CPZ and **RPZ;** arborist setbacks for Crown and Root protection (from centre of trunk). CPZ, RPZ plus **WSS** (working space setback - see App C) form the tree protection zone (**TPZ**).

Tag/ID	# of Trees	Loc	Survey	Bylaw Y/N	Common name, (*Botanical*)	Dbh (cm)	Ht (m)	Spr (m)	LCR (%)	Class	Condition	Value	Priority	Assessment Findings:	ACTION	CPZ (m)	RPZ (m)
C01	1	CITY	Y	Y	Armstrong maple (Acer rubrum 'Armstrong')	**30**	9	2.0	90	0	VH	VH	**N/A**	• No significant defects observed. RATIONALE: CITY TREE	**PROTECT**	2.0	
C02	1	CITY	Y	Y	Armstrong maple (Acer rubrum 'Armstrong')	**24**	9	2.0	90	0	VH	VH	**N/A**	• No significant defects observed. RATIONALE: CITY TREE	**PROTECT**	2.0	
C03	1	CITY	Y	Y	Armstrong maple (Acer rubrum 'Armstrong')	**26**	9	2.0	90	0	VH	VH	**N/A**	• No significant defects observed. RATIONALE: CITY TREE	**PROTECT**	2.0	
C04	1	CITY	Y	Y	Armstrong maple (Acer rubrum 'Armstrong')	**25**	9	2.0	90	0	VH	VH	**N/A**	• No significant defects observed. RATIONALE: CITY TREE	**PROTECT**	2.0	

Tag/ID	# of Trees	Loc	Survey	Bylaw Y/N	Common name, (*Botanical*)	Dbh (cm)	Ht (m)	Spr (m)	LCR (%)	Class	Condition	Value	Priority	Assessment Findings:	ACTION	CPZ (m)	RPZ (m)
C05	1	CITY	N	Y	Red maple (Acer rubrum)	**7**	4	1.5	75	0	H	H	**N/A**	• No significant defects observed. • The tree is growing in an elevatedplanter above the existing sidewalk that is situated continuously along the frontage of the property. • The proposed commerical use of the site and the expanded sidewalk frontage that is normally associated with this land use will be impeded by this planter and it is proposed that these trees are cut and removed to accommdoate the new frontage improvements. RATIONALE: CONFLICT WITH SIDEWAKL AND GRADING IN COMMERICAL RETAIN FRONTAGE	**REMOVE**		
C06	1	CITY	N	Y	Red maple (Acer rubrum)	**8**	5	2.0	75	0	H	H	**N/A**	• No significant defects observed. • Site conditions and imapcts from the project are as per tree C05. RATIONALE: CONFLICT WITH SIDEWAKL AND GRADING IN COMMERICAL RETAIN FRONTAGE	**REMOVE**		
C07	1	CITY	N	Y	Red maple (Acer rubrum)	**5**	4	1.5	75	0	H	H	**N/A**	• No significant defects observed. • Site conditions and imapcts from the project are as per tree C05. RATIONALE: CONFLICT WITH SIDEWAKL AND GRADING IN COMMERICAL RETAIN FRONTAGE	**REMOVE**		
C08	1	CITY	N	Y	Red maple (Acer rubrum)	**11**	6	2.5	75	0	H	H	**N/A**	• No significant defects observed. • Site conditions and imapcts from the project are as per tree C05. RATIONALE: CONFLICT WITH SIDEWAKL AND GRADING IN COMMERICAL RETAIN FRONTAGE	**REMOVE**		

DUNDAS STREET

TROLLY POLE

TROLLY POLE

TROLLY POLE

LAMP

TRAFFIC LIGHT

CONCRETE SIDEWALK

COMMERCIAL ENTRANCE

COMMERCIAL ENTRANCE

COMMERCIAL ENTRANCE

COMMERCIAL ENTRANCE

C08 1.6m [5.4ft] approx

C07 approx

C06 approx

C05 approx

5.6% SLOPE

197.81

90° 29' 45"

90° 29' 45"

197.81

90° 13' 42"

89° 47' 14"

Building corner is 0.12 on Dundas Street.

Building corner is 0.28 clear of Dundas Street and 1.47 clear Lakewood Drive.

ROOF OVER LEVEL 4

Overhang

6.35

ROOF TERRACE BELOW

ROOF TOP

3 Storey Building

7.6% SLOPE

7.2% SLOPE

LOT AREA:

21,373 square feet

Grass

Loading Dock

Top of Loading Dock=53.0

Bottom of Loading Dock=51.0

Building corner is to line with Lane.

Building corner is 0.18 clear of Lakewood Drive.

REMOVE cedar hedge

REMOVE cedar hedge

REMOVE 8cmØJapanese maple

90° 12' 41"

4.5% SLOPE

197.84

90° 29' 54"

COMMERCIAL & RESIDENTIAL PARKING ENTRANCE

COMMERCIAL LOADING

SPEED BUMP

(FULLY PAVED)

LANE

EXIST HYDR

SIGN POST

0.3m [1.0ft]

0.6m [2.0ft]

3.0m [9.8ft]

C04

C03

C02

C01

CONCRETE SIDEWALK

LAMP

LAKEWOOD DRIVE

RESIDE

Curb=52.37

Curb=52.56

Curb=52.59

Gutter=52.93

Curb=50.56

Curb=50.59

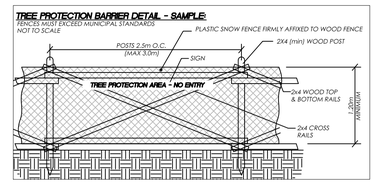
Gutter=50.93

DRAWING USE AND COORDINATION:

- This drawing relies on information and drawings supplied by the client or their consultants. Refer to original drawings from the consultants (i.e. surveyor, engineer, architect or other design professionals) for accurate locations and dimension of site features.
- All tree protection measures specified herein should be included and coordinated with the designs for the project, including but not limited to: architectural, landscape, civil and geo-technical. It is the responsibility of each design professional to understand and review the tree protection measures and determine any conflicts. If conflicts are identified, the design professional and/or the client should bring those to the attention of the project arborist from this office to review and resolve.
- Tendering and contracts for site preparation, land clearing, civil works and/or construction should include specifications for tree protection measures to be implemented as per this drawing and any reference documents.
- It is the responsibility of the owner or their agent to obtain all necessary approvals for the tree retention and removal scheme presented herein. Any changes that the municipality requests should be brought to the attention of the project arborist from this office to review and resolve.
- Some existing trees may not be shown on this drawing (i.e. understize or bylaw exempt trees, or grouped trees). It is the responsibility of the contractor(s) to confirm that all necessary municipal approvals are in place, and to determine the full scope of tree removal work. Only the trees shown to be retained and protected are to remain on site, unless otherwise directed by the owner.
- Trees and stumps to be removed from within the tree protection zone (including CPZ, RPZ and WSS) are to be removed as directed and with on-site supervision from an arborist from this office.
- Stump grinding may be required for the removal of trees within the tree protection zone, at the discretion of an arborist from this office.
- Certain tree removals in proximity of retained trees or power lines may require assistance from a suitably qualified professional, such as but not limited to:
  - ISA Certified Arborist (tree removal, rigging, pruning and other tree service work) working to ANSI A300 and ANSI Z133 Standards and Best Management Practices.
  - Certified Utility Arborist (tree removals, pruning and other tree service work) working to ANSI A300 and ANSI Z133 Standards and Best Management Practices and following BC Hydro policies and procedures.

TREE PROTECTION BARRIER DETAIL - SAMPLE:

FENCES MUST EXCEED MUNICIPAL STANDARDS
NOT TO SCALE



TREE PROTECTION ZONE RESTRICTIONS:

Trees that are specified to be retained must be protected from damage during all phases of development related work on the site. Any access or construction related work within the TPZ (CPZ, RPZ and/or WSS) requires advance approval, guidance and on-site direction or supervision by the project arborist. General restrictions in the **TPZ** are as follows:

- No soil disturbance of any scope or to any depth for cuts or fills, including but not limited to; trenching, stripping of over-burden, bulk excavation, fill placement, site preparation, grade transitions, topsoil placement, etc.,
- No passage or operation of machinery, trucks, vehicles or equipment (including small track machines, skid steers, lifts, etc), except as approved and directed by the project arborist, and subject to special measures.
- No storage of soil, spoils, gravel, construction materials, waste materials, etc.,
- No waste or washing of concrete, stucco, drywall, paint, or other potentially harmful materials,
- No placement of temporary structures or services,
- No affixing lights, signs, cables or any other device to retained trees,
- No pruning or cutting of retained trees, except as approved and directed by the project arborist, and performed by a qualified tree service firm employing ISA Certified Arborists and working to ANSI A300 and ANSI Z133 Standards.
- No landscape finishing, such as but not limited to; installing retaining walls, digging planting holes, placing growing medium, installing irrigation or conduit, etc., except as approved and directed by the project arborist.

LEGEND-TREE PROTECTION:

- denotes **CROWN PROTECTION ZONE – CPZ** or dripline (furthest extent of foliage). Exclusion zone – no aerial encroachment of buildings, cranes, equipment, etc
- denotes **ROOT PROTECTION ZONE - RPZ** specified by project arborist This is the alignment for **TREE PROTECTION BARRIERS** (dimensions to centre of trunk)
- denotes **WORKING SPACE SETBACK - WSS** Offset from RPZ as specified by Project Arborist – Site works within WSS requires approval and on-site supervision by the Project Arborist
- denotes **SPECIAL MEASURES** required
- denotes **REFERENCE #** to tree protection specifications See **REPORT** or **LOU** for further details. Project Arborist to direct or implement.

LEGEND-TREE MANAGEMENT IN DEVELOPMENT AREA:

See arborist report for further details.

- denotes **TAG NUMBER** or **ID REFERENCE** (see tree inventory and assesment list)
- denotes **RETENTION** tree (protection measures as specified)
- denotes **UNDERSIZE TREE** that is smaller than bylaw defined size. If to be retained, **consult this office for protection measures.** If to be removed, **a permit may be required from municipality.**
- denotes **REMOVAL** tree (TAGGED TREE) (municipal permit or approvals may be required)
- denotes **HIGH RISK** tree to be **REMOVED** or **MODIFIED** (see tree inventory and report – permit or approvals required)

TREE MANAGEMENT DETAIL
APPENDIX C: TREE MANAGEMENT DRAWING

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ARBORTECH CONSULTING
SUITE 145 - 12051 HORSESHOE WAY, RICHMOND, BC V7A 4V4 604 275 3484

PROJECT:	PROPOSED REDEVELOPMENT		
ADDRESS:	57 LAKEWOOD DR VANCOUVER BC		
CLIENT:	WINTER BLOSSOM - NEXST PROPERTIES		
CITY REF:		ACL FILE:	19196
PLOT SIZE:	22"X34"	REV #: 0	DATE: JUL 23, 2019

APPENDIX D: TPZ SPECIFICATIONS

1. **CONTACT INFORMATION:**

All tree protection questions, clarifications and coordination, should be directed to:

ARBORTECH CONSULTING *OFFICE:* ***604 275 3484*** *EMAIL:* ***trees@aclgroup.ca***

A project arborist will be assigned by our office to schedule a pre-construction meeting, and coordination of supervision protocols will be established.

2. **TREE PROTECTION ZONES (TPZ):**

Tree protection setbacks are defined on our drawings and documents relative to the centre of the tree trunk where it emerges from the ground and/or the actual extent and spread of the crown or roots of the tree. The ***TPZ*** is comprised of three main components:

- ***Crown Protection Zone*** (**CPZ**): the dripline is the furthest extent of branches and foliage projected to the ground below, and is a zone where aerial encroachment is not desirable. Buildings should be set back from the CPZ sufficiently to allow working space to; install the envelope/glazing, undertake future maintenance, and to accommodate future growth of the crown as the tree matures. Any encroachments (i.e. for building encroachments, machinery or equipment operation, pedestrian or vehicle access, operation of cranes or lifts etc) may affect viability for tree retention and will require an impact assessment by the project arborist to determine feasibility and to specify mitigation measures as necessary.
- ***Root Protection Zone*** (**RPZ**): a setback prescribed by the project arborist representing the closest proximities of soil and root disturbance toward a tree that are deemed manageable and tolerable based on site and tree factors, and conditional to mitigation measures and compensatory treatment that may be specified. Minor encroachments may be possible but such encroachments would require a detailed analysis by the project arborist.
- ***Working Space Setback*** (**WSS:** a setback outside of the RPZ as specified by the project arborist where soil and root disturbances may occur (i.e. for excavation or site preparation), conditional to the on-site supervision and direction by the project arborist, implementation of mitigation measures and undertaking of certain best management practices and treatments (i.e. root pruning).

3. **TREE PROTECTION ZONE RESTRICTIONS:**

Trees that are specified to be retained must be protected from damage during all phases of development related work on the site. Any access or construction related work within the TPZ (CPZ, RPZ and/or WSS) requires advance approval, guidance and on-site direction or supervision by the project arborist. General restrictions in the ***TPZ*** are as follows:

- No soil disturbance of any scope or to any depth for cuts or fills, including but not limited to; trenching, stripping of over-burden, bulk excavation, fill placement, site preparation, grade transitions, topsoil placement, etc.,
- No passage or operation of machinery, trucks, vehicles or equipment (including small track machines, skid steers, lifts, etc), except as approved and directed by the project arborist, and subject to special measures.
- No storage of soil, spoil, gravel, construction materials, waste materials, etc.,
- No waste or washing of concrete, stucco, drywall, paint, or other potentially harmful materials,
- No placement of temporary structures or services,
- No affixing lights, signs, cables or any other device to retained trees,
- No pruning or cutting of retained trees, except as approved and directed by the project arborist, and performed by a qualified tree service firm employing ISA Certified Arborists and working to ANSI A300 and ANSI Z133 Standards.
- No landscape finishing, such as but not limited to; installing retaining walls, digging planting holes, placing growing medium, installing irrigation or conduit, etc., except as approved and directed by the project arborist.

4. **TENDERING, IFC DRAWINGS AND CONSTRUCTION MANAGEMENT:**

Tendering of the project, issuance of the IFC drawings and documents (architectural, civil, landscape, mechanical, geo-technical, etc.) as well as planning of the construction (demolition, site clearing, excavation, shoring, access/egress, crane operations, etc.) should be coordinated with the tree protection specifications herein and the measures outlined as specified on the ***Tree Management Drawing*** prepared by this office. Any conflicts with the TPZ's identified by the project team or the contractor will require additional detailed review by the project arborist in advance of proceeding.

5. **BARRIERS – TREE PROTECTION FENCES:**

Barriers should be erected at the CPZ setback where possible, but must be installed no closer to the RPZ specified alignments as a minimum tree protection measure. Signs stating "TREE PROTECTION ZONE - NO ENTRY" must be placed on the tree protection fence at a suitable frequency at the direction of the project arborist. The contractor, sub-contractors and trades should be made aware of the restrictions therein (see above). The barriers must be maintained at those alignments in good condition, and may not be removed for any reason (including landscaping), unless prior approval from the project arborist is obtained.

6. **SURVEYING:**

Tree locations are derived from the project survey, and any discrepancies should be coordinated with their office directly and reported to the project arborist. Tree barriers aligned with or within close proximity to a property line, a design feature, a restrictive covenant line, and/or an environmentally sensitive or protected area may require a survey in advance to enable accurate barrier installation.

7. **TREE PRUNING, TREATMENTS, ENHANCEMENTS AND SPECIAL MEASURES:**

The developer and their contractors are responsible to ensure completion of enhancement or remedial tree treatments, and proactive tree protection measures for retained trees as specified by the project arborist, including but not limited to;

- 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 and other treatments.
- Installation of soil amender (i.e. mulch) within the ***RPZ*** to mitigate soil desiccation and to improve soil fertility.
- Supplemental watering to compensate for soil hydrology changes.
- Low impact removal for stumps located within a ***CPZ*** (i.e. stump grinding or cutting with project arborist supervision).

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- Windfirming 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 project arborist.

See the tree management drawing for further details.

8. **DEMOLITION OR PRE-CONSTRUCTION OPERATIONS:**

If tree removal permits are issued at this stage, please review next item also. Note that some municipalities will not approve tree removal at the demolition phase. Tree barriers may need to be installed prior to demolition and/or the municipality may require on-site direction and supervision by the project arborist during the process of demolishing existing structures and hardscapes. In some cases tree protection barriers must be realigned, and restoration of the zone undertaken, after demolition is complete. A letter of undertaking (***LOU***) confirming supervision may be required by, or may be on file with, the municipality. The demolition contractor will need to coordinate with the project arborist accordingly.

9. **TREE REMOVAL/CLEARING OPERATIONS:**

A copy of the tree permit must be provided to the project arborist to check for congruency with our tree management drawing. Note that neighbour approvals, additional municipal permits and/or authorizations from regulatory bodies may be required and are the responsibility of the developer or their assigned representative. 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). There are often removal trees (identified or unidentified on our drawings) that require felling, extraction and stump removal from TPZ's using low impact methods. Only the trees shown for retention within a tree protection zone as specified on our tree management drawing shall be retained (unless otherwise directed by the developer). The contractor and/or the land clearing subcontractor should verify the tree removal and clearing scope based on their own site investigation. The developer/owner and their contractor should also coordinate with the project arborist in advance to identify retained trees, identify low impact removal trees, review the work plan, and to ensure contractor compliance with the tree protection measures specified.

10. **CONSTRUCTION OPERATIONS:**

A letter of undertaking (***LOU***) for arborist supervision may be on file with the municipality. The contractor (project manager/site superintendent) and the developer are encouraged to proactively meet with the project arborist in advance of commencing work on the project to; 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 challenges. Pursuant to the Tree Protection Zone Restrictions noted above, the trunks, branches, foliage and roots of retained trees, as well as the soil within the TPZ, must not be damaged by construction activities. Careful attention to excavation, access/egress, servicing, and machinery equipment and crane operation in proximity to the height and size of the TPZ's is recommended. Note that pruning to reduce the height of retained trees (topping or heading) CANNOT be accommodated. It is recognized that certain unpredictable construction conflicts with a TPZ may arise that could interfere with the protection of the selected trees, however any proposed encroachment into a TPZ and/or changes to the tree retention scheme are subject to approval in advance by the project arborist and the municipality. Special measures required for tree protection compliance related to construction work in the ***CPZ*** or within an ***RPZ*** may be feasible to accommodate managed encroachments into a ***TPZ***, such as but not limited to:

- Root mapping by the project arborist.
- Installing armour or suspended structures over the soil within the ***RPZ*** to accommodate temporary worker or equipment passage within a ***TPZ***. Several types of armouring may be available. Implementation is at the discretion of the project arborist and may be conditional to municipal approvals.
- Low impact trenching using air-vac or hydro-vac, with arborist supervision, to accommodate underground services or utilities. This option is restricted as to viability by; proximity, scope, depth, shoring needs, tree species, site/soil conditions and other factors.

11. **LANDSCAPING OPERATIONS:**

Removal of the tree barriers requires advance coordination and approval by the project arborist. The operation of equipment of any size or type, the placement of growing medium, all grading and sub-base preparation for hard landscape features. (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 turf and other surface finishing, all have a high potential for causing damage to trees, roots or soil. Advance coordination between the landscape contractor and our office prior to landscape operations commencing is required to avoid tree protection non-compliance and bylaw issues.

ACL GROUP ARBORTECH CONSULTING

APPENDIX E: LETTER OF UNDERTAKING (LETTER OF ASSURANCE)

PROOF OF CONTRACT FOR FIELD SERVICES BY PROJECT ARBORIST

July 23, 2019 ACL File: **19196**

Client and Project: **Winter Blossom Holdings Ltd**
c/o Nexst Properties
Attn.: Harrison Han

Site Address: **57 Lakewood Dr Vancouver BC**

Ref Documents: **Most Current Tree Management Report and Drawing** (as prepared by this office)

Pursuant to city bylaws or policies, the **Project Arborist** is confirmed to be retained under contract to the developer or owner to assist with tree protection treatments and compliance during site preparation and construction phase as summarized below:

SCHEDULE:

- PRE-CONSTRUCTION SITE VISIT:
  The tree protection zone setbacks and restrictions will be reviewed by the project arborist with the general contractor, including the working space setback provisions noted below.
- SITE VISITS DURING CONSTRUCTION:
  The project arborist will attend proactively once per month or as scheduled with the contractor when construction is in progress in vicinity of the retained trees in order to check on compliance.
- POST CONSTRUCTION ASSESSMENT AND SIGN-OFF:
  At completion of the project, the project arborist is required by the city to undertake an inspection and sign-off to confirm that all tree protection measures have been successfully implemented.

SPECIAL MEASURES:
See Tree Management Drawing for numbered diamonds and location references corresponding with special measures item numbers as follows.

1. General:
   We must be called to attend and review, approve, direct and/or supervise certain works from time to time during the demolition, site preparation, construction and landscaping, at critical milestones or activities:
   - **a.** Prior to demolition, site preparation or construction commencing, to direct and inspect the installation of tree protection barriers or measures in advance of or in lieu of municipal inspection and approval.
   - **b.** Whenever access into the tree protection zone (TPZ) is contemplated or desired for any reason.
   - **c.** Whenever any grading, trenching, excavation or landscape work occurs within a TPZ, including the root protection zone (RPZ) and the working space setback (WSS) offset from a RPZ as specified by the project arborist.
   - **d.** For any pruning of a retained tree.
   - **e.** For any tree removal or stump removal from within a RPZ or WSS.
   - **f.** Landscape finishing within or directly adjacent to a TPZ must be reviewed by this office in advance and installed with on-site direction and guidance from the project arborist.
     i. Preparation works and construction of landscape finishing works including but not limited to; sidewalks, paths, patios, decks, retaining walls, fencing, irrigation, conduit, benches, patio pavers, soil placement, grass or turf installation, planting or other landscape items.
     ii. Turf within TPZ's is discouraged, however if desired we may support it as long as a suitable mulch zone setback is implemented around the base of the tree.
     iii. Certain landscape features may be excluded or will require specific materials and methods to be utilized that meet tree root protection compliance requirements.
     iv. Note that the planting of any plants, shrubs or hedges within the TPZ is restricted to small pot sizes (i.e. #1 or #2 depending on species) and using "pocket planting" standards. Planting holes are minimized in size, dug into existing grade to avoid damage to woody roots, and backfilled with minimal addition of growing medium.
   - **g.** At the completion of the project to review the condition of the trees and to sign off on the construction and landscape having met tree protection compliance measures to the satisfaction of the project arborist.
2. Pruning:
   Certain retained trees may require pruning as recommended by the project arborist to treat one or more of the following; restoration of form, aesthetics, mitigation of defect(s), building clearance, sight lines, overhead clearance for vehicles or pedestrians and/or construction access. All tree work is to be approved in advance by the city via liaison by the project arborist. The pruning work must be carried at the developers cost and under the direction of the project arborist from this office and either by;
   Vancouver Park Board crews, or
   ISA Certified Arborist employed by a qualified tree service firm,
   and working in conformance with applicable ANSI standards (A300 and Z133).

UNIT 145 – 12051 HORSESHOE WAY RICHMOND, BC CANADA V7A 4V4 P 604 275 3484 F 604 275 9554

3. Low Impact Road or Sidewalk Restoration or Improvements TPZ:
   The project arborist must be on site concurrently with the demolition, site preparation, excavation and other works related to hardscape improvement in the public realm to expose tree roots, to provide root protection measures and/or undertake root pruning treatments as necessary.
4. Landscape Finishing:
   Preparation works and installation of landscape finishing works. See item 1 above.

Site review reports will be issued to; the owner, the prime consultant and the general contractor through the construction phase, and the post construction assessment sign off report will be issued to the city after completion of the project.

By signing below, the owner agrees that they;

- Have read and understand Arbortech's standard ***Tree Protection Specifications***,
- Will provide Arbortech Consulting with all design drawings and report any design changes that may impact tree preservation,
- Will ensure that Arbortech Consulting is contacted with a minimum of **3 business days advance notice** to arrange attendance by the project arborist at required times,
- Will comply with project arborist directed and supervised work in conformance with arboricultural standards and best management practices, using low impact materials and methods as directed, and facilitate any remedial work or treatments that may be prescribed or required by the project arborist.

Submitted by; **Norman Hol** For Scheduling: Phone: **604 275 3484** Email: **trees@aclgroup.ca**	**Signature of Owner:** _____ **Printed Name:** _____ Phone: Email:

	Signature of Contractor: _____ **Printed Name:** _____ Phone: Email: