

Arborist Report for Development

Site Address: 912 Vancouver St, Victoria
Christ Church Cathedral

Date of Report: April 22, 2021

Date of Field Work: April 15, 2021

Client Name: Peter Daniel

Email: peter@woodburnmanagement.com

Phone: 250 514 7797

Prepared by Bill Stephen, BSc(F)

ISA Certified Arborist # PN-0350A

On behalf of Gye and Associates, Urban Forestry Consultants Ltd

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EXECUTIVE SUMMARY

Existing and Proposed Conditions: Christ Church Cathedral occupies a city block within central Victoria, surrounded by Rockland Avenue, Burdett Avenue, Quadra Street and Vancouver Street. The entire parcel is registered as 911 Quadra St, but the proposed work is taking place adjacent to the school building, whose convenience address is 912 Vancouver St. This report addresses a permit application to install a permanent prefabricated classroom structure in a location currently occupied by a small sports court. Access will be from a well-defined crossing off Burdett Avenue, and delivery staging will be from the surface of an existing parking lot. Service connections to the school building have already been installed in an alignment which is not disruptive to retained protected trees.

On site Bylaw-Protected Trees: There are five bylaw-protected trees currently growing near enough to the site to be possibly affected by the work or by access activities. One of these trees is recommended for removal as it is abutting the proposed classroom. The others will be readily protected by measures proposed in this Tree Management Plan.

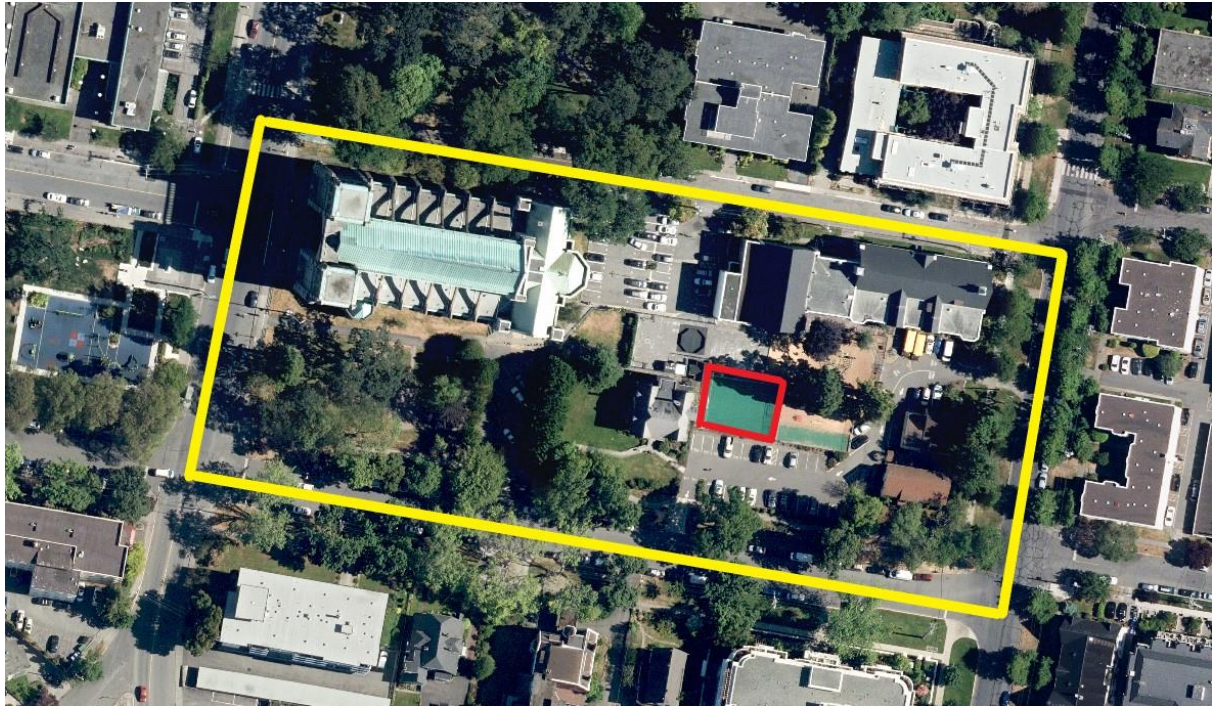
Municipal Trees: No Municipal street trees will be affected by the proposed work. The boulevard crossing route is wide enough that all delivery will remain on the existing hard surface.

Tree Protection Measures: Detailed measures for the protection of trees through all stages of the proposed redevelopment of the site are provided in this report and in the attached Tree Protection Plan drawing.

Tree Status	Total	To be RETAINED	To be REMOVED	To be PLANTED
On site trees, bylaw protected	5	4	1	2
On site trees, not bylaw protected	0	0	0	0
Municipal trees	0	0	0	0
Neighbouring trees, bylaw protected	0	0	0	0
Neighbouring trees, not bylaw protected	0	0	0	0
Total	5	4	1	2

ASSIGNMENT

Gye and Associates (G&A) have been retained to assist the proponent and the project design team to minimize tree impacts associated with the placement of a prefabricated classroom structure onto an existing sports court within the Cathedral grounds (area shown in red below). This report has been prepared in accordance with the City's published Terms of Reference for Tree Preservation Plans.



Contextual map

METHODOLOGY

- A site visit was made to identify, measure and assess the condition of relevant trees. The proposed architectural site plan and engineering site servicing plan were reviewed to assess potential tree impacts associated with the project.
- Biometric and assessment data were recorded and are presented in table format (Table 1).
- Protected Root Zone (PRZ) radii were calculated for the subject trees. The PRZ was calculated using a method recommended by Nelda Methany and James Clark,¹ which considers the tree species' relative tolerance to disturbance, its biological age, and the diameter of the tree at chest height. Soil depth and texture, existing land use and the

¹ Nelda Matheny and James R. Clark, Tree and Development, A Technical Guide to Preservation of Trees During Land Development (International Society of Arboriculture, Champaign IL, USA. 1998 pp. 74)



health and condition of the tree were also considered.

- Design and construction drawings were provided to the arborist for review, relevant elements of which are incorporated within the attached Tree Preservation Plan drawing, including the location of existing trees, proposed building, underground services and landscape features.²
- The canopy and protected root zone (PRZ) of each tree was plotted to scale on the site plan.
- The site plan was reviewed to identify site grading, servicing, building and landscape elements that may encroach within the PRZs of the trees.

OBSERVATIONS

SITE DESCRIPTION

The property at 911 Quadra St is a large, historically significant church complex which contains the Cathedral, a school, offices, open space and parking lots. The property is located in central Victoria. The terrain of the site is flat. The proposed installation will take place in an existing sports court surfaced with artificial turf, its substrate being uninhabitable to root growth. The adjacent trees are within either a mulched playground or a hardscape. Underground service connections between the school and the proposed installation have already been completed with no expected consequences to on site protected trees. Structure delivery access to the property is through a wide boulevard crossing off Burdett Avenue that can accommodate the turning radius of a delivery truck and trailer.

TREE RESOURCE

Five protected trees are associated with the proposed re-development.

- Two very large Giant sequoia trees grow within the adjacent mulched play area. An inobtrusive ground inspection showed no visible defects in their main stems or at their root flares. School Director Todd Fitzsimmons reports that there is no history of large branch failure in the past ten years. The trees have received regular arboricultural care for the past 27 years. The current professionals responsible are 'Advantage Tree Care'. There are small dead branches in the upper crowns, which are cleaned out from time to time by their arborist. The easternmost of the two trees (tag # 937) is exhibiting symptoms of stress. Mr Fitzsimmons reports that the symptoms first appeared about three years ago, despite there having been no recent disturbances in the area. Many large conifers in the Victoria area were negatively affected by a series of unusual hot dry summers. Tree # 937 was perhaps more affected than tree # 938 because it is closer to the asphalt parking lot. As a species, the Giant sequoia is highly resilient to changing environmental stresses. Both trees can be readily protected through protection measures proposed in the Tree Management Plan.

² An undated landscape site plan was received on February 12, 2021 and is used as a base layer for the attached tree plan, along with a survey plan drawing prepared by Summit Land Surveying, dated August 17, 2020.



- One bylaw-protected European beech (tag # 939) is located near the school. It is in excellent condition and can be readily protected through protection measures proposed in the Tree Management Plan.
- One multistem American holly (tag # 936) is located near the school, well away from the work area. It has good structure but exhibits early signs of stress.
- An American holly (tag # 940) is a multistem specimen in fair condition. It is less than one metre from the edge of the proposed installation.

PROPOSED DEVELOPMENT

The installation of a prefabricated classroom structure is proposed. It will be placed upon large concrete blocks embedded in the ground. Underground service connections to the existing school building have already been installed. Access to the work site will be from existing driveways and parking lots.

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

ANTICIPATED TREE IMPACTS AND REMEDIATION MEASURES

Installation of the concrete footings and placement of the structure will mainly impact a multi-stemmed holly immediately adjacent to the proposed building location (tag # 940); this tree will need to be removed. The structure will also sit just inside the protected root zone of a Giant redwood (Tree 938) with a stem diameter of 1.6m. The other on-site trees nearby can be isolated from impact of the work with protection fencing. Root impacts to Tree 938 can be minimized by implementing standard tree protection measures, detailed below and on the attached Tree Protection Plan drawing.

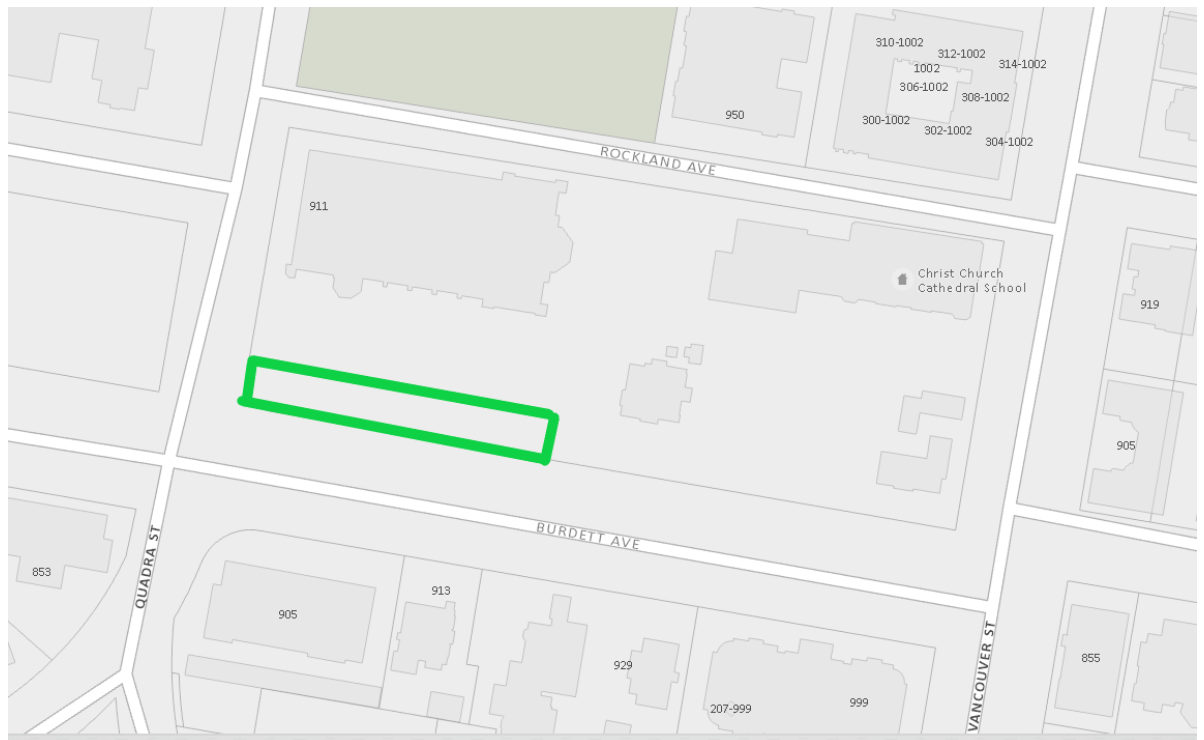
Site access from Burdett Avenue will make use of an existing double-wide paved driveway. Turning radius encroachment onto the grass boulevard is readily avoided.

The position of the American holly (tag # 0940) abutting the proposed structure makes its successful retention unlikely. Half of its crown and half of its root system are in direct spatial conflict. Any surviving stems will become unstable in the direction of the active play area or will physically interfere with the building. Trees replacing it in the garden area nearby will make a much more significant contribution to Victoria's urban forest over time.

REPLACEMENT TREES

Two replacement trees are required to be planted on the site to mitigate the removal of Tree 940. There are many optional locations for this block wide property. The park lawn area near the corner of Burdett and Quadra has lost three well located trees recently, these locations are excellent for planting the replacement trees. Gye and Associates recommends large maturing shade trees such as:

Quercus garryana	Garry oak
Ginkgo biloba	Ginkgo
Tilia tomentosa	Silverleaf linden
Fagus sylvatica	European beech



Recommended location for replacement trees.



TREE TABLE

Tag #	Common Name	Bylaw status	Stem diameter (DBH cm)	PRZ radius (m)	Crown diameter (m)	Structural condition	Health	Location	Retention suitability	Species tolerance to disturbance	Comments	Recommendations
936	American holly	Protected	45	4	Fair	Good	Fair	On-site	Suitable	Good	Multistem. Mild symptoms of stress manifest in past three years	Retain and protect
937	Giant redwood	Protected	134	17	Fair	Good	Fair	On-site	Suitable	Good	Moderate symptoms of stress manifest in past three years. No visible defects in main stem. No history of large branch failure. Small dead branches in upper crown.	Retain and protect
938	Giant redwood	Protected	162	18	Good	Good	Good	On-site	Suitable	Good	No visible defects in main stem. No history of large branch failure. Small dead branches in upper crown.	Retain and protect
939	European beech	Protected	54	7	Good	Good	Good	On-site	Suitable	Good	No visible defects in main stem. No history of large branch failure.	Retain and protect
940	American holly	Protected	49	4	Good	Fair	Good	On-site	Suitable	Good	Multistem. Some stems damaged by rubbing together.	Remove and replace elsewhere on church property.

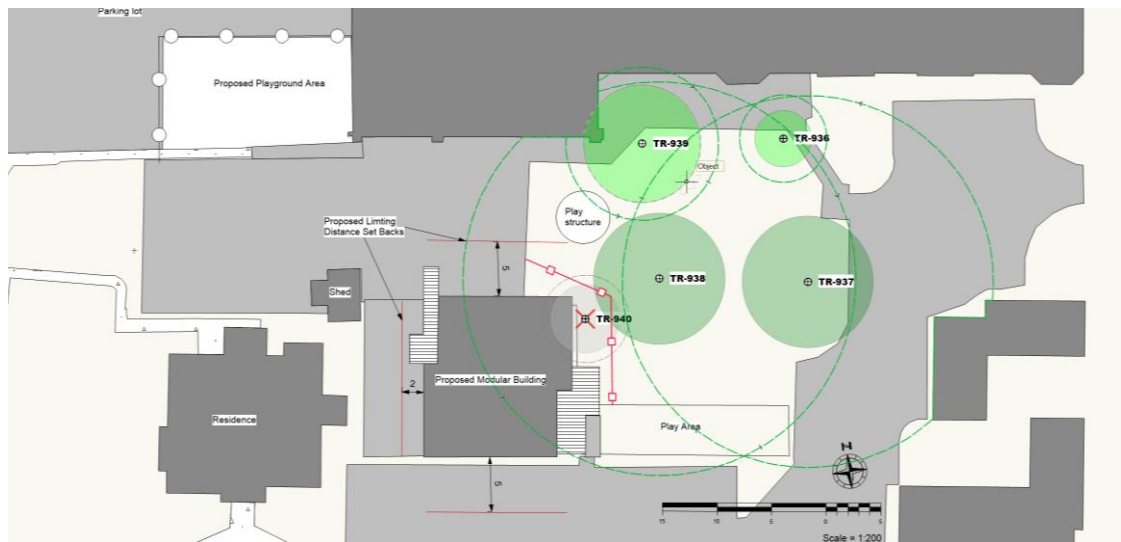
Biophysical attributes of trees



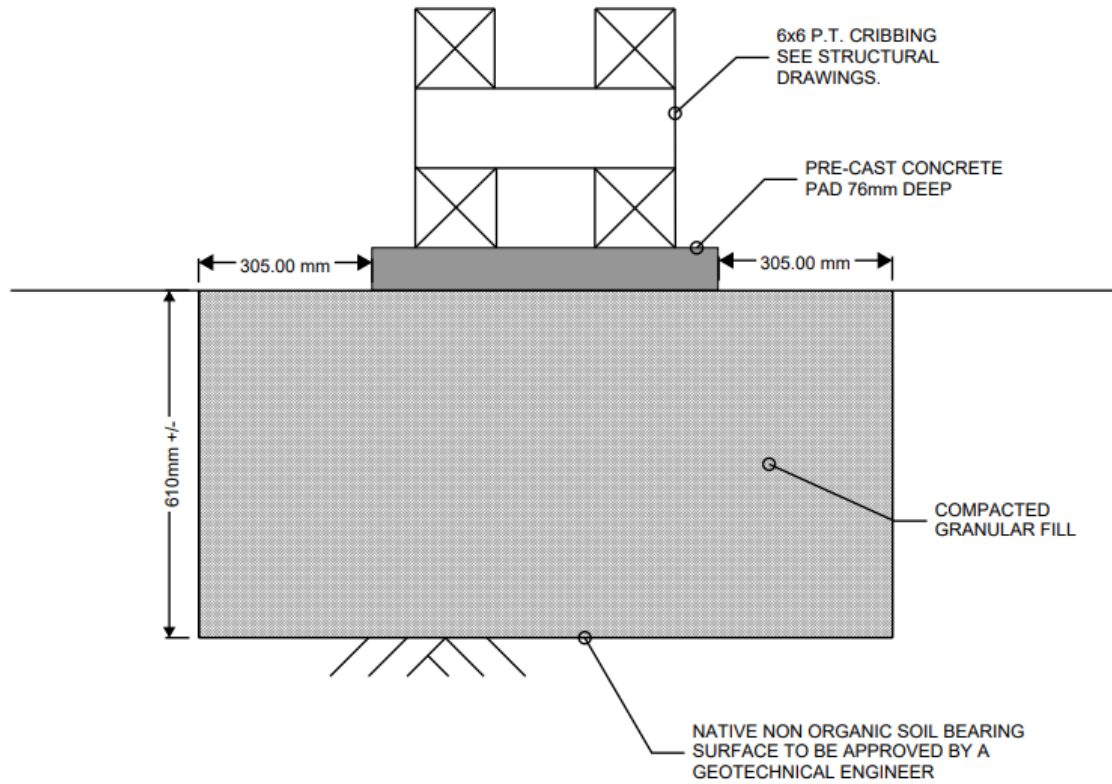
Giant sequoia on right (tag # 937) showing symptoms of stress



Holly # 940 to be removed. Sports Court on its right is location of proposed modular building.



Site plan showing proposed modular building, tree locations, and other landscape features. Tree roots from Sequoias # 937 and # 938 have adapted to the decades old land uses, with preferential feeder root growth within the mulched play area and other softscapes. The artificial turf of the long-established sports court produces an environment that is inhospitable to roots.



Design of support blocks for proposed modular building. Some native soil will be preserved, allowing limited expansion of root system from Sequoia # 938 into the area.



ADDITIONAL TREE PROTECTION MEASURES

Tree protection measures to limit impacts from the construction of the foundation, driveway, in ground services and landscape include the following:

- **Pre-demolition and construction meetings:** Prior to the release of a demolition or building permit by the City, the applicant and the applicant's general contractor are required to meet on site with the project arborist to review the Tree Preservation Plan in detail. The purpose of the meeting is to systematically review the objectives of the plan and the measures required to protect trees designated for retention during the demolition, site preparation, construction, and landscape phases of the project. Areas for material storage and on-site trades parking (if any) shall be identified. The tree protection fencing shall be laid out and standards for fencing and signage shall be confirmed. The meeting will also provide an opportunity to address any logistical constraints and to answer questions.
- **Tree Protection Fencing:** All tree protection areas (TPAs) shall be fenced to prevent soil compaction, rutting and other forms of disturbance within the PRZ. If more working room inside the TPAs is required, the project arborist shall be consulted. If the arborist authorizes alteration of fencing in order to facilitate more working room, the exposed portion of the root zone (now) outside the fencing must be protected to prevent soil disturbance. Acceptable soil protection materials include steel plates or 200mm of compacted road base on top of geo-textile cloth or two layers of ¾" plywood.
- **On site Supervision:** All excavation, trenching or rock removal (including blasting) within or adjacent to TPAs shall be supervised by the project arborist, including trenching for both municipal service connections and extension of these underground services to the building. Where considered necessary by the arborist, hand digging and pneumatic or hydraulic excavation techniques shall be used in place of mechanical excavation.
- **Tree Pruning:** The project arborist shall prune any tree roots or branches damaged during any phase of the project.
- **Pre-construction meeting for the landscape phase:** Landscaping activities – such as trenching for irrigation or lighting, grubbing of vegetation, distribution of soils and other landscape materials – are a significant potential source of damage to the sensitive soils and root systems of protected trees. Prior to any site preparation or construction activity for landscaping, the landscape and general contractor shall meet with the project arborist to review the tree protection plan and measures associated with landscaping.
- The arborist shall supervise all landscape activity within the tree protection areas.
- At completion of the redevelopment, the arborist shall ensure that any tree protection or restoration deficiencies are addressed by the owner and building contractor. Once all deficiencies have been repaired, the arborist shall prepare a letter to the City of Victoria confirming successful completion of the project, including resolution of any deficiencies.

Additional detail is provided in the attached Tree Management Plan. If diligently implemented, the tree protection measures specified in the Tree Management Plan



and in this report will effectively preserve municipal and both on and off-site trees for the long term benefit of the property owner and community.

ROLE OF THE PROJECT ARBORIST

In addition to assisting with tree preservation planning during the design and permit application phases of the project, the responsibilities of the arborist during the construction and landscape phases of the project are described below:

The main role of the project arborist is to assist the contractor in successfully preserving all trees, on and off site, designated for retention as a condition of the building permit. The following is a summary of the key interventions required by the arborist (G&A). **The owner's building contractor is responsible for coordinating with the arborist for all required on site work.**

1. Pre-construction meeting
2. On site supervision when working around TPAs
3. Pre-blasting workplan meeting
4. Pre-landscaping workplan meeting
5. Periodic site monitoring to ensure ongoing compliance with tree protection measures
6. Post-construction inspection and report to the City of Victoria

End report

Prepared and submitted on behalf of Gye and Associates, Urban Forestry Consultants Ltd.

Consulting Arborist: Bill Stephen, BSc(F)

ISA Certified Arborist (Certification No. PN-0350A)

ISA Tree Risk Assessment Qualified (Current)

Reviewed by:

Jeremy Gye – Senior Consultant

Gye and Associates, Urban Forestry Consultants Ltd.

Consulting Arborist (Diploma, American Society of Consulting Arborists, 1997)

ISA Certified Arborist (Certification No. PN-0144A)

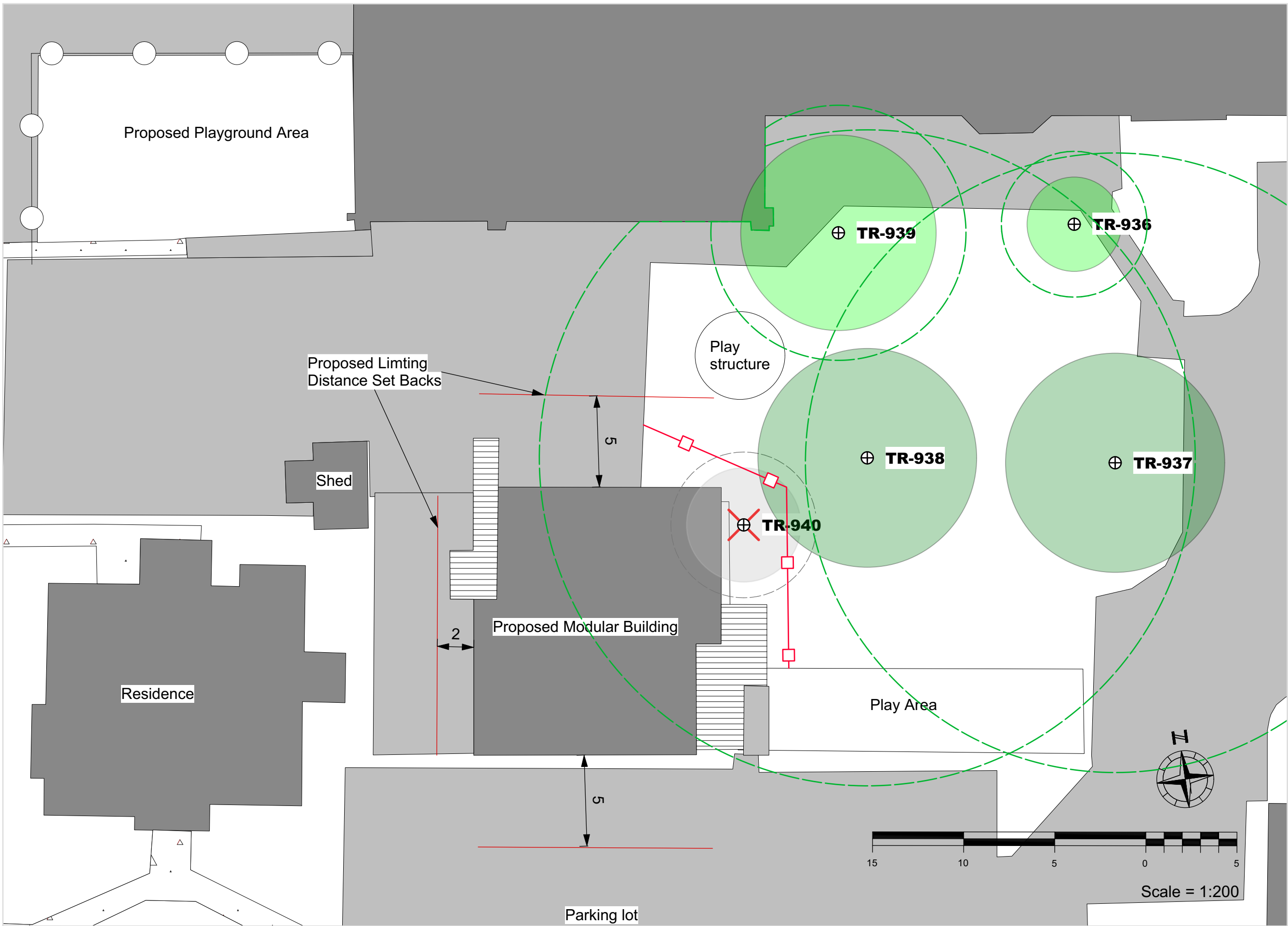
ISA Certified Municipal Specialist (Certification No. PN-0144AM)

ISA Tree Risk Assessment Qualified (Current)



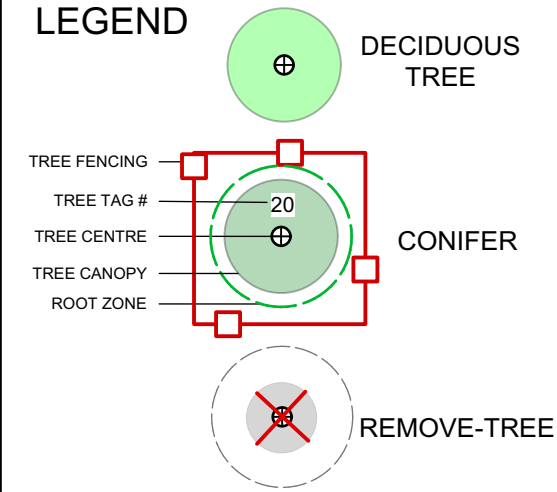
ASSUMPTIONS AND LIMITING CONDITIONS

1. This report and the opinions expressed within it have been prepared in good faith and to accepted arboricultural standards within the scope afforded by its terms of reference and the resources made available to the consultant. The report provides no undertakings regarding the future condition or behavior of the trees reviewed within it. Tree condition and risk assessments are not an exact science. Both qualities can and do change over time and should be reappraised periodically.
2. Any legal description provided to the consultant/appraiser is assumed to be correct. No responsibility is assumed for matters legal in character. Any and all property is appraised or evaluated as though free and clear, under responsible ownership and competent management.
3. It is assumed that any property is not in violation of any applicable codes, ordinances, statutes, or other governmental regulations.
4. Care has been taken to obtain all information from reliable sources. All data have been verified insofar as possible; however, the consultant/appraiser can neither guarantee nor be responsible for the information provided by others.
5. The consultant/appraiser shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
6. Loss or alteration of any part of this report invalidates the entire report.
7. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by anyone other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant/appraiser.
8. This report and attached drawings remain the sole property of Gye and Associates, Urban Forestry Consultants Ltd., until all accounts have been paid in full.
9. Neither all nor any part of the contents of this report, nor any copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant/appraiser – particularly as to value conclusions, identity of the consultant/appraiser, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant/appraiser as stated in his qualifications.



TREE PRESERVATION MEASURES

1. **Pre-construction meeting:** Before construction begins, the owner and contractor shall meet with the arborist to review the placement of fencing and other tree protection measures within this plan.
2. **Tree Fencing:**
- a) The City of Victoria requires that tree protection fencing shall be installed at the locations indicated on this drawing prior to building permit being issued (see fencing detail on plan).
 - b) Requests to temporarily remove or move tree fencing must be reviewed by the project arborist for approval.
 - c) If it is not possible to fence the entire PRZ, the unprotected portion of the PRZ shall be armoured with two overlapping layers of 3/4" plywood or a temporary cover of geo-textile and 200mm of road-base, moderately compacted with a plate compactor.
 - d) Tree protection fencing and armouring shall be maintained in good condition throughout the duration of the project.
3. **Tree Management Plan posting:**
- a) A full-sized weather-proof copy of this tree plan shall be available on the site office for all to see and consult.
 - b) The general contractor shall ensure that all relevant sub-trades are familiar with the drawing and tree protection measures.
4. **Tree removal:**
- a) In order to minimize collateral damage to protected trees, tree removal shall be carried out by qualified arborists familiar with controlled tree removal in urban areas.
 - b) All stump removal within the tree protected areas (TPAs) shall be supervised by the project arborist.
5. **Tree Pruning:**
Any tree pruning required will be carried out by an ISA Certified Arborist or Arboricultural Technician under the supervision of the Project Arborist.
6. **Site servicing and excavations:** The project arborist shall be present to oversee excavation, service trenching, stump removal, site grading or blasting within, or adjacent to, the fenced tree protection areas (TPAs).
7. **Root pruning and protection:**
- a) Any tree roots damaged during site work shall be pruned back to undamaged tissue by the arborist.
 - b) The vertical face of excavated cuts adjacent to the TPAs shall be securely covered with non-permeable fabric by the project arborist to prevent soil desiccation and erosion.
8. **Temporary access:** If temporary access is required within a tree protection area (TPA), the contractor shall notify the project arborist in advance and review the access requirements and any additional protective measures prescribed by the arborist.
9. **Storage restrictions:** No equipment, materials or excavated soil shall be placed or stored within the TPA. THIS PARTICULARLY INCLUDES HOARDING OF EXCAVATED SOILS NEEDED FOR BACKFILLING OF THE HOUSE FOUNDATION.



DO NOT ENTER

Tree Protection Zone

**NO DUMPING
NO FILL**

NO STORAGE

**NO DIGGING
NO EXCAVATING**

Project Arborist: Gye and Associates Ltd. 250.883.4533



PROJECT
**912 Vancouver St,
Victoria, BC**

SHEET TITLE
Tree Management Plan

	FOR REVIEW	
REV NO	DESCRIPTION	DATE

PROJECT NO.	21-027
DATE	April 22, 2021
SCALE	1:200
DRAWN BY	LM
SHEET NO.	T - 1
THIS DRAWING IS SCALED TO PRINT ON A 17X22" SHEET	

TREE TABLE

G&A Tree ID	Common Name	DBH (cm)	PRZr (m)	Crown Diameter	Health	Structural Condition	Retention Suitability	Species tolerance to Disturbance	Bylaw Protected?	Comments	Recommendations
936	American holly	45.2	4	Fair	Fair	Good	Suitable	Good	Protected	Multistemmed. Mild symptoms of stress manifest in past three years	Retain and protect
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939	European beech	54	7	Good	Good	Good	Suitable	Poor	Protected	No visible defects in main stem. No history of large branch failure.	Retain and protect
940	American holly	49	4	Good	Good	Fair	Suitable	Good	Protected	Multistemmed. Some stems damaged by rubbing together.	Remove and replace with a new tree elsewhere on church property.

Tree Protection Fencing Detail

Modular steel panel fencing is recommended in order to reduce land-fill waste post-construction. Fencing panels shall be secured to the ground with rebar wired to panel frame.

All-weather signage will be attached, clearly designating the area within as a TREE PROTECTION AREA – NO TRESPASSING.

In cases where steel-panel fencing is not practical or available, fencing shall be constructed with a wooden 2x4 frame (side, top and bottom rails) and back-bracing supports as required to ensure robust placement. Snow-fencing will then be affixed to the frame using battens, zip-ties, staples, wire or nails.

