STAFF REPORT

TO:	CHIEF ADMINISTRATIVE OFFICER
FROM:	BRIGID REYNOLDS, CONSULTING TOWN PLANNER
SUBJECT:	DP2026-03 – 118 BEECH CR
MEETING DATE:	JANUARY 27, 2026
SUBJECT PROPERTY:	LOT 25 SECTION 6, RENFREW DISTRICT, PLAN VIP83739 (PID 027-217-299)

PURPOSE

The purpose of this application is to approve a development permit for the construction of a single-family dwelling within the Hazard Lands Protection Development Permit Area (DPA 2).

BACKROUND

The subject property is located on a 971 m2 (0.24 ac) parcel, located at 118 Beech Cr. The property is zoned Suburban Residential (R-1). The OCP designates the property as within DPA 2 due to the slope on the subject property and due to the wildfire hazard This lot is part of the phase 5 of the Slopes subdivision.

Reports submitted in support of this application include:

- Geotechnical Memorandum, prepared by Ryzuk Geotechnical Engineering Ltd. Dated December 30, 2025
- Wildfire Hazard Assessment, prepared by Strathcona Forestry Consulting, dated January 4, 2026

Hazard Lands DPA

The Geotechnical Memorandum notes that the slopes ranges between 7 to 11 degrees (13 to 20%) and triggers the requirement for a development permit. The memorandum concludes that the development of the proposed home is feasible from a geotechnical perspective.

The OCP designates almost the whole Town as a high wildfire hazard. The Wildfire Hazard Assessment concludes that the hazard risk on the property is rated at a moderate level which is acceptable provided the recommendations in the report are adhered to.

Stormwater Management
Roof rainwater leads can go to a stormtec chamber and then to the Town storm connection. In consultation with the Public Works Dept, depending on footing depth the perimeter drainage can be directed to the back yard.

IMPLICATIONS

a. Financial:
Application fees are collected to cover the cost of processing the application.

b. Policy/Legislation:
The subject property is in Development Permit Area – 2 for hazard lands pursuant to the Official Community Plan.

c. Strategic Priority:
N/A

d. Sustainability:
N/A

e. Communication:
As required by the Development Approval Procedures Bylaw No. 1109, notice of the application was sent to neighbours within 50 m of the subject property a minimum of 10 days prior to Council's consideration of the request. The notice was mailed out on January 16, 2025 and at the time of preparing the staff report no comments have been received.

f. Staffing Implication:
Processing this application is part of the Planning Department's regular duties.

Options

1) Approve the development permit for this application.
2) Approve the development permit with additional requirements.
3) Deny the development permit for this application.

Recommendation
The contract planner recommends approving DP2026-03 for the property located at 118 Beech Cr, legally described as Lot 25, Section 6, Renfrew District, Cowichan Lake District, Plan VIP83739 (PID 027-217-299) in conformance with the following conditions:

1. All development shall be in accordance with
    a. Attached site plan
    b. Geotechnical Memorandum, prepared by Ryzuk Geotechnical Engineering Ltd. Dated December 30, 2025
    c. Wildfire Hazard Assessment, prepared by Strathcona Forestry Consulting, dated January 4, 2026
2. Prior to any land alteration and building permit issuance
    a. Implement sediment and erosion control measures to prevent sediment from leaving the subject property.

Signed:

Brigid Reynolds

Brigid Reynolds RPP MCIP
Contract Planner

Concurrence:

John T

John Thomas
Chief Administrative Officer

ATTACHMENT 1
SITE PLAN

ATTACHMENT 2

Geotechnical Memorandum, prepared by Ryzuk Geotechnical Engineering Ltd. Dated December 30, 2025

RYZUK

GEOTECHNICAL

GEOTECHNICAL MEMORANDUM

Client: James D. Smith
Contact: Section 22 - Disclosure harmful to Personal Privacy
Email: Section 22 - Disclosure harmful to Personal Privacy
Project Title: Pre-Purchase Geotechnical Assessment
Project Address: 118 Beech Crescent (Lot 25) – Lake Cowichan, BC

Date: December 30, 2025
Project No.: 12748-1

Pre-Purchase Geotechnical Assessment

As requested, we visited the subject property, 118 Beech Crescent (Lot 25), on December 15, 2025, and completed a pre-purchase geotechnical assessment of the land. Our scope of work included visual assessment of the surface conditions at the property and a test pit investigation to assess the shallow subsurface soil and groundwater conditions. Our observations and comments are contained herein, and a Photo Log and Test Pit Location Plan are attached. Our scope of work was determined in discussion with our client and was intended only to provide a preliminary geotechnical opinion of the property. Our work has been conducted in accordance with, and is subject to, the accepted Terms of Engagement.

The subject property is located within 'The Slopes' residential subdivision, just north of the Town of Lake Cowichan and Youbou Road. The property is roughly triangular shaped due to being a cul-de-sac lot, and is bounded by Beech Crescent to the north, single family homes to the east and west, and an undeveloped parcel of land to the south. In general, the site topography descends towards the south with approximately 6 m of vertical relief across the depth of the property. As shown on the attached Test Pit Location Plan, the lot varies in depth between 31 to 45 m, which equates to an approximate overall slope at the property of between 7 to 11 degrees (13 to 20%) below horizontal. The lot is currently vacant with much of the south half covered by broom and blackberry.

The upper portion of the slope is relatively flat, and we measured the crest to be approximately 9 to 10 m from the northern property line. The slope then descends at an orientation of roughly 35 to 40 degrees below horizontal which then levels out for 11 m (roughly) to the southern property line. The estimated total height of the slope is approximately 6 m. Pooling of surface water was observed upon the upper and middle benches, although we note our site visit was conducted during a prolonged period of heavy rain. Along the southern property line, we observed another slope leading off property and measured such to descend at an angle of approximately 15 to 20 degrees below horizontal.

To gain an understanding of the shallow subsurface soil and groundwater conditions, we completed a test pit investigation on the lower bench, near the middle to south end of the lot. The investigation comprised two test pits, in locations shown on the attached Test Pit Location Plan. All test pits were terminated in very dense silty granular material, suspected to be part of an undisturbed glacial till deposit. Table 1 summarizes the stratigraphy of each test pit.

Table 1: Test Pit Summary

Test Pit (TP25-XX)	Depth	Stratigraphy/Soil
TP25-01	0 to 1.0 m	Fill – topsoil, wood, organics, silty sand and gravel, some cobbles, trace boulders
	At 1.0 m	TP terminated in very dense silty granular material. Heavy groundwater seepage encountered at 0.6 m below ground surface.
TP 25-02	0 to 1.2 m	Fill - topsoil, wood, organics, silty sand and gravel, some cobbles, trace boulders
	1.2 m to 1.85 m	Transitions to sand/gravel
	At 1.85 m	TP terminated in very dense silty granular material. Heavy groundwater seepage encountered at base.

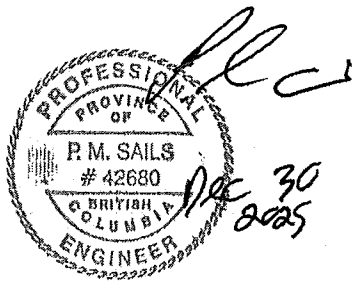
Heavy groundwater seepage was encountered in both test pits and test pits were backfilled with the excavated material.

Given the findings of our assessment, we consider development of a proposed home at the property to be feasible from a geotechnical perspective, provided appropriate geotechnical design and field review are completed.

We trust the preceding is suitable for your purposes at present. If you have any questions or require anything further, please do not hesitate to contact us.

Sincerely,

Ryzuk Geotechnical
Permit to Practice Number: 1002996



Sean Gugay, EIT
Advanced Junior Engineer

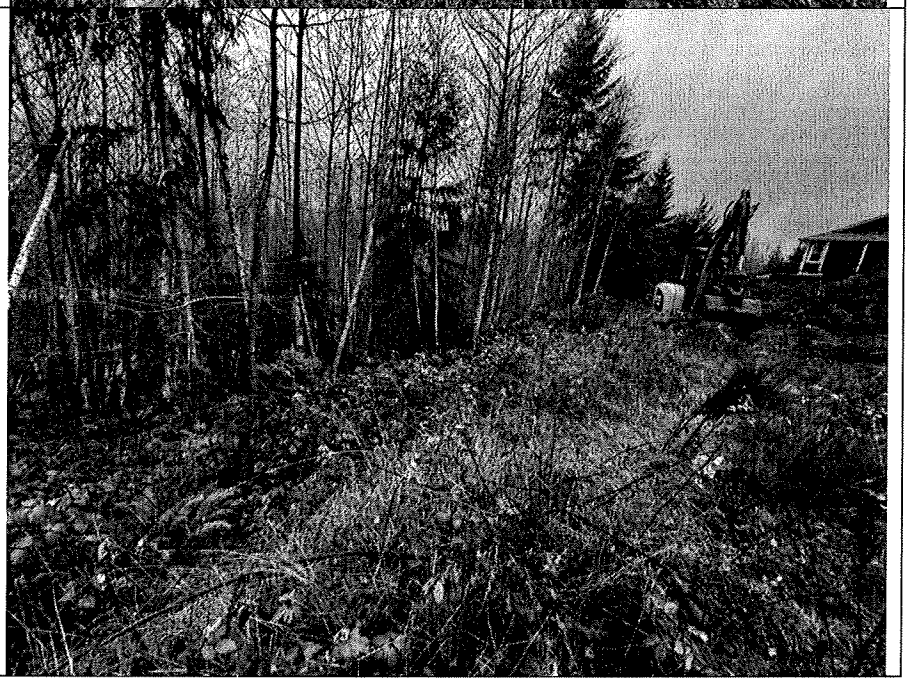
Patrick Sails, P.Eng.
Lead Geotechnical Engineer

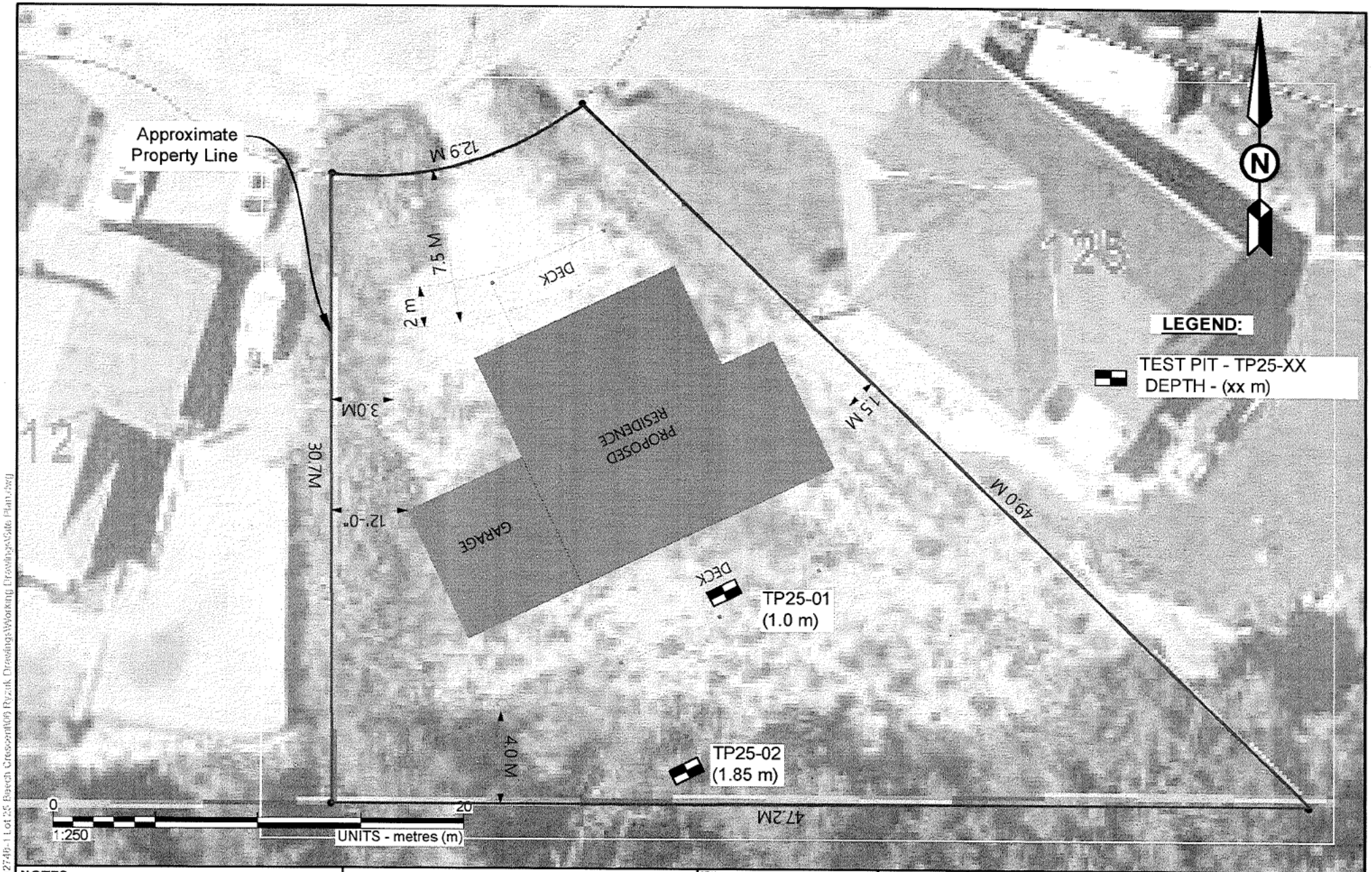
Attachments:

- Photo Log
- Test Pit Location Plan

Photo Log	
Photo 1: Looking south into property from Beech Crescent.	
Photo 2: Looking southeast into property down into the benched portion near the middle of the lot.	

Photo 3: TP25-01	
Photo 4: TP 25-02	

Photo 5: TP25-01 after leaving open for 20 mins.	
Photo 6: Trees lining the approximate southern edge of the property.	



NOTES

1. This drawing is scaled for 8.5x11 sheet and does not require further scaling to fit. Scales will differ if printed on different sheet size.
2. Background imagery taken from 2025 CVRD GIS Webmapping systems.
3. Proposed residence location taken from Lahni Wickland Drafting & Design Service drawing page 1.
4. Test pit locations accurate up to +/- 2 m.

RYZUK GEOTECHNICAL
100 - 771 Vernon Avenue - Victoria, BC V8X 6A7
250-475-3131 mail@ryzuk.com

SEAL

PTPN: 1002996

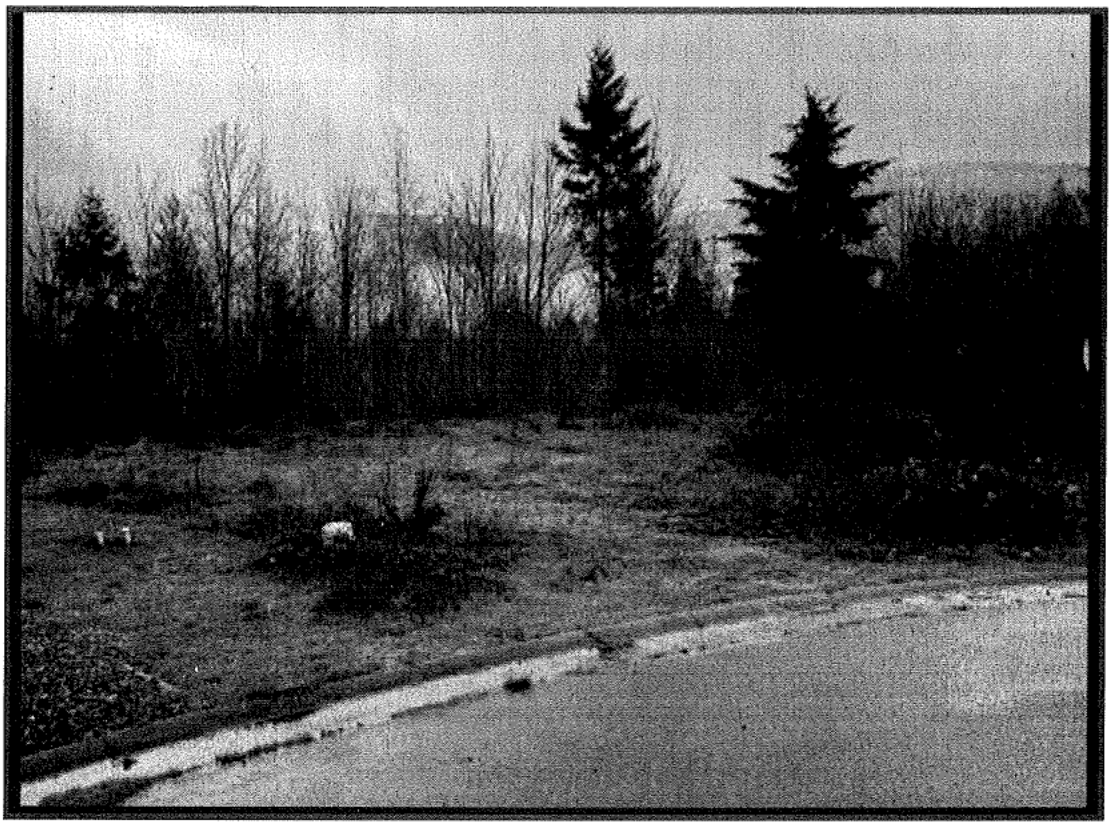
DRAWN BY	SG
EOR/LEAD	PMS
REVIEW	
SCALE	1:250
DATE	2025/12/30
CLIENT	
PROJECT TITLE	PRE-PURCHASE ASSESSMENT
PROJECT ADDRESS	118 BEECH CRESCENT (LOT 25) - LAKE COWICHAN, BC
DRAWING NAME	TEST PIT LOCATION PLAN
PROJECT No.	12748-1
SHEET No.	01 of 01
REVISION	00

R:\Ryzuk Data\12900 to 12999\12748-1 Lot 25 Beech Crescent\05 Ryzuk Drawings\Working Drawings\Site Plan.dwg

ATTACHMENT 3

Wildfire Hazard Assessment, prepared by Strathcona Forestry Consulting, dated January 4, 2026

Strathcona Forestry Consulting



Wildfire Hazard Assessment
Lot 25 Beech Crescent

Town of Lake Cowichan

Prepared for: Section 22 - Disclosure harmful to Personal Privacy

Prepared by: Strathcona Forestry Consulting
PO Box 387 Stn Mn
Duncan BC V9L 3X5
E: strathcona.fc@shaw.ca

4 January 2026

Executive Summary

In accordance with the Town of Lake Cowichan Development Permit Area Guidelines for Wildfire, [redacted] retained Strathcona Forestry Consulting to conduct a Wildfire Hazard Assessment of Lot 25, Beech Crescent, proposed for construction of a single-family dwelling. The subject lot at the Slopes at the Lake subdivision is designated within a wildfire DP area.

Assessment determined that the wildfire threat is currently Moderate. Ratings of Moderate and Low are generally considered acceptable under provincial fire behaviour standards. Factors influencing the current rating include: well-maintained homes and properties at the surrounding area; moderate fuel loading (vegetative cover) at the subject lot; status of local infrastructure (access and community water); and response likely < 10 minutes.

Recent wildfire seasons in Canada have highlighted the threat that wildfires can pose to communities. Much of rural Canada – including many areas at the Town of Lake Cowichan - is classified in the wildland-rural interface – where structures are located within or beside forests. Strategies for wildfire prevention and preparedness developed through the FireSmart program have proven effective at reducing risk related losses to wildfire (FireSmartCanada.ca; FireSmartBC.ca). FireSmart principles for wildfire prevention and preparedness increase resiliency of both human and natural ecosystems.

While the current status of the subject lot is rated Moderate for Wildfire threat, it is prudent in interface areas to be prepared for wildfire. In my professional opinion, compliance with the recommendations in this report will ensure the safety of the intended development.

Fire prevention and protection in the interface zone are ongoing processes. Long-term implementation of FireSmart mitigation is essential to ensure protection for life, property, and ecological processes in the wildfire interface at the Town of Lake Cowichan.

Introduction

In accordance with the Town of Lake Cowichan Development Permit Area Guidelines for Wildfire, [redacted] retained Strathcona Forestry Consulting to conduct a Wildfire Hazard Assessment of Lot 25, Beech Crescent, which is proposed for a single-family dwelling. The subject lot is located at the Slopes at the Lake subdivision.

The interface (wildland urban interface/wildland residential interface) describes any area where combustible wildland fuels are found adjacent to homes or other buildings. Under Section 488 of the Local Government Act, development permits may be designated where protection of Natural Hazard Lands is justified. Natural hazards, including wildfires, may put life and property, and local biodiversity, at risk if development is inappropriately situated and not well planned. Areas assigned at high or extreme risk from wildfire are designated in a Development Permit Area (DPA). The objective of the DPA is to properly manage the risks associated with the hazard (interface wildfires).

Hazard Assessment

This report describes the vegetation, terrain, and infrastructure on and around the subject property, and provides recommendations to reduce the risk of wildfire. Assessment criteria are based on Rating Interface Wildfire Threats in British Columbia (https://www2.gov.bc.ca/), FireSmart (FireSmart, Protecting Your Community From Wildfire (Second Edition. Partners in Protection, 2003 (https://www.firesmartcanada.ca/), and the Home Owners FireSmart Manual (BC Edition (https://www2.gov.bc.ca/assets/gov/public-safety-and.../homeowner-firesmart.pdf). Fire behavior modeling is standardized after the Canadian Forest Fire Danger Rating System (CFFDRS). Fuel Types listed in this assessment are customized from the CFFDRS Fuel Type list for applicability in south coastal BC. Wildfire threat assessment was conducted through an analysis of fuel threats in and adjacent to the proposed development, as described in the 2025 Wildfire Threat Assessment Guide and Worksheets (MFLNRO, BCWS, 2025). This process, used by qualified environmental professionals, employs physical and biophysical factors, combined with fuel hazards, to determine the wildfire threat (low, moderate, high, or extreme). Fire risk is also based on four classes: low, moderate, high, and extreme. Recommendations in this report conform to BC Building Code standards and fire hazard planning authorized by Section 3(2) of the BC Fire Services Act.

Field Inspection: Field inspection took place in January 2026. The site investigation entailed an analysis of the interface fire hazard that the subject property and surrounding lands are exposed to, from the perspective of the general area, local site, and proposed and existing structures in the general vicinity, up to 100+ m from property boundaries, where feasible.

Location and Description of Proposal:

The subject lot is located at the distal, east end of Beech Crescent. The lot is proposed for a single-family residential dwelling (see location map below). Beech Crescent (not a crescent) is accessed from Mountain View Drive at The Slopes at the Lake subdivision. The northern portion of the lot proximal to Beech Crescent is gently sloping. The southern, sloping portion of the lot supports mixed tree cover. A buffer of mature mixed forest separates Beech Crescent from Youbou Road to the south.

The Slopes at the Lake neighbourhood is characterized by well-maintained homes and properties. The neighbourhood is serviced with community water and hydrants.

Lot 25 is located at the distal end of Beech Crescent at The Slopes at The Lake.

Wildfire Hazard and Risk

Wildfire hazard is a process, a phenomenon or a human activity that may cause loss of life, injury, or other health impacts, property damage, social and economic disruption or environmental degradation. Wildfire hazard can be described qualitatively as a fire environment—fuel, weather, topography, and ignitions.

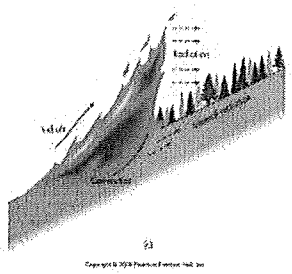
Risk assessment for wildfire and its impacts to communities considers both the likelihood of a wildfire and the potential consequence associated with that likelihood. For example, if the fuel (i.e., the hazard) ignites and the fire spreads towards the community (probability), the wildfire can become a threat to life and property (consequence) with an associated risk of loss.

Determination of the wildfire hazard and risk involves a detailed assessment of potential fire behaviour, field reviewed fuel characteristics, proximity of fuel to the community, local fire spread patterns, topographical considerations and local factors.

Fire Behaviour. Fire behaviour has three components: weather, topography, and fuel. Fire behavior predicts how forest and wildland vegetation (fuel) will burn under different conditions. Weather and topography cannot be changed; alteration of fuels across the landscape is the only way to lower fire intensity and change fire behaviour.

Biogeoclimatic Classification. The subject proposal is classified in the very dry Coastal Western Hemlock (CWHxm) biogeoclimatic. Summers are generally warm and dry, while winters are relatively moist and mild. Growing seasons tend to be long, and often feature extended periods of drought. In recent years, Fire Danger Ratings (i.e., the risk of a fire starting) have trended towards extended periods of High and Extreme ratings during the fire season.

Topography. Physical site characteristics impact fire behavior by affecting ignition potential and the rate of fire spread. Potential wildfire behavior tends to be exacerbated by steep terrain. The northern portion of the lot (nearest Beech Crescent) is gently sloping; the southern portion of the lot has a moderate inclination to the south.



Wildfires typically burn uphill. Warmer aspects tend to burn "hotter."

Vegetation. Fire behavior predicts how forest and wildland fuels (vegetation) will burn under different conditions. Fuel hazard means the potential fire behaviour, without regard to the state of weather or topography, based on the physical fuel characteristics, including fuel arrangement, fuel load, condition of herbaceous vegetation and the presence of ladder fuels.

Benchmark vegetative fuel types developed by the Canadian Forest Fire Danger Rating System Fire Behavior System (CFFDRS) are used to forecast how a wildfire will react (cwfis.cfs.nrcan.gc.ca ›) (refer to Appendix 2).

Vegetative cover at Lot 25 comprises a mix of invasive and native shrubbery, forbs (herbs and grasses), with mixed tree cover on the sloping, southern portion of the lot.

Key Fuel Types at / proposed residential construction Lot 25 Beech Crescent:

Fuel Types	Description	Forest Floor & Surface Fuels	Ladder Fuels	Wildfire Behaviour (why and how a fire spreads)
C-5/D-2 Fragmented coniferous & deciduous second-growth	Fragmented, second-growth forest cover on lower (southern) slopes of lot	Moderate discontinuous surface fuel loading.	Moderate (low branches, taller brush)	Fire-start during warm, dry windy weather would have moderate potential for Crown Fire Initiation in brush and forest stands at The Slopes. Embers can carry several kilometres.
Modified C-2/0-1 (low brush, grass)	Mix of native/non-native shrubbery and forbs/grasses occupies the northern portion of the lot near Beech Crescent	No trees on upper portion of lot. Low grass/weeds and patchy encroachment from Himalayan blackberry Scotch broom, and thistle	n/a	Warm dry conditions in summer could increase risk of fire, especially if embers spread from south or west.

Vegetative cover at Lot 25 is comprised of a mix of grasses, forbs, invasive weeds, and mixed tree cover.

Risk of Ignition. Risk of ignition represents the potential for fire starts. Risk of ignition could come from activities at the subject property (e.g., new construction and /or domestic activities), or from activities at neighbouring properties. Historic ignitions in the immediate area are low (CWRP Fire History, 2024). Risk of ignition is rated low.

Fi re Spread and Intensity. Head fire intensity is a numerical ranking of difficulty of control for specific fuel types. Flame length is a main visual manifestation. Head fire intensity is a major determinant of certain fire effects and difficulty of control. Numerically, it is equal to the product of the net heat of combustion, quantity of fuel consumed in the flaming front, and the linear rate of spread. Under warm, dry conditions, a fire could spread relatively quickly through this rural neighbourhood. Dry, windy conditions would increase the rate of spread.

HeadFire Intensity is currently Low to Moderate.

The goal of Wildfire Risk Reduction (WRR) is to reduce HeadFire Intensity to less than 2000 kW/m (< 3, HFI column Moderate) (see chart following).

Fire Weather Indices

Hazard Rating	FFMC Fine Fuel Moisture Code	DMC Duff Moisture Code	DC Drought Code	ISI Initial Spread Index	BUI Build Up Index	FWI Fire Weather Index	HFI Head Fire Intensity
Low	0-76	0-21	0-79	0-1.5	0-24	0-4.5	1-2
Moderate	77-84	22-27	80-189	2-4	25-40	4.5-10.5	3
High	85-88	28-40	190-299	5-8	41-60	10.5-18.5	4
Very High	89-91	41-60	300-424	9-15	61-89	18.5-29.5	5
Extreme	92+	61+	425+	16+	90+	29.5+	6

Spotting Potential. Spotting is a fire behavior characteristic in which sparks or embers are carried up by the wind and/or convective column and fall into other downwind fuels to ignite additional fires beyond the zone of direct ignition by the main fire (Firewise.org). Fire spotting is one of the major ways that fires spread and homes are ignited and destroyed in wildland/urban interface fires. Firebrands can come down on and ignite combustible roofs, combustible items stored adjacent to homes, and other nearby combustible fuels. The resulting spot fires may go unnoticed and thus unsuppressed when an area has been evacuated of residents, when firefighters are spread too thin, or when spot fires are too numerous.

The maximum spotting distance in a particular fire varies according to several factors, including overall fire intensity, wind speed, fuel type, initial size of the ember when lofted up, and how rapidly it is burning (Firewise.org).

If a fire start occurs during warm, windy, dry weather (High/Extreme Fire Danger Ratings), there is currently a moderate potential for spotting at the local area.

Fire Protection Area (FPA): The subject site is located within the service area of Lake Cowichan Fire Department, a volunteer fire department with a Fire Chief, Training Officer, and about 30 on-call members. The firehall is at 3 North Shore Road, a driving distance of approximately 2 km from the subject site. Response will vary depending on time of day, road/traffic conditions, and distance of volunteers from the hall.

Fire department response time is the elapsed time, in minutes, from when the first firefighting unit is dispatched to when the first fire fighting unit arrives at the emergency scene. Fire department intervention time is crucial in determining the consequences of a fire in terms of deaths, injuries, and loss of property and damage to the environment. An early aggressive and offensive primary interior attack on a working fire is usually the most effective strategy to reduce the loss of lives and property damage.

The British Columbia Building Code addresses situations where the firefighter response time 'exceeds 10 minutes in 10% or more of all calls' by requiring higher levels of non-combustible construction and reductions on allowable areas of unprotected openings. The Building Code should address Fire Department concerns.

Mutual Aid Fire Departments within the CVRD operate under a mutual aid agreement with other fire departments within (and outside) the region. In the case of a serious fire, mutual aid from adjoining fire departments can benefit fire suppression by pooling manpower and resources (water supply, water tenders, etc.,). Mutual aid, however, may not always available.

Wildfires Fire departments in the CVRD automatically respond to structure fires and small, easily accessible bush fires inside the fire service Fire Protection Area (FPA). The Wildfire Management Branch generally responds to forested areas outside a FPA. The subject property is contained with a FPA.

Water Supply An adequate and reliable water supply for firefighting is an essential part of a community's fire protection system. The Fire Underwriters Survey (FUS) Guidelines outline water specifications for fire protection. The BC Building Code governs the minimum water requirements for buildings. In fire protection areas served by a community water system, water supply for fire protection generally consists of a piped system in common with domestic potable water.

The Slopes is serviced with community water and fire hydrants.

Access FireSmart infrastructure and access increase the resident and firefighter safety, and facilitate quick response by firefighters. Developments should have sufficient access for emergency vehicles, including 2-way road access in and out of any site, and safe driveway accesses. FireSmart infrastructure and access increase the resident and firefighter safety, and facilitate quick response by firefighters. Local government standards for public roads generally follow the BC Building Code and Geometric Design Guide for Canadian Roads (www.tac-atc).

The Slopes subdivision is one-way-in/ one-way-out from Youbou Road. The subject lot is located at the end of Beech Crescent at a distance of approximately 0.3 km from Mountain View Drive, which in turn is a short distance from Winter Drive, which accesses the Youbou Road.

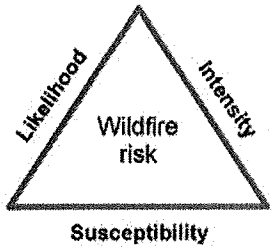
Wildfire Threat Assessment Results

Wildfire risk differs from wildfire threat in that it incorporates the likelihood of a fire occurring and the associated fire behaviour into the impacts of the fire on human values (consequence). Wildfire risk ratings are integral in identifying and prioritizing where to focus FireSmart activities to protect values.

Wildfire threat assessment connects threat analysis with current fuel assessment to derive a local wildfire threat. Scoring from the FireSmart assessment and fire behavior analyses at the subject property determined the proposal has a Moderate Fuel Assessment rating, and a Moderate Wildfire Threat Rating (below). Factors influencing the ratings include: low to moderate ladder and moderate surface fuel loading; degree of local infrastructure (access and community water); well-maintained homes and properties in the general vicinity; gentle to moderately sloping topography; and potential for response < 10 minutes. Ratings of Moderate and Low are generally considered acceptable under provincial fire behaviour standards.

LOCAL WILDFIRE THREAT SUMMARY: Lot 25 Beech Crescent			
System:	**Subcomponents**	**CURRENT ratings**	**Projected Ratings post-development***
MFLNRO Wildfire Threat Assessment	Fire Behaviour: Fuel, Weather, Topography	Fuel Assessment Class: **Moderate** (see chart next pg.)	Moderate
	Structural (incl vicinity)	Moderate	Low to Moderate
Overall Rating:		**Moderate**	Moderate
HIRV Model	Hazard Impact Risk Vulnerability	Moderate Moderate - High Moderate Moderate	Moderate Moderate Low to Moderate Moderate
Wildfire Risk	Likelihood Intensity Susceptibility	Moderate	Low to Moderate

*Projected ratings conditional upon compliance with recommendations contained in this report.



Wildfire risk triangle. (Scott et al. 2013).

Generalized Descriptions of the "Fuel Assessment Rating" classes:

Low	Fires may start and spread slowly. There will be minimal involvement of deeper fuel layers or larger fuels.
Moderate	Forest fuels are drier and there is an increased risk of surface fires starting. There will be involvement of the organic layer but larger dead material will not readily combust.
High	Forest fuels are very dry, new fires may start easily, burn vigorously; aerial fuel will be engaged in the flaming front. Most fuel in the organic layer will be consumed and larger dead fuel will be consumed in the smoldering combustion.
Extreme	Extremely dry forest fuel, new fires will start easily, burn vigorously; all aerial fuel will be engaged in the flaming front. Most fuel in the organic layer will be consumed and larger dead fuel will be consumed in the smoldering combustion.

FMC (Fuel Moisture Content) 95% value based on 90th percentile drought conditions.

Fuel reduction targets should be sufficient to be effective to meet treatment objectives of reduced fire behaviour under 90th Percentile Fire Weather Index (FWI) Conditions (FFMC, ISI, BUI) from the BCWS weather network.

Summary

Recent wildfire seasons in Canada have highlighted the threat that wildfires can pose to communities. Many areas of Lake Cowichan are situated within or near the forest and are designated in the wildland-rural interface – an area where buildings and forested areas meet. These areas are at increased risk of wildfire.

Wildfire hazard assessment of a proposed single family dwelling at Lot 25 Beech Crescent determined the local wildfire threat is Moderate. The best protection against loss, damage or injury due to wildfire involves active prevention. FireSmart principles are essential to fire prevention (https://firesmartcanada.ca/; https://firesmartbc.ca/). FireSmart principles are designed to increase resiliency of human communities and natural ecosystems.

Recommendations

Vegetation Management

General Precautions During Land Clearing and Construction

Ensure any land clearing activities are conducted in compliance with BC's Wildfire Act local bylaws.

- As per the BC Wildfire Act, if a high-risk activity (i.e., land clearing) is taking place between 1 April and 31 October, the operator must keep at the activity site fire fighting hand tools, in a combination and type to properly equip each person who works at the site with a minimum of one fire fighting hand tool, and an adequate fire suppression system (onsite portable water tanker and fire fighting tools – shovels, pulaskis, portable water backpacks). In addition, efforts must be made to maintain an adequate fire break between any high risk activity and areas of continuous forest to ensure a fire originating at the site does not escape the site.
- During construction, develop an Emergency Plan of Action, listing key contact information in case of fire and/or another emergency at the site.
- Hazard abatement (removal of slash/disposal of debris piles) must take place in compliance with local bylaws.
- Ensure construction workers are made aware of the risk of fire in the interface zone, especially during dry summer weather.

Proposed structural development:

FireSmart Zones – (see Appendix 1)

- **Immediate Zone 1a: 0-1.5 m**

A noncombustible surface should extend for 1.5 m around the new home and any auxiliary structures. Avoid storing flammable outdoor items, such as garbage cans without lids and fuel tanks, which are places where embers can land and start a fire, in this critical area adjacent to the structure.

- Any new landscaping should employ noncombustible landscaping materials, such as gravel, brick, or concrete
- Avoid woody shrubs, trees, or tree branches in this immediate zone
- Thin out and remove dead/dying understorey trees if present.
- Rake up and remove tree needles and small branches within this zone.
- Create a noncombustible zone underneath and for 1.5 m around any vehicles parked beside structures.

- **FireSmart Intermediate Zone 1: 1.5 - 10 m**

Establish and maintain an environment around structures that will not support fire. Focus on fuel removal, conversion, and reduction.

- Maintain landscaping with a low density of fire resistant (native) plants and shrubs.
- Maintain landscape with non-combustible landscaping material, and/or regular irrigation, mowing, pruning, raking, weeding and dead plant removal.
- Limb (prune) trees 1.5 to 2m from the ground. Create space between trees and shrubs – a general rule is twice the height of what the plant will be at maturity. Remove tree limbs closer than 4 from power lines and any touching structures.
- Avoid using woody debris, including bark mulch, as it provides potential places for fires to start.
- Store items such as construction materials, tools, equipment, and machinery at least 10 m from structures.

- **FireSmart Extended Zone 2: 10-30 m** (where applicable subject to local conditions and property boundaries)

Conduct modified FireSmart activities: thinning and pruning to reduce fuel loading.

- Conduct light (understorey) thinning; remove standing dead smaller trees
- Within 30 m of structure, remove lower branches of conifers to a height of at least 2.5 m from the ground. (For smaller evergreen trees; general rule of thumb is prune branches up to a third the height of the tree)
- Regularly clean up accumulations of fallen branches, any dry grass and leaves, and conifer needles from the ground to eliminate potential surface fires

General Principles of FireSmart Landscaping (where applicable)

- Incorporate FireSmart landscaping by utilizing existing, widely spaced trees, native shrubs and groundcover possibly in combination with stone and/or water features. See FireSmart Guide to Landscaping. Fire-resistive native plant species are ideal. *https://www.firesmartcanada.ca/resources-library/firesmart-guide-to-landscaping*
- Recommended fire-resistive plants have:
  - moist, supple leaves
  - minimal accumulation of dead vegetation
  - water-like sap that produces little odour
  - low amount of sap or resin material
- Promptly re-vegetate any areas of soil disturbed during clearing and construction with approved landscaping materials and/or native plant species to minimize spread of invasive plant species (i.e., Himalayan blackberry, Scotch broom, daphne, etc.).

- Any powerlines should be clear (3m+) of branches and other vegetation.

Site Maintenance:

- Regularly maintain vegetation at the property (including removal of any invasive plant species along property perimeters, and around access routes).

Construction (General Guidelines)

The roof is the most vulnerable component of a structure. Sparks and burning embers from a wildfire can travel long distances and quickly ignite flammable roofing material. Roofs also contain many areas in which debris and embers may collect. Regular roof cleaning should be done to remove combustible materials such as leaves and branches.

Siding materials are also vulnerable to wildfire. Combustible debris can accumulate at the vents and openings on the home and be ignited by embers during a wildfire.

N.B. Accessory buildings located within the Wildfire Development Permit Area must meet the same building standards as the principal building.

- **Use fire-retardant roof covering assemblies** rated Class A, B, or C (i.e., metal, tile, ULC-rated asphalt) and non-combustible siding materials (i.e., stucco, metal siding, brick, cement shingles or cementitious materials, poured concrete, or ULC-rated wood siding) on new structures. Refer to the manufacturer's guidelines to maintain the fire resistance of your roof. Metal, clay tile, and rated asphalt shingles are the most fire-resistant roofing materials.
- **Construct eaves and soffits** of ignition-resistant or non-combustible materials. All eaves and ventilation openings in exterior walls, roofs, and soffits shall be covered with noncombustible, 3 millimetre corrosion-resistant wire mesh, or be designed to prevent flame or ember penetration into the structure.
- **Ensure exterior windows and glazing within doors exposed to the wildfire interface** and skylights are tempered glass, have multilayer glazing, or have a fire protection rating of not less than 20 minutes, and meet the requirements of the NAFS. Openable windows must be covered with non-combustible, corrosion-resistant screens.
- **Construct exterior doors and garage doors** of noncombustible materials (i.e. metal clad, solid core wood or have a 20 minute fire protection rating), and meets the requirements of the North American Fenestration Standard (NAFS).
- **Use fire-resistant siding** such as stucco, hardiboard, metal, brick and concrete, which offer superior fire resistance to wildfire. Logs and heavy timbers are less effective, while wood and vinyl siding offer very little protection.
- **Ensure exterior cladding** on elevations adjacent to the wildfire interface is constructed of ignition-resistant or non-combustible materials such as: stucco, metal siding, brick, cement shingles, cement board, concrete block, poured concrete, concrete composite, rock and logs or heavy timber.
- **Ensure a minimum of 15 cm ground-*to-siding fire-resistant clearance.***
- **Follow FireSmart guidelines for design, construction, and maintenance of window and door glazing, eaves and vents, and decking.** Install noncombustible material for all vents (should be 3 mm screening or ASTM fire rated vents). Metal products are recommended for vents and vent flashing. https://www.firesmartcanada.ca/
- **Ensure structures are equipped with working smoke alarm(s).**

- **Sheath in the base of structures** with fire-resistant material to reduce the risk of sparks and embers igniting the home. Install fire-resistant windows.
- **Ensure all doors are fire-rated and have a proper seal.** This is applicable to garage doors in addition to all other doors.

Maintenance

- Regularly inspect siding for locations where embers could accumulate and lodge.
- Maintain and remove combustible debris near exterior walls to reduce a building's vulnerability to ignition during a wildfire.
- Regularly remove debris from gutters – sparks and easily ignite these dry materials.
- Inspect vents and openings regularly to ensure vents are in good repair, and remove any accumulated combustible debris.
- Regularly maintain and clean corners and crevices of the structure and surrounding area.

Water

- The owner/developer is responsible for ensuring all connections and upgrades to Town services accommodate planned development.
- Ensure compliance with fireflow guidelines from Town of Lake Cowichan.

Access

- Ensure driveway access meets local servicing requirements.
- Two-way road access is ideal for emergency response (not feasible in this situation).
- Ensure address signage is clearly evident. Ideal address signage includes letters, numbers, and symbols that are at least 10 cm high, with a 12 mm stroke, contrasting with the background colour of the sign, and are reflective.
- Ensure new structure is mapped on fire department "pre-org" (fire planning) maps.

Emergency Preparedness

In the case of a nearby wildfire, it is important to have an adaptation and mitigation plan ready for the home, property, and valuable possessions.

- Create and practice an emergency preparedness plan. What will you do if you have to evacuate? What are your escape routes and meeting points? Make a listing of emergency contacts in case you need to evacuate.
- Make sure you're properly insured.

FireSmart Neigbhourhood

Consider liaising with the Slopes at the Lake FireSmart Neighbourhood committee (contact through the Lake Cowichan Fire Department FireSmart Program) to learn more about how local residents can prepare for wildfire.

Appendix 1. FireSmart Zones

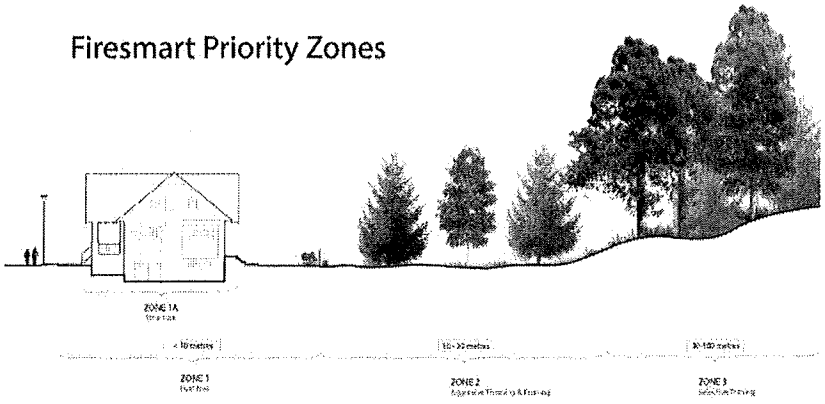
In interface areas, FireSmart advocates the establishment and maintenance of Fuel Management Zones* extending outward from structures and along access routes:
Zone 1 a (0-1.5m)
Zone 1 (0-10 m).
Zone 2 (10-30 m).
(FireSmart, 2003; updated 2024)

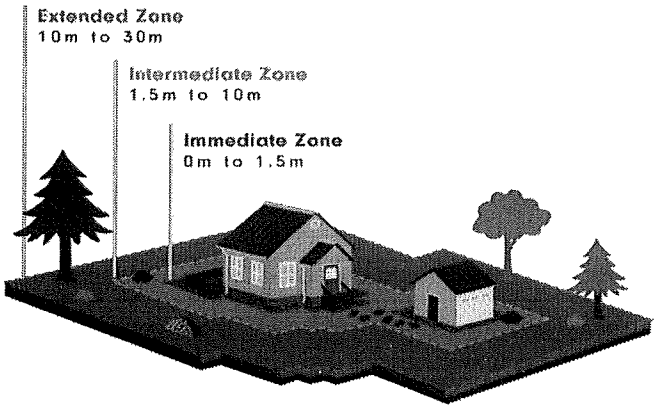
Immediate Zone 1a (0-1.5 m): This is the noncombustible zone, where it is very important not to have any combustibles next to buildings.

Intermediate Zone 1 (0-10 m): The main objective of vegetation management is to create an environment that will not support fire. Vegetation management focuses on fuel removal, conversion, and reduction.

Extended Zone 2 (10-30 m): Where treatment in PZ 1 is not sufficient to significantly reduce the fire hazard due to fuel loading, extend the fuel modified area with a variety of thinning and pruning actions.

*Setback Zone distances may be extended depending on aspect, slope, fuel loading, etc.





Appendix 2. Generic Fuel Types (adopted from CFFDRS).

Fuel Type	Description	Wildfire Behaviour Under High Wildfire Danger
Coniferous:		
C1	Terrestrial herbaceous ecosystem: mossy rock outcroppings. Lichen. Organic layer absent or shallow. Uncompacted.	High potential for surface fire, esp. where dense clumps dried moss, lichen
C2	Dense regeneration to pole-sapling (immature) forest with crowns almost to ground; continuous moss, compacted organic layer; continuous shrubs; low to moderate ladder fuels	High potential for crown fires; low to very high fire intensity and rate of spread
C3	Fully stocked, mature conifer stands, crowns separated from ground; sparse understorey	Surface and crown fire, low to very high fire intensity and rate of spread
C4	Dense, pole-sapling (immature) forest, heavy standing dead and down, dead woody fuel; continuous needle litter; continuous vertical crown fuel continuity	High potential for crown fires, high to very high fire intensity and rate of spread
C5	Moderately well-stocked, mature forest, moderate dense understorey crowns well separated from ground; continuous needle litter	Low to moderately fast-spreading, low to moderate intensity surface fire
C6	Fully stocked conifer plantation; absent understorey; tree crowns separated from ground; continuous needle litter	Surface fire may spread rapidly to become high intensity fire with high rate of spread
C7	Open, mature coniferous stand; uneven-aged; discontinuous understorey; tree crowns mostly separated from ground	Surface, torching, rarely crowning (except on steeper slopes), mod - high intensity/ ROS
D (Deciduous)	Moderately well-stocked deciduous stands; moderate medium to tall shrubs and herb layers D-1 Leafless D-2 In leaf	Typically a surface fire; low to moderate rate of spread and fire intensity
M (Mixed Forest)	Moderately well-stocked mixed stand of conifers and deciduous tree species; moderate shrub understorey; conifer crowns extend nearly to ground M-1 Leafless M-2 In Leaf	Surface, torching and crowning; moderate to very high intensity and spread rate (varies with slope and % vegetation cover)
S-3 (Slash)	Slash from logging and land clearing Coastal cedar-hemlock-Douglas-fir slash May have high foliage retention; moderate loading and depth; moderate shrub and herb coverage	Fine fuel % and cedar foliage retention will result in faster ignition and spread
01-Long	Continuous standing grass – fuel loading is 0.3 kg/m2; scattered trees 01-a Matted 01-b Tall	Rapid spreading, moderate to high intensity surface fire
02-Short	Continuous human modified short grass	The taller, and more cured the grass, the more rapid spread; low to moderate intensity surface fire Short grass typically has a low rate of spread and low fire intensity.

Appendix 3. Fire Risk Classes.

RELATIVE WILDFIRE RISK
Low
Moderate
High
Extreme

Fire Risk Classes

Low (Green): The combination of the local fuel hazard, weather influences, topography, proximity to the community, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it a lower potential for threatening a community. These stands will support surface fires, single tree or small groups of conifer trees could torch/ candle in extreme fire weather conditions. Fuel type spot potential is very low, low risk to any values at risk.

Moderate (Yellow): The combination of the local fuel hazard, weather influences, topography, proximity to the community, fuel position in relation to fire spread patterns and known local wildfire threat factors make it possible that a wildfire in this area would threaten the community. Areas of matted grass, slash, conifer plantations, mature conifer stands with very high crown base height, and deciduous stands with 26 to 49% conifers. These stands will support surface fires, single tree or small groups of conifer trees could torch/ candle. Rates of spread would average between 2-5 meters/ minute. Forest stands would have potential to impact values in extreme weather conditions. Fuel type spot potential is unlikely to impact values at a long distance (<400m).

High (Orange): The combination of the local fuel hazard, weather influences, topography, proximity to the community, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it likely that a wildfire in this area would threaten the community. This includes stands with continuous surface/ crown fuel that will support regular torching/ candling, intermittent crown and/or continuous crown fires. Rates of spread would average 6 -10 meters/ minute. Fuel type spot potential is likely to impact values at a long distance (400 -1 000m).

Extreme (Red): The combination of the local fuel hazard, weather influences, topography, proximity to the community, fuel position in relation to fire spread patterns, and known local wildfire threat factors make it very likely that a wildfire in this area would threaten the community. Stands with continuous surface/ crown fuel and fuel characteristics that tend to support the development of intermittent or continuous crown fires. Rates of spread would average >10 meters/ minute. Fuel type spot potential is probable to impact values at a long distance (400 -1 000m or greater).These forest stands have the greater potential to produce extreme fire behaviour (long range spotting, fire whirls and other fire behaviour phenomena.

Limitations

This report provides an assessment of site conditions. Evaluation is based on professional judgment. The investigation involved field observation. Recommended treatment pertains only to the particular site as disclosed at the time of inspection. The report was prepared considering site-specific circumstances and conditions. It is intended only for use by the client for the purpose for which it was commissioned and for use by local government regulating the activities to which it pertains.