

**DATE:** June 20, 2018**FILE:** 3360-20/RZ 3C 18**TO:** Chair and Directors  
Electoral Areas Services Committee**FROM:** Russell Dyson  
Chief Administrative OfficerSupported by Russell Dyson  
Chief Administrative Officer*R. Dyson***RE: Proposed Zoning Bylaw Amendment – Forbidden Plateau Road  
(Fry / Taylor)  
Puntledge – Black Creek (Electoral Area C)  
Lot 4, Block 249, Comox District, Plan EPP11657, PID 028-704-550**

### Purpose

To provide an overview of an application (Appendix A) to rezone a 20 hectare property on Forbidden Plateau Road to a zone that would enable its subdivision into four 4 hectare residential lots and recommend that the request be denied.

### Recommendation from the Chief Administrative Officer:

THAT the board deny the application to rezone Lot 4, Block 249, Comox District, Plan EPP11657, PID 028-704-550, which would have enabled subdivision to create 4 hectare parcels.

### Executive Summary

- The property owners of an undeveloped 20 hectare parcel along Forbidden Plateau Road are requesting a rezoning to allow for the property to be subdivided into residential lots with a minimum lot area of 4 hectares.
- The property is designated as being within the Rural Settlement Areas (RSA) of the Regional Growth Strategy (RGS) and Official Community Plan (OCP).
- The proposal involves potentially gifting 0.4 hectares to the Comox Valley Regional District (CVRD) to be used as a “fire hall lot”. A feasibility study concerning fire protection options for the area was recently completed and recommended against the CVRD establishing fire protection service at this time. Therefore, the CVRD does not have a use for a fire hall lot at this location.
- The proposal would add population density in the drinking water supply watershed, into an area outside of all fire protection districts and adjacent to the working landscape.
- According to the conceptual subdivision plan, the proposal involves creating approximately 475 metres of new, dead-end road over an area identified as a Streamside Protection and Enhancement Area (SPEA) to access the proposed four lots.
- Staff recommends that the application be refused on the basis of inconsistencies with the RGS and OCP with respect to adding residential density within the drinking water supply watershed and the working landscape and inconsistency with the OCP’s framework for considering requests to rezone for lot sizes between 4 hectares to 20 hectares in the RSA, and policy directions regarding road access.

Prepared by:

Concurrence:

**J. MacLean**

**A. Mullaly**

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Jodi MacLean, MCIP, RPP  
Rural Planner

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Alana Mullaly, M.Pl., MCIP, RPP  
Acting General Manager of Planning  
and Development Services Branch

**Stakeholder Distribution (Upon Agenda Publication)**

Applicant	✓
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**Background/Current Situation**

An application has been received to amend the Zoning Bylaw to enable subdivision of the subject property into four lots. The subject property (Figures 1 and 2) is 20.4 hectares in area, accessed off the gravelled portion of Forbidden Plateau Road. It is predominately forested though an interior access road and potential building sites are cleared.

In support of the application, the applicant submitted a conceptual subdivision plan (Appendix A) that illustrates the intended lot configurations and sizes. It includes four proposed lots ranging in size between 4.00 to 6.86 hectares, with a new road along the northern boundary and a 0.415 hectare area labeled “proposed fire hall lot to be gifted to CVRD”. Each proposed residential lot on the plan includes a potential building site illustrating test pits dug for the soils report (see Soil conditions section below), a potential location for a well and one house with 10, 30 and 100 metre vegetation management radii noted in the FireSmart guidelines. To accommodate implementation of the conceptual subdivision plan, a new zone would have to be created that has a minimum lot area of 4 hectares.

**Planning Analysis**

Regional Growth Strategy

The RGS, Bylaw No. 120, being the “Comox Valley Regional District Regional Growth Strategy Bylaw No. 120, 2010”, designates the subject property as being within the RSAs (Figure 3). MG Policy 2A-2 directs that the minimum lot sizes in the RSA be established within the OCP “...ranging between 4 hectares and 20 hectares, subject to soil conditions, ground water capacity, extension of existing subdivision areas, interface fire hazards and suitability of lands for rural development.” These aspects are reviewed in sections below.

MG Policy 2A-1 states that “All new development within RSAs must maintain the rural character of its surroundings and support the function of a working landscape. This requires careful consideration of the permitted uses, the form and scale of development and lot sizes.” Working landscapes refer to forestry and agricultural uses. The subject property was formerly used as a part of a block of land in the Private Managed Forest (PMF) program and was last logged about 20 years ago. The subject property was created in a 2011 subdivision and removed from the PMF program once it was sold for rural residential use. A restrictive covenant (privately-enforced) was placed on title in favour of the previous property owner which manages the surrounding forestry land that prohibits sawmills, wood processing, gravel or mineral extraction, and gravel crushing and screening. The company also holds an easement on the subject property for use of the interior road to access its land beyond. The subject property is currently bordered by land within the PMF program on all but the south side. Adding population density and residential development along the edges of a working landscape can bring conflict and should include the use of buffers and transition zones (see Working landscapes section below).

Official Community Plan

The OCP, Bylaw No. 337 being the “Rural Comox Valley Official Community Plan Bylaw No. 337, 2014”, follows through with the RGS’s RSA policy concerning minimum lot sizes with Policy 43.(3) which states: “*Consider requests to rezone for lot sizes between 4 hectares to 20 hectares using either the density bonusing framework or through the community amenity contributions policy included in this OCP.*” Following this, Policy 43.(4) directs: “*Apply the following framework to proposed rezoning applications in rural settlement areas:*

- (a) 20 hectares – basic permitted lot size;*
- (b) 15 hectare lots – where up to 10 per cent of the total area is required for public dedication of greenspace or environmental protection;*
- (c) 10 hectare lots – where up to 15 per cent of the total area is required for public dedication of greenspace or environmental protection;*
- (d) 8 hectare lots – where up to 20 per cent of the total area is required for public dedication of greenspace or environmental protection;*
- (e) 6 hectare lots – where up to 25 per cent of the total area is required for public dedication of greenspace or environmental protection;*
- (f) 4 hectare lots – where up to 30 per cent of the total area is required for public dedication of greenspace or environmental protection;*
- (g) Where a combination of lot sizes is proposed, with an aim to create a diverse community with a range of rural lot sizes of at least 4 hectares, the amount of land required for public dedication of greenspace or environmental protection will be calculated based on the average lot size within the proposed subdivision. The average will be rounded down to the nearest whole number.”*

According to this policy, the proposed 4 hectare minimum lot area would necessitate approximately 30 per cent of its total area dedicated to public greenspace or environmental protection, which would amount to approximately 6 hectares. The application includes no public dedication of greenspace or environmental protection. The policies allow for consideration of equivalences in community amenity contributions under the direction of policy 72(2). The applicant is proposing dedication of 0.415 hectare for use in the public provision of fire protection services, however this is not included in policy 72(2) as an amenity. The application is not achieving the objective of these OCP policies.

Policy 43(5) of the RSA designation, concerning the assessment of suitability for enabling further subdivision in a rezoning application, states the following factors, among others, should be considered: soil conditions and ground water capacity, connectivity between existing and proposed subdivisions, fire protection, surrounding land uses, and mitigating impacts to working landscapes (Appendix B).

*Soil conditions and ground water capacity*

Policy 43.(5) of the OCP states “*Assess new lot development in the RSA proposing to rezone as follows: (a) Soil conditions must be shown to have the capacity to provide long-term sustainable on-site sewage treatment including a primary and secondary onsite sewage disposal field location, in accordance with Subdivision Standards published by Island Health.*” In support of this, a report by Ron McMurtrie, P.Eng., of Ron McMurtrie and Associates Consulting Engineers (Appendix A) examined the site and determined that the soils will support the installation of Type 1 systems in accordance with the BC Sewerage System Regulations and that the 4 hectare lot sizes are consistent with the Subdivision Standards with respect to the availability of dispersal areas and soil depths. Policy 43.(5)(b) and (c) relate to demonstration of ground water capacity and quality for the provision of potable water for the proposed lots. In support of this, the applicant provided the well construction report, dated August 16, 2011, (Appendix A) which was generated for the subject property’s well when the parent parcel was subdivided to create this lot.

### *Connectivity*

Policy 43.(5) of the OCP states “*Assess new lot development in the RSA proposing to rezone as follows ... (d) The proposed development should be a natural extension of an existing subdivision where there is vehicle and pedestrian access connectivity between the existing and proposed subdivision and where the applicant has provided a site plan that illustrates the proposed road and trail connections.*” The proposal constitutes a densification of an existing subdivision; it would create four ~4 hectare lots within an area of predominately 20 hectare lots. The conceptual subdivision plan (Appendix A) includes proposed access road that would add approximately 500 metres of dead-end road off the gravelled Forbidden Plateau Road. The proposed access road would have an average grade of about 9 per cent (45 metre elevation gain over 500 metres of road), including two short sections in excess of 20 per cent grade. The cost of constructing the road is borne by the developer with the Ministry of Transportation & Infrastructure taking over maintenance.

In addition to the above policy specific to the RSA, Policy 23.(1) within the OCP’s Transportation section concerning new subdivisions in general states, “*Review all new development proposals to assess the emergency access design. In general, new multi-lot residential and commercial development should have two separate and unobstructed accesses.*” The proposed access road is a dead-end road that does not provide two separate and unobstructed accesses. Policy 25.(2), within the OCP’s Infrastructure section, states, “*Encourage development of any new roads, road improvements...to design using natural topography and conservation of environmental features.*” The proposed access road is a straight (east-west) road that does not curve with the natural topography and is placed over two identified watercourses (see Working landscapes section below).

### *Fire Protection*

The subject property is outside of all fire protection districts. In response to a petition from Forbidden Plateau Road area residents in the fall of 2017, a fire protection feasibility study for this area, including the subject property, was initiated. The study was prepared for the CVRD by Defero-West Consulting and Leftside Partners and considered fire protection options such as expanding the existing fire protection boundaries to include more properties along Forbidden Plateau Road, maintaining a first responder vehicle on the mountain and creating a new volunteer fire department, as well as voluntary community-led alternatives. At the time of the submission of this application the feasibility study was underway and in that context the applicant has proposed to dedicate 0.415 hectares to the CVRD to be used as a “fire hall lot” should a local service area be created and necessitate a fire hall location. The feasibility study was received by the Electoral Area Services Committee on June 18, 2018, and it did not recommend proceeding with the CVRD-operated local service area. Therefore, presently the CVRD does not have a use for a fire hall lot in this location and should a need for one arise in the future, appropriate locations will be reviewed based on efficiency and best practises with respect to the scope and scale of the service.

Policy 43.(5) of the OCP states “*Assess new lot development in the RSAs proposing to rezone as follows ... (e) The applicant must provide a report prepared by a qualified professional that demonstrates how the proposed development addresses and mitigates any risks associated with interface forest fire hazards.*” The applicants submitted a report titled Wildfire Threat Assessment for Lot 4, Block 249, Forbidden Plateau Road prepared by Leigh Stalker, RPF, of Strategic Natural Resource Consultants dated April 5, 2018 (Appendix A). The report found the subject property is dominated by moderate Wildfire Behaviour Threat Class, with cleared areas and roads having a lower rating. The report provides recommendations, based on the guidelines of the FireSmart program. FireSmart focusses on mitigating risk to existing development within the interface area and provides guidelines for designing subdivisions where the additional density has been approved. The recommendations for subdivision design include avoiding road curvature radii of less than 30 metres, incorporating a turn-around radius of at least 18 metres at the terminus of dead-end roads, having the access route not

exceed 10 per cent gradient, burying electrical lines if possible and providing vegetation maintenance around above-ground lines. The conceptual subdivision plan (Appendix A) illustrates a new dead-end road, approximately 500 metres long which would climb at about 10 per cent gradient, to a terminus with about a 20 metre radius of right-of-way. The illustrated road is straight, though there are two road curves with less than 30 metre radii along the existing Forbidden Plateau Road before the subject property is reached. The other recommendations of the report are applicable to proposed buildings including structural options (e.g. roofing, siding, chimneys, decks, etc.), water supply maintenance (for fire suppression purposes), and vegetation removal (within 30 metres from a structure). Should the subject property be subdivided, this report should be registered on title for future property owners.

#### *Watershed*

Policy 43.(5) of the OCP states “*Assess new lot development in the RSA proposing to rezone as follows ...* (f) *The suitability of land for rural residential development must be assessed in relation to the surrounding land uses, environmental features and the accessibility of the land.*” With respect to surrounding land uses and environmental features, the rear 5 hectares is within the Browns River watershed which is upstream of the CVRD’s backup water intake at the confluence of Browns River with the Puntledge River. The remaining front 15 hectares of the subject property are within the watershed that drains into the Puntledge River upstream of the drinking water intake pipe of the Comox Valley Water System, as well as several other local water service areas. The CVRD is intending to move the drinking water intake pipe from its current location on the Puntledge River to Comox Lake which will have the effect of removing the subject property out of the watershed used for drinking water. At present, should this infrastructure project proceed as intended, it is expected to be completed in 2021. It is premature to commit to additional residential density in this watershed prior to the completion of the deep water intake project.

#### *Mitigating impacts to working landscapes*

Policy 43.(5) of the OCP states “*Assess new lot development in the RSA proposing to rezone as follows ...* (g) *New development should be designed to limit and mitigate any impacts on adjacent working landscapes through buffering and site design that avoids environmentally sensitive features as designated in the sensitive ecosystem inventory.*” The subject property abuts Privately Managed Forest on its north and west side, as well as across Forbidden Plateau Road to the east. The conceptual subdivision plan (Appendix A) keeps over 100 metres of distance between the western boundary and the closest building site. The proposed access road has been placed along northern which could help act as a buffer but it appears to conflict with a covenant on title which identifies two watercourses, identified in the sensitive ecosystem inventory and a *Riparian Area Regulations* (RAR) report registered on title. The majority of the parcel (the Puntledge River watershed portion) drains towards these watercourses and the methodology used in the RAR Simple Assessment Report dated November 20, 2010, applies a 30 metre SPEA (Figure 4). The covenant requires the property owner to maintain native vegetation within the SPEA, refrain from depositing fill or disturbing soil within the SPEA, and to “*not create structural impervious or semi-impervious surfaces, flood protection works, roads, bridges...or utility corridors within the SPEA*”. The covenant allows for a modified SPEA to be created through the preparation of a detailed RAR assessment report.

#### Rainwater Management

Objectives 4.(6) and (8) of the OCP states “*To ensure all developments within drinking water supply watersheds and recharge areas are reviewed within the context of the precautionary principle*” and “*To maintain or restore the natural hydrological regime in CVRD watersheds, including natural rates of surface runoff, infiltration to shallow groundwater (interflow) and infiltration to deep groundwater with an aim, where possible, to restore the regime*”

*to its proper functioning condition.*” A Rainwater Management Plan was prepared by a qualified professional when this 20 hectare subject property was created in 2011 based on its intended 20 hectare lot size and registered on the title. This Rainwater Management Plan does not reflect the current proposal. If the board seeks to advance this application, a revised Rainwater Management Plan should be required that addresses the proposed 4 hectare lot areas while meeting the OCP’s objectives of watershed management and protection.

### Zoning

The subject property is currently zoned Rural Twenty (Figure 5) which has a minimum lot area of 20 hectares. Under this zone, the subject property has no further subdivision potential but does allow for two single detached dwellings. In addition to residential uses, the current zone permits a range of uses that promote a working landscape, such as sawmills, wood processing, extraction of gravel or minerals, and crushing and screening of gravel, however a restrictive covenant is registered on title, in favour of the owners of the neighbouring forestry parcels prohibiting these uses. This application is requesting a zone be created which has a 4 hectare minimum lot area and allows for residential uses.

### **Policy Analysis**

Section 479 of the *Local Government Act* (RSBC, 2015, c. 1) (LGA) authorizes a local government to regulate, through bylaw, the use, density, the size and shape of land, buildings and structures. Section 460 of the LGA states that a local government must define procedures by which a property owner may apply for a bylaw amendment.

### **Options**

The board may deny the application or direct staff to report back with an external agency referral list based on the application as presented.

Staff recommends the application be refused on the basis of inconsistencies with the RGS and OCP with respect to adding residential density within the drinking water supply watershed and the working landscape and inconsistency with the OCP’s framework for considering requests to rezone for lot sizes between 4 hectares to 20 hectares in the RSA, and policy directions regarding road access.

### **Financial Factors**

A \$2,000 rezoning application fee has been collected under the “Comox Valley Regional District Planning Procedures and Fees Bylaw No. 328, 2014.” If the application proceeds, to the public hearing, the applicant will incur an additional statutory fee of \$1,500. If the property is successfully rezoned, future fees will be incurred during the subdivision and development permit processes.

### **Legal Factors**

This report and the recommendations contained herein are in compliance with the LGA and CVRD bylaws. The LGA authorizes a local government to regulate the use of land and buildings. Part 13 of the LGA requires that all bylaws and services adopted following adoption of a RGS must be consistent with the RGS.

### **Intergovernmental Factors**

If the application proceeds to bylaw preparation, external referrals to provincial agencies, First Nation organizations and municipalities will be issued.

**Interdepartmental Involvement**

Planning staff consulted with other CVRD departments, including engineering services, fire services, community parks and long range planning. The concerns of these departments are outlined in this report.

**Citizen/Public Relations**

If the application proceeds to bylaw preparation, community consultation will be held in accordance with Bylaw No. 328 (i.e. statutory mailing and public hearing).

Attachments: Appendix A – “Application RZ 3B 18”  
Appendix B – “OCP sections 41-43: Rural Settlement Areas”



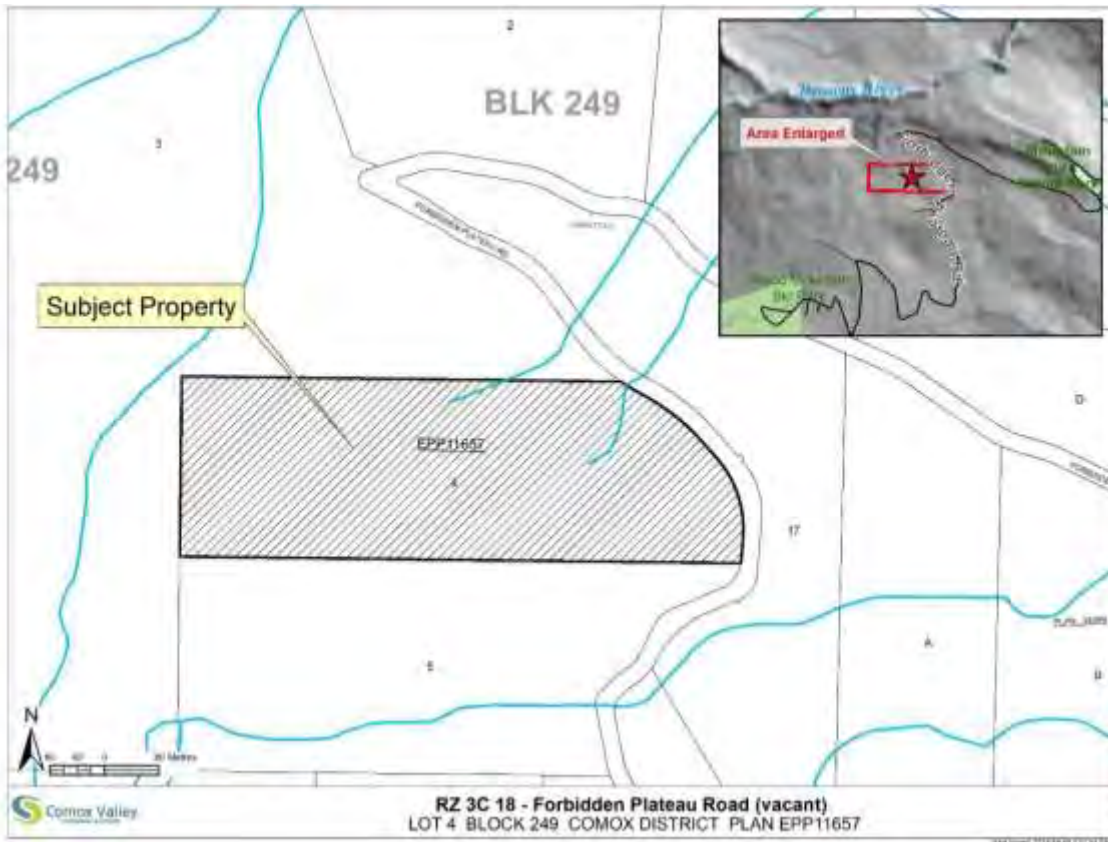


Figure 1: Subject Property



Figure 2: Air Photo (2016)



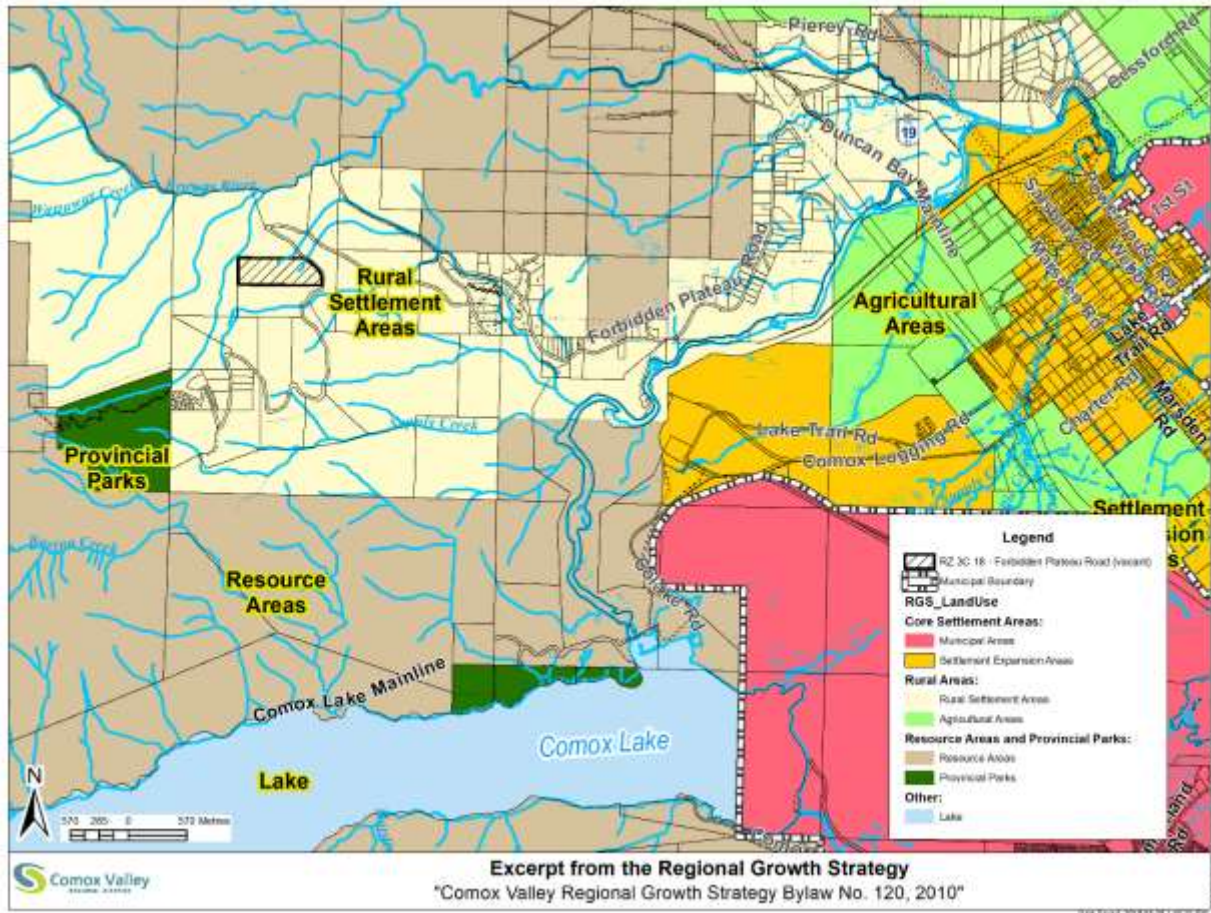


Figure 3: Regional Growth Strategy

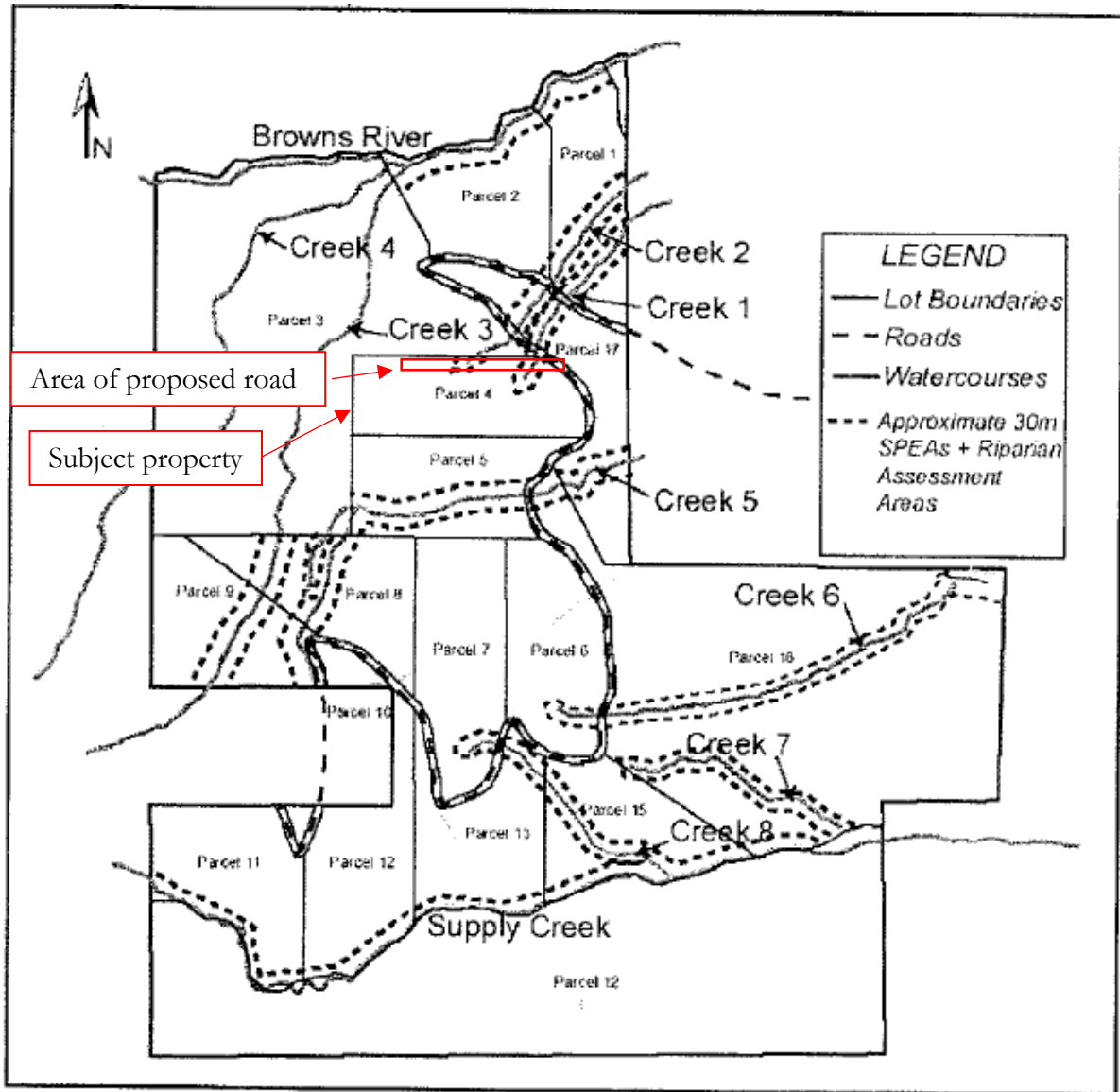


Figure 4: SPEA and Riparian Assessment Areas, from RAR Assessment Report dated November 20, 2010 (Covenant CA2234895)

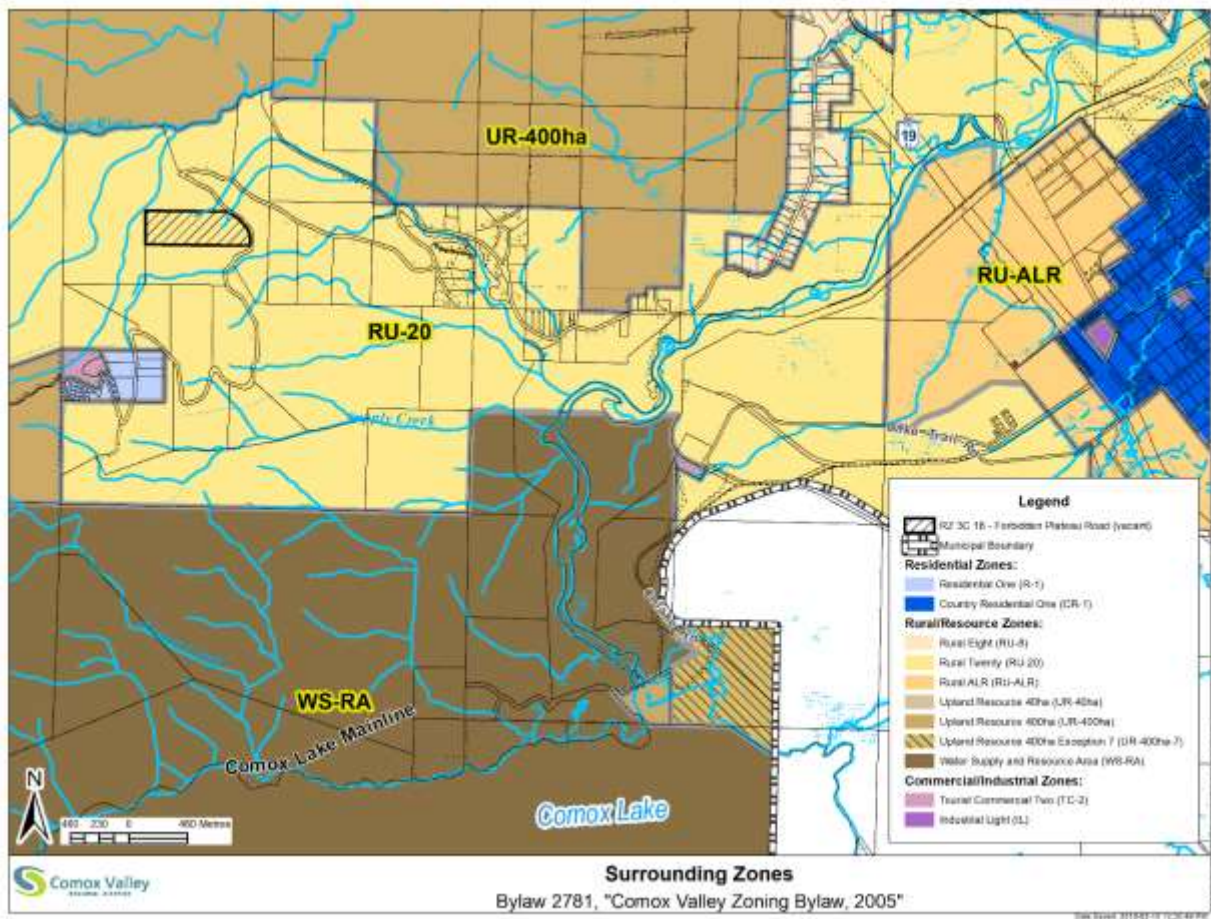


Figure 5: Zoning



J.E. Anderson and Associates  
 1250 F Cedar Street  
 Campbell River, BC V9W 2W5  
 Ph: 250-287-4865 Fax: 250-287-9502

Our File : 120-072

April 6, 2018

Comox Valley Regional District  
 Planning and Development Services Branch  
 600 Comox Road  
 Courtenay, BC, V9N 3P6

Attn. Alana Mullaly, MCIP RPP

**RE: Proposal for Re-Zoning**

*Lot 4, Block 249, Comox District, Plan EPP11657 – Forbidden Plateau Road  
 Registered Owners: Fry, Taylor*

I, Colin Burridge, have been retained by the owners to act as their agent for this re-zoning application. I have enclosed the following items to accompany the application:

- Current title search of the subject property
- BC Assessment roll report
- Copies of all registered covenants and easements for the subject property
- Well construction report for the existing well
- Sewerage system and soil evaluation report
- Wildfire Threat assessment report
- Site plan
- Application form
- Cheque in the amount of \$ 2,000.00 for the application fee

Development Proposal:

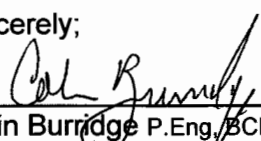
The current zoning for the property is RU-20 which provides for a minimum lot area of 20 ha. Our clients are interested in subdividing the property in the future and wish to re-zone to a suitable designation which would allow for a minimum lot area of 4.0 ha, this being consistent with the Regional Growth strategy. There is an existing gravel road providing access to the property from Forbidden Plateau Road, a new access road is proposed along the north boundary of the lot. Our field survey and computed profile indicate a road design meeting MoTI standards is feasible in this location.

Fire protection for this area is currently not provided and is certainly an issue as outlined in the Fire Protection Feasibility Study for the Forbidden Road, prepared in February, 2018. Our clients propose to gift to the CVRD a one acre parcel for a future fire hall, the exact location and size within the proposed Lot A would be negotiated. This firehall parcel could be subdivided through the provisions of Section 99 (1) (h) of the Land Title Act.

The soils study that has been performed indicate the proposed new lots are all suitable for on-site sewerage systems. Proposed dwelling locations have been identified on the site plan and have been chosen based on the proximity to soils test locations and proposed access roads.

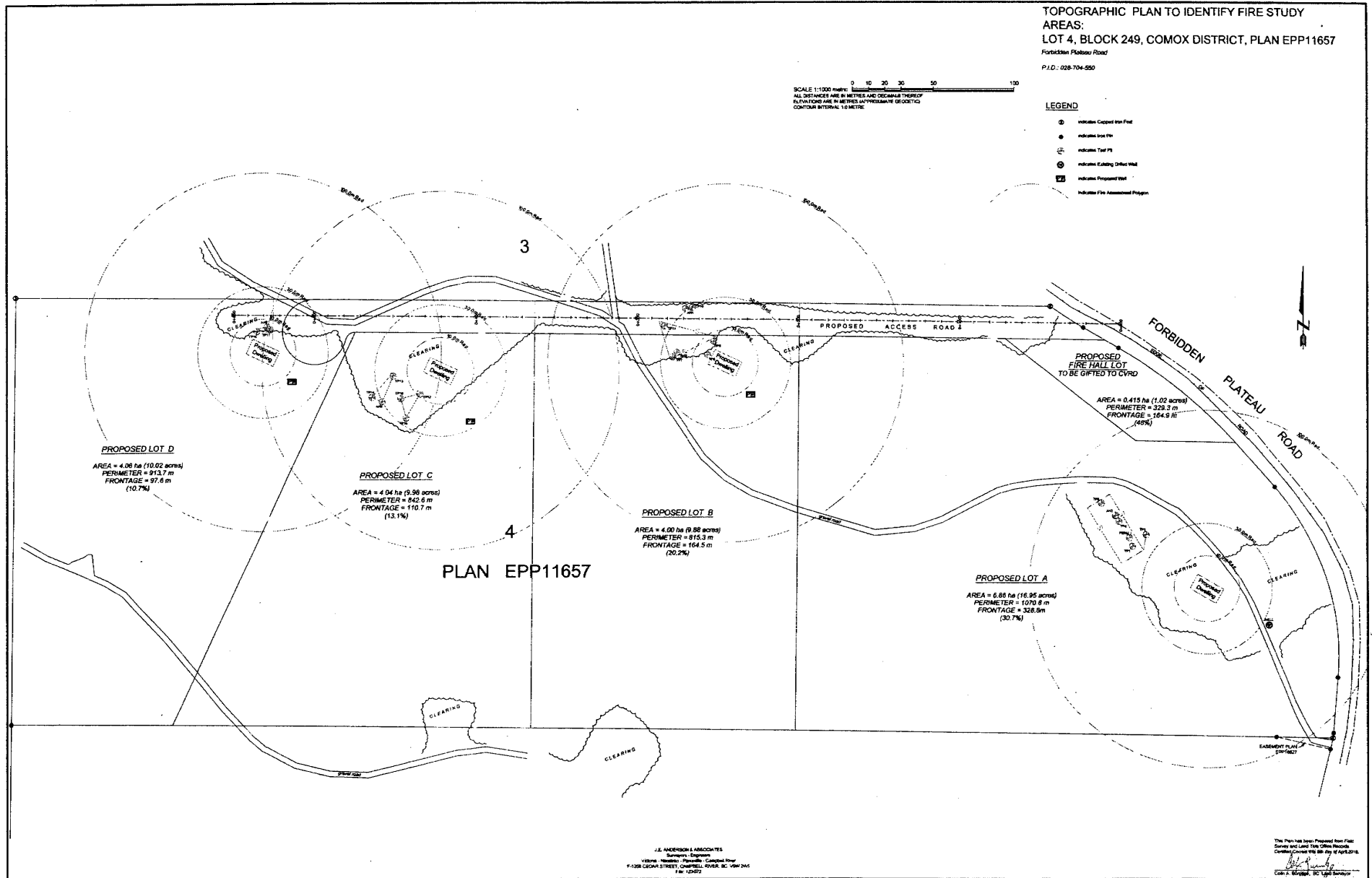
Please contact our office at your convenience with any questions or comments regarding this application.

Sincerely;

  
 Colin Burridge P.Eng, BCLS, CLS

cc. Jim Fry

120-072CVRD1.doc







Ministry of Environment

- Well Construction Report
- Well Closure Report
- Well Alteration Report

DRILLWELL ENTERPRISES LTD.  
4994 Polko Road  
Duncan, B.C. V9L 6W3  
Phone: 250-746-6268

Ministry Well ID Number: P3063026  
Ministry Well Tag Number:  
 Confirmation/alternative specs. attached  
 Original well construction report attached

Red lettering indicates minimum mandatory information.

See reverse for notes & definitions of abbreviations.

Owner name: **Couverdon Real Estate**  
Mailing address: **#3-4890 Rutherford N.** Town **Nanaimo** Prov. **B.C.** Postal Code **V9T4Z**

Well Location: Address: Street no. Street name Town  
(or) Legal description: Lot **4** Plan **EPP11657** D.L. Block **249** Sec. Twp. Rg. Land District **Comox**  
(or) PID: (and) Description of well location (attach sketch, if nec.):

NAD 83: Zone: **10** UTM Easting: **345624** m Latitude (see note 3):  
(see note 2) (and) UTM Northing: **5504523** m (or) Longitude:

Method of drilling:  air rotary  cable tool  mud rotary  auger  driving  jetting  excavating  other (specify): **Dual Rotary**  
Orientation of well:  vertical  horizontal Ground elevation: **1415** ft (asl) Method (see note 4): **GPS**  
Class of well (see note 5): **Water Supply** Sub-class of well: **Domestic**  
Water supply wells: indicate intended water use:  private domestic  water supply system  irrigation  commercial or industrial  other (specify):

**Lithologic description (see notes 7-14) or closure description (see notes 15 and 16)**

From ft (bgl)	To ft (bgl)	Relative Hardness	Colour	Material Description (Use recommended terms on reverse. List in order of decreasing amount, if applicable)	Water-bearing Estimated Flow (USgpm)	Observations (e.g., fractured, weathered, well sorted, silty wash); closure details
0	10	m	Br	Till		
10	345	h	gr	Bedrock green with grey layers		
					325	34
					345	34

**Casing details**

From ft (bgl)	To ft (bgl)	Dia in	Casing Material / Open Hole	Wall Thickness in	Drive Shoe
0	10	10	steel, Recovered		
0	18	6	steel	2 1/4	ND
18	345	6	open hole		

**Screen details**

From ft (bgl)	To ft (bgl)	Dia in	Type (see note 18)	Slot Size

Surface seal: Type:  **Bentonite**  Depth:  **18**  ft  
Method of installation:  Poured  Pumped Thickness:  **2**  in  
Backfill: Type: Depth: ft  
Liner:  PVC  Other (specify):  
Diameter: in Thickness: in  
From: ft (bgl) To: ft (bgl) Perforated: From: ft (bgl) To: ft (bgl)

Intake:  Screen  Open bottom  Uncased hole  
Screen type:  Telescope  Pipe size  
Screen material:  Stainless steel  Plastic  Other (specify):  
Screen opening:  Continuous slot  Slotted  Perforated pipe  
Screen bottom:  Bail  Plug  Plate  Other (specify):  
Filter pack: From: ft To: ft Thickness: in  
Type and size of material:

**Developed by:**

Air lifting  Surging  Jetting  Pumping  Bailing  
 Other (specify): Total duration: hrs  
Notes:

**Well yield estimated by:**

Pumping  Air lifting  Bailing  Other (specify):  
Rate:  **3/4**  USgpm Duration:  **1**  hrs  
SWL before test:  **10**  ft (btoc) Pumping water level: ft (btoc)

**Obvious water quality characteristics:**

Fresh  Salty  Clear  Cloudy  Sediment  Gas  
Colour/odour: Water sample collected:

**Well driller (print clearly):**

Name (first, last) (see note 19):  **Rich Brown**   
Registration no. (see note 20):  **CWB 0412-1406**   
Consultant (if applicable; name and company):

DECLARATION: Well construction, well alteration or well closure, as the case may be, has been done in accordance with the requirements in the Water Act and the Ground Water Protection Regulation.

Signature of Driller/Responsible

PLEASE NOTE: The information recorded in this well report describes the works and hydrogeologic conditions at the time of construction, alteration or closure, as the case may be. Well yield, well performance and water quality are not guaranteed as they are influenced by a number of factors, including natural variability, human activities and condition of the works, which may change over time.

**Final well completion data:**

Total depth drilled:  **345**  ft Finished well depth:  **345**  ft (bgl)  
Final stick up:  **20**  in Depth to bedrock:  **10**  ft (bgl)  
SWL:  **10**  ft (btoc) Estimated well yield:  **3/4**  USgpm  
Artesian flow: USgpm, or Artesian pressure: ft

Type of well cap:  **steel, welded**  Well disinfected:  Yes  No  
Where well ID plate is attached:  **clamped to casing**

**Well closure information:**

Reason for closure:  
Method of closure:  Poured  Pumped  
Sealant material: Backfill material:  
Details of closure (see note 17):

**Date of work (YYYY/MM/DD):**

Started:  **1/08/15**  Completed:  **11/03/16**   
Comments:

Ron McMurtrie and Associates, Consulting EngineersWastewater System Specialists

Comox/Hornby Island, BC 250-335-2685

[jasbreez@island.net](mailto:jasbreez@island.net)

March 5, 2018

Mr. Jim Fry  
 c/o J.E. Anderson and Associates  
 F-1250 Cedar Street  
 Campbell River, BC V9W 2W5

**RE: PROPOSED SUBDIVISION OF LOT 4, BLOCK 249, COMOX DISTRICT, PLAN EPP11657  
 - SEWERAGE SYSTEM SITE AND SOIL EVALUATION**

**OUR FILE: 0898**

**MOTI FILE:**

Dear Sir:

The following report summarizes our site and soil evaluation for onsite sewerage systems regarding the proposed subdivision of the above noted property. This report has been prepared with regard to the following documents: 1. VIHA Subdivision Standards, July 2013 and; 2. BC Sewerage System Regulation, Standard Practice Manual (SPM), Version 3, September 2014.

#### **BACKGROUND AND PROPOSED DEVELOPMENT**

The subject property (Lot 4, Plan EPP11657) has an area of 19.38 hectares. The proposed subdivision is for 4 lots: Lots A, B, C and D as shown on the attached plan. Proposed minimum lot size is 4.0 hectares. Primary and reserve septic field areas to service the proposed lots with onsite sewerage systems are also shown on the plan. Each lot will have its own drilled well for domestic water supply.

#### **SITE AND SOIL EVALUATION**

A site and soil evaluation was carried out by the author at the above noted property to locate potential areas for primary and reserve dispersal areas for sewerage systems serving the proposed Lots A, B, C and D. Machine dug test pits and permeability testing was carried out between September 14 to 21, 2017 and wet-season conditions and groundwater observations were made on December 13, 2017. A summary of the soil conditions, permeability test results and groundwater conditions are included in the tables below.

The property is generally forested (conifers) with cleared areas for road right of way and potential building sites. The proposed dispersal areas are primarily in the cleared areas with the exception of Lot D which is in the forest at the edge of the clearing. There are no major drainage channels or streams on the property that conflict with the proposed septic field areas.

Land slope in the proposed septic field areas ranges from 5 to 10% in Lots A, B and C. Lot D slopes range from 6 to 12% and from 15 to 20%.

Soils on the property and in the proposed septic field areas are predominantly: *Reddish brown sandy loams, of moderate to strong blocky structure and friable consistence and they are gravelly (>15% coarse fraction)*. Typical depth of this soil layer varied from 45 to 70cm as observed in the test pits. They are considered favorable for the treatment and dispersal of wastewater. They are underlain by a layer of: *Massive sandy loam, dense to moderately cemented and of lower permeability*. This is considered a flow restrictive layer and is unfavorable for the treatment of wastewater. A layer of *organics (duff and forest litter)* of 5 to 15cm typical depth covers the site.



Ron McMurtrie and Associates, Consulting EngineersWastewater System Specialists

Comox/Hornby Island, BC 250-335-2685

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The following table summarizes the measured depths of observed features in the test pits and indicates the available soil depth for treatment for each pit in the final column:

<b>SOIL TEST PIT SUMMARIES (MEASURED DEPTHS)</b>						
<b>TEST PIT #</b>	<b>RESTRICTIVE LAYER (cm)</b>	<b>ROOT DEPTH (cm)</b>	<b>REDOXI-MORPHIC (cm)</b>	<b>GROUND-WATER (DEC 13, 2017) (cm)</b>	<b>SOIL TEXTURE AND STRUCTURE, CONSISTENCE Note 1</b>	<b>DEPTH TO LIMITING LAYER (AVAILABLE SOIL DEPTH) (cm)</b>
<b>LOT A</b>						
TP1	55	60	55	60	SL-G BLK S/A-FAV	55
TP2	50	55	55	80	SL-G BLK S/A-FAV	50
TP3	30	35	30	NIL	SL-G BLK S/A-FAV	30 Note 2
TP4	40	40	40	60	SL-G BLK S/A-FAV	40
TP5	55	60	55	70	SL-G BLK S/A-FAV	55
TP6	50	50	50	60	SL-G BLK S/A-FAV	50
<b>LOT B</b>						
TP7	50	50	50	60	SL-G BLK S/A-FAV	50
TP8	50	50	55	60	SL-G BLK S/A-FAV	50
TP9	55	55	55	60	SL-G BLK S/A-FAV	55
TP10	50	50	50	50	SL-G BLK S/A-FAV	50
TP11	45	45	50	60	SL-G BLK S/A-FAV	45
<b>LOT C</b>						
TP12	70	60	65	70	SL-G BLK S/A-FAV	60
TP13	50	50	50	75	SL-G BLK S/A-FAV	50
TP14	60	60	60	80	SL-G BLK S/A-FAV	60
TP15	60	55	60	>85	SL-G BLK S/A-FAV	55
TP16	75	60	50	80	SL-G BLK S/A-FAV	60

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LOT D						
TP17	60	55	60	>80	SL-G BLK S/A-FAV	55
TP18	70	70	70	>85	SL-G BLK S/A-FAV	70
TP19	60	55	60	>75	SL-G BLK S/A-FAV	60
TP20	75	75	60	>90	SL-G BLK S/A-FAV	60
TP21	75	65	65	>85	SL-G BLK S/A-FAV	65
Note 1: SL - Sandy Loam; G - gravelly; BLK-S/A - Blocky Sub-angular structure; FAV - Favorable grade and consistence.						
Note 2: TP3 is located outside of the proposed dispersal area.						

The site is underlain by bedrock and there are a number of shallow exposed bedrock layers and outcroppings on the property. The proposed septic field areas do not contain any bedrock outcrops or other negative effects from shallow bedrock.

Soils in the field areas are generally well drained and free of negative effects from surface water runoff and do not contain areas with poorly drained or seasonally wet soils. Wet season observations made on December 13, 2017 confirmed this assumption. Groundwater observations in the test pits ranged from 50 to 90cm on this date. Groundwater depths exceeded typical rooting and mottling depths observed in the pits.

There are no known wells on the property or neighbouring properties within 30m of the proposed septic field areas.

There are no potential effluent break-out points within 15m of the proposed septic field areas.

Permeability testing was carried out using a 4" Permeameter in hand-augured holes typically about 30cm deep. The results of the tests are shown in the table below including calculations of Hydraulic Conductivity in mm/day. It is noted that the median field saturated hydraulic conductivity (Kfs) is 1109 mm/day. This is consistent with the expected values for a sandy loam soil.

PERMEAMETER TEST RESULTS - 4" DIAMETER						
Auger Hole#	Location	Depth (cm)	Diameter (cm)	Stable Fall (mm/min)	Soil Factor (CS)	K <sub>FS</sub> (mm/day)
<b>LOT A</b>						
AH1	Near TP1	30	9	26	47.2	1227
AH2	Near TP2	30	9	8	47.2	378
<b>LOT B</b>						
AH3	Near TP7	30	8	53	52.5	2783 <sup>1</sup>
AH4	Near TP10	30	9	10	47.2	472
<b>LOT C</b>						
AH5	Near TP14	30	8	72	52.5	3780 <sup>1</sup>
AH6	Near TP15	30	9	21	47.2	991

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LOT D						
AH7	Near TP20	30	9	11	47.2	519
AH8	Near TP17	30	8	78	52.5	4095 <sup>1</sup>
<b>Design K<sub>FS</sub></b>					<b>Median</b>	<b>1109</b>
Note 1. High readings due to presence of coarse gravel						

**PRIMARY AND RESERVE DISPERSAL AREAS**

The proposed septic field areas for Lots A, B, C and D are summarized in the following table and are as shown on the attached plan. All septic field areas shown exceed the VIHA Subdivision Standards shown in Table B for lots served by individual wells in "Loam" soils (715 sq.m. for primary and reserve areas). The minimum contour length of 25m in the VIHA Standard has been met or exceeded for the 4 areas.

SEPTIC FIELD AREA SUMMARY (PRIMARY AND RESERVE AREAS)					
	LOT AREA (hectares)	SOIL TYPE	SOIL DEPTH (cm)	PRIMARY AND RESERVE AREA (sq.m.)	CONTOUR LENGTH (lin.m.)
<b>LOT A</b>	7.28	LOAM	50	720	45
<b>LOT B</b>	4.00	LOAM	50	750	25
<b>LOT C</b>	4.04	LOAM	50 - 60	750	30
<b>LOT D</b>	4.06	LOAM	60	750	25

**Proposed Lot A (7.28 ha)**

The proposed dispersal area for Lot A (primary and reserve area) measures 16m x 45m (across the slope). The slope in the field area is approximately 5%.

Soil depth in the dispersal area of 50cm exceeds the VIHA Subdivision Standards which specify a depth of 46cm for 2.0 hectare lots with less than 15% slope.

**Proposed Lot B (4.00 ha)**

The proposed dispersal area for Lot B (primary and reserve area) measures 30m x 25m (across the slope). The slope in the field area is approximately 10%.

Soil depth in the dispersal area of 50cm exceeds the VIHA Subdivision Standards which specify a depth of 46cm for 2.0 hectare lots with less than 15% slope.

**Proposed Lot C (4.04 ha)**

The proposed dispersal area for Lot C (primary and reserve area) measures 25m x 30m (across the slope). The slope in the field area is approximately 10%.

Soil depth in the dispersal area of 50 to 60cm exceeds the VIHA Subdivision Standards which specify a depth of 46cm for 2.0 hectare lots with less than 15% slope.

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**Proposed Lot D (4.06 ha)**

The proposed dispersal area for Lot D (primary and reserve area) measures 30m x 25m (across the slope). The slope in the field area varies from approximately 6 to 12% in part of the area and exceeds 15% in the other part.

Soil depth in the dispersal area of 60cm exceeds the VIHA Subdivision Standards which specify a depth of 46cm for 2.0 hectare lots with less than 15% slope. It does not however meet the VIHA Standard of 90cm for >15% slope.

**SUMMARY AND CONCLUSIONS**

In general it is concluded that site and soil conditions on the property are suitable and favorable and that sufficient area is available to provide primary and reserve dispersal areas for the proposed subdivision. The site and soils will support the installation of Type 1 systems in accordance with BC Sewerage System Regulations and the BC Standard Practice Manual (SPM-V3). The 4.0 hectare minimum lot size is considered adequate for properties served by individual wells.

1. Soils in dispersal areas for proposed Lots A ,B, C and D are generally favorable for the treatment of sewerage system effluent using Type 1 (septic tank) treatment method.
2. Soil depth for proposed Lots A, B, and C (50 to 60cm) is greater than the 46cm depth in the VIHA Standards. A Type 1 system in accordance with the Standard Practice Manual (SPM-V3) is suitable for use on the lots.
3. Soil depth for proposed Lot D (60cm) is greater than the 46cm depth in the VIHA Standards for areas less than 15% slope, but less than the 90cm depth for greater than 15% slope. However, Type 1 systems in accordance with the Standard Practice Manual (SPM-V3) can be safely constructed in the proposed field area.
4. The dispersal areas (720 to 750 sq.m. for primary and reserve) for proposed Lots A, B, C and D meet the recommended area for loam soils (715 sq.m.) as per Table A of the VIHA Subdivision Standards.
5. Dispersal areas for proposed Lots A ,B, C and D meet horizontal setback criteria of the VIHA Subdivision Standards (>30m to drinking water wells; >15m to potential breakout points; >30m to surface water bodies).
6. If installed and maintained in accordance with the BC Sewerage System Regulation, Type 1 systems installed in the above noted areas will not cause, nor contribute to a health hazard.

It is concluded that the property is suitable for the installation of on-site sewerage systems to serve the proposed Lots A, B, C and D. All specifications of the VIHA Subdivision Standards have been met with one minor exception on Lot D. All lots can support the installation of a sewerage system in accordance with SPM-V3. Based on site observations there are likely several areas on each property in addition to the proposed dispersal areas that are suitable for system installation. It is recommended that the property be approved for subdivision based on the generally favourable site and soil conditions observed in the septic field areas.

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I trust the foregoing meets your needs regarding the proposed subdivision of your property. Please contact the undersigned at your convenience if you have any questions or wish to discuss this report further.

Yours truly,

Ron McMurtrie, P.Eng.

Attached: Proposed Subdivision and Septic Field Area Plan



April 5, 2018

# Wildfire Threat Assessment

Lot 4, Block 249, Forbidden Plateau Road

Submitted By:

Leigh Stalker, RPF

PROFESSIONALLY RESOURCEFUL

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# Wildfire Threat Assessment

## for Lot 4, Block 249, Forbidden Plateau Road

*Submitted to:*

Jim Fry

*Submitted by:*

Leigh Stalker, RPF (#4744)

Strategic Natural Resource Consultants Inc.



*I certify I personally completed the work described herein.*



## 2 Introduction

Strategic Natural Resource Consultants (SNRC) was retained in March 2018 to provide a wildfire threat assessment for a potential development on Lot 4, Block 249, Forbidden Plateau Road. Recommendations are to be based on outcomes of the assessment. This report is a requirement for a rezoning application the developer intends to submit to the Comox Valley Regional District. The development proposal is a four lot strata subdivision which requires a zoning amendment to allow minimum lot area of four hectares.

## 3 Study Area Description

Lot 4, Block 249 (“study area”) is located off of Forbidden Plateau Road in the Comox Valley Regional District, west of the City of Courtenay. It totals 20.0 hectares (ha) which is made up of proposed Lot A (6.86 ha), Lot B (4.00 ha), Lot C (4.04 ha), Lot D (4.06 ha). Utility lines are located within the study area.

The property is bordered by private land. Adjacent properties which contain structures are considered “intermix” developments. This refers to a rural interface<sup>1</sup> condition where larger lots or acreages are prevalent and wildland vegetation is found around structures.

Located on the lower slopes of Forbidden Plateau, the topography consists of predominantly continuous, uniform slopes in the middle slope positions. A few small streams or non-classified drainages are found on the property. The gentle slopes (0 to 10%, some to 15%) are predominantly on a northeast aspect. The study area has an elevation range from approximately 400 to 485m.

Lot 4 is found within the Biogeoclimatic Ecosystem Classification unit CWHxm – Very Dry Maritime Coastal Western Hemlock Subzone. This unit is characterized by warm, dry summers and moist, mild winters with relatively little snowfall<sup>2</sup>. Growing seasons are long, and feature water deficits on zonal sites. The forest cover is largely made up of Douglas-fir with some western red cedar, western hemlock, western white pine and red alder scattered throughout. Understory vegetation includes Douglas-fir, western red cedar, western hemlock, red huckleberry, dull Oregon grape, salal. Roadside vegetation consists of red alder, willow, black cottonwood, bitter cherry, salmonberry and Scotch broom. Recently cleared areas consist of red alder, regenerating conifer species (predominantly Douglas-fir), salal and bracken.

<sup>1</sup> The wildland urban interface, or ‘interface’, is a term used to describe an area where various structures and other human development meet wildland vegetation.

<sup>2</sup> Green, R. N. and K. Klinka. 1994. A field guide to site identification and interpretation for the Vancouver Forest Region. Land Management Handbook Number 28. Victoria, BC.



## 4 Methodology

A wildland urban interface (WUI) wildfire threat assessment (WTA) involves determining the ability of a unique area of forest land, usually located adjacent to, surrounding or abutting a community, group of buildings or individual structures, to support a wildfire. The assessment is designed to provide an *estimate* of the wildfire threat posed by the unique area of forest land based on the forest fuel within the area, local topography, general weather conditions, and position of the forest land relative to the development<sup>3</sup>. This method does not consider house characteristics, yard maintenance, emergency response or water availability, but, as indicated above, does quantify fuels, topography, weather and position of structures.

The 2012 “Wildland Urban Interface Wildfire Threat Assessments in BC”<sup>3</sup> was used for this assessment. This WTA method is polygon based; vegetation types (forest and other) within Lot 4 were divided into polygons for assessment purposes. Polygons are areas of relatively homogenous forest cover, surface plant composition and topography that will likely exhibit similar wildfire behaviour under the same weather conditions.<sup>3</sup> A user-defined approach was used to delineate assessment polygons, based on proposed dwelling sites on each lot with the three FireSmart<sup>4</sup> Priority Zone buffers of 0-10m, 10-30m and 30-100m. Areas within the buffers but outside the legal lines were not assessed. Ortho-imagery (Bing, Google Earth), topographic plans (including FireSmart Priority Zones) provided by J.E. Anderson & Associates and local knowledge from the landowner and surveyor formed the office review to roughly delineate the area of interest into polygons of similar forest cover and topography. A field review on 20 March 2018 verified the polygon boundaries.

A WUI WTA Worksheet is completed for each vegetation type, or polygon. This worksheet rates a polygon to determine the Wildfire Behaviour Threat Class which is an estimate of the potential wildfire behaviour on a unique area of vegetation type, or polygon, based on the vegetation, topography and fire weather within the polygon<sup>3</sup>. A tally method is used that rates and assigns points under each component. If the first component (fuels) points do not add up to a specific amount, the polygon does not have adequate fuel volume or continuity to support a wildfire and thus the rest of the assessment is not relevant due to the lack of forest fuel available for combustion and wildfire spread. For definitions of Very Low, Low, Moderate, High and Extreme classes, see Appendix B. The WUI Wildfire Threat Assessment System is consistent with FireSmart, a national program endorsed by governments across Canada, the insurance industry and many other groups. It is a widely recognized manual that aims to give communities and individuals the information and tools they need to confront interface fire protection issues.

<sup>3</sup> Morrow, B., K. Johnston and J. Davies. 2013. Wildland Urban Interface Wildfire Threat Assessments in BC. A report submitted to the Ministry of Forests, Lands and Natural Resource Operations, Victoria, BC, Canada.

<sup>4</sup> Partners in Protection. 2003. FireSmart: Protection Your Community from Wildfire. Second Edition. Edmonton, Alberta.



For the purpose of this Wildfire Threat Assessment system:

*An assessment polygon is not FireSmart unless it receives a Wildfire Behaviour Threat Class assessment of low or moderate. The structural condition of the building and structures is not factored into this assessment system. This assessment system only quantifies the ability of a wildfire in a forested area to impact a structure, or the ability of a structure fire to spread into the adjacent forest land. It does not quantify the ability of a structure to withstand a wildfire on the adjacent forestland<sup>5</sup>.*

A minimum of one worksheet per vegetation type (polygon) was completed. This was deemed appropriate to accurately reflect the total variation identified within the assessment area. Five WTA worksheets were completed at representative sites throughout Lot 4. The results of these assessment plots were extrapolated to the general vegetation types. Three photographs were taken at each plot to show representative surface fuels, ladder fuels and aerial fuels. See next section, Table 2 for worksheet results.

The final step in the assessment process included the extrapolation of polygon classes into an output map. Colour codes are used to represent general vegetation types, and dotting/hatching for Wildfire Behaviour Threat Classes. The assessment outcome can assist in identifying wildfire threats over both the short and long term, and may provide a basis for prioritizing and implementing fuel (vegetation) management strategies to reduce wildfire threats in and around the assessed community/structures<sup>5</sup>. Specifically in the pre-development phase, it can encourage a landowner to consider how the position of their home can influence wildfire threat.

## 5 Results

Three general vegetation types were found within Lot 4. These types are described in Table 1 below and shown in Figure 1. Results of the WTA plots are in Table 2.

---

<sup>5</sup> Morrow et al., 2013.



**Table 1. General vegetation type descriptions.**

Type	Description
Type 1	Immature conifer stand. Approximately 20 years old. Tree species include Douglas fir, western hemlock, western red cedar, western white pine. Generally, crown base height is low. Understory vegetation consists of salal, red huckleberry and regenerating conifers (Douglas fir, western hemlock and western red cedar). Slopes are approximately 0 to 12%. Aspect is northeast. Soils are well drained.
Type 2	Mature conifer stand. Approximately 60 years old. Tree species include Douglas fir, western hemlock and western red cedar. Generally, crown base height is high. Understory vegetation consists of salal (patchy, approximately 25-50cm tall), scattered red huckleberry, dull Oregon grape and regenerating conifers (Douglas fir, western red cedar and western hemlock). Slopes are approximately 0 to 15%. Aspect is northeast. Soils are well drained.
Type 3	Recently cleared land and road right of way. Includes gravel road surfaces. Some areas have vegetation beginning to grow which includes red alder, regenerating conifer species (predominantly Douglas-fir), salal and bracken. Roadside vegetation consists of red alder, willow, black cottonwood, bitter cherry, salmonberry and Scotch broom. Slopes are approximately 0 to 15%. Aspect is north east. Soils are predominantly well drained with small areas of poor drainage/seepages.

**Table 2. Wildfire Threat Assessment Worksheet (plot) results.**

Plot #	Location (UTM)	General Vegetation Type	Date (dd/mm/yy)	Component			Wildfire Behaviour Threat Score	Wildfire Behaviour Threat Class
				Fuel	Weather	Topography		
L1	345000.81 mE 5504668.76 mN	Immature conifer stand	20/03/18	61	8	12	81	Moderate
L2	345146.09 mE 5504657.09 mN	Immature conifer stand	20/03/18	51	8	8	67	Moderate
L3	345258.64 mE 5504699.11 mN	Recently cleared	20/03/18	28	n/a	n/a	28	Low
L4	345317.18 mE 5504676.0 mN	Mature conifer stand	20/03/18	67	8	8	83	Moderate
L5	345599.78 mE 5504593.50 mN	Mature conifer stand	20/03/18	53	8	12	73	Moderate

Table 3 describes the Wildfire Behaviour Threat Class found within the FireSmart Priority Zones of each proposed lot.



**Table 3. Wildfire Behaviour Threat Classes by proposed lot.**

Proposed Lot	Lot Size (ha)	Wildfire Behaviour Threat Class Overlap		
		Priority Zone 1 (0-10m)	Priority Zone 2 (10-30m)	Priority Zone 3 (30-100m)
A	6.86	Low	Low, Mod	Low, Mod
B	4.00	Low, Mod	Low, Mod	Low, Mod
C	4.04	Low	Low, Mod	Low, Mod
D	4.06	Low, Mod	Low, Mod	Low, Mod

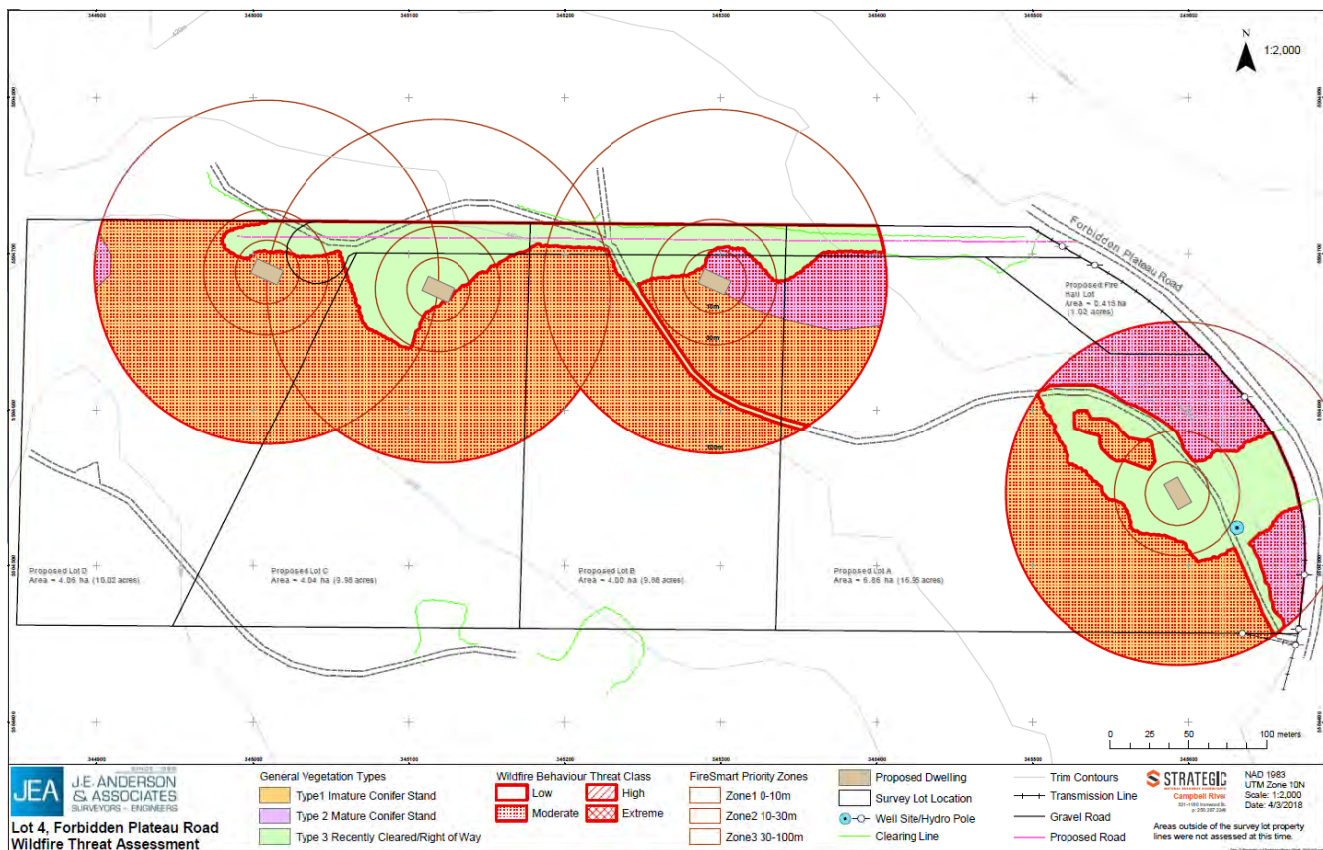


Figure 1 General vegetation types with Wildfire Behaviour Threat Classes within each FireSmart Priority Zone (see Appendix A for full size map).

Threat assessments for vegetation types 1 and 2 resulted in moderate Wildfire Behaviour Threat Class. Vegetation type 3 did not reach the minimum point requirement to continue past the fuel component and thus received a low Wildfire Behaviour Threat Class.



## 6 Conclusion and Recommendations

As shown in section 5 (Results) above, Lot 4 is dominated by moderate Wildfire Behaviour Threat Class, with cleared areas and right-of-ways having a low rating. Although a majority of the lots consist of mostly moderate Wildfire Behaviour Threat Class, considerations must be given to the fact that any structure built on any of the lots will still be built in the interface and thus could be exposed to wildfire at some point in time. In addition, the fuel component (i.e. increase in surface fuels continuity, duff depth, crown closure) will change over time as a stand matures or there is an alteration of the forest stand, both of which have the potential to increase the Wildfire Behaviour Threat Class.

The results of the assessment were used to recommend the use of particular FireSmart mitigation measures in order to reduce the threat posed by interface fire on potential structures within Lot 4. This section provides recommended actions using FireSmart's three principal aspects for interface fire hazard mitigation: vegetation management, infrastructure and structural options. Table 4 summarizes recommended actions on a lot by lot basis.

**Table 4. Recommended FireSmart actions.**

Proposed Lot	Lot Size (ha)	Wildfire Behaviour Threat Class Overlap	Recommended Actions				
			FireSmart Infrastructure	FireSmart Structural	FireSmart Vegetation Management		
					Priority Zone 1	Priority Zone 2	Priority Zone 3
A	6.86	Low, Moderate	✓	✓	✓	✓	
B	4.00	Low, Moderate	✓	✓	✓	✓	
C	4.04	Low, Moderate	✓	✓	✓	✓	
D	4.06	Low, Moderate	✓	✓	✓	✓	

### 6.1 FireSmart Infrastructure Options

FireSmart infrastructure (in relation to road ways, water supply and utilities) cannot increase the probability of structure survival because this is determined by vegetation management and the use of FireSmart structural options<sup>6</sup>. However, implementation of FireSmart infrastructure at the planning stage of new development is encouraged to increase resident and firefighter safety and to facilitate quick response by firefighters in the event of a wildfire. Firefighters in the wildland urban interface are already working at a disadvantage, without an adequate water system and potentially on narrow roads, steep grades, and underbuilt bridges<sup>6</sup>. In addition, tackling these issues at an early stage will prevent more costly implementation measures at a later date.

Below is a summary of the FireSmart recommended guidelines, followed by specific recommendations for Lot 4.

<sup>6</sup> Partners in Protection. 2003.





### 6.1.1 Access Routes

Roads are access routes for emergency vehicles, escape routes for residents during a wildfire, and may also serve as fire breaks to provide fire protection and assist firefighting efforts in the interface.

*FireSmart recommended guidelines for roads:*

- Roadways should allow for simultaneous access for emergency vehicles and public evacuation with a traveled way of not less than 6.1m horizontally and 4.1m vertically. Where parking is permitted, an additional 2.7m of improved road width should be provided.
- Road curvature radius should be at least 30m from the centerline.
- Road gradients should not exceed 10%.
- Dead-end roadways more than 90m in length should have a turn-around at the terminus having no less than 36m outside diameter of traveled way. Fire officials may authorize a ‘hammer-head T’ turn around. Dead-end roads should be posted as such.
- Any gated roads should have the gates located at least 9m from the public right-of-way and should not open outward. Fire Service personnel should have keys for all gates.
- Roads should have a hard all-weather surface capable of supporting any fire apparatus likely to be operated on the road. All-weather gravel roads are acceptable.

*FireSmart recommended guidelines for fire service access driveways:*

- Driveways more than 45m in length should be a minimum of 3.7m in width and provide 4.1m vertical clearance over the full width.
- Turnouts shall be spaced so that drivers can see from one turnout to the next. Turnout requirement is waived where the fire service access width is 6.1m or more.
- Driveway turns should not restrict the access of the largest emergency vehicle likely to be operated on the driveway.
- Gradients, dead-ends, gates and surfacing shall be as the recommended guidelines for roads above.
- Signs and house numbers should be clearly visible and legible from the road.

### 6.1.2 Water Supply

Lot 4 is outside the City of Courtenay Fire Protection District; therefore, fire protection capabilities will be limited. Residents of communities without a fire department depend entirely on water sources they have developed<sup>7</sup>. All buildings proposed and existing within interface areas should have a water supply for the purpose of firefighting. FireSmart recommended guidelines for water supply are found below.

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<sup>7</sup> Partners in Protection. 2013.



*FireSmart recommended guidelines for water supply:*

Interface homeowners with no fire department protection have a much lower level of fire preparedness and may choose to implement some or all of the following measures:

- At minimum, have garden hose connections plumbed on the exterior of the building. In addition, consider standpipes located 15m from building.
- Keep enough garden hose at each interface building to allow a water stream to be directed on all exterior surfaces of the building, including the roof. Equip each hose with a nozzle and keep it connected during the fire season.
- Provide access to the roof in order to wet it down or suppress spot fires that may ignite the roof. Connect a sprinkler to the hose and nail it to the roof, but turn it on only if fire is an immediate risk.
- Homeowners should consider a number of alternatives in installing water sources for fire suppression purposes:
  - At minimum, interface buildings without a pressurized water system should have at least one large water barrel and a 10 litre fire pail.
  - Consider additional water storage capability through tanks, ponds, pools or underground cisterns.
  - If well water is supplied by electrical pumps, consider having an auxiliary gasoline-powered generator that can be wired directly to the electrical pump.
  - If near a water source, consider a gasoline-powered fire pump sufficient enough to supply firefighting needs. Property owners may wish to increase the effectiveness of their firefighting water supplies by considering the use of approved firefighting foam concentrates, gels and wetting agents.

### **6.1.3 Utilities – Electric and Gas**

Overhead power lines have the potential to be a major source of ignition for interface fires (primary distribution lines are a particular problem). Propane tanks surrounded by dense concentrations of vegetation are potential bombs in an interface fire. FireSmart recommended guidelines for utilities are found below.

*FireSmart recommended guidelines for electrical utilities:*

- Underground power distribution offers the greatest fire safety. Consider where feasible and supported by BC Hydro.
- Utilities, wire owners, or wire service providers should keep vegetation cleared to appropriate distances from the powerline to prevent vegetation from making contact.

*FireSmart recommended guidelines for propane:*

- Propane tanks should have all vegetation within 3m cleared away. Locate tanks at least 10m from any building.

**Recommendation 1:** The developer should incorporate FireSmart infrastructure options into the design of the subdivision. These include access routes and electric utilities.

**Recommendation 2:** Landowners should incorporate FireSmart infrastructure options into the design of their homes and property. These include access routes, utilities (electric and gas) and minimum water supply as per the recommended guidelines.

## 6.2 FireSmart Structural Options

All structures in the study area will be built in the interface and thus should be constructed to FireSmart design standards to increase the ability of the structure to withstand an interface fire event. Below is a summary of the recommended guidelines, followed by specific recommendations for Lot 4.

*FireSmart recommended guidelines for roofing:*

- Use only fire-retardant roofing rated Class A, B or C.
- Clear roofs of all overhanging branches or needles and combustible debris buildup on roof surfaces or in gutters.

*FireSmart recommended guidelines for chimneys or stovepipes:*

- Use approved spark arrestors.
- Chimney outlets should have at least 3m clearance from all vegetation and obstructions. Chimney outlets must be 0.6m higher than any part of the roof within 3m.

*FireSmart recommended guidelines for exterior siding:*

- Any material used for siding purposes should be fire resistant, at least 12mm thick and extend from the ground level to the roofline.

*FireSmart recommended guidelines for windows and door glazing:*

- Clear concentrations of vegetative fuels that are within 10m of glazed openings.
- Consider smaller, thermal pane, tempered glass windows.
- Consider solid shutters or exterior metal fire-screens.

*FireSmart recommended guidelines for eaves, vents and openings:*

- Consider solid shutters or exterior metal fire-screens on all eaves, attic and underfloor openings.

*FireSmart recommended guidelines for balconies, decks and porches:*

- Build balcony and deck surfaces of non-combustible or fire-resistant materials.
- Provide access to below slotted deck surfaces so that debris may be removed on a regular basis (i.e. needle litter).



*FireSmart recommended guidelines for on-site firefighting equipment:*

- Keep a shovel and a grubbing tool readily available from the exterior of the building during fire season. Maintain the minimum water supply as per Section 6.1.2 (Water Supply).

**Recommendation 3:** Landowners should use FireSmart structural options in the design of their homes and any other structures on their property.

### 6.3 FireSmart Vegetation Management Options

The goal of vegetation management is to create a fuel-reduced buffer between structures and flammable vegetation to reduce the intensity and rate of spread of wildfire approaching or leaving the development<sup>8</sup>. Vegetation management is broken down into three approaches: fuel removal, fuel reduction and fuel conversion. Below is a summary of the recommended guidelines, followed by specific recommendations for Lot 4.

An interface building will not continue to be FireSmart without occasional maintenance of previously treated areas<sup>9</sup>. Maintenance schedules depend on factors such as vegetation type, soil and moisture regimes, and specific weather events.

#### 6.3.1 Priority Zone 1 (0 to 10m from structure)

This area is immediately adjacent to a given building and extends outward in all directions for a recommended minimum of 10m in flat terrain. The main objective of vegetation management in this zone is to create an environment that will not support fire of any kind. Fuel removal and conversion are the principal vegetation management strategies.

*FireSmart recommended guidelines for Priority Zone 1:*

- Annual grasses within 10m of buildings should be mowed to 10cm or less.
- Ground litter and downed trees should be removed annually.
- Overmature, dead, and dying trees with potential to ignite and carry fire should be removed.
- Vegetation conversion to less fire-prone species is encouraged.
- Vegetation existing away from the immediate area of the building should be thinned and pruned to prevent a fire from being carried toward or away from the building.
- Where slope and aspect increase the hazard to buildings, fuelbreaks should be provided.
- Remove piled debris and other combustibles away from the building.

<sup>8</sup> Walkinshaw, S. 2012. Inuvik Community Wildfire Protection Plan. Prepared for the Government of the Northwest Territories, Environment and Natural Resources – Forest Management Division.

<sup>9</sup> Partners in Protection. 2003.



### 6.3.2 Priority Zone 2 (10 to 30m from structure)

This area begins 10m from the building and extends to 30m from the building. The main objective of vegetation management within this zone is to create an environment that will only support fires of lower intensity and rate of spread. Fuel reduction (rather than removal) is the main strategy for vegetation management.

*FireSmart recommended guidelines for Priority Zone 2:*

- On sloped terrain, the width of Priority Zone 2 must be extended downslope.
- Thin the forest canopy and the understory. Prune lower branches.
- Keeping deciduous trees is encouraged.

### 6.3.3 Priority Zone 3 (30 to 100m from structure)

This area begins 30m from the building and extends to 100m or farther from the building. This area further extends the fuel modified area by reducing flammable vegetation using strategies and standards for vegetation management are similar to those applied in Priority Zone 2. Fuel reduction and conversion (rather than removal) are the principal vegetation management strategies. Vegetation management in this area is required where there is a high hazard that is not reduced to desired levels by vegetation management in Priority Zone 2.

In the case of Lot 4, no high threat areas exist at this point in time; low and moderate threat classes dominate. Existing and proposed access roads also provide a break in fuel continuity.

*FireSmart recommended guidelines for Priority Zone 3:*

- On sloped terrain, the width of Priority Zone 3 must be extended downslope.
- Thin the forest canopy and the understory. Prune lower branches.
- Keeping deciduous trees is encouraged.

**Recommendation 4:** Landowners should ensure FireSmart vegetation management and maintenance in Priority Zones 1 (0-10m) and 2 (10-30m) for all structures. Vegetation management in Priority Zone 3 (30-100m+) is at the landowners' discretion.

**Recommendation 5:** Landowners are strongly encouraged to review suggested FireSmart vegetation/landscaping publications such as:

- FireSmart Guide to Landscaping. Partners in Protection. Edmonton, Alberta
- Fire-resistant Plants for Home Landscapes: Selecting plants that may reduce your risk from wildfire. Oregon State University. PNW 590, August 2006.

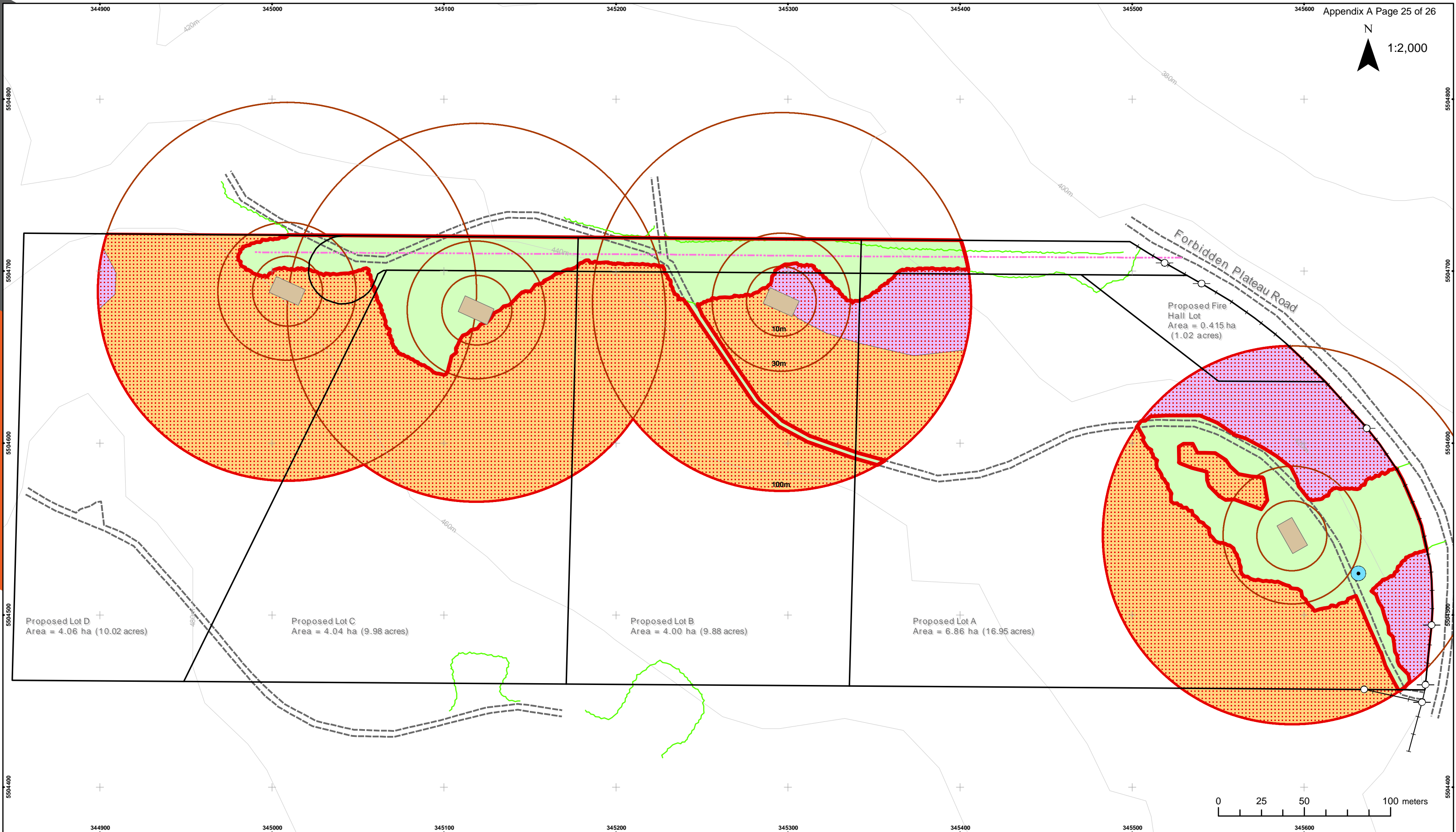
**Recommendation 6:** Landowners are strongly encouraged to have their property FireSmart assessed immediately following construction, and then again at five years to re-assess FireSmart compliance over time due to changes in vegetation structure and continuity.



## 7 Appendix A

Map 1, General vegetation types and Wildfire Behaviour Threat Class Map





### Lot 4, Forbidden Plateau Road Wildfire Threat Assessment

- General Vegetation Types**
- Type 1 Mature Conifer Stand
  - Type 2 Mature Conifer Stand
  - Type 3 Recently Cleared/Right of Way

- Wildfire Behaviour Threat Class**
- Low
  - Moderate
  - High
  - Extreme

- FireSmart Priority Zones**
- Zone 1 0-10m
  - Zone 2 10-30m
  - Zone 3 30-100m

- Proposed Dwelling
- Survey Lot Location
- Well Site/Hydro Pole
- Clearing Line

- Trim Contours
- Transmission Line
- Gravel Road
- Proposed Road



NAD 1983  
UTM Zone 10N  
Scale: 1:2,000  
Date: 4/3/2018

Areas outside of the survey lot property lines were not assessed at this time.

Path: G:\Projects\Lot 4 Forbidden Plateau\Draw\_20180403.mxd



## 8 Appendix B

Wildfire Behaviour Threat Class definitions from the document, “Wildland Urban Interface Wildfire Threat Assessments in BC” by Morrow, Johnston and Davies (2013).

### **Very Low (Blue)**

These are lakes and water bodies that do not have any forest or grassland fuels. These areas cannot pose a wildfire threat and are not assessed.

### **Low (Green)**

This is developed and undeveloped land that will not support significant wildfire spread.

Examples: Urban/suburban, farm areas with modified forest fuels; irrigated, managed, and heavily grazed fields; gravel pits; severely disturbed land; fully developed residential and commercial areas not directly adjacent to forested or undeveloped land; areas with no readily combustible vegetation on site.

### **Moderate (Yellow)**

This is developed and undeveloped land that will support surface fires only. Homes and structures could be threatened.

Examples: Unmanaged fields with more than one year of matted grass in a cured state at some time during the fire season; grass fields with shrubs and a deciduous tree overstorey; grass fields with coniferous shrubs and tree overstorey with less than 20% canopy coverage; patches of isolated coniferous stands less than 0.5 ha in size.

### **High (Orange)**

Landscapes or stands that:

- are forested with continuous surface fuels that will support regular candling, intermittent crown and/or continuous crown fires;
- often include steeper slopes, rough or broken terrain with generally southerly and/or westerly aspects;
- can include a high incidence of dead and downed conifers;
- are areas where fuel modification does not meet an established standard.

Examples: Areas of continuous beetle killed pine trees; forested land with coniferous coverage exceeding approximately 40% canopy closure; steep, gullied slopes with a continuous coniferous cover; Douglas-fir stands with a high incidence of dead, dying and downed trees from root rot infestation; open grown coniferous stands with low live crowns that would allow candling of large trees.

### **Extreme (Red)**

Consists of forested land with continuous surface fuels that will support intermittent or continuous crown fires. Polygons may also consist of continuous surface and coniferous crown fuels. The area is often one of steep slopes, difficult terrain and usually a southerly or westerly aspect.

Examples: Forested land with relatively continuous coniferous canopy closure, in excess of 40%, continuous dead pine; steep, gullied, forest slopes with a continuous coniferous forest cover.



### *Rural settlement areas*

41. The rural settlement areas encompass the greatest diversity of land use within the CVRD. The RGS managing growth policies direct that the rural settlement areas grow at a rate which is no more than 10 per cent of any new residential development in the regional district over the next 25 years. Permitted uses in the rural settlement areas include all primary uses such as commercial, industrial, residential and institutional uses.

### *Rural settlement area - objectives*

42. (1) To promote land uses that support rural lifestyles in the electoral areas of the Comox Valley.
- (2) To provide opportunity for alternative and affordable forms of housing.

- (3) To promote the use of agriculturally viable land for agricultural purposes.
- (4) To restrict sprawl and parcel fragmentation in rural areas, per the RGS.
- (5) To protect working landscapes from encroachment by residential or other uses.
- (6) To minimize the impact of new development on existing neighbourhoods.
- (7) To direct new commercial, industrial and institutional uses requiring public servicing into the settlement nodes.

### *Rural settlement areas – policies (subdivision)*

43. (1) The minimum lot size in the rural settlement area is between four hectares and twenty hectares, subject to soil conditions, ground water capacity, extension of existing subdivision areas, interface fire hazards and suitability of lands for rural development.
- (2) Use the density bonusing framework below, through site specific rezoning, to support establishment of communities with shared common social, spiritual, economic or lifestyle visions, such as agriculture, co-living arrangement or intergenerational living.
- (3) Consider requests to rezone for lot sizes between four hectares to twenty hectares using either the density bonusing framework or through the community amenity contributions policy included in this OCP.
- (4) Apply the following framework to proposed rezoning applications in rural settlement areas:
  - (a) 20 hectare – basic permitted lot size;
  - (b) 15 hectare lots – where up to 10% of the total area is required for public dedication of greenspace or environmental protection;
  - (c) 10 hectare lots – where up to 15% of the total area is required for public dedication of greenspace or environmental protection;
  - (d) 8 hectare lots – where up to 20% of the total area is required for public dedication of greenspace or environmental protection;
  - (e) 6 hectare lots – where up to 25% of the total area is required for public dedication of greenspace or environmental protection;
  - (f) 4 hectare lots – where up to 30% of the total area is required for public dedication of greenspace or environmental protection; and
  - (g) Where a combination of lot sizes is proposed, with an aim to create a diverse community with a range of rural lot sizes of at least four hectares, the amount of land required for public dedication of greenspace or environmental protection will be calculated based on the average lot size within the proposed subdivision. The average will be rounded down to the nearest whole number.
- (5) Assess new lot development in the rural settlement areas proposing to rezone as follows:
  - (a) Soil conditions must be shown to have the capacity to provide long-term sustainable on-site sewage treatment including a primary and secondary

- onsite sewage disposal field location, in accordance with *Subdivision Standards* published by Island Health.
- (b) Ground water capacity must be demonstrated, by way of a water flow report provided by the applicant to show a source of potable water for each proposed lot. In the majority of cases, new rural residential development will be expected to provide potable water from a well.
  - (c) Ability to meet the *Guidelines for Canadian Drinking Water Quality* and requirements of the *Drinking Water Protection Act* for two or more connections, and the *Health Hazard Regulations* which establish the duty of landlords to provide potable water.
  - (d) The proposed development should be a natural extension of an existing subdivision where there is vehicle and pedestrian connectivity between the existing and proposed subdivision and where the applicant has provided a site plan that illustrates the proposed road and trail connections.
  - (e) The applicant must provide a report prepared by a qualified professional that demonstrates how the proposed development addresses and mitigates any risks associated with interface forest fire hazards.
  - (f) The suitability of land for rural residential development must be assessed in relation to the surrounding land uses, environmental features and the accessibility of the land.
  - (g) New development should be designed to limit and mitigate any impacts on adjacent working landscapes through buffering and site design that avoids environmentally sensitive features as designated in the sensitive ecosystem inventory.