FB390586 AND 30 NOV 2010 11 41 FB387831

Land Title Act
**Form C** (Section 233)
Province of British Columbia

**GENERAL INSTRUMENT-PART 1** (This area for Land Title Office use) Page 1 of 7 Pages & an Attachment

1. **Application:** (Name, address, phone number and signature of applicant, applicant's solicitor or agent)
Michael J. Whittaker, QC, Solicitor
P9 - 1061 Fort Street, Victoria, BC, V8V 5A1, Phone: 250-380-0456

ac 12/15/2010 11:52:34 AM 2 1
Charge 1 $73.40

KLA Registry Services - Scott & Kary Thornton KLA MJW File No. 4375

2. **Parcel Identifier and Legal Description of Land:***

| (PID) | (Legal Description) |
|---|---|
| Not Available | Strata Lots 1, 2, 3, & the Common Property, Section 19, Range 3 West, North Saanich District, Strata Plan VIS 7032 |
| Not Available | Lots A & B, Section 19, Range 3 West, North Saanich District, Plan VIP 88501 |

3. **Nature of Interest:***

| Description | Document Reference (page and paragraph) | Person Entitled to Interest |
|---|---|---|
| Covenant + Rentcharge | Page 3, Paragraph 1 | Transferee |

4. **Terms:** Part 2 of this instrument consists of (select one only)

(a) Filed Standard Charge Terms [ ] D.F. No.
(b) Express Charge Terms [x] Annexed as Part 2
(c) Release [ ] There is no Part 2 of this instrument

A selection of (a) includes any additional or modified terms referred to in item 7 or in a schedule annexed to this instrument. If (c) is selected, the charge described in Item 3 is released or discharged as a charge on the land described in Item 2.

5. **Transferors:***
RICHARD GRAHAM BRADSHAW and JUDITH BRADSHAW
THE OWNERS, STRATA PLAN VIS

ac 11/30/2010 11:42:20 AM 2 1
Charge 1 $73.40

6. **Transferee:**(including occupation(s), postal address(es) and postal code(s))*

THE CORPORATION OF THE DISTRICT OF NORTH SAANICH, 1620 Mills Road, North Saanich, BC, V8L 5S9

7. **Additional or Modified Standard Charge Terms:**

ac 12/15/2010 11:52:06 AM 2 1
Defect 1 $32.70

Nil

8. **Execution(s):**** This instrument creates, assigns, modifies, enlarges, discharges or governs the priority of the interest(s) described in Item 3 and the Transferor(s) and every other signatory agree to be bound by this instrument and acknowledge(s) receipt of a true copy of the filed standard charge terms, if any.

| Officer's Signature | Execution Date Y M D | Transferors' Signatures |
|---|---|---|
| Michael J. Whittaker, QC<br>P9-1061 Fort Street<br>Victoria, BC, V8V 5A1<br>Lawyer<br>(As to both signatures) | 10 11 30 | Richard Graham Bradshaw<br><br>Judith Bradshaw |

OFFICER CERTIFICATION: Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the **Evidence Act** R.S.B.C. to take affidavits for use in British Columbia and certifies the matters set out in Part 5 of the **Land Title Act** as they pertain to the execution of this instrument.

R

Land Title Act
**Form D**

EXECUTIONS CONTINUED

| Officer's Signature | Execution Date Y M D | **The Corporation of the District of North Saanich** by its authorized signatories: |
|---|---|---|
| **Rob Buchan**<br>Acting Chief Administrator<br>A Commissioner for BC<br>1620 Mills Road<br>N. Saanich, BC, V8L 5S9<br>(as to both signatures) | 10 11 04 | **Mayor: Alice Finall**<br><br>**Manager: Curt Kingsley** |

OFFICER CERTIFICATION:
Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the **Evidence Act** R.S.B.C. 1979, c. 116, to take affidavits for use in British Columbia and certifies the matters set out in Part 5 of the **Land Title Act** as they pertain to the execution of this instrument.

Land Title Act
**Form D**

EXECUTIONS CONTINUED

| Officer's Signature | Execution Date Y M D | **The Owners, Strata Plan VIS** by its authorized signatories: |
|---|---|---|
| **Michalel J. Whittaker, QC**<br>Lawyer<br>P9-1061 Fort Street<br>Victoria, BC<br>V8V 5A1<br>(as to both signatures) | 10 11 30 | **Richard Graham Bradshaw**<br><br>**Judith Bradshaw** |

OFFICER CERTIFICATION:
Your signature constitutes a representation that you are a solicitor, notary public or other person authorized by the **Evidence Act** R.S.B.C. 1979, c. 116, to take affidavits for use in British Columbia and certifies the matters set out in Part 5 of the **Land Title Act** as they pertain to the execution of this instrument.

## PART 2 - EXPRESS CHARGE TERMS

WHEREAS:

A. The Transferors are the registered owners of the 2 properties described in paragraph 2 of the Form C herein.

B. The Transferors wish to subdivide Block 41 and 42, Section 19, Range 3 West, North Saanich District, Plan 1211 into 5 lots, (the "lots") and as a condition of such approval the Transferors have been requested by the Transferee to enter into this Covenant pursuant to Section 219 of the Land Title Act, RSBC, Chapter 250, and amendments thereto.

This Agreement is evidence that in consideration of $1.00 and other good and valuable consideration from the Transferee to the Transferor, the receipt of which is hereby acknowledged, the Parties covenant and agree as follows:

**FIRE PREVENTION:**

1. The Transferors hereby acknowledges agree with the Transferee that they will on a continuing basis address the issue of mitigating fire hazards, to the satisfaction of the Transferee, on those properties described in paragraph 2 of the Form C herein and more particularly set forth on the Plan of Subdivision and Bare Land Strata Plan attached hereto as Schedules "A" and "B", and without limiting the generality of the foregoing, they covenant and agree with Transferee that:

(a) no outdoor burning shall occur on a lot;

(b) a fuel reduced buffer shall be maintained at all times from the perimeter of every building to a distance equal to ten (10) metres / thirty-two (32) feet or to the property boundary, whichever is less, and that this area shall be landscaped and maintained with the intent of eliminating the accumulation of combustible debris;

(c) the owner of the lot shall use only non-combustible materials for exterior siding and roofing for all buildings and structures on a lot;

(d) the owner of a lot shall install spark arresters on all on all wood burning fireplaces and wood burning appliances on a lot or within any building or structure;

(e) all eaves, attics, decks and openings under floors must be screened to prevent the accumulation of combustible debris to the satisfaction of the Transferee's Chief Building Inspector.

(f) either Fuel Modification Priority Zones (PZ1 and PZ2) as described in the report "Wildland Urban Interface Fire Hazard Assessment 625Birch Road/626 Wain Road, North Saanich, BC" (Strathcona Forestry Consulting May 2010) attached hereto as Schedule "C", or Fuel Modified Areas (FMA1 and FMA2) as described in the brochure "FireSmart Landscaping on Southern Vancouver Island" (Strathcona Forestry Consulting 2004) shall be created prior to issuance of an occupancy permit for a lot, and that these areas will be maintained by the Owner at all times or, as otherwise approved by the District of North Saanich, upon receipt of a Wildfire Hazard Assessment by a qualified professional;

(g) landscaping within Fuel Modification Zones or Fuel Modified Areas will be provided with the intent that landscape materials do not contribute to fuel loading within these areas. Specifically, the planting of coniferous trees or cedar tree hedges in the fuel reduced zone or area is prohibited;

(h) all landscaped areas will be maintained with the intent of eliminating the accumulation of combustible debris;

(i) all landscaped areas should be serviced at all times by an automatic underground sprinkler system and in particular that during hot, dry periods when water restrictions are in effect, garden areas are watered at least two (2) times per week, preferably later in the day;

(j) domestic landscape plants will consist of drought and fire resistant species; and

(k) all construction debris and materials shall be removed from the entire lot, to the satisfaction of the District, prior to issuance of an occupancy permit.

**RENT CHARGE:**

2. As security for the performance of the obligations of each of the owners of a lot under this Agreement, the Transferors grant to the District of North Saanich a perpetual rent charge against the lots, ranking prior to all financial charges and encumbrances registered against the lots, including options to purchase and rights of first refusal. The Rent Charge is granted both under S. 219 of the Land Title Act (British Columbia) as an integral part of the statutory covenant created by this Agreement, and as a fee

simple rent charge at common law.

3. The Rent Charge secures payment to the Transferee, by the owner of a lot, of the sum of $1,000.00 per year per violation.

4. The Transferee shall be entitled to recover from the owner of a lot all reasonable expenses incurred as a result of enforcement of the Rent Charge.

5. The Rent Charge is suspended unless and until the owner of a lot is in breach of any provision of this Agreement.

6. The Transferee may enforce the Rent Charge by any combination or all, of:

   (a) an action against the owner for the Rent Charge Amount;
   (b) distraint against the land to the extent of the Rent Charge Amount;
   (c) an action for appointment of a receiver in respect of the owner's applicable lot; or
   (d) an order for sale of the owner's applicable lot.

**BONDING:**

7. Prior to the issuance of a Building Permit, the applicant must deposit under Section 925 of the **Local Government Act** a landscaping deposit in the amount of 125% of the estimated cost of the landscape modification works, as provided by a qualified professional, as accepted by the District of North Saanich.

**GENERAL PROVISIONS:**

8. The Transferors hereby agree with the Transferee, that the Transferee is not required, nor is it under an obligation in law or equity, to prosecute or enforce the terms of this Covenant in any way whatsoever. Furthermore, an alleged waiver of any breach of this Agreement is effective only if it is an express waiver in writing of the breach in respect of which the waiver is asserted. A waiver of a breach of this Agreement does not operate as a waiver of any subsequent breach of the same issue, or any other breach of this Agreement.

9. The Parties agree that nothing contained or implied in this Covenant shall prejudice or affect the powers of the Transferee in the exercise of its functions under any statute, bylaw, order or regulation, all of

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which may be fully exercised in relation to the Lots as if this Covenant had not been executed.

10. The Parties agree that this Covenant may only be modified or discharged with the consent of the Transferee pursuant to Section 219 (9) of the Land Title Act, and until the Transferee, at its sole and absolute discretion, considers there in no further need for this Covenant and grants a written release of these presents, the Agreement shall continue in perpetuity.

11. The Parties agree they will do such further acts and give such further assurances as necessary to implement the true intent and meaning of this Covenant. It is agreed that if any part of this Agreement is for any reason held to be invalid, illegal or unenforceable by a court having the jurisdiction to do so, that part is to be severed from the rest of this Agreement and the rest of this Agreement remains in force unaffected by that holding or by the severance of that part.

12. It is mutually understood and agreed by and between the Parties that this is the entire agreement between the Parties, and the Covenant shall be construed as running with the aforesaid properties described in paragraph 2 of the Form C herein.

13. This Agreement shall be binding upon and enure to the benefit of the respective Parties hereto, their heirs, administrators, personal representatives, successors and assigns. The Transferors are only liable for breaches of this Agreement that occur while the Transferors are the Registered Owners of the subject property.

14. Whenever the singular or masculine form is used in this Covenant it shall be construed as including the plural, feminine and body corporate or politic where the context so requires.

THIS IS THE INSTRUMENT CREATING THE COVENANT ENTERED INTO UNDER S. 219 OF THE LAND TITLE ACT BY THE REGISTERED OWNERS REFERRED TO HEREIN.

**End of Document**

***Strata Property Act***

**Form E**

[am. B.C. Reg. 289/2000, s. 3.]

**CERTIFICATE OF STRATA CORPORATION**

*(Sections 78, 79, 80, 100, 214, 257, 259, 261, 262, 263, 266, 269, 274, 283 of the Act and*

*sections 17.20 to 17.22 of the Regulation)*

**Complete and file only the applicable form of certificate.**

---

**CERTIFICATE FOR SECTION 78, 79, 80, 214, 257, 259, 261, 262, 263 OR 266 OF THE ACT OR SECTION 17.20 OF THE REGULATION**

The Owners, Strata Plan VIS.....*[the registration number of the strata plan]* certify that a resolution ~~referred to in section .....[section number] of the Strata Property Act or section .....[section number] of the Strata Property Regulation~~ was passed by ~~a ..... unanimous vote or ..... 3/4 vote [check appropriate vote] at an annual or special general meeting held~~ on all the Owners the creation of the Strata Plan ~~[month day, year],~~ and that the attached instrument, schedule, plan or other document conforms to the resolution.

**For the purposes of section 165 (4) (f) of the *Land Title Act*, execution of the attached instrument has been approved by a resolution at an annual or special general meeting in accordance with the requirements of the *Strata Property Act* or the Strata Property Regulation, and the instrument conforms to the resolution.**

.....Shaken Bradshaw.....

Signature of Council Member

.....Bradshaw.....

Signature of Second Council Member ~~(not required if council consists of only one member)~~

# SUBDIVISION PLAN OF BLOCKS 41 AND 42, SECTION 19, RANGE 3 WEST, NORTH SAANICH DISTRICT, PLAN 1211

PLAN VIP

B.C.G.S. 92B.063

Scale 1:750

0 7.5 15 30 45 60 75

The intended plot size of this plan is 432mm in width by 559mm in height (C size) when plotted at a scale of 1:750

Deposited in the Land Title Office at Victoria, B.C., this _____ day of _____, 2010.

_____ Registrar

Owner : _____ Richard Graham Bradshaw

Owner : _____ Judith Bradshaw

Witness : _____ as to both signatures

(Print name here _____)

Address : _____

Occupation : _____

PLAN VIP72952

A B

BLOCK D PLAN 1833

8

DEDICATED FOR ROAD 359.5 Sq. M.

BIRCH ROAD

SEE POSTING PLAN 38485

4 PLAN 24135

SECTION 19

BLOCK 41

C 0.754 ha

BLOCK 40

BLOCK 39

BIRCH ROAD

A

PLAN 47504

KALITAN ROAD

PLAN 1211

WEST

RANGE

1211

B

BLOCK 42

A 0.218 ha

BLOCK 43

BLOCK 44

C

B 0.200 ha

SEE POSTING PLAN 49398

DEDICATED FOR ROAD 277.3 Sq. M.

WAIN ROAD

Iron Pipe

Legend

- Non-Standard Iron post found
- O Standard Iron Post set
- Standard Iron Post found
- Control Monument found
- Sq. M. denotes square metres
- All distances shown are in metres
- All distances are horizontal ground measurements

Integrated Survey Area No. 22 North Saanich, NAD83 (CSRS)

Grid bearings are derived from observations between control monuments 78H7291 and 78H7292.

This plan shows horizontal ground-level distances except where otherwise noted. To compute grid distances, multiply ground-level distances by combined factor 0.99981278

The owners hereon declare that they have entered into a covenant agreement with The District of North Saanich under Section 219 of the Land Title Act

This plan lies within the Capital Regional District.

I, D.R. Carrier, a British Columbia Land Surveyor, certify that I was present at and personally superintended the survey represented by this plan and that the survey and plan are correct. The field survey was completed on the

7th day of May, 2010.

The plan was completed and checked, and the checklist filed under # 110095, on the

10th day of May, 2010.

_____ B.C.L.S.

Approved under the Land Title Act, this

_____ day of _____, 2010.

_____ Approving Officer, The District of North Saanich.

J.E. ANDERSON & ASSOCIATES
B.C. Land Surveyors — Consulting Engineers
Victoria and Nanaimo, B.C. phone 727-2214
File : 25279

C:\PROGRAM FILES\ACAD2000\25279SUB.DWG DBL

ORIGINAL

Schedule A

Schedule 4 B4

FIRST SHEET
Sheet 1 of 1 Sheets

# BARE LAND STRATA PLAN OF LOT C, SECTION 19, RANGE 3 WEST, NORTH SAANICH DISTRICT, PLAN VIP_____

B.C.G.S. 92B.083

Scale 1:500

0 5 10 20 30 40 50

The intended plot size of this plan is 432mm in width by 560mm in height ( D size ) when plotted at a scale of 1:500

STRATA PLAN _____

Deposited and registered in the Victoria Land Title Office, this _____ day of _____, 2010.

_____
Registrar

Owner : _____
Richard Graham Bradshaw

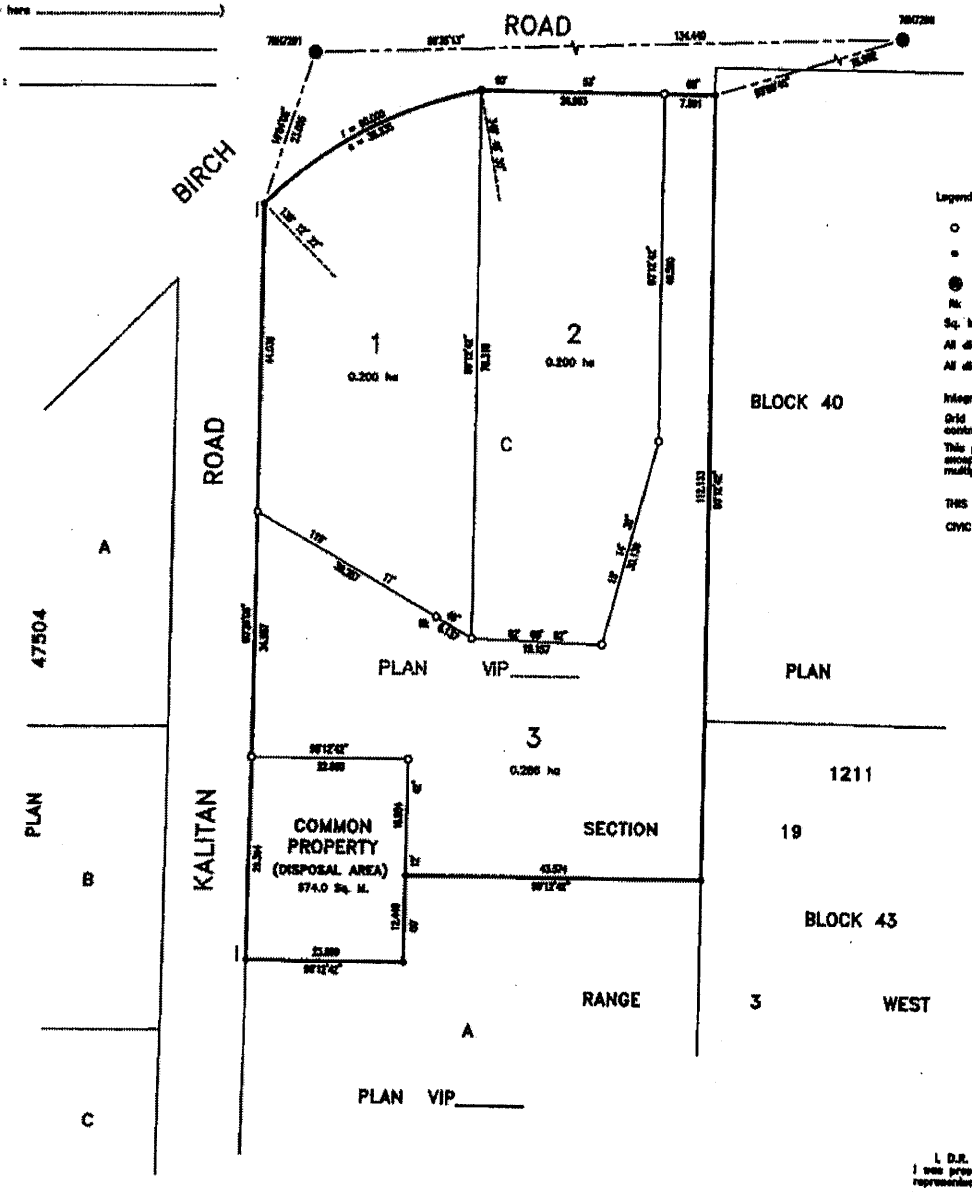
Owner : _____
Judith Bradshaw

Witness : _____
as to both signatures

(Print name here _____)

Address : _____

Occupation : _____




Legend

- Standard Iron Post set
- Standard Iron Post found
- Control Monument found
- Rk denotes set in rock
- Sq. M. denotes square metres
- All distances shown are in metres
- All distances are horizontal ground measurements

Integrated Survey Area No. 22 North Saanich, NAD83 (CSRS)

Grid bearings are derived from observations between control monuments 78H7280 and 78H7291.

This plan shows horizontal ground-level distances except where otherwise noted. To compute grid distances, multiply ground-level distances by combined factor 0.99961278

THIS PLAN LIES WITHIN THE DISTRICT OF NORTH SAANICH

CIVIC ADDRESSES :

Strata Lot 1 : _____
Strata Lot 2 : _____
Strata Lot 3 : _____

This plan lies within the Capital Regional District.

I, D.R. Cartier, a British Columbia Land Surveyor, certify that I was present at and personally superintended the survey represented by this plan and that the survey and plan are correct. The field survey was completed on the

7th day of May, 2010.

The plan was completed and checked, and the checklist filed under # 110089, on the

10th day of May, 2010.

_____
B.C.L.S.

Approved as a Bare Land Strata development under the Strata Property Act, this

_____ day of _____, 2010.

_____
Approving Officer for The District of North Saanich

J.E. ANDERSON & ASSOCIATES
B.C. Land Surveyors - Consulting Engineers
Victoria and Nanaimo, B.C. phone 727-2214
File : 25279
Z:\DWG_ACAD2000_SERVER\25279STR.DWG DBL

ORIGINAL

Schedule "C"

# Strathcona Forestry Consulting

# WILDLAND URBAN INTERFACE FIRE HAZARD ASSESSMENT:

**625 Birch Road/626 Wain Road**
**North Saanich BC**

*Prepared for:*
R. Graham and Judith Bradshaw
625 Birch Road
North Saanich BC V8L 5S2

*As a requirement for:*
THE DISTRICT OF NORTH SAANICH

*Prepared by:*
STRATHCONA FORESTRY CONSULTING
strathcona.fc@shaw.ca

May 2010

## TABLE of CONTENTS

## 1.1 Background

In accordance with guidelines established by the District of North Saanich for development in the Wildland-Urban Interface (WUI) zone, R. Graham and J. Bradshaw, property owners, 625 Birch Road, retained Strathcona Forestry Consulting to provide a Wildland Urban Interface (WUI) assessment of a proposed 5-lot subdivision at their property.

## 1.2 The Wildland Urban Interface

The interface (wildland urban interface) describes any area where combustible wildland fuels (i.e., trees, shrubs, grasslands) are located next to homes or other buildings. Fuels may occur at the interface, where development and wildland fuels (vegetation) meet at a well-defined boundary, or in the intermix, where development and wildland fuels intermingle with no clearly defined boundary (*FireSmart*, Partners in Protection, 2003).

Successful fire suppression in recent decades has increased natural fuel loads (combustible vegetation). The United Nations Intergovernmental Panel on Climate Change (2007) predicts global climate change will extend the duration of fire seasons and increase wildfire frequencies in fire-prone regions with mild climates (i.e., southeast Vancouver Island).

On average, half the wildfires occurring each year in British Columbia are human-caused. Over ninety percent of wildfires on BC's south coast are human-caused. In 2009, one out of eight fires on southeast Vancouver Island was classified as an interface fire (Ministry of Forests and Range, 2010). The number of interface fires is increasing. Wildfire in the interface zone is a major cause of concern for fire fighting agencies.

Effective hazard mitigation can be incorporated into the design and planning stages of interface development if local government, developers, and property owners are made aware of issues inherent in a selected site or in building or infrastructure plans.

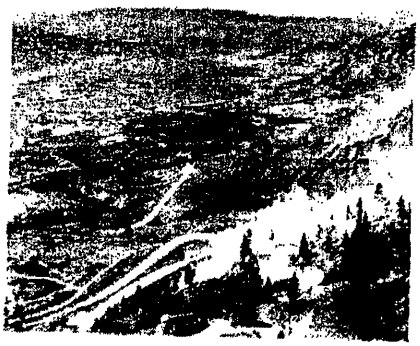


Photo. Interface fire.

### 1.3 Property Location

The subject property at 625 Birch Road occupies approximately 5 ac (app. 2.5 ha) between Birch Road and Wain Road in an area of North Saanich characterised by rural treed acreages and hobby farms. Well-maintained residential properties surround the subject property. A well-established existing residence (625 Birch Road) will be retained at the subject property. A walking trail extends along the western border of the property between Birch Road and Main Road.

### 1.4 Wildfire Hazard Development Permit Area

The North Saanich Official Community Plan identifies a large area of North Saanich, including the subject property, in a Development Permit Area (DPA) for Wildfire.

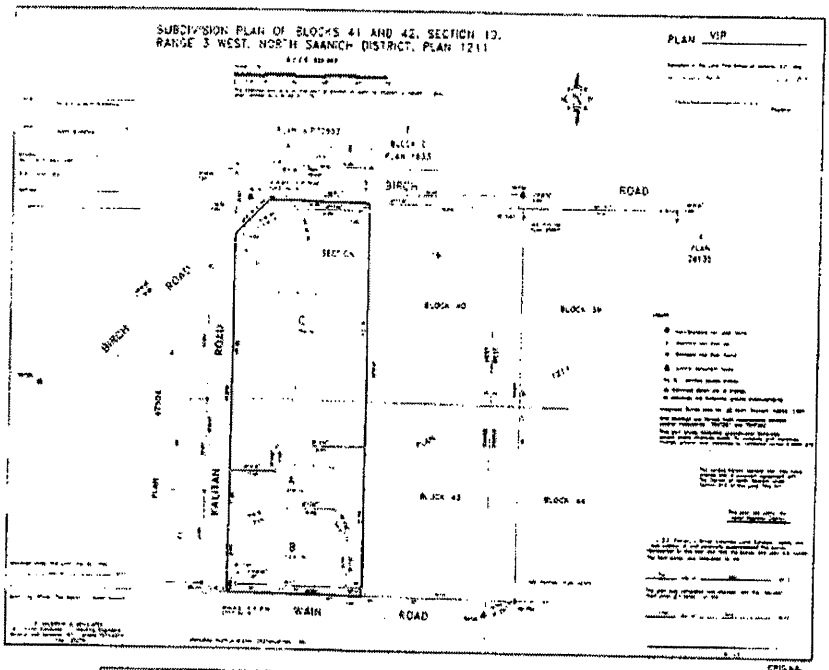
Current wildfire hazard mapping at North Saanich is based on a 1996 Ministry of Forests and Range (MoFR) study that designated North Saanich as an "interface community" with a high risk of wildfire. The MoFR assessment considered topography, dominant vegetation, pattern of development, and available fire protection services.

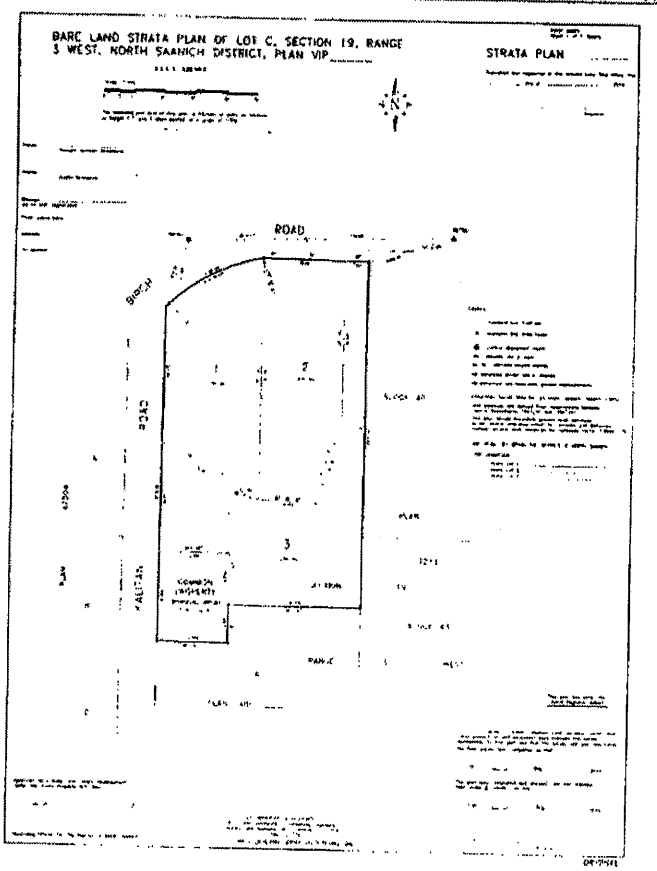
The District of North Saanich might consider replacing the outdated 1996 interface map with accurate, up-to-date hazard mapping to account for changes in land use and vegetation that have occurred in North Saanich over the last 15 years. The Union of BC Municipalities currently provides funding for local governments for strategic wildfire protection programming, including Community Wildfire Protection Planning (www.civicnet.bc.ca).

### 1.5 Description of Proposed Development

Proposed development at the subject property consists of a 5-lot subdivision to create 4 new lots (Figures 1, 2). The existing residence occupies Remainder Lot 3 (app. 5 ac), which sits roughly in the centre of the property. The subdivision will include 2 new lots (Lots 1 and 2) on Birch Road, and 2 new lots (Lots A and B) on Wain Road. Lots 1 and 2 will be accessed from Birch Road. Lots A and B will be accessed from Wain Road.

The subdivision will be serviced by piped community water. Hydrants located on Wain Road and Birch Road supply adequate pressure and volume (NSFD).




Figures 1 & 2. Subdivision site plans (J.E.A.)

## 1.6 Background Preparation and Field Assessment

Prior to the site visit, development plans were reviewed with J. E. Anderson and Associates, and the District of Saanich Planning and Community Services. A survey and site plan map of the proposed subdivision was provided by J.E. Anderson and Associates.

Strathcona Forestry Consulting conducted a site visit to the property on May 13, 2010. The field investigation involved an analysis of the interface fire hazard that the property is exposed to, from the perspective of the general area, local site, and proposed and existing structures in the general vicinity.

At the time of the site visit, I discussed with the property owners the purpose of the interface fire hazard assessment.

Photo. Proposed subdivision viewed from Birch Road.

## 2.0 [redacted]

### 2.1 Climate

The subject property is classified in the moist maritime Coastal Douglas-fir Biogeoclimatic Subzone (CDFmm). The CDFmm represents the mildest climate in Canada. Summers are generally warm and dry, while winters are wet and mild. Growing seasons are very long, and feature pronounced water deficits on zonal (average) and drier sites. Long periods of droughts are not uncommon during the fire season (April to October).

Prevailing weather systems in summer can vary from moderately moist to windy and excessively dry patterns. Prevailing summer winds are northwesterly. Net radiation values are generally high.

### 2.2 Physiographic Features

The subject property lies in an area the Saanich Peninsula with gently undulating relief. The property rises slightly in the centre. Soils in the area developed in sandy, gravelly fluvioglacial and/or silty and/or or clayey marine deposits. Common soils are Orthic Sombric Brunisols. Soil samples taken at the time of the field assessment suggested the northern portions of Lots 1 and 2 have a high water table during the winter months. A small imperfectly drained, seasonably wet area is located at the northwestern corner of the property. The remainder of the property appears to be well-drained.

Terrain features of the subject property pose a low risk for wildfire.

### 2.3 Vegetation

Vegetation at the subject property is characterised by human disturbance. Forested portions of the property (Lots A and B) support young (Structural Stage 5) to older mature second-growth stands (Structural Stage 6) dominated by Douglas-fir, with lesser amounts of western red cedar, grand fir, native cherry, and bigleaf maple. Lots 1 and 2 were recently logged and cleared of vegetation. Perimeters of the property, including the pedestrian walkway corridor, contain discontinuous native and invasive brush (Structural Stage 3a & 3b, and 4). The well-established Remainder Lot is landscaped with a lawn and ornamentals, and contains remnant forest stands. (See Appendix 1 for Description of Structural Stages.)

Moderate encroachment of invasive plant species (daphne, ivy) has occurred.

Newly disturbed areas should be promptly landscaped to avoid ingress of broom and other invasive plant species.

## 3.0 Fire Protection

**North Saanich Fire Department.** The North Saanich Fire Department is a composite career / volunteer department consisting of 4 career and approximately 40 volunteers operating out of two Fire Halls (Wain Road - main hall, and McTavish Road).

The subject property is located less than a kilometre from the main Fire Hall.

**Mutual Aid.** The North Saanich Fire Department operates under a mutual aid agreement with fire departments from neighbouring jurisdictions (Sidney, Central Saanich, and the Victoria Airport Authority).

Local fire departments automatically respond to structure fires and small, easily accessible bush fires. Assistance from the Ministry of Forests and Range is requested when larger brush fires occur within fire protection areas.

**Fireflow (Water Supply for Fire Suppression).** An adequate and reliable water supply for firefighting is an essential part of a community's fire protection system. The subject property will be serviced by community piped water and hydrants.

**Access.** All development should have proper access for emergency vehicles. FireSmart infrastructure and access can increase the probability of structural survival. Access routes should be designed to provide safe simultaneous access for emergency vehicles and public evacuations.

Lots A and B will be accessed from Wain Road. Lots 1 and 2, and the Remainder Lot will be accessed from Birch Road. The North Saanich Fire Department determined it was not necessary to develop an emergency access driveway between Wain Road and Birch Road due to existing hydrant distribution and capacity, and the close proximity of the Fire Hall on Wain Road.

### 3.1 Fire History

The Ministry of Forests and Range Protection Branch maintains a database of wildfires that have occurred in the last fifty years on the Saanich Peninsula (Ministry of Forests and Range, South Island Fire Base, 2010). Human-caused and lightening-caused fires are recorded. In the last two decades, the Ministry of Forests and Range has suppressed a number of small (generally < 1 ha) wildfires on the Saanich Peninsula.

## 4.0 Hazard Assessment

Hazard assessment methodology was based on standard fire danger and hazard assessment models:

The **Canadian Forest Fire Danger Rating System** (CFFDRS) is a standard national system of evaluating daily forest fire danger in Canada. The CFFDRS is comprised of two major subsystems: the Fire Weather Index (FWI) system and the Fire Behaviour Prediction (FBP) system.

The Fire Weather Index (FWI) system provides relative measures of fuel moisture and fire behaviour. Daily weather readings provide numerical ratings of relative wildland fire potential. The FWI has three Fuel Moisture Codes that follow daily changes in the moisture contents of three classes of forest fuel with different drying rates. Fire Behaviour Indices represent rate of fire spread, amount of available fuel, and fire intensity; their values increase as fire weather severity worsens.

Standard components of the FWI system are combined to determine potential fire intensity (Fire Weather Index). Fire danger levels (classified as very low, low, moderate, high, or extreme) summarise wildland fire conditions for a specific area.

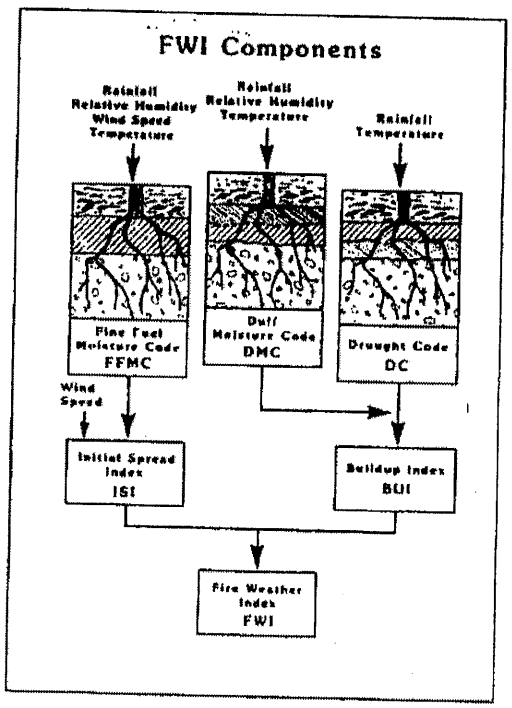



Fig. 3 FWI Components

Fire Danger Class Ratings (DGR), calculated based on fire weather indices from a network of automated weather stations, are used to determine the need for open fire

bans and public travel restrictions or road closures in forested areas. Industrial activities use the fire danger classes to determine restrictions on industrial operations, such as the need for early shutdown, "fire-watch" following early shutdown, or complete shutdown of industrial activity.

Table 1. Fire Danger Class (DGR)

| *Build-up Index (BUI)* | **Fire Weather Index (FWI)** | | | | |
|---|---|---|---|---|---|
| | *0* | *1-7* | *8-16* | *17-30* | *31+* |
| *0-19* | I | II | II | III | III |
| *20-42* | II | II | III | III | IV |
| *43-69* | II | III | III | IV | IV |
| *70-118* | II | III | IV | IV | V |
| *119+* | III | III | IV | V | V |

FWI = Fire Weather Index; BUI = Buildup Index

Fire Danger Class I Very Low

Fire Danger Class 2 Low

Fire Danger Class 3 Moderate

Fire Danger Class 4 High

Fire Danger Class 5 Extreme


Table 2 Fire Danger Class Ratings

| Fire Danger Class Rating | Description |
|---|---|
| **Class 1** | **Forest fire is not likely to start.** (VERY LOW) |
| **Class 2** | **Forest fire danger is** LOW. **It is possible for fires to start in light flashy fuels, but they will have a slow rate of spread.** |
| **Class 3** | **Fire danger is** MODERATE. **Fine fuels in open areas and sunny slopes may spread rapidly.**<br>**Use caution during any forest activities.** |
| **Class 4** | **Fire danger is** HIGH. **Fires will start easily from all causes, and will spread rapidly, and increase in intensity - they will be hard to extinguish. Spot fires may occur and will burn deep.**<br>**Extreme caution must be used in any forest activities. Burning permits and industrial activities may be restricted.** |
| **Class 5** | **Forest fire danger is** EXTREME. **Small fires will spread very rapidly - they will be hard to extinguish. Severe spotting may occur. Mop-up will require a great deal of effort.**<br>**General forest activities may be restricted, including burning permits, industrial permits, and campfires.** |

The Canadian Forest Fire Behaviour Prediction (FBP) System incorporates fuel types in fire behaviour modeling to provide a description of the fire, including estimates of fire area, perimeter, perimeter growth rate, flank and back fire behaviour, fuel consumption, and fire intensity.

A fuel type as defined by the CFFDRS is as an identifiable association of fuel elements of distinctive species, form, size, arrangement, and continuity that will exhibit characteristic fire behaviour under defined burning conditions. More specifically, a fuel type is a fuel complex of sufficient homogeneity, extending over an area of sufficient size that equilibrium fire behaviour can be maintained over a considerable time period. Fuel types in the FBP system are described qualitatively, rather than quantitatively using terms describing stand structure and composition, surface and ladder fuels, and the forest floor cover and organic (duff) layer.

Key parameters of the CFFDRS evaluated in this study included:

- Drought code – represents the average moisture content of deep, compact, orangic layers. This code is a useful indicator of seasonal drought effects on forest fuels, and amount of smouldering in deep duff layers and large logs.
- Danger Class Ratings – days above Danger Class Rating IV (Very High) and V (Extreme).
- Fuel Types – fuel elements that affect fire behaviour
- Output Fire Behaviour Factors – determine risk of ignition, structures at risk, suppression constraints

The **Hazard, Impact, Risk and Vulnerability (HIRV) model** is a community risk assessment incorporating Hazard Identification, Risk Analysis, Vulnerability Assessment, Impact Analysis, and Risk Management.

The **FireSmart Interface Community Fire Hazard analysis** provides a quantitative procedure for assessing the interface fire hazard based on 23 risk factors. Hazard categories are low, moderate, high, and extreme. An interface area, site, or structure is not considered to be "fire safe" unless it obtains a low or moderate assessment score.

**Table 3. Wildland-Urban Interface (WUI) fire hazard rating classes**

**Low – urban, suburban, and farm areas with modified forest fuels, generally flat terrain; no readily combustible vegetation; low risk to adjacent development**

**Moderate – partially modified forest fuels; scattered mixed forest in suburban areas; moderate to good water availability; homes and structures may be threatened**

**High – areas with little or no fuel modification; continuous ground fuels; sloping terrain with/without gullies present; moderate to low availability of water; some areas hard to access**

**Extreme – areas with little or no fuel modification, continuous ground fuels; rolling and gullied terrain; rock outcrops may be present; low water availability; some inaccessible terrain; may or may not be heavy use areas; direct threat to homes/structures/values.**

## 5.0 ASSESSMENT RESULTS

### 1. Canadian Forest Fire Danger Rating System.

The CFFDRS evaluates potential fire behaviour and estimates the potential severity of wildfire hazard based on key FWI System and FBP System parameters:

**Drought Codes.** The Drought Code is a measure of long-term drought as it relates to fire behaviour. A drought code over 350 is rated high, and is associated with high fire behaviour. A drought code over 500 is rated extreme. Annual average fire weather data for the CDFmm indicate drought codes rarely exceed 500 (BC MoFR S. Island Fire Base). Drought codes are typically low in May and June, generally rise during July, and often exceed 500 in the month of August. During this period, fire danger in the District of North Saanich is typically high or extreme.

**Fire Danger Ratings.** Fire danger on the South Island can vary significantly from year to year. Over the last decade, fire weather data from the Ministry of Forests and Range indicate an average of over 15% of total days in Fire Class Hazard 3 (moderate danger class). The average number of Danger Class V-days within the CDFmm during the summer fire season is 20%. The most extreme fire weather tends to occur between late July and mid to late August.

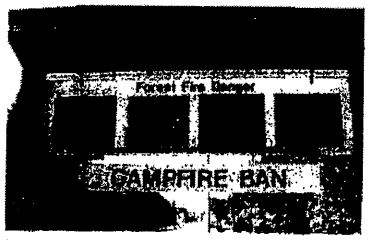



Photo. Forest Fire Danger Rating sign at South Island Fire Base.

**Fuel Types.** Three broad types of vegetative fuel types were identified at the site: coniferous stands, deciduous shrubbery, and open areas with decked logs (cleared land with very little vegetation).

**Output Fire Behaviour Factors.** Output fire behaviour factors (fire intensity, rate of spread, crown fraction burned) for fuel types were evaluated and summarised (Table 4).

**TABLE 4. SUMMARY ANALYSIS: SEVERITY OF WILDFIRE HAZARD AT 625 BIRCH/626 WAIN RD**

| AREA | FIRE BEHAVIOUR | RISK OF IGNTION | STRUCTURES AT RISK | SUPPRESSION CONSTRAINTS | OVERALL WILDFIRE HAZARD |
|---|---|---|---|---|---|
| **5555 Munns Road** | L-M | M | M | L | M |

L = LOW, M = MODERATE, H = HIGH, E = EXTREME

**CFFDRS fire behaviour modeling indicates the severity of wildfire hazard is <u>Moderate</u> (acceptable) for the proposed 5-lot subdivision at the subject property.**

## 2. FireSmart Interface Community Fire Hazard Analysis.

Results from a FireSmart Interface Community Fire Hazard Analysis indicate the current interface fire hazard at the subject property is **Moderate (Acceptable)**. The moderate hazard rating results from: good suppression capabilities; gentle topography; developed infrastructure (i.e., 2-way roadways, piped water, hydrants), and a local landscape characterised by discontinuous fuel complexes.

## 3. Hazard Impact Risk Vulnerability Model.

HIRV modeling was used to determine the potential impact of interface fire at the subject property. Results from HIRV modeling are summarised in Table 5.

**TABLE 5. HIRV MODELLING - IMPACT OF INTERFACE FIRE AT 625 BIRCH RD/626 WAIN RD – PRESENT-DAY, AND 5-LOT SUBDIVISION**

| HAZARD: WILDLAND URBAN INTERFACE FIRE | RISK RATING | VULNERABILITY | IMPACT ANALYSIS | RISK & VULNERABILITY ANALYSIS |
|---|---|---|---|---|
| 625 Birch (current property) | Moderate | Moderate | Environmental= 2<br>Social= 1 Economic= 1<br>Political= 1 | Risk = M<br>Vulnerability = M |
| 625 Birch/ 626 Wain (5-lot subdivision) | Low-Moderate | Moderate | Environmental= 2<br>Social= 1 Economic= 2<br>Political= 2 | Risk = L-M<br>Vulnerability = M |

1=LOW 2=MODERATE 3=HIGH 4=EXTREME

## 6.0 DISCUSSION

**Interface Fire Hazard Rating.** The interface fire hazard at the subject property is **Moderate**. This rating is considered acceptable. Features of the proposed 5-lot subdivision include:

- community piped water system and hydrants
- discontinuous combustible fuel complexes
- low relief
- good Fire Department response times

**Risk of Ignition.** The risk of ignition at the subject property is low-moderate. Ignition risk could come during the construction phase of the subdivision, and/or from present/future homeowners in the general area.

**Required Mitigation.** While the interface fire hazard rating is moderate, existing and future property owners should be cognizant of ways to reduce the risk of fire. Mitigative measures to manage the interface fire hazard are discussed in the next section.

## 7.0 MITIGATION

Mitigative measures to reduce the wildfire hazard typically address:

- Vegetation/Site Management
- Structural Options
- Infrastructure

Education and public awareness are also integral to wildfire risk reduction.

**Vegetation Management.** Combustible fuels are a concern when development is proposed in the interface zone. The primary premise of the FireSmart program is management of combustible fuels (vegetation) to reduce hazard ratings to acceptable levels.

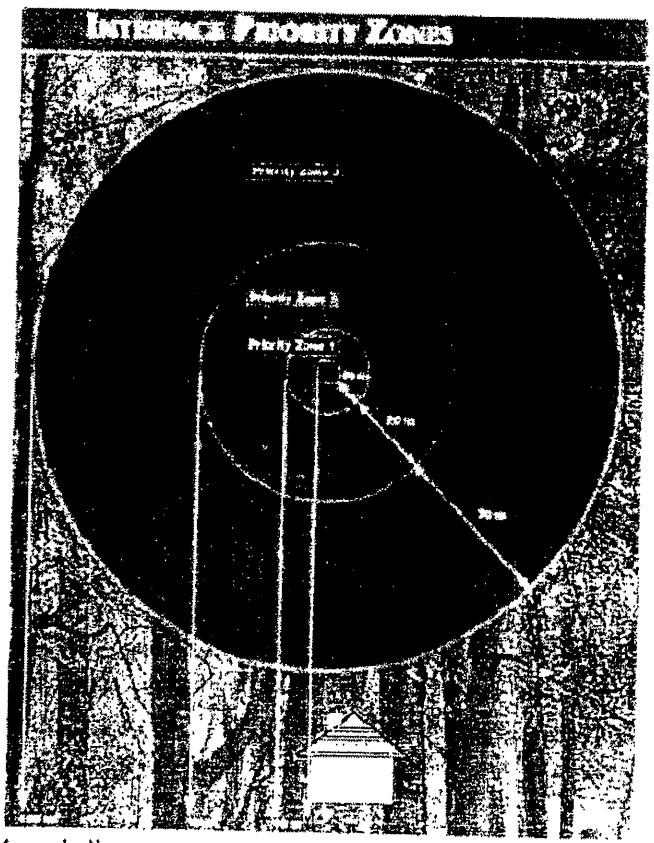



Figure 3. Fuel Modified Zones are concentric zones around structures. Fuel modification zone distances should be increased where residences are located on sloping ground, tops of slopes, warm aspects, (i.e., south and west aspects), and/or border areas with continuous vegetation. (Photo Credit: FireSmart.)

Vegetation management in interface areas involves the removal, reduction, or conversion of on-site fuels.

Vegetation management strategies are directed at three concentric FireSmart Fuel Modification Zones (or Priority Zones) around structures in the interface (Figure 4).

**Fuel Modification: Priority Zone 1 - PZ 1 (Fuel Removal / Conversion)**: This area, immediately adjacent to the building, and extending outward in all directions for a recommended minimum of 10 m in flat terrain, is the most critical zone because combustible vegetation within it will allow a wildfire to come within close proximity to, or direct contact with, the structure.

The primary objective of vegetation management in PZ 1 is to create a fuel-free environment that will not support a fire of any kind. Fuel management is essential to reduction of fire danger.

Photo. Fuel removal & conversion in PZ 1

**Fuel Modification: Priority Zone 2 - PZ 2 (Fuel Reduction)**: This zone commences 10 m from the building and extends to 30 m from the building on flat ground, and further on sloping terrain.

Fuel management in Priority Zone 2 focuses on creating an environment that will only support fires of lower intensity and rate of spread.

Photo. Fuel reduction in PZ 2.

**Fuel Modification: Priority Zone 3 - PZ 3 (Fuel Reduction and/or Conversion)**: This area begins 30 m from the building, extending to 100 m or farther, depending on topography.

Fuel management is required when high hazard levels are not sufficiently reduced by techniques used in PZ 2.

Photo. Vegetation management may be necessary in PZ 3 if fuel treatments in PZ 1 and 2 are insufficient to reduce hazard levels.

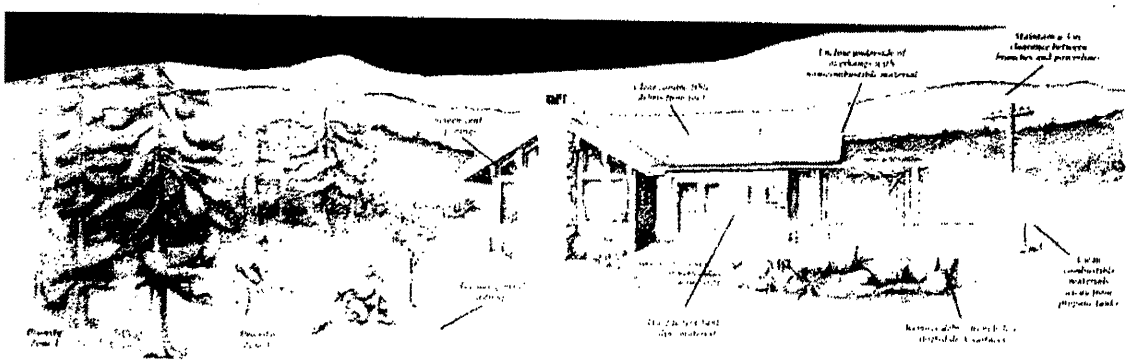


Figure 4. FireSmart homes and properties feature fuel modification zones and fire-retardant construction.

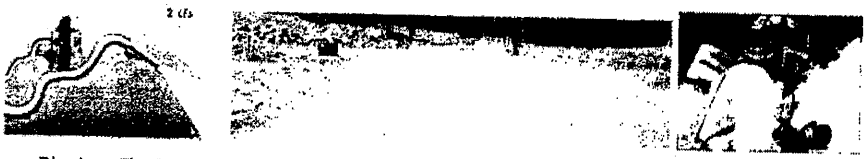
**Building Construction and Design** - Fire mitigation strategies must consider the vulnerability of buildings in the interface zone. FireSmart design standards must be incorporated into the construction (and retrofit) of interface buildings. The design, construction, and maintenance of interface residences or communities must reflect FireSmart guidelines for roofing, siding, stovepipes or chimneys (i.e., spark arrestors), windows and door glazing, eaves and vents, decks and porches, and on-site firefighting equipment.

Photo. New residence features FireSmart landscaping and fire retardant construction.

**Infrastructure** - Infrastructure consists of the network of roadways and communications, utilities, services, and local planning tools that define a community. Key features of FireSmart infrastructure are safe access routes and an adequate water supply for firefighting (fireflow). Standard references for FireSmart infrastructure include:

- FireSmart: Protecting Your Community from Wildfire (interface management) www.partnersinprotection.ab./ca
- National Fire Protection Association (structural fire protection) www.nfpa
- Fire Underwriters Survey (fireflow) http://www.firecomm.gov.mb.ca/municipal_support_fire_underwriters.html
- Geometric Design Guide for Canadian Roads (accesses)

FireSmart infrastructure is designed to increase resident and firefighter safety, and facilitate quick response by firefighters.



Photos. FireSmart infrastructure features adequate fireflow and good access.

## 6.0 RECOMMENDATIONS

Mitigative action to maintain the interface fire risk at manageable levels should follow FireSmart guidelines:

**Awareness**

- Ensure property owners are aware of measures to reduce the risk of fire.

**Vegetation Management**

- Prior to commencement of work, conduct a hazard tree assessment, and safely remove any danger trees around building envelopes.

- Establish and maintain a Priority Fuel Modified Zone **(Priority Zone 1)**
  0 to10 m around structures
  **Treatment in Priority Zone 1:**
  ⇨Remove/convert combustible vegetation
  ⇨Remove fuels on an ongoing basis (downed branches, dry leaf litter)
  ⇨ Retain well-spaced, pruned coniferous trees
  ⇨ Retain healthy deciduous trees

  **The main objective of vegetation management in PZ1 is to create an environment that will not support fire.**

  **Due to the Moderate interface fire hazard, the juxtaposition of the proposed lots and neighbouring properties, and the likelihood that existing forest cover will be significantly reduced during land clearing, the requirement to establish a Fuel-Modified Zone 2 10-30 around structures will not be required.**

- Develop a landscape plan featuring fire-resistive vegetation
  *See FireSmart Landscaping on Southeastern Vancouver Island* (brochure), Strathcona Forestry Consulting, 2004.
  http://www.cityoflangford.ca/documents/brochures/FireSmartLandscaping.pdf

**Structural Options**

- Use fire-retardant roof covering assemblies rated Class A, B, or C (i.e., metal, tile, ULC- rated asphalt).

- Use non-combustible siding materials (i.e., stucco, metal siding, brick, cement shingles or cementitious materials, poured concrete, or ULC-rated wood siding).

- Follow FireSmart guidelines for design, construction and maintenance of chimneys, window and door glazing, eaves and vents, and decking.
  http://www.partnersinprotection.ab.ca

**Access**

- Ensure new driveways meet minimum FireSmart guidelines for width, gradient, and overhead clearance (in accordance with the latest edition of the "Manual on Geometric Design Standards for Canadian Roads and Streets").

- Ensure lot numbers (during building phase) and house addresses are clearly evident from roadways.

**Fire Protection**

- Ensure new structures and accesses are mapped on Fire Department fire plan "pre-org" maps

- Liaise with the North Saanich Fire Department to ensure fire protection and prevention issues are adequately addressed.

**Fire Plan**

- During the construction phase of the subdivision, ensure an Emergency Fire Plan is provided, outlining emergency procedures in case of fire. Workers on site should be familiar with the plan.

**Water Supply for Fire Fighting**

- Follow local government guidelines to ensure community piped water can deliver adequate water to control major fires on a reliable basis via sufficient and suitable hydrants.

**Regulatory Provisions**

- During development (either at the land clearing stage or at building permit), a follow-up interface assessment should be conducted at phased development to ensure appropriate mitigative measures are being implemented.

## 9.0 EXECUTIVE SUMMARY

The Wildland Urban Interface (WUI) fire hazard at a proposed 5-lot subdivision at 625 Birch Road/626 Wain Road is Moderate (acceptable).

Planned mitigation should be sufficient to ensure the safety of the intended development.

Fire prevention and protection in the interface zone are ongoing processes. Long-term implementation of mitigative measures is essential to ensure protection for life, property, and ecological processes in the wildland urban interface.

## 10.0 LIMITATIONS

*This report provides an assessment of WUI hazard and risk. Evaluation is based on professional judgment. The investigation involved a 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.*

## 11.0 APPENDIX 1

### Structural stages and codes

From Standards for Terrestrial Ecosystems Mapping in British Columbia. 1998. Ecosystems Working Group of the Terrestrial Ecosystems Task Force, Resources Inventory Committee.

| Structural stage | Description |
|---|---|
| ***Post-disturbance stages or environmentally induced structural development*** | |
| **1 Sparse bryoid** | Initial stages of primary and secondary succession |
| **Substages** | |
| 1a Sparse | <10% vegetation cover |
| 1b Bryoid | Bryophyte- and lichen-dominated communities |
| ***Stand initiation stages or environmentally induced structural development*** | |
| **2 Herb** | Early successional stage or herbaceous communities Maintained by environmental conditions or disturbance; time since disturbance <20 yrs for normal forest succession |
| Substages | |
| 2a Forb-dominated | Herbaceous communities dominated by non-graminoid herbs |
| 2b Graminoid-dominated | Herbaceous communities dominated by grasses, sedges, reeds, and rushes |
| 2cAquatic | Herbaceous communities dominated by floating or submerged aquatic plants |
| 2dDwarf shrub | Communities dominated by dwarf woody species |
| **3 Herb/Shrub** | Early successional stage or shrub communities maintained by environmental conditions or disturbance; dominated by shrubby vegetation; seedlings and advanced regeneration may be abundant |
| **Substages** | |
| 3a Low shrub | Communities dominated by shrub layer vegetation < 2m tall; seedlings and advanced regeneration may be abundant; time since disturbance <20 yrs for normal forest succession |
| 3b Tall shrub | Communities dominated by shrub layer vegetation that are 2 – 10 m tall; time since disturbance <40 yrs for normal forest Succession |

| | |
|---|---|
| | ***Stem exclusion stages*** |
| **4 Pole/Sapling** | Trees > 10 m tall, typically densely stocked, have overtopped shrub and herb layers; time since disturbance usually <40 yrs for normal forest succession; up to 100+yrs for dense (5 000-15 000+ st/ha) stagnant stands |
| **5 Young Forest** | Self-thinning has become evident; forest canopy has begun differentiation into distinct layers (dominant, main canopy, and overtopped); time since disturbance generally 40-80 yrs, but may begin as early as age 30 |
| | ***Understorey reinitiation stage*** |
| **6 Mature Forest** | Trees established after the last disturbance have matured; time since disturbance generally 80-250 yrs for CDFmm |
| **7 Old Forest** | Old, structurally complex stands composed mainly of shade-Tolerant and regenerating tree species; snags and coarse woody Debris in all stages of decomposition typically, as are patchy understoreys; time since disturbance generally >250 yrs |